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Spring 2-9-2021

Research is a Scientific Capital: The Role of University Libraries in Higher Education Institutions

Nusrat Ali
Quaid-e-Azam Library, University of Gujrat, Pakistan, nusrat.ali@uog.edu.pk

Muhammad Shoaib
Department of Sociology, University of Gujrat, Pakistan, shoaibsoc@uog.edu.pk

Dr. Iqbal Hussain Asad
Department of Library & Information Science, Minhaj University Lahore, Pakistan,
iqbalhussainasad@gmail.com

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Abstract

This paper attempts to examine the research support services in university libraries of higher education institutions in the Punjab, Pakistan. University libraries are providing traditional and as well as modern facilitation to scholars, students, and teachers for face to face and online learning in the globe generally and in Pakistan specifically. A quantitative study design opted and a sample of 90 university libraries was taken out of 116 libraries including sub-campuses libraries from the Punjab Province. A well-structured questionnaire was administered and pretested to conduct a representative survey. The study findings indicated that there was a significant difference in research support facilities between government and private sector university libraries in the Punjab Province. There was also a significant difference in the training of library staff regarding research support activities among university types. The study recommended that training on research support services in the library should be provided to library professional staff, researchers, and students for the best utilization of library services.

Keywords: Research Support Services, Higher Education, Digital and Physical Collections, University Library

Introduction

University libraries are playing an important role to facilitate research scholars, students, and teachers at all levels of education generally and at higher education particularly (Auten, Croxton, & Tingelstad, 2020; Hollister & Schroeder, 2015). The library is providing different sources including print and digital collection to patrons (Shoaib, Abdullah, & Ali, 2020). The digital collection in university libraries of the developed world are well organized and managed (Copeland, Yoon, & Zhang, 2020). Conversely, in the developing world, the situation of university libraries is different as lack of technology and un-availably of internet facilities in remote rural areas including Pakistan. It is pertinent to mention here that the staff of libraries is trying their best to facilitate in the field of higher education as per the availability of resources (Solberg, 2020). Libraries established in different universities are playing a pivotal role through Higher Education Commission (HEC) in supporting research and academic activities to excel in the learning activities. Previously, these have been traditionally providing services related to information available to the student, staff, and other researchers on campus during face to face academic

activities (Solberg, 2020). Conversely, the contemporary environmental nature of these services are changing to digital resources accordingly to support online and e-learning (Ali & Naveed, 2020; Saragossi, Stevens, Scheinfeld, & Koos, 2020). These institutions can enhance participant of library users in their research compilation process (Mundhial, Sahoo, Dash, & Mohanty, 2020). Besides, it is pertinent to mention here that the intervention of advanced technology is taking more attention of them. There are several extensive research support services provided by library professionals in higher education institutions of the Punjab province (Rehman & Mahmood, 2010). These include providing different research training to researchers in the domain of literature review, searching techniques, data analysis tools, and reference management (Visintini, Boutet, Manley, & Helwig, 2018). These services are also extended to ensure easy access to digital resources and a research environment for scholars (Si, Zeng, Guo, & Zhuang, 2019). It provides online repositories and online services including an online soft copy of research material and journals access as well (Harlow & Hill, 2020). Thus, the main aim of this paper is;

➢ To evaluate the research support services in university libraries in Punjab

Hypotheses of the Study

Hypothesis 1: There is a difference in research support facilities between government and private sector university libraries

Hypothesis 2: There is a significant difference in the training of library staff regarding research support activities between government and private sector university libraries

Hypothesis 3: There is a significant difference in research support services of library and researchers' ease between government and private sector university libraries

Hypothesis 4: Research support services in the library are going to be provided in the future for staff development and researchers' ease is predicted by training of library staff, training and seminar for researchers, and motivation for library staff

Review of Literature

Literature review develops appropriate research plans and tools for the success of research in the field of library science and higher education along with other disciplines (Dyab, 1997). Further, the review is based on existing published research documents including research papers, seminars, conference proceedings, articles from academic journals, research summaries, books, and articles on library websites (Carlsson & Torngren, 2020). It is noteworthy to mention here that a better understanding of issues related to the organization, management of university libraries, different

types of equipment, and level of user satisfaction is very important and under consideration of research scholars (Griffin, 2020).

Several pieces of research have been conducted to study the phenomena of research support services in university libraries in the globe generally and in Pakistan particularly (Ali & Naveed, 2020). It is argued that university libraries are facilitating students and scholars along with teachers to provide and facilitate (Shoaib et al., 2020). Librarian provides access of print and digital collection to support academic activities at higher education institutions. It is important to mention here that multiple researchers supported the argument that research support services are provided to students and scholars in higher education institutions.

Public libraries all over the world typically provide services to communities that have regional facilities at remote centers and provide learning services and Internet services based on information and communication technologies (Borrego & Anglada, 2018). Further, it provides knowledge, culture, and utilities, receive free information and provide the opportunity to share the use of the library as a member of a democratic society (Bennett, 2020). However, most public libraries in developing countries offer mainly isolated printed resources of knowledge, waiting for a researcher to send or return library books or reading materials. These libraries are still used as research repositories and all library operations are done manually (Wong & Wong, 2018). Reasons are often considered as restrictions on equipment, funds, and public librarians do not fully understand community information services (Johnson, 2020). It seems that you have not created ICT tools and technologies to create and implement effective community information services to eventually promote economic citizens and social development of the community in the developing world (Keller, 2015).

It is noted that library users with quick and efficient remote access to library resources and services. Currently, the trend of website development in developing countries is also increasing more and more active websites are already being developed in some academic libraries (Shoaib et al., 2020). Some of these sites have static pages that contain only minimal information on library resources, employees, and services (Campbell, Hatch, & Torabi, 2018). Other sites offer dynamic web pages that provide adequate library information and services such as OPAC, electronic database, peer-review journal, reference service, and library resources. However, there has been no user base survey to evaluate the website of the University Library so far. For unknown reasons, library experts, researchers, scholars again ignored the research in this field (Gonzalez-Solar, 2018). It is

found that the librarians' attitudes are an important factor for digital technology services and academic library resource applications, as librarians introduce and provide new services and resources to researchers (Ali & Naveed, 2020). They are responsible for researcher needs and requirements. Further, they facilitate to support the use of digital technology at university libraries and try to develop the latest information resources and services (Martin, Luis, & Pacheco, 2018). Similarly, evaluation of librarian attitudes towards the use of digital technology in libraries is also very important (Johnson, 2020). However, it is noted that the role of libraries has shifted to the creators' service due to the scientific, radical, economic, and social changes in the field of higher education reading services (Kane & Mahoney, 2020). Thus, this paper attempts to examine the research support services in higher education institutions in the Punjab, Pakistan.

Materials and Methods

This paper is based on a quantitative study design and a sample of 90 university libraries was taken out of 116 libraries including sub-campuses libraries from the Punjab Province. A well-structured questionnaire was administered and pretested from 25 respondents to conduct a representative survey. It is pertinent to mention here that the measurement tool consists of different sections of independent and variables. An attitudinal scale of (dis)agreement is used to measure the response on the subject underhand. Further, coding, editing, and data entry are completed. Data is analyzed and frequency distribution, correlation, independent sample t-test, and regression analysis is employed to draw results and conclusion.

Results

This section of the study provides the results of the current study. It is divided into different sections including a) frequency distribution, b) correlation statistical test, c) mean and standard deviation, d) independent sample t-test, and multiple linear regression test.

A) Frequency Distribution

It was reported based on the survey data that 52.2 percent of the university libraries were from the private sector and 47.8 percent out of 90 were from public sector university libraries. The sample size was split over public and private sector libraries as per proportional allocation to the public and private sector of total university libraries including sub-campuses libraries. Data in Table 1, the number of professional staff working in the library. Here, data reflect that 34.4 percent of the libraries had 1-2 professional workers, 22.2 percent professional staff range from 3 to 4 and only

2.2 percent of the professional workers fall in intervals 9 to 10. It is concluded that more than half of the libraries had less than 5 professional workers.

Table 1

Frequency Distribution of the Variables

Professional staff			Para-professional staff		
Number	Frequency	Percentage	Number	Frequency	Percentage
1 – 2	31	34.4	No Staff	21	23.3
3 – 4	20	22.2	1 – 2	28	31.1
5 – 6	17	18.9	3 – 4	13	14.4
7 – 8	13	14.4	5 – 6	14	15.6
9 – 10	02	02.2	7 – 8	07	07.8
11 & Above	07	07.8	9 & Above	07	07.8
Total	90	100.0	Total	90	100.0
Digital collection in the library			Non-professional staff		
Up to – 5000	31	34.4	No staff	11	12.2
5001 – 10000	11	12.2	1 – 2	36	40.0
10001 – 15000	02	02.2	3 – 4	13	14.4
15001 – 20000	02	02.2	5 – 6	08	08.9
20001 – 25000	13	14.4	7 – 8	04	04.4
25001 – 30000	07	07.8	9 & Above	18	20.0
30001 & Above	24	26.7	Total	90	100.0
Total	90	100.0	Online database regarding e-books		
Physical collection			No database	09	10.0
Up to– 50000	64	71.1	1 – 2	17	18.9
50001 – 100000	10	11.1	3 – 4	30	33.3
100001 – 150000	09	10.0	5 – 6	17	18.9
150001 – 200000	03	03.3	7 – 8	08	08.9
200001 & Above	04	04.4	9 & Above	09	10.0
Total	90	100.0	Total	90	100.0
Online database regarding e-journals			Computers in the library computer lab		
No database	06	06.7	0 – 2	13	14.4
1 – 10	26	28.9	3 – 4	06	06.7
11 – 20	35	38.9	5 – 6	07	07.8
21 – 30	08	08.9	7 – 8	02	02.2
31 – 40	04	04.4	9 & Above	62	68.9
41 – 50	09	10.0			
51 & Above	02	02.2	Total	90	100.0
Total	90	100.0			

The result also shows the number of para-professional staff working in the library. Field data show that 31.1 percent of the libraries had 1-2 professional workers, 23.3 percent para-professional staff ranges from no para-professional, and only 7.8 percent of the para-professional workers fall in interval 7-8 and 9 & above. It is concluded that more than half of the libraries had less than 5 para-

professional workers. Statistical data in this table describes the number of non-professional staff working in the library. Calculated data present that 40.0 percent of the libraries had 1-2 non-professional workers, 20.0 percent non-professional staff range from 9 & above and only 4.4 percent of the non-professional workers fall in intervals 7 to 8. It is argued that more than half of the libraries had less than 1-4 non-professional workers. Further, tabulated data also illustrates the number of digital collections in the library. Data reported that 34.4 percent of the libraries had up to–5000 digital collections, 26.7 percent digital collection range from 30001 & above and only 2.2 percent of the digital collections fall in the interval 10001–15000 and 15001-20000. It is concluded that about half of the libraries had less than 5001–10000 digital collections. As well as the concern of several physical collections in the library, field data show that 71.1 percent of the libraries had up to–50000 physical collections, 11.1 percent physical collection range from 50001-100000 and only 3.3 percent of the physical collections fall in interval 150001–200000. It is argued that the majority half of the libraries had less than 50001 physical collections.

Collected data also indicate the number of the online database regarding e-books access in the library. Field data show that 33.3 percent of the libraries had 3–4 online database access regarding e-books, 18.8 percent online database access regarding e-books range from 1–2 and 5–6 and only 08.9 percent of the online database access regarding e-books fall in interval 7–8. It is concluded that more than half of the libraries had less than 5 online database access regarding e-books. Data also reflect the number of online database access regarding e-journals in the library. Here, data reflect that 38.9 percent of the libraries had 11–20 online database access regarding e-journals, 28.9 percent online database access regarding e-journals range from 1–10 and only 02.2 percent of the online database access regarding e-journals fall in interval 51 & above. It is argued that the majority of the libraries had less than 21 online database access regarding e-journals. Further, data depict the number of computers in the library computer lab. Field data show that 68.9 percent of the libraries had 9 & above computers, 14.4 percent of computers range from 0 to 4, and only 2.2 percent of the computer fall in interval 7 to 8. It is concluded that the majority of the libraries had more than 9 computers.

Table 2 shows the number of computers in library offices. Calculated data present that 72.2 percent of the libraries had 1-10 computers, 10.0 percent computer range from 11-20, and only 1.1 percent of the computer fall in the interval 31-40. It is argued that the majority of the libraries had less than 11 computers. Data also describe the seating capacity in the library. Data reported that 47.8 percent

of the libraries had 151 & above seating capacity, 22.2 percent seating capacity range from 31-60, and only 3.3 percent of the seating fall in intervals up to-30. It is concluded that the majority of the libraries had more than 151 seating capacity.

Table 2
Number of Computers in Library Offices and Seating Capacity

Computers in library offices			Distribution of library by seating capacity		
Number	Frequency	Percentage	Number	Frequency	Percentage
No computer	04	04.4	Up – 30	03	03.3
1 – 10	65	72.2	31 – 60	20	22.2
11 – 20	09	10.0	61 – 90	09	10.0
21 – 30	03	03.3	91 – 120	10	11.1
31 – 40	01	01.1	121 – 150	05	05.6
41 – 50	02	02.2	151 & Above	43	47.8
51 & Above	06	06.7	Total	90	100.0
Total	90	100.0			

Field data also show that there are 64.4 percent of library staff have mater level of qualification and 32.2 percent have 6 to 10 years of experience working in university libraries and facilitate patrons of libraries. Further, these staff members are classified as 68.9 percent males and 31.1 percent females. It is pertinent to mention here that the sample size is also proportionally allocated to the gender of the professional and non-profession working staff in the university libraries of higher education institutions.

B) Correlation Statistical Test

Table 3 describes the correlation statistical test. Data reflect that there is a moderate relationship of accessibility to online resources with print resources, positions of library support staff for researchers, reference service facilities in the library, training and seminar activities, subscription of online tools by the library, and allied services at the library for researchers. Data reflected that there is a moderate relationship of accessibility of print resources with positions of library support staff for researchers, reference service facilities in the library, training and seminar activities, subscription of online tools by the library, and allied services at the library for researchers.

Data present that there is a moderate relationship of positions of library support staff for researchers with reference service facilities in the library, training and seminar activities, subscription of online tools by the library, and allied services at the library for researchers. Data elaborates that there is a high relationship of reference service facilities in the library with training

and seminar activities, subscription of online tools by the library, and allied services at the library for researchers. Data shows that there is a high relationship between training and seminar activities with a subscription of online tools by the library and allied services at the library for researchers. Data illustrates that there is a high relationship of subscription of online tools by the library with allied services at the library for researchers.

Table 3

List of Codes of variables and Correlational Statistical Test-1

Code/s	Variable name
1	Accessibility to online resources
2	Accessibility to print resources
3	Positions of library support staff for researchers
4	Reference service facilities in the library
5	Training and seminar activities
6	Subscription of Online tools by the library
7	Allied services at the library for researchers

Correlation statistical test

Code	1	2	3	4	5	6	7
1	1	$.380^{**}$	$.358^{**}$	$.583^{**}$	$.497^{**}$	$.474^{**}$	$.427^{**}$
2		1	$.348^{**}$	$.523^{**}$	$.542^{**}$	$.547^{**}$	$.356^{**}$
3			1	$.326^{**}$	$.476^{**}$	$.439^{**}$	$.409^{**}$
4				1	$.733^{**}$	$.673^{**}$	$.698^{**}$
5					1	$.800^{**}$	$.688^{**}$
6						1	$.777^{**}$
7							1

Table 4 indicates the correlation statistical test among variables. Data reflect that there is a highly significant relationship of training expertise activity with organizational and time management activities, technological and digital-related activities, communication and confidence-building activities, attitude and response of co-workers, workload pressure and deadlines, and internal politics and management related pressure. Data present that there is a highly significant relationship of organizational and time management activities with technological and digital-related activities, communication and confidence-building activities, attitude and response of co-workers, workload pressure and deadlines, and internal politics and management related pressure. Data elaborates that there is a highly significant relationship of technological and digital-related activities with communication and confidence-building activities, attitude and response of co-workers, workload pressure and deadlines, and internal politics and management related pressure. Data shows that there is a negative weak relationship of communication and confidence-building

activities with attitude and response of co-workers, workload pressure and deadlines, and internal politics and management related pressure. Data illustrates that there is a moderately significant relationship of attitude and response of co-workers with workload pressure and deadlines and internal politics and management related pressure. Data depicts that there is a highly significant relationship between workload pressure and deadlines with internal politics and management related pressure.

Table 4
List of Codes of variables and Correlational Statistical Test-2

Code	Variable Name
1	Training expertise activities
2	Organizational and time management activities
3	Technological and digital-related activities
4	Communication and confidence-building activities
5	Attitude and response of co-workers
6	Workload pressure and deadlines
7	Internal politics and management related pressure

Correlation statistical test

Code	1	2	3	4	5	6	7
1	1	$.661^{**}$	$.807^{**}$	$.581^{**}$	$.362^{**}$	.046	$.217^{*}$
2		1	$.685^{**}$	$.670^{**}$	.026	.095	.047
3			1	$.760^{**}$	$.255^{*}$	.011	.080
4				1	.014	-.105	-.125
5					1	$.546^{**}$	$.654^{**}$
6						1	$.711^{**}$
7							1

Table 5 shows the correlation statistical test. Data reflect that there is a highly significant relationship of type of research support service in the library with research support facilities, training of library staff regarding research support activities, challenges and threats faced by library staff concerning developing research support related skills in library and research support services your library is going to provide in future for staff development and researchers' ease. Data present that there is a highly significant relationship of research support facilities with the training of library staff regarding research support activities, challenges and threats faced by library staff concerning developing research support related skills in library and research support services your library is going to provide in future for staff development and researchers' ease.

Data elaborates that there is a moderately significant relationship of training of library staff regarding research support activities with challenges and threats faced by library staff concerning developing research support related skills in library and research support services your library is

going to provide in future for staff development and researchers' ease. Data illustrates that there is a weak significant relationship of challenges and threats faced by library staff concerning developing research support related skills in the library with research support services your library is going to provide in the future for staff development and researchers' ease.

Table 5

List of Codes of variables and Correlational Statistical Test-3

Code	Variable Name
1	Type of research support service
2	Research support facilities
3	Training of library staff
4	Challenges and threats faced by library staff
5	Research support services in the library

Code	1	2	3	4	5
1	1	.693**	.565**	.039	.382**
2		1	.812**	.074	.541**
3			1	.106	.592**
4				1	.061
5					1

Table 6 depicts the correlation statistical test. Data reflect that there is a highly significant relationship of type of digital access and print resource for researchers with training and seminars for researchers and training and motivation for library staff. Data present that there is a highly significant relationship between training and seminars for researchers with training and motivation for library staff.

Table 6

Correlation Statistical Test

Variables	Digital access and print resource for researchers	Training and seminars for researchers	Training and motivation for library staff
Digital access and print resource for researchers	1	.687**	.678**
Training and seminars for researchers		1	.713**
Training and motivation for library staff			1

C) *Mean and Standard Deviation*

The table presents group statistics of variables. It includes the mean and standard deviation of variables including government and private sector university libraries.

Table 7

Mean and Standard Deviation of Government and Private Sector University Libraries

Statement	Type of Organization	N	Mean	Std. Deviation	Std. Error Mean
Research support facilities	Government	43	74.86	18.430	2.810
	Private	47	84.70	21.014	3.065
Training of library staff	Government	43	80.51	18.766	2.862
	Private	47	90.62	20.017	2.920
Research support services in the library	Government	43	65.02	12.957	1.976
	Private	47	73.28	10.731	1.565

Table 8 depicts the independent sample t-test. The result support **Hypothesis 1** that there is a difference in research support facilities between government and private sector university libraries in the Punjab Province. The calculated value of the independent sample t-test also proves **Hypothesis 2** that there is a significant difference in the training of library staff regarding research support activities between government and private sector university libraries in the Punjab Province. Here, the result is also significant by supporting my **Hypothesis 3** that there is a significant difference of research support services of the library is going to provide in future for staff development and researchers' ease between government and private sector university libraries in the Punjab Province.

D) *Independent Sample t-Test*

Table 8
Independent sample t-Test (Difference of Government and Private Sector Universities)

Variables		Levene's Test for Equality of Variances		t-test for Equality of Means					95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Research support facilities	Equal variances assumed	.760	.386	-2.353	88	.021	-9.842	4.183	-18.155	-1.529
	Equal variances not assumed			-2.367	87.851	.020	-9.842	4.159	-18.106	-1.577
Training of library staff	Equal variances assumed	.278	.600	-2.465	88	.016	-10.105	4.100	-18.254	-1.957
	Equal variances not assumed			-2.472	87.943	.015	-10.105	4.088	-18.230	-1.981
Research support services in the library	Equal variances assumed	1.014	.317	-3.302	88	.001	-8.253	2.500	-13.221	-3.286
	Equal variances not assumed			-3.274	81.832	.002	-8.253	2.521	-13.268	-3.239

E) *Multiple Linear Regression Test*

Table 9

Multiple linear regression predicting research support services in the library is going to be provided in the future for staff development and researchers' ease (standard errors and parameter estimates)

Predictors	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
Training of library staff regarding research support activities	.035	.018	.057	1.949	.055
Training and seminars for researchers	1.290	.081	.551	15.859	.000
Training and motivation for library staff	1.300	.099	.466	13.105	.000
(Constant)	6.441	1.667		3.863	.000
R Square = .951			Adjusted R Square = .949		
No. of observations = 90			F = 558.225		

Table 9 asserts multiple linear regressions predicting research support services in libraries are going to be provided in the future for staff development and researchers' ease. Here, the result supports **Hypothesis 4** that research support services in the library are going to be provided in the future for staff development and researchers' ease is predicted by training of library staff, training and seminar for researchers, and motivation for library staff.
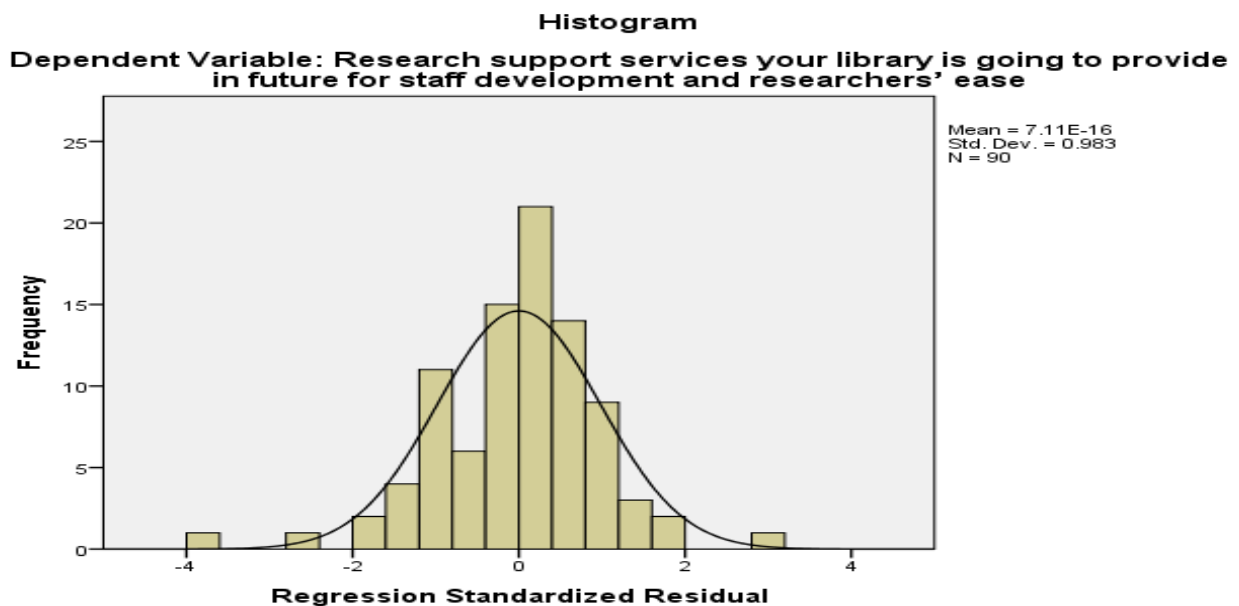

Figure 1: Modal Fit Summary

Here, Figure 1 is showing a model summary of multiple linear regression. The result presents that the model summary is fit showing significant results by the predictors.

Discussion

University libraries are playing a pivotal role in supporting research and academic activities. They have been traditionally providing services related to information available to the student, staff, and other researchers. There many sorts of extensive research support services provided by library professionals in universities of the Punjab Province to help researchers. These services include providing different research training to researchers i.e. how to the literature review, searching techniques, data analysis tools, and reference management, etc. The services provided by library professionals also extend to provide digital resources access and environment to researchers to get help from online repositories and providing online services like an online soft copy of material and online journals access (Harlow & Hill, 2020). There is a difference in research support facilities between government and private sector university libraries in the Punjab Province. There is also a significant difference in the training of library staff regarding research support activities between government and private sector university libraries in the Punjab Province. There is a significant difference in research support services the library is going to provide in the future for staff development and researchers' ease between government and private sector university libraries in the Punjab Province. Research support services in the library are going to be provided in the future for staff development and researchers' ease is predicted by training of library staff, training and seminar for researchers, and motivation for library staff.

The review of the relevant literature shows that intellectual research is radically changing and the practice of research is also changing. In the present technological era, redesigned university libraries and services for dynamic users have become a powerful engine for changing university libraries. The research examined in this study shows that most are research by researchers, scientists, and doctoral students working in an academic environment. The main objective of these studies is to look at attitudes, information needs, and patterns of use of library resources and services. It has been observed that there are few bibliographies on the role of university libraries in research. Most of the studies examined did not focus on the resources and services of university libraries for research support. Since researchers have not found effective research on Kerala University Library, we hope that this study can make a significant contribution to the library and information sciences. Support research is a key issue for universities and research libraries. Library

research support services can be considered as specific information services provided by a particular library and can promote research by addressing the specific information needs of each institution's researchers. For example, include periods in which the librarian instructs the data management software to find information from a new database or functionality in a database it is registered with.

Research support services have been created that allow researchers to search for a large number of library searches from librarians. Consultation with researchers is far from the point of reference, which is dominated by students (Harlow & Hill, 2020). There is some evidence that this service is popular in the research community, apparently because it considers it useful to obtain relevant materials for its research projects. However, it is important to underline that research studies of researchers should be accompanied by intensive information education. This will allow researchers to acquire the information skills necessary for lifelong learning.

Conclusion

We concluded that university libraries are playing a pivotal role in supporting research and academic activities. They have been traditionally providing services related to information available to the student, staff, and other researchers. There many sorts of extensive research support services provided by library professionals in universities of the Punjab Province to help researchers. These services include providing different research training to researchers i.e. how to the literature review, searching techniques, data analysis tools, and reference management. The services provided by library professionals also extend to provide digital resources access and environment to researchers to get help from online repositories and providing online services like an online soft copy of material and online journals access. There is a difference in research support facilities between government and private sector university libraries in the Punjab Province. There is also a significant difference in the training of library staff regarding research support activities between government and private sector university libraries in the Punjab Province. There is a significant difference in research support services the library is going to provide in the future for staff development and researchers' ease between government and private sector university libraries in the Punjab Province. Research support services in the library are going to be provided in the future for staff development and researchers' ease is predicted by training of library staff, training and seminar for researchers, and motivation for library staff.

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