

Satisfaction Level of Librarians Regarding Research Support Services: A Comparative Survey of Private and Public Universities of Pakistan

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The key objective of this research was to compare the satisfaction levels of private and public university librarians (ULs) regarding research support services (RSSs). The study used judgmental and convenience sampling techniques to collect data from the respondents via a self-administered questionnaire used offline/online. The questionnaire focused on four facets of RSSs.

An independent t-test was applied for data analysis. The study outcomes illustrated that no significant difference existed between the librarians of private and public universities regarding the RSSs provided. The mean scores of the four RSSA factors confirmed that respondents were moderately satisfied with their RSSs. Moreover, in the majority of the cases, public ULs were slightly better than their counterparts in the private sector. The findings of this study might create healthy competition between the private and public ULs in Pakistan and abroad.

Keywords: Research support services (RSSs); university librarians (ULs); satisfaction level; comparative survey; Pakistan.

INTRODUCTION

Libraries are considered service-oriented organizations whose fundamental goal is the delivery of quality services to library users (Thakuria, 2007). A service is a task that an individual executes to aid a client (Ahmed, 2017). Research support services (RSSs) have emerged in libraries as relatively innovative services where diverse capabilities converge (Rubbiaa et al., 2014). Their mission can vary from providing support to creating innovative notions, providing research suggestions to exploring grant availabilities, and aiding in appropriate research activity to helping broadcast and publish research output. Richardson et al. (2012) explained that RSSs can have various titles like RS, copyright, or research services. However, they are frequently offered under the umbrella of educational or information amenities.

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Keller (2015) recognized five RSSs as services involved in managing institutional repositories, open-access publishing, offering knowledge of bibliometrics to enhance research impact, supporting the research scholars, and facilitating research data management (RDM). Most librarians in Australia have been found to provide inclusive support for all five stages of RSSs by compiling FAQs, arranging online lectures, providing training and advice to access required bibliographic databases such as Scopus, the Web of Science, and JCR, and facilitating the use of online tools like Endnote. However, librarians' main contribution appears to be in the areas of RDM of publications, research assessment, and open science (Kaiponen & Nykyri, 2016). Parker-Gibson and Houpert (2017) describe somewhat dissimilar types of RSSs while considering the researcher's desires.

According to them, RSSs include practicum and training on statistical software and citation management, initiating funding proposals and their management, and conducting literature reviews. The ACRL (2012) emphasized that librarians must collaborate with faculty members to enhance the required capabilities to carry out and publish research work in the existing online environment. More than four decades back, Lacey (1980) believed that librarians should coordinate with faculty to help them frame the research question, learn search strategies, and minimize the waste and tedium of the early stages of research. Thus, in the current times of mounting emphasis on the research productivity of university faculty, subject librarians must become their active research partners by helping initiate research to create new factual knowledge (Chanetsa & Ngulube, 2016). It would be a great achievement for librarians to build strong associations with faculty and researchers and become collaborative research team partners (Jaguszewski & Williams, 2013).

Corrall (2014) admitted that librarians were quick to understand the research process. Her review of the various investigations revealed that librarians could actively understand the researchers' comprehension of the research they produced. Federer (2013) also agreed with the findings of Corrall (2014) and declared that her literature review also indicates that librarians can facilitate the researchers in the research process and provide valuable data. Potomkova, Geier, and Feber (2010) have analogous opinions that librarians play a crucial role in facilitating researchers in systematic reviews. On the other hand, various authors have recently discussed librarians participating in research projects as faculty members (Tang & Hu, 2019). Due to the pressure of increased research productivity on researchers, they are unable to carry out all of the related activities of research, such as managing grants for research projects, searching the literature, managing citations and references, analyzing data, checking plagiarism, searching an appropriate journal for publishing research and promoting research. The researchers have long been searching for supporters who can aid them in their research activities, and librarians have taken advantage of this opportunity by assisting them with their research projects.

The literature review revealed that librarians could support the researchers through the abovementioned RSS. Therefore, this study aims to examine the satisfaction level of private and public university librarians (ULs) in Pakistan regarding the RSSs they provide to researchers.

LITERATURE REVIEW

Research Support and Research Support Services

Parker (2012) disclosed that research support (RS) is a considerably advanced stage of reference services. She opined that RS is the suite of services and facilities that help increase researchers' research output and erudition. Keller (2015) mentioned that RS is mentally inspiring and challenging and provides a chance for librarians to collaborate with faculty and researchers of their institution to accomplish university objectives. She further disclosed that RS is a comparatively new concept. However, it is considered an amplifying imperative in Australian university libraries. The literature review has recommended that libraries must improve RS by developing modified RSSs via expert librarians embedded in university departments (Richardson et al., 2012). Nevertheless, Raju and Schoombie (2014) have noted that RS librarianship is still in its infancy worldwide. The literature review revealed that library scientists and notable investigators of social sciences have investigated several types of RSSs. These include RDM, institutional repositories management, open access publishing, Research Excellence Framework, search engine optimization, subscriptions, abstracting and indexing services, status of journals, applying for scholarship, research impact computations, partnerships/collaborations, scholarly publishing, managing research performance reports, copyright, data evaluation software, communication skills, initiation of funding proposals, conducting literature reviews, bibliometrics, and citation managers.

Pressure of Research Productivity/Outcome on Researchers

Research productivity refers to work that has resulted from the investigation and has been published as a journal/conference paper, book, or research proposal for grants, patents, and standards (Okiki & Mabawonku, 2013). In the recent academic scenario, it is widely acknowledged that scholars with more research publications would be more capable. Research publications in reputable journals are considered an imperative aspect of initial recruitment, professional promotion, development, acknowledgment, and salary negotiation. This atmosphere puts incredible pressure on the faculty/researchers to publish continuously and in appropriate quantity (Olakunle & Olanrewaju, 2019). Corral (2014) has reported that there has been a decline in the use of libraries by researchers. Researchers are slowly moving toward areas such as writing for financial support, ethical and systematic reviews, managing research repositories, hosting and managing conferences, publishing in journals, and assessing

the impact of citations. However, in response to the researchers' request for help, librarians have been assisting investigators in probing the available resources, reviewing literature for availing research donations, compiling with the funder's guidelines, publishing research, conducting bibliometric analyses, managing data and preserving data, managing citations and other information-related areas (Federer, 2013; Parker-Gibson & Houpert, 2017). Federer (2013) established that librarians' involvement in research influences investigators' data collection, storage, and curation practices. In contrast, Mitchell (2013) found that it is not a common practice, and only some financing bodies support research projects initiated by librarians, which makes them essential members of the research proposal team.

Perceptions of Faculty/Researchers Regarding Librarians

Even when faculty/researchers perceive that librarians could help them in their research work, they often do not contact librarians or understand how to collaborate with them. Furthermore, if they contact them, they ask the librarians to focus on the inappropriate parts of their research, such as interpreting the research aims or managing citations (Epstein & Rosasco, 2015). Therefore, a clue to faculty motivation to work with librarians is their curiosity about what they can offer them (Cannon, 1994). Federer (2013) revealed that in their project, the researchers wanted an informationist (Librarian) to help in their research work. Most of them did not know what kind of services librarians could provide. As a result, they requested the librarians to manage their non-professional tasks like RDM instead of asking for any specific service. However, librarians can apply their skills to write funding proposals for their research, recognize its limitations, provide advice on RDM, and conduct professional searches for meta-analyses and logical reviews, bibliometrics, and network analysis to discover probable research collaborators. Similarly, Corral, Kennan, and Afzal (2013) disclosed that librarians in the UK and the USA have acknowledged diverse communications from researchers regarding the worth of their RSSs.

Librarians and Research

Librarians have presciently performed a crucial part in assisting the faculty and researchers. These efforts must be strengthened and augmented in the contemporary age of online information explosion. Assessing the research needs of academia and exploring strategies to fulfill these needs have always been challenging tasks (Epstein & Rosasco, 2015). Most researchers and faculty members have no idea about RSSs offered by the librarians because the librarians have not professionally marketed the RSSs they provide. A reference librarian can help the faculty in their research activities through detailed research discussion, reference interviews, immediate support when needed, and by providing reader advisory services (Mon & Harris, 2011). In the present era, librarians have proved their role as information and service providers,

creating complications for training information professionals. To fulfill the requirements of investigators, librarians need to be experts in all research-related steps: from the initiation of the research proposal and funding to research publication, applying ICTs, using social media effectively, knowing databases of numerous subjects, understanding the copyright and licensing issues, conducting research evaluation, creating awareness regarding the management and preservation of data; engaging in content analysis, contacting peers, and involving positively with researchers and concerned offices as well as complying with policies and guidelines of the donors (Federer, 2013).

Faculty Librarian Collaboration

Faculty-librarian collaboration may be productive for teaching and assessment (Nguyen & Tuamsuk, 2020). The concept of the partner is not only to help the researchers complete and disseminate their research work, but it is the name of the actual contribution of knowledge creation by exercising the possessed expertise and capabilities of librarians (Monroe-Gulick, O'Brien, & White, 2013). Law (2010) disclosed that librarians have primarily performed the role of supporters in the academic research process until now; however, their part as partners is limited. Consequently, becoming a 'partner' in the research process instead of a 'supporter' is a field of the LIS profession that requires more investigation and emphasis. Bradbury and Weightman (2010) revealed that librarians are skilled in searching progressive literature, undertaking acute evaluation, summarizing the occurring evidence, and developing evidence-based techniques. Therefore, librarians can support the faculty in initiating and marketing open educational resources (Smith et al., 2023). LibGuides is a modern tool librarians use to collaborate and facilitate the faculty regarding their obligatory course-related resources (Clever, 2020; Orth-Alfie & Wolfe, 2024). Likewise, they commonly build partnerships with faculty to write down funding applications (Karasmanis & Murphy, 2014) and systematically review the literature. It is to be noted that some librarians at Cancer Research Wales have written several review articles on urological cancer. Hence, the study of Raju and Schoombie (2014) authenticated the above idea and discovered that librarians engaged in research were energetic associates in the research process, from the beginning to publishing research in the form of an article, book, or dissertation. Hence, the librarian's role has shifted from a helper to a collaborator in the research process.

New and Emerging Roles of Librarians

The impact of the monetary downfall has condensed the budgets for human resource departments (Nicholaset al., 2010). This has put pressure on librarians to submerge themselves into innovative emerging characters. The librarians also need proper skills to perform these emerging roles, and it needs to be evaluated whether librarians are content and proficient enough to carry out these roles. The literature

review identified several examples of new and emerging roles following functional and liaison models (Cox & Corrall, 2013; Federer, 2013). On the other hand, technology has also forced subject librarians to reassume and modernize their tasks, errands, and capabilities in order to be pertinent in the present information environment (Chanetsa & Ngulube, 2016).

A broad and somewhat different range of services to be performed by librarians is that of liaison/subject librarians who should have massive fundamental capabilities of artificial intelligence, advanced searching and retrieval, digital literacy skills, digital management and marketing, digital reference services, data curation and analytics, metadata, leadership, publishing and presentation, scholarly communication, use of social media, and referencing and statistical tools (Chanetsa & Ngulube, 2016; Diseiye et al., 2024; Hussain, 2023). According to Keller (2015), the emerging duties of liaison librarians are drastically but not fundamentally diverse from their previous jobs. However, the emerging roles demand that liaison librarians be well-informed regarding research impact, create active contacts with researchers, join research workgroups, and promote research data through institutional repositories (Schmidt et al., 2024). Jaguszewski and Williams (2013) opined that liaison librarians identify the requirements of researchers and refer them to a person who has specialized/technical skills regarding the research topic.

PROBLEM STATEMENT

Internationally, diverse studies have investigated the provided RSSs, but there have been few studies in the Pakistani context. The literature review has revealed that there is much literature available on RS and RSSs internationally. The thesis of Bright (2018) examined the role of ULs as research collaborators, Mitchell (2013) explored the RSSs of ULs, Karasmanis and Murphy (2014) determined the role and collaborations of LISPs in RS, Samahet al. (2021) explored the library management support of the ULs, Esmailzadeh, Bahrami, and Soleymani (2020) explained the aptitudes of ULs to provide health research services, Joo and Schmidt (2021) and Tang and Hu (2019) examined the awareness of ULs concerning research development services and research data management respectively, Shin (2021) explored the role of ULs as research collaborators, and Malone and Burke (2016) explored the knowledge of librarians regarding research data management and altmetrics/ bibliometrics respectively.

However, fewer studies are available in Pakistan in this context. The study of Awan, Richardson, and Ahmed (2022) disclosed the awareness of LISPs concerning the RSS. Sheikh, Malik, and Mahmood (2020) have examined the involvement of LISPs in research activities. Hanif, Ahmed, and Sabzwari (2018) have disclosed the perceptions of Pakistani university LISPs regarding their provided RSSs, and Ali and Naveed (2020) have explored the RSSs and resources provided by the university libraries of

Pakistan. Despite that, some studies have addressed the service quality comparison of university libraries(private and public) regarding the satisfaction level of the users(Ahmed, 2017; Awan, Azam, & Asif, 2008; Bamidele et al., 2012; Rehman, 2012; Shoeb, 2011). Conversely, no study has been available that has compared the satisfaction level of ULs of the private and public sectors regarding the RSSs they provided to researchers. The literature review identified this gap at the national and international levels. Consequently, to fill the gap, the study examined the comparison of private and public sector university librarians' satisfaction levels regarding the RSSs they provided to researchers. The study will help librarians conduct more surveys to ascertain the RSSs of other institutions. The findings will support librarians in overcoming their shortcomings and encourage them to seek new research skills. It will also benefit researchers to know how librarians can support them in increasing their research productivity.

Objectives

The foremost purpose of the current study was to explore the satisfaction level of librarians employed in Pakistan's private and public sector universities regarding the RSSs they provided to researchers.

Hypotheses

- H1 There is no significant difference between the librarians of private and public universities in supporting the researchers in writing research work.
- H2 There is no significant difference between the librarians of private and public universities in supporting the researchers in publishing research work.
- H3 There is no significant difference between the librarians of private and public universities in supporting the researchers in marketing research work.
- H4 There is no significant difference between the librarians of private and public universities in supporting the researchers regarding bibliometrics.
- H5 There is no significant difference between the librarians of private and public universities in supporting the researchers regarding research data management.
- H6 There is no significant difference between the librarians of private and public universities in supporting the researchers regarding software services.

METHODOLOGY

Instrument

Most of the previous research studies in the field of social sciences and LIS have used a questionnaire as a data collection instrument (Ahmed & Sheikh, 2021; Ameen & Gorman, 2009; Mahmood, 2013; Safdar & Idrees, 2020). Therefore, the survey technique was chosen for this study. A quantitative survey technique was exercised, and a questionnaire was used to collect data. A suitable scale to gauge the RSSs of librarians did not exist. Some scales have been developed and are available for measuring the RSSs of librarians (Bright, 2018; Childress, 2011). However, these scales could not be directly applied to examine librarians' satisfaction with the RSS provided in this study. Therefore, to develop the current scale for computing RSSs, statements were adapted through a systematic literature review, their content validity was checked, it was pilot-tested, and the recommended changes were incorporated into the final version of the questionnaire. The questionnaire consisted of six facets which have been highlighted in previous literature: writing research work, publishing research work, and promoting research work, research metrics/bibliometrics, research data management services, and software services (Bright, 2018; Childress, 2011; Epstein & Rosasco, 2015; Hanif, 2017; Jaguszewski & Williams, 2013; Karasmanis & Murphy, 2014; Mitchell, 2013; Monroe-Gulick, O'Brien, & White, 2013; Raju & Schoombee, 2014). The current study used a five-point Likert scale ranging from very satisfied (1) to very dissatisfied (5). To measure the internal consistency and reliability of the instrument, Cronbach's alpha coefficient was applied. The Cronbach alpha values of RSS subdivisions were 0.89 – 0.95, which illustrated that the gained values were larger than the suggested ones.

Sample and Data Collection

The current study used a judgment/purposive and convenience sampling method to collect data. The total population was approximately 1000 librarians working in private and public universities in Pakistan. Therefore, according to Krejcie and Morgan (1970), the sample encompassed 278ULs(5% margin of error and 95% confidence level). Moreover, to take an appropriate sample, all university libraries were surveyed, and one librarian (providing RSSs to researchers) from their central/main and sub-campus library was selected for inclusion in the study.

The librarians' contacts were obtained using personal affiliations, university websites, and professional directories, and the questionnaire was distributed through e-mails and WhatsApp. However, the target population was followed up continuously to obtain the maximum response rate. The survey instrument was sent to 278 respondents, of which 265 (176 Public and 89 private) librarians provided feedback. Therefore, the response rate was 95%. One response from a private university

librarian with missing data was discarded. Data from 176 librarians from public and 88 from private university libraries were analyzed for data analysis purposes.

Data Analysis

Statistical Package for Social Sciences (SPSS, Version 19) was used for data analysis purposes. The researchers wanted to calculate the mean scores, their comparison, and the significant variance of private and public university librarians provided RSSs. For this purpose, Levine's test for the equality variance, usually an independent t-test, was applied. The level of significance was $P < 0.05$. Before applying the t-test, assumptions like random sampling, normal distribution of data, homogeneity, outliers, etc., were checked.

RESULTS

The current study's findings have compared librarians' satisfaction with RSSs being provided in private and public universities in Pakistan. An independent t-test was applied to compare these services. Six facets of RSSs were investigated via specific questions in the data collection instrument: writing research work (11), publishing research work (4), promoting research work (3), bibliometrics (5), research data management (5), and software services (6).

The findings of the t-test (Table 1) showed no significant variance between the librarians of private and public universities regarding the support provided to researchers in 'writing research work.' The mean scores of all eleven statements demonstrated that respondents were moderately satisfied with the support they provided. Difference between means (DBM) of the eight statements: to facilitate the researchers in developing questionnaires (DBM = 0.193), applying systematic searching techniques (DBM = 0.107), reviewing the retrieved Literature (DBM = 0.09), checking validity and reliability (DBM = 0.09), collecting data (DBM = 0.056), formulating research hypothesis (DBM = 0.051), developing research topics (DBM = 0.034), and formulating research methodology (DBM = 0.017) illustrated that public sector ULs were slightly better than their counterparts in this regard. However, the DBMs also illustrated that the private ULs were marginally better than their counterparts in supporting the researchers in analyzing data (DBM = 0.113), communicating research results (DBM = 0.102), and identifying potential grant opportunities (DBM = 0.005).

Table 1

Satisfaction level of private and public ULs regarding writing research work

Statements	Public (n = 176)		Private (n = 88)		Mean Diff.	T	Sig. (2-tailed)
	Mean	Std. dev.	Mean	Std. dev.			
I feel confident to facilitate researchers to.....							
Understand the landscape of the research area to develop a research topic	3.92	.884	3.88	.850	.034	.299	.765
Apply systematic searching techniques to search literature	4.13	.792	4.02	.830	.107	1.027	.306
Review the retrieved literature systematically to mature research	3.95	.886	3.86	.899	.090	.781	.435
Formulate research questions/hypothesis	3.80	.956	3.75	.861	.051	.423	.673
Formulate research methodology	3.82	.978	3.80	.945	.017	.713	.893
Develop data collection instruments (surveys, interview protocols, etc.)	3.89	.950	3.70	.846	.193	1.613	.108
Collect data	3.98	.868	3.93	.854	.056	.504	.615
Check the validity and reliability of the research	3.80	1.034	3.71	.921	.090	.697	.486
Data analysis	3.65	1.073	3.77	.943	-.113	-.843	.400
Scholarly communicate research results	3.71	1.030	3.81	.851	-.102	-.804	.422
Identify potential grant opportunities	3.64	1.048	3.647	.910	-.005	-.043	.965

The study outcomes illustrated in Table 2 highlight that no significant disagreement was observed between the librarians of private and public universities regarding their support in ‘publishing research work’ to researchers. The mean scores of all four factors of ‘publishing research work’ confirmed that respondents were moderately satisfied with their provided support to researchers. The DBM of the factor to facilitate the researchers in knowing copyright issues of research (DBM = 0.011) was the only factor where public sector university librarians’ DBM was somewhat better than their peers. Conversely, the DBM also showed that the private ULs were slightly more advanced than their peers in supporting the researchers in using the information fairly (DBM = 0.079), selecting an appropriate journal for publishing research (DBM = 0.056), and reviewing the research draft prior to publishing (DBM = 0.034).

Table 2

Satisfaction level of private and public ULs regarding publishing research work

Statements	Public (n = 176)		Private (n = 88)		Mean Diff.	t	Sig. (2 tailed)
	Mean	Std. dev.	Mean	Std. dev.			
I feel confident to facilitate researchers to							
Select an appropriate journal to publish research work	3.84	.930	3.89	.858	-.056	-.480	.632
Know copyright issues of research	3.92	.864	3.90	.839	.011	.102	.909
Use information fairly	3.98	.855	4.06	.691	-.079	-.757	.450
Review the research draft prior to submission for publication	3.68	.968	3.71	.921	-.034	-.274	.784

Literature (DBM = 0.09), checking validity and reliability (DBM = 0.09), collecting data (DBM = 0.056), formulating research hypothesis (DBM = 0.051), developing research topics (DBM = 0.034), and formulating research methodology (DBM = 0.017) illustrated that public sector ULs were slightly better than their counterparts in this regard. However, the DBMs also illustrated that the private ULs were marginally better than their counterparts in supporting the researchers in analyzing data (DBM = 0.113), communicating research results (DBM = 0.102), and identifying potential grant opportunities (DBM = 0.005). The study outcomes illustrated in Table 2 highlight that no significant disagreement was observed between the librarians of private and public universities regarding their support in ‘publishing research work’ to researchers.

The mean scores of all four factors of ‘publishing research work’ confirmed that respondents were moderately satisfied with their provided support to researchers. The DBM of the factor to facilitate the researchers in knowing copyright issues of research (DBM = 0.011) was the only factor where public sector university librarians’ DBM was somewhat better than their peers. Conversely, the DBM also showed that the private ULs were slightly more advanced than their peers in supporting the researchers in using the information fairly (DBM = 0.079), selecting an appropriate journal for publishing research (DBM = 0.056), and reviewing the research draft prior to publishing (DBM = 0.034).

Table 3 demonstrates that no significant difference is observed between the librarians of private and public universities regarding their support to researchers in ‘promoting research work.’ The mean scores of the three facets of ‘promoting research work’ confirmed that respondents were moderately satisfied with the support provided to researchers.

The DBM of the facets demonstrated that private ULs were somewhat better than their counterparts in facilitating the researchers in promoting research work through social media (DBM = 0.125), online electronic tools (DBM = 0.102), and printed ways (DBM = 0.011). The t-test was applied to explore the variance between the means of librarians of private and public universities regarding the application of ‘bibliometrics’ to help the researchers. The outcomes showed that no significant difference existed between librarians of private and public universities regarding the application of ‘bibliometrics.’ The findings also highlighted that all respondents were moderately satisfied with the support for using bibliometrics.

Table 3

Satisfaction level of private and public ULs regarding promoting research work

Statements	Public (n = 176)		Private (n = 88)		Mean Diff.	t	Sig. (2- tailed)
	Mean	Std. dev.	Mean	Std. dev.			
I feel confident to facilitate researchers to							
Promote research through printed ways (brochures, handouts, news bulletin, etc.)	3.79	.902	3.80	.895	-.011	-.097	.923
Promote research through online electronic tools (e.g., Google Scholar, Research Gate, Academia.edu, etc.)	3.94	.892	4.04	.856	-.102	-.889	.375
Promote research through Social media (blogs, Twitter, Facebook, LinkedIn, WhatsApp, Instagram, etc.)	3.90	.975	4.03	.749	-.125	-1.056	.292

The DBM of public ULs was somewhat better than the private ones. The DBM of the five statements related to bibliometrics, i.e., ‘to facilitate the researchers to understand disciplinary research trends’, ‘potential research grant support’, ‘the importance of potential research collaborations’, ‘the impact factor of a journal’, and ‘citation reports’ were 0.136, 0.102, 0.09, 0.073, 0.051 respectively (Table 4). The t-test outcomes demonstrated (Table 5) that no significant variance was observed between librarians of private and public universities in providing ‘research data management’ support to the researchers.

The findings also revealed that all respondents were moderately satisfied with the support provided in managing the research data. The findings also illustrated that the DBM of public ULs regarding understanding the security of backup copies (DBM = 0.085) and institutional policy of research data management (DBM = 0.051) were somewhat better than the private ULs. The DBM of private ULs were slightly better than their counterparts regarding three statements: to facilitate the researchers to

share research data (DBM = 0.187), preserve research data in the repository (DBM = 0.045), and use various formats to preserve data (DBM = 0.011).

Table 4

Satisfaction level of private and public ULs regarding bibliometrics

Statements	Public (n = 176)		Private (n = 88)		Mean Diff.	t	Sig. (2-tailed)
	Mean	Std. dev.	Mean	Std. dev.			
I feel confident to facilitate researchers to							
Understand citation reports (h-index, g-index, and m-index calculations)	3.59	.992	3.54	.957	.051	.399	.690
Understand the impact factor of the journal	3.93	.945	3.86	.819	.073	.625	.533
Understand potential research grant support	3.67	1.016	3.56	.932	.102	.792	.429
Understand disciplinary research trends	3.77	.988	3.63	.860	.136	1.102	.271
Understand the importance of potential research collaborations	3.77	.928	3.77	.928	.090	.778	.437

Table 5

Satisfaction level of private and public ULs regarding RDM

Statements	Public (n = 176)		Private (n = 88)		Mean Diff.	T	Sig. (2-tailed)
	Mean	Std. dev.	Mean	Std. dev.			
I feel confident to facilitate researchers to							
Understand various formats to preserve data	3.84	.911	3.85	.851	-.011	-.098	.922
Guide regarding institutional policy of research data management	3.84	.946	3.79	.818	.051	.432	.666
Preserve research data in the repository	3.90	.883	3.95	.882	-.045	-.394	.694
Understand the security of backup copies	3.91	.880	3.82	.937	.085	.725	.469
Share research data	3.82	.954	4.01	.823	-.187	-1.573	.117

The findings of the t-test confirmed that there was no significant variance between the librarians of private and public universities in their satisfaction with the support provided to the researcher in using ‘software services. ‘The findings showed that regarding the five statements related to the software services, all subjects were moderately satisfied with the support provided for using this research-related

software. However, they were neutral regarding the usage of qualitative software. The findings confirmed that the DBM of public ULs was slightly better than their counterparts regarding the statements: to facilitate the researchers' use of plagiarism detection software, quantitative data analysis software, citation styles, citation managers, and qualitative data analysis software (DBM = 0.153, 0.034, 0.022, 0.022, and 0.011 respectively). Conversely, the factor in facilitating the researchers' use of online survey tools (DBM = 0.028) was the only factor where private sector university librarians' DBM was somewhat better than their peers in the public sector (Table 6).

Table 6

Satisfaction level of private and public ULs regarding software services

Statements	Public (n = 176)		Private (n = 88)		Mean Diff.	t	Sig. (2- tailed)
	Mean	Std. dev.	Mean	Std. dev.			
I feel confident to facilitate researchers to							
Use online survey tools (Survey Monkey/Google form etc.)	3.91	.906	3.94	.998	-.028	-.232	.817
Use quantitative data analysis software (SPSS/ SYSTAT/SSS, etc.)	3.75	1.039	3.71	.982	.034	.256	.798
Use qualitative data analysis software (NVIVO/Leximancer, etc.)	3.45	1.145	3.44	1.112	.011	.077	.939
Use plagiarism detection software (Turnitin/Safe Assign/Eve/Insit, etc.)	3.92	.997	3.77	1.069	.153	1.150	.251
Use citation styles (APA/Chicago/MLA,etc.)	3.88	.9963	3.86	1.007	.022	.174	.862
Use citation managers (Endnote/ Reference Manager/ Zotero/ Mendeley,etc.)	3.90	1.065	3.88	1.055	.022	.164	.870

DISCUSSION

The current study investigates and compares the satisfaction of private and public ULs in Pakistan regarding the RSSs being provided to researchers. The independent t-test was applied to gauge any differences. The findings indicate that no significant difference exists between the librarians of private and public universities regarding the RSSs they provide. Moreover, private and public sector ULs are moderately satisfied with their supported RSSs. The outcomes also highlight that in most cases, public sector ULs are slightly better than private ULs in supporting RSSs among researchers. The findings are aligned with the outcomes reported by other researchers (Hanif, Ahmed, & Sabzwari, 2018).

Conversely, these findings are contradictory to the results of studies conducted by Ahmed (2017), Awan et al. (2008), Rehman (2012), and Shoeb (2011), who pointed out that generally, private ULs were more skilled in offering services to clients. The discussion regarding the six factors of RSSs is as follows:

The results found no significant variance between the librarians of private and public universities regarding supporting the various facets of 'writing research work.' The results are consistent with the outcomes reported by Hanif, Ahmed, and Sabzwari (2018), who also found no significant variance between librarians of private and public universities regarding their perceptions of helping the researchers in writing research work. Both types of respondents have been moderately satisfied with the support provided in writing research work to the researchers. The findings are similar to the results of Kiran (2010), who indicated that the faculty of the University of Malaya (Malaysia) were satisfied that UL provided services and felt that they had a positive impact on their research work. The findings contradict the results of the study by Bamidele et al. (2012), which reported that the faculty members were not satisfied with the literature search services provided by the private and public ULs in Nigeria.

The DBMs of eight statements (to facilitate the researchers in developing research topics, methodology, questionnaires, hypothesis, searching techniques, reviewing retrieved literature, checking validity and reliability, and collecting data) show that public sector ULs are slightly better than their counterparts. However, the DBMs of the other three items disclose that the private ULs are slightly better than their counterparts in supporting the researchers in analyzing data, communicating results, and identifying potential grant opportunities. The findings are similar to the outcomes reported by MacColl and Jubb (2011) and Young and Jacobs (2013), who have reported that most ULs guide the researchers regarding research topics, develop research questions, search the literature, intellectual property, and copyright issues; research tools and writing/publishing research work. The findings are somewhat aligned with the findings of Sheikh, Malik, and Mahmood (2020), who disclosed that the ULs were somewhat confident in writing research work. The above discussion confirms the first hypothesis of the study. The mean scores of both respondents are approximately less than four. Therefore, respondents have to enhance their knowledge in this regard in order to support the researchers more effectively. In this way, they can become partners/collaborators instead of supporters of research work.

In the case of 'publishing research work,' no significant difference exists between the librarians of private and public universities in Pakistan. The results are consistent with the outcomes reported by Hanif, Ahmed, and Sabzwari (2018), who indicated that no significant variance existed between the librarians of private and public universities regarding their perceptions of helping the researchers publish research work. The mean scores of subsets show that ULs are moderately satisfied with their provided support to researchers. The findings illustrate that in the majority

of the cases (using information fairly, selecting an appropriate journal for publishing, and reviewing the research draft prior to publishing), private ULs are slightly better than their peers. However, the situation is the opposite regarding knowing copyright issues. The outcomes contradict the results of Hanif, Ahmed, and Sabzwari (2018), who illustrated that, in most cases, public ULs were slightly better than their counterparts. The preceding results prove the second hypothesis true. Many fake journals loot money from researchers in the name of publishing their research.

Here again, the research publishing knowledge of the librarians can save the researchers from predatory publishers/journals. In the facet of 'promoting research work,' again, there is no significant variance observed between these two groups, and both are moderately satisfied with their support to researchers regarding promoting research. This is the only facet where whole items show that private ULs are somewhat better than their counterparts in facilitating the researchers in promoting research work through social media, online electronic tools, and printed ways. The former debate confirms the third hypothesis of the study. The subjects are more satisfied with promoting research through electronic means and social media; however, they require more skills and knowledge because the future is in these channels.

The findings regarding the use of 'bibliometrics' demonstrate that no significant difference exists between the respondents. Conversely, all respondents are moderately satisfied with the support provided for using bibliometrics. The findings are consistent with the outcomes of MacColl and Jubb (2011), who explored that ULs agreed they must offer support and guidance to researchers regarding the impact factor of journals and bibliometrics. In this facet, the findings of all five items (understanding disciplinary research trends, potential research grants, research collaborations, the impact factor of a journal, and citation reports) show that public ULs are slightly better than private ULs. The preceding discussion proves the 4th hypothesis true. It is suggested that librarians enhance their skills to obtain research grants and manage citation metrics (h-index, g-index, and m-index calculations) to become partners/co-authors instead of supporters in a research environment.

Research data has its own importance in the recent era of information explosion. Now, social sciences, science, and technology researchers preserve their research/lab data and raw data for future use. Even if any researcher has collected data from a widespread population, their contact numbers should be preserved, which may be helpful for other researchers. In the above scenario, librarians possess unique capabilities to manage data. Therefore, the study's findings have shown no significant difference between the respondents regarding providing RDM service to researchers. This means that private and public ULs provide services equally. Similar findings were also explored by Hanif, Ahmed, and Sabzwari (2018). However, private ULs are marginally better than their counterparts in preserving and sharing research

data in various formats. In the same way, public ULs are slightly healthier than the first ones regarding the security of backup copies and institutional policy regarding RDM.

The results also illustrated that both respondents are moderately satisfied with their abilities to help researchers manage research data. The findings are similar to the study results of MacColl and Jubb (2011), who concluded that ULs strongly agreed that they must guide and support researchers in managing and sharing research data. The former debate confirms that the fifth hypothesis is correct. However, it is suggested that librarians should augment their capabilities regarding RDM, especially in understanding various formats to preserve data and regarding the institutional policy of research data management. The software is critical in every walk of life, and research is not out of context. Researchers need reference management software, data analysis software (qualitative and quantitative), plagiarism software, online survey tools, etc.

The researchers are not experts in the use of this research-related tool. However, librarians have some expertise and can support the researchers. Considering the above discussion, the study results indicate that private and public ULs equally support the researcher in applying software services; there is no significant difference between the services of both. Similar findings have been presented in the study conducted by Hanif et al. (2018). Librarians are moderately satisfied regarding online survey tools, quantitative data analysis software, citation styles, and citation managers. Young and Jacobs (2013) also found that many ULs assist researchers in using diverse plagiarism and reference software.

However, the results contradict the outcomes of Ali and Richardson (2018), who found that librarians possess a minimum competency in using citation managers and plagiarism software. Conversely, ULs are neither satisfied nor dissatisfied regarding qualitative data analysis software. This is the only point where both private and public ULs are neutral. The findings confirm that public ULs are slightly better than their counterparts (to facilitate researchers' use of plagiarism detection software, quantitative and qualitative data analysis software, and reference managers). Conversely, using online survey tools is the only factor where private sector ULs are somewhat better than their peers. Hanif et al. (2018) also presented similar findings. The above discussion supports the sixth hypothesis as being correct. Considering the study findings, it is suggested that respondents should upgrade their skills related to using qualitative research software to support the researchers better, as a vital part of research relies on it.

CONCLUSION

The study findings illustrate that private and public ULs are moderately satisfied with the RSSs they provide to researchers, except for one facet of RSS. In response to the statement, 'using qualitative software,' they indicated that they were neither satisfied nor dissatisfied. The landmark of the findings may be that no significant variance exists between the private and public ULs regarding their provided RSSs (write, publish, and promote research work; bibliometrics; research data management; and software services). This outcome clearly shows that both groups of librarians are equally capable of offering services. However, in most aspects of RSS, the public ULs were found to be slightly better than their peers. Various studies have shown that private ULs are more capable than public ULs. Therefore, the findings of this study may enhance the morale of public ULs and encourage them to do more through self-education or training. The findings may create healthy competition between Pakistan's private and public ULs and abroad. It is recommended that librarians upgrade their RSSs and qualitative data analysis software services because they lack this skill. The librarians' self-efficacy may be a limitation of the study. In the future, the study may be conducted to gauge the satisfaction level of the researchers/faculty regarding the provided RSSs by the ULs. The study may be conducted with other populations like chief librarians, reference librarians, college librarians, and special library librarians.

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