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### Author

Awan, Muhammad Hanif, Richardson, Joanna, Ahmed, Shamshad

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# Current Status of Research Support Services in University Libraries of Pakistan

Muhammad Hanif Awan, Joanna Richardson, and Shamsad Ahmed

## Abstract

**Purpose** - Research Support Services (RSS) is an emerging and popular area in university libraries, whose increasing importance has been well documented since the early 2010s. This study aims to identify the status of RSS provided in the university libraries of Pakistan and to compare the results with relevant international studies. The research also reports on the perception of librarians regarding the application of RSS in Pakistani university libraries.

**Design/methodology/approach** - A quantitative survey was conducted of the chief librarians/head librarians working in the 175 university libraries of Pakistan. A structured questionnaire was designed and pre-tested with national and international research experts, faculty members, and library professionals. SPSS was used to calculate descriptive statistics. Furthermore, the results of the study were compared with previous and current literature from an international perspective.

**Findings** - The results of the study indicated that most of the university libraries were providing basic RSS and that they had good collections of both general and subject-specific works to meet the needs of researchers. Furthermore, most of the respondents not only were interested in providing RSS but also emphasized that libraries should upgrade their collection to meet researchers' requirements. However, results of the study also indicated that there was noticeably less support for both the more advanced and newer research support services.

**Practical implications** – Because the delivery of such services enables libraries to help meet a university's strategic research goals, the findings will be of interest to university LIS executives, policymakers, and administration. The suggested recommendations highlight those service areas which are most in need of improvement.

**Originality/value** – This research provides an updated perspective on the delivery of research support services by university libraries in Pakistan.

**Keywords** Academic libraries, Digital library, Library research support, Library services, Research skills, Library skills

**Paper type** Research paper

## Introduction

Research and publishing have become strategic priorities in university libraries because of the pressure on universities to improve their rankings through research and educational excellence (Riera Quintero *et al.*, 2012; Si *et al.*, 2019; Weaver and Richardson, 2021). As a result, research support services (RSS) emerged throughout the world but particularly in the university libraries of the UK, United States, Germany, Australia, New Zealand, and Ireland, where the provision of research support to researchers became a necessary part of the university libraries' core services

(Larsen *et al.*, 2010). In fact, such is their importance that RSS have been considered as a major paradigm shift in the current era of information and technology (Corrall *et al.*, 2013).

In a rapidly changing research environment, researchers are under pressure to keep pace with these changes (Courtney and Dallis, 2015; Farooq *et al.*, 2016; Sandy *et al.*, 2020; Joo and Schmidt, 2021). Consequently, reports from major library and information science (LIS) associations, such as Research Libraries UK (Evidence Base, 2021) and Association of College and Research Libraries (Connaway *et al.*, 2017), have recommended that university libraries should provide RSS to researchers.

According to Forsman *et al.* (2012, p. 181), RSS can be defined as “specific information services to promote research by meeting the unique information needs of the researchers within a particular institution”. Likewise, Wiklund and Voog (2013) have described RSS as the services provided in libraries to assist and facilitate researchers in their research endeavor. More recently, Si *et al.* (2019, p. 282) have stated: “In general, research support refers to anything a library does to support the activity of scholarship and research at its parent institution”. They, along with Tang and Zhang (2019), have specifically linked such services with a researcher’s information needs based on the research lifecycle, i.e., from the inception of a research project to its completion. Therefore, a key aspect of successful RSS is the ability of librarians to meet the specific needs of researchers.

As the nature of research has evolved, so, too, have the types of services offered as part of an academic library’s RSS suite. For example, in the early to mid-2010s, research studies (Drummond and Wartho, 2009; Simons and Richardson; 2012; McAlpine and McIntosh, 2015; Davis, 2016) described the types of services being provided in their respective libraries, which at the time included licensed electronic resources, individual consultations with researchers, specialized print collections, web services, provision of bibliographic management software, publication support, impact measurement, and institutional repositories.

However, as the decade unfolded, it became apparent that because of its evolving nature, research was now characterized by a complex data-intensive world in which many researchers were operating (Tenopir *et al.*, 2014; Fransson *et al.*, 2016; Si *et al.*, 2019; Wolski *et al.*, 2020). Consequently, LIS researchers began to report on studies as to how academic libraries could either initiate or improve their existing research *data* services. For example, Si *et al.* (2019) mention services such as research data introduction, data management guideline, data curation and storage, and data management training. Whereas Sandy (2020) has highlighted the importance of digital curation, research data management, and open access and publishing, Saarti and Rosti (2020) have discussed the impact of open science in this space.

As Tang and Zhang (2019, p. 23) have recently observed, “As user-oriented innovative information services of libraries, research support services mark the beginning of libraries’ transformation from providers of traditional consultation services to those of intelligence analysis services”. Libraries have an excellent opportunity to redefine their core research support services to meet new needs.

## Literature Review

In the late 2000s, the importance of RSS came to the forefront with an increasing number of research studies being reported in the literature. For example, research by Drummond and Wartho (2009) highlighted that most Australian libraries were offering comprehensive support in five areas, including frequently asked questions (FAQ), online tutorials, training and advice, online tools (e.g., EndNote), and access to required bibliographic databases (e.g., Web of Science, Scopus, Journal of Citation Reports (JCR)).

In the 2010s, several major studies focused on comparative research. For example, articles reported on American and Canadian members of the Association of Academic Health Sciences (Cheek and Bradigan, 2010) and the Association of Research Libraries (ARL) (Soehner *et al.*, 2010), with McMinn (2011) reporting on all ARL member libraries. In all cases, the majority of respondents had done widespread planning and had developed models for service provision; many were also delivering support in areas such as bibliographic management software, electronic resources, grant preparation, and research publishing. In another comparative study, MacColl and Jubb (2011) explored the existing level of RSS offered in both American and UK university libraries. They reported that, regardless of country, “institutionally-provided research support services are not appreciated by researchers in universities, who consider them marginal at best and burdensome at worst” (p. 3). Nevertheless, the authors noted that university libraries were endeavoring to play a positive role regarding their support for researchers.

The mid-2010s saw a move away from studies on what Mbofung (2014, p. 457), along with Tang and Zhang (2019, p. 23), has referred to as “traditional services” within RSS, and a greater focus on newer drivers within the research environment. For his part, Siddiqui (2014) reported on the impact of open access on the role of librarians in supporting researchers. Tenopir *et al.* (2014) conducted a comparative study to explore the research data management (RDM) services offered in U.S. and Canadian academic libraries. They found that while RDM services were not frequently offered in most libraries, some libraries were planning to offer RDM services in the future. Both Mattern *et al.* (2015) and Leenaraj and Tuamsuk (2016) recommended that university libraries should offer the following research data services: web pages with resources, library portal with links to disciplinary data repositories, guidance for research data management, and automatic notification whenever a researcher’s work had been cited.

Leenaraj and Tuamsuk (2016) examined the factors affecting the research support services in the research university libraries of Thailand. As a result, they recommended an entire infrastructure for RSS be developed in university libraries, e.g., a dedicated section with staff responsible for research promotion and space for offering relevant services, and the provision of information technology and personnel with sound research knowledge to conduct RSS. Fransson *et al.* (2016) employed a mixed methods approach to investigate the development of integrated research data management support at Malmö University Library, Sweden. They recommended that university libraries should conduct workshops for Ph.D. students regarding findings, re-using and citing open research data, active data management plan, structured practice for

organizing data management and depositing research data to local archives, and publishing data sets for dissemination. Subsequently, Renwick *et al.* (2017) reported on some of the challenges in developing countries for academic libraries to assist researchers with data management.

In their analysis of the RSS offered by libraries in leading world universities, Si *et al.* (2019, pp. 298-299) have identified the main services as those addressing RDM, OA, scholarly publishing, research impact measurement, research navigation, research consultation, and research tools. For their part, Tang and Zhang (2019) have reported in their study that RSS could be divided into seven categories: research data management, open access, scholarly publishing, research impact measurement, research guides, research consultation, and research tools recommendation.

Following on from her seminal work on research data management (Tenopir *et al.*, 2014), Tenopir has reported on a follow-up study conducted with the same sample of members of the Association of College and Research Libraries (Tenopir, 2019; Tenopir *et al.*, 2019ba; Tenopir *et al.*, 2019b). The study examined the broader concept of research data services (RDS) and concluded that although more academic libraries were now offering a range of services, RDS had not increased markedly since the initial survey. A key finding was that “More academic libraries still offer informational/consultative research data services (RDS) (such as creating web-guides or consulting on data management plans) than technical/hands-on services (such as maintaining data repositories or creating metadata for data sets) (Tenopir *et al.*, 2019, p. 1)”. Possible factors contributing to lack of full implementation included constrained financial resources (library budget), insufficient library staff, lack of expertise among existing staff, and overall lack of interest from faculty.

In the same year, Cox *et al.* (2019) reported on an international survey designed to assess the impact of research data services on academic libraries. Like the work of Tenopir, they found that whereas RDS were being developed, they tended to be advisory rather than technical and had yet to be prioritized as a key suite of library services. A skills shortage was also noted among library staff. The authors have concluded that academic libraries will want to rethink their approach, given the impact of “exogenous factors” (p. 1453). These include, but are not limited to, open access (OA) and open scholarship, text and data mining, and artificial intelligence. Similarly, Saarti and Rosti (2020) have examined the potential impact of open science by reporting on services being offered specifically by the University of Eastern Finland Library to address this relatively new trend.

Recently, Joo and Schmidt (2021) have reported on their research into the range of challenges for research data services faced by research universities in the United States. They have defined RDS as “a broad set of services designed to assist researchers in data management planning, digital curation, data documentation, data analysis, data visualization and other areas” (239). According to their findings, participants rated data archiving, data preservation, and data documentation as more important than data collection, data analysis, and data refinement. They note that “This finding reaffirms some of the prior studies (Cox *et al.*, 2017; Yoon and Schultz, 2017) in that technical services might not be widely offered yet in RDS” (249). The authors have

concluded by identifying resource constraints, such as budget, staff and technical support, as the major challenges for libraries in developing research data services.

### **Research Support Services in Pakistani University Libraries**

A few studies have been undertaken of the status of selected research support services in the university libraries of Pakistan. Mahmood and Shafique (2010), for example, indicated that the status of services at that time was neither satisfactory nor encouraging. In their study of the Social Sciences faculty at Bahauddin Zakariya University Multan, Bhatti and Hanif (2013) reported that although there was high use of the internet by researchers for their research work, internet facilities were not being provided within the Faculty's departmental libraries. In their study of researchers' use of an electronic research database provided to university libraries by the Higher Education Commission of Pakistan, Khan and Ahmed (2013) reported that while respondents found the content useful for their research, they experienced some issues within the library. These included insufficient training for the researchers in advanced searching techniques and lack of sufficient library staff for assistance.

Similarly, Sheikh (2015) found that elements of the so-called Information Commons service model were not being developed within Pakistani university libraries to support researchers despite their importance in supporting research. Furthermore, he clarified that a successful information commons consisted of facilities such as computer workstations, electronic resources, information and communication technology (ICT) support, presentation practice room, video conferencing rooms, and space for meeting, seminars and cultural events, reference services, research publishing support, and different types of seating.

Younus (2014), on the other hand, stated in his Ph.D. thesis that the status of digital reference services, document delivery services, and internet services was improving gradually, along with information technology development. For their part, Ahmed and Rehman (2016) reported that the majority of university libraries in the province of Khyber Pakhtunkhwa (KPK) were providing email, search engines, web browsing, bibliographic databases and electronic journals.

Piracha and Ameen (2019) examined the planning and policy development regarding RDM in university libraries of Pakistan and reported that in general chief librarians had little knowledge or awareness. Major challenges to developing RDM services included "lack of willingness, motivation and coordination with researchers, non-availability of skillful professional and support staff, poor infrastructure and networking" (p. 39). Consequently, Ashiq *et al.* (2021) have identified an important new role for libraries in Pakistan, given the scarcity of RDM services. In a recent survey of the university libraries of the province of Punjab, Ali and Naveed (2020) found that despite specialized research services and research training programs being available in some libraries, the remainder did not provide state-of-the-art research support services for their university's researchers.

As seen above, only a few studies have been conducted which examine the status of RSS in the university libraries of Pakistan. In addition, some of the studies have explored only one or

two specific services. Therefore, a gap in the available literature has highlighted the need for a more extensive study to explore this topic.

### **Research Objectives**

The primary objective of the study is to determine whether university libraries in Pakistan are providing research support services at a level which meets the needs of the researchers.

The following are the objectives of the study:

1. To identify the existing status of research support services provided in university libraries of Pakistan.
2. To compare the results with relevant international studies.

This study focused on the following research questions:

1. Which research support services are provided to users in university libraries of Pakistan?
2. How do the research support services provided in university libraries of Pakistan compare with those in international university libraries?

### **Research Methodology**

A quantitative survey study was conducted on a target population of chief librarians/head library working in the 175 university libraries of Pakistan. A structured questionnaire (refer Appendix 1) was designed based on a literature review, analysis of websites of national/international university libraries, and pre-testing of the instrument with national and international research experts, faculty members, and library professionals. Purposive sampling technique was employed to collect data from the respondents. A total of 160 responses were found suitable for data analysis, with a response rate of 91%.

SPSS (version 24) was used to calculate descriptive statistics to summarize the status of RSS in the university libraries. Furthermore, the results of the current study were compared with past literature regarding RSS from both a national and international perspective.

### **Results**

Demographic data was collected principally about the respondents. However, analysis of the relevant sector for the 160 universities represented in the survey revealed that 94 (58.8%) universities belonged to the public sector and 66 (41.2%) were in the private sector. The majority of universities (N=102; 63.7%) were classified as “general”, with the remainder classified according to specialized areas, such as agriculture, health science, and business and information technology. Specific data was not captured as to whether the universities represented in the sample offered PhD programs.

Respondents were asked about the existing RSS provided in their respective libraries. As Table 1 shows, more than 80% are providing basic research support services.

Table 1. Provision of basic research support services (N=160; Multiple responses)

Items	Frequency	Percentage
Books on research (print format)	158	98.7
Books on specific subjects (print format)	153	95.6
Reference services	149	93.1
Access to HEC digital library	145	90.6
Journals on specific subjects	143	89.4
Current awareness service (CAS)	140	87.5
Digital reference services	136	85.0
New arrival alert services (books and journals)	132	82.5
Selective dissemination of information (SDI) services	131	81.5

The “access to HEC digital library” refers to a program offered by the Higher Education Commission (HEC), Pakistan—known as the HEC National Digital Library—whose primary objective is to provide researchers with access to international scholarly literature. In the context of this survey, current awareness helps researchers in general stay up to date with the latest developments in their field, by offering services such as table of contents (TOC). SDI provides a more targeted approach, which is directed toward individual researchers (LIS BD Network, 2014).

As Table 2 shows, between 60-75% of respondents’ libraries are providing slightly more advanced services, some of which are aimed at either a cohort of researchers or individual researchers. The provision of an institutional research repository ranks at 75.6%. However, the delivery of support to researchers by designated librarians ranks lower, i.e., between 62.5%-66.3%.

Table 2. Provision of slightly more advanced research support services (N=160; Multiple responses)

Items	Frequency	Percentage
Institutional research repository	121	75.6
Reservation of study room for group discussion	111	69.4
Clipping services	109	68.1
Liaison librarian program	106	66.3
Research support training programs in the library	100	62.5
Research advisory desk for researchers	100	62.5
E-Journals subscription by the university libraries	99	61.9

Respondents indicated that less than 60% of their libraries were currently providing a range of more highly specialized services, particularly those involving computerized tools (Table 3). Whereas around half of the libraries surveyed offered document delivery and interlibrary loan



services for researchers, only 43.1% provided access, via subscription, to standard statistical tools such as IBM’s Statistical Package for the Social Sciences (SPSS).

Table 3. Provision of specialized research support services (N=160; Multiple responses)

Items	Frequency	Percentage
Manual for research guidance	92	57.5
Document delivery services	90	56.3
Inter library loan & resource sharing	87	54.4
Library portals linked to e-repositories in specific subject	81	50.6
Subscription to tools (Turnitin/Safe Assign/ EVE2 and INSIT, etc.) for plagiarism	80	50.0
Provide online scholarly communication facility	75	46.9
Subscription to reference tools (EndNote / Zotero / BibTex / Mendeley / RefWorks, etc.)	72	45.0
Subscription to statistical tools (SPSS / SYSTAT and SSS, etc.)	69	43.1
Special, archival collection and manuscripts	68	42.5

Finally, as shown in Table 4, additional tools to support important research activities such as online surveys, e.g., Survey Monkey, and qualitative statistical analysis, e.g., NVivo and Leximancer, scored less than 40%.

Table 4. Provision of additional research support services (N=160; Multiple responses)

Items	Frequency	Percentage
Subscription to tools (NVivo /Leximancer, etc.)	63	39.4
Online research support tutorial	60	37.5
Abstracting and indexing services	59	36.9
Subscription to tools (Survey Monkey, Google Forms, etc.) for online surveys	44	27.5

## Discussion

The objective of the study was to explore the existing level of RSS offered in the university libraries of Pakistan. The findings indicate that while all the responding libraries offer some services, the range and depth of these services varies considerably.

The findings of the study show that most of the responding university libraries are providing basic RSS, such as access to digital reference services, discipline-specific journals, and current awareness services. This substantiates the findings by Canuel and Crichton (2015), who asserted that the majority of the libraries in the member institutions of the Association of Universities and Colleges of Canada (AUCC) were providing journal access to users in various disciplines.

Results of the current study also indicate that university libraries have good collections of both general and subject-specific works to meet the needs of researchers. This may be partly as a result of the role of the Higher Education Commission, Pakistan in both its budgetary provisions for libraries (Khan and Bhatti, 2016) and the development of a strong research culture within universities (Kumari, 2015; Naseem *et al.*, 2019). From an international perspective, Forsman *et al.* (2012, p. 180) have highlighted the importance of not only acknowledging the “new working cultures of researchers” but also recognizing that they differ across disciplines within an institution.

In Pakistan, almost all university libraries (93.1%) have a reference section to facilitate researchers’ requirements. Of these, 85% indicated that they specifically offered digital reference services. An early study by Bhatti and Hanif (2013) found that because of the advancement of information technology, most of the researchers at Bahauddin Zakariya University, Multan (Pakistan) sought information through a variety of electronic sources. However, the results of the current study differ from those of Younus (2014), who reported that the level of digital reference services in Pakistani university libraries was only at an early stage. This current positive change may be attributed to an increased focus on information technology in educational institutions (Rasheed and Rafiq, 2017).

Current findings show that between 81.5%-87.5% of responding libraries provide a basic current awareness service for researchers as well as more targeted SDI services. This approach supports earlier studies (Mbofung; 2014; Canuel and Crichton, 2015), which reported that most of the university libraries surveyed were offering new arrival (e.g., electronic books, journals, and newspapers) alert services to users through channels such as mobile apps, Facebook, and e-mail.

Approximately 75% of responding libraries provide an institutional research repository. Previous studies (Thompson *et al.*, 2015; Reed, 2015) as well as the recent study by Joo and Schmidt (2021) have confirmed the importance of an institutional repository service among researchers, as it enables libraries to provide them with access to the intellectual work of the parent institution. In addition, such a service increases external, i.e., national and international, accessibility to the research outputs of an institution (Fernández-Marcial *et al.*, 2016).

Sheikh (2015) reported in his survey that university libraries of Pakistan were not providing rooms for group discussion. Findings from the current study confirm that slightly less than 70% of respondents are currently providing such a facility. However, this is not in line with the advice provided by researchers such as Choy and Goh (2016) when planning academic library spaces.

In terms of the allocation of library research support staff, there are challenges. For example, in their study of university libraries in the province of Punjab, Ali and Naveed (2020) reported that 92.2% (n=83) were allocating professional library staff to answer research queries. In contrast, however, the current study found that the delivery of support to researchers by designated librarians across all of Pakistan is provided by only 62.5%-66.3% of respondents, which is of concern. That said, it should be noted that newer studies on RSS, and particularly RDS, have highlighted the challenges which libraries face in allocating research support staff.

Cox *et al.* (2019), Tenopir *et al.* (2019a), Joo and Schmidt (2021), for example, have reported on insufficient library staff, limited awareness among library staff, lack of training, and insufficient time as major factors.

Another area of concern is the provision of e-journal subscriptions. The fact that only approximately 60% of respondents are providing e-journal subscriptions via the library may reflect a reliance on the HEC National Digital Library mentioned previously. These libraries appear not to be providing access to additional online subscriptions. However, Ahmed and Uzair (2017) have claimed that the HEC digital library is not providing full access to e-journals in different disciplines; as a consequence, they have suggested that university libraries subscribe to e-journals recommended by the researchers. From a budgeting perspective, this would constitute an added expense for which a university library might not be funded.

In a similar vein, despite a study by Maceviciute (2014), indicating that university libraries are generally providing library portals links to e-repositories in specific subjects, the current study has found that only about half of responding Pakistani university libraries are offering this service.

The provision of online research guides should be part of a normal research library's website, according to studies by Maceviciute (2014). Researchers will benefit from tools that enhance their research efforts (Tran and Lyon, 2017). However, the current study revealed that less than 60% of respondents are providing "manuals for research guidance"; this confirms comparable findings by Si *et al.* (2019) of 61.8% and by Ali and Naveed (2020) of 62.2%.

Given apparent challenges within some Pakistani university libraries in being able to provide access to all the content required by their researchers, services such as document delivery and interlibrary loan (ILL) play an important role. Whereas Ali and Naveed (2020) reported that 72.2% of responding Punjabi university libraries always provided document delivery for their researchers, the current study found that only 56.3% of respondents are offering this service.

Both studies treated ILL and resource sharing slightly differently, which makes comparative analysis challenging. In the Ali and Naveed (2020) study, they reported that whereas 82.2% of respondents always provided books to researchers on demand, only 43.3% always performed resource sharing for researchers, with 34.4% undertaking this service "sometimes". The questionnaire administered for the current study combined ILL and resource sharing with the result that 54.4% are providing ILL and resource sharing for researchers. It would be useful to identify the major factors contributing to these statistics, e.g., library budget constraints and/or lack of demand from researchers.

In their seminal work on the evolution of librarians' roles, Jaguszewski and Williams (2013) emphasized the importance of offering online scholarly communication facilities so that researchers can easily communicate, discuss, and share their experiences with classmates, other research scholars, and their research supervisor. However, slightly less than half (46.9%) of the libraries in the current study are providing online scholarly communication facilities. This may be in part because of the lack of training for Pakistani librarians to support this type of initiative (Farooq *et al.*, 2016).

In surveying the provision of standard research support tools, the current study has found that only 40-50% of responding libraries are offering these. For example, exactly half subscribe to tools to combat plagiarism. Addressing plagiarism, specifically in Pakistan, is important because of the HEC's mandatory anti-plagiarism policies (Khan *et al.*, 2021). Soroya *et al.* (2017) have encouraged librarians in Pakistan to promote these policies as a foundation for academic integrity.

Researchers, such as Keller (2015) and Butler and Byrd (2016), have reported that most university libraries provide reference tools (EndNote / Zotero / BibTex / Mendeley / RefWorks) and provide guidance/assistance to researchers regarding tasks such as creating bibliographies, selecting citation styles, and developing endnotes. In contrast with the wide proliferation of these tools internationally, the findings of the current study indicate that only 45% of responding libraries subscribe to any reference tool.

Statistical tools, on the other hand, are much more specialized. So, the fact that only 43.1% of respondents subscribe to SPSS and/or similar tools confirms a previous study by Butler and Byrd (2016). That said, the findings of the current study that less than 60% (i.e., 39.4%) of respondents provide subscriptions to qualitative statistical analysis is at odds with the findings of Butler and Byrd (2016), who have reported that most university libraries are offering researchers access to tools such as NVivo and Leximancer. Current findings may be an indication of library financial constraints or librarians being more comfortable with what Tenopir *et al.* (2019a, p. 1) have described as “informational/ consultative” rather than “technical/hands-on” services.

Additionally, the results of the current study show that most Pakistani university libraries do not provide special, archival collections and manuscripts for researchers. Similar results were observed by Maceviciute (2014), who suggested that university libraries should collect and preserve archival content and make it accessible to researchers. Research Libraries UK (Evidence Base and Associates, 2021) has also highlighted the important contribution which libraries could make in this space.

Overall, the RSS landscape in Pakistan is one in which university libraries have yet to maximize their full potential to support researchers. While there is good support for “traditional” services, which were identified universally as good practice in the early to mid-2010s, there is noticeably less support for the more advanced, let alone, newer research support services. University libraries in Pakistan have yet to embrace “the potential for transformational impacts, when combined with the demands implied by other new services” (Cox *et al.*, 2019, p. 1432).

### **Limitations of the Study and Further Research**

A limitation of the current survey is that some of the research support services listed in the questionnaire for respondents may not necessarily be provided within a university by the library. For example, whereas a subscription to a statistical tool such as SPSS may be paid for by a university's information technology division, the license for a tool such as Turnitin may be covered by its academic services division. Therefore, it would be useful to conduct follow-up research to determine whether some of the more specialized RSS not being offered by the library

are in fact being provided elsewhere within the respective university. In addition, the relatively low statistics regarding the provision by respondents of research content in some areas raises fundamental questions as to how researchers are acquiring content which the library cannot provide. Further study is indicated to address this gap.

It would also be useful to investigate the types of universities offering RSS and whether there are any common attributes among them in relation to the level of RSS being offered. A follow-up survey is indicated to identify both the level of awareness among this cohort of research data services and existing and/or planned relevant services.

Since a primary goal within universities is to support researchers throughout the entire research lifecycle, it would be beneficial for the institution to have a broader picture of which research support stakeholders are providing what services. For its part, the library could then identify areas with which to partner to enhance overall support to researchers.

## **Recommendations**

The authors recommend that the following suggestions be implemented in university libraries of Pakistan to bring the current standard of their RSS in line with best practice in international libraries.

1. University libraries should upload Online Research Support LibGuides on the library webpage where various online services, databases and research activities should be shared to support researchers.
2. University libraries should offer online tutorials regarding RSS on the university's webpage.
3. All the university libraries should establish an RSS Section and librarians having research skills should be appointed for the guidance of the researchers.
4. Standard Operating Procedures (SOP) should be framed, with the help of liaison librarians and researchers, for establishing RSS in the university libraries.
5. Libraries should subscribe to reference tools (e.g., Endnote/ Zotero/ BibTex/ Mendeley/RefWorks); tools such as SPSS/ SYSTAT and SSS for quantitative analysis; NVivo/Leximancer, and the like for qualitative analysis; Turnitin/Safe Assign/ Eve and/or Insit etc. for plagiarism; and tools such as SurveyMonkey, Google Forms for online surveys.
6. Libraries should conduct and participate in training/workshops/seminars on RSS in Pakistan.
7. Library schools should include an RSS course in the curriculum of library and information science.
8. Higher Education Commission of Pakistan should play a proactive role in the development of the infrastructure of the RSS section in the university libraries of Pakistan.

9. A research guide should be published regularly consisting of information regarding in-house RSS to assist researchers.
10. A sufficient budget for the RSS Section should be allocated to meet the needs of information technology, as well as subscriptions to impact factor journals and other relevant research works.
11. An institutional repository should be established in the departmental/central libraries to support the university community.
12. University libraries should provide an advisory desk service and a separate study room facility for researchers.
13. Web-based RSS provided by the library should be offered on the mobile apps of the researchers.
14. University library administration should prioritize research data services by redirecting existing resources (financial and human) and by seeking collaboration with other organizational units to obtain relevant resources and support not currently offered by the library.
15. University libraries should raise awareness of RDS among researchers by first identifying how to best support this cohort and by then developing appropriately targeted services.

## Conclusion

This study has provided an updated perspective on the delivery of research support services by university libraries in Pakistan. It is to be hoped that university administration and chief librarians will encourage librarians in general to improve their research skills, as this strategy can only benefit the parent organization. Through awareness of, and involvement in, RSS, librarians have an opportunity to enhance their knowledge of learning, teaching, and guidance of research activities, and thus support their university's strategic research goals.

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## Appendix 1

The following is the initial part of the structured questionnaire, which was administered to participants. The complete questionnaire has three additional sections which have not been discussed as part of the current study.

### Research Support Services in University Libraries of Pakistan: Perceptions and Applications

#### Demographic Information:

- Q.1. Name of University: -----
- Q.2. Category:      General            Engineering            Agriculture/ Veterinary        
                          Art/Design            Business/ IT            Health Sciences        
                          Other (Please specify):-----
- Q.3. Sector: Private University            Public University
- Q.4. Province:-----
- Q.5. Designation:-----
- Q.6. Gender:      Male            Female
- Q.7. Qualification: MLIS            M. Phil            PhD            If any other
- Q.8. Experience      1-10 Y            11–20 Y            21-30 Y            above30 Y

#### Section A: Research support services (RSS) provided by the library

- Q. 9.    i.    **Existing RSS:** are those services which are provided in the library to researchers  
           ii.    **Demanded RSS:** are those services that researchers demand in the library

Table A1. Likert scale

5	4	3	2	1
Strongly Agree	Agree	Not sure	Disagree	Strongly Disagree

Table A2. Survey Questions

<b><u>Research support services (RSS)</u></b>		<b>Existing RSS</b>		<b>Demanded RSS</b>				
		YES	NO	5	4	3	2	1
1	Manual for research guidance	1	2	5	4	3	2	1
2	Books on research (print form)	1	2	5	4	3	2	1
3	Books on specific subject (print form)	1	2	5	4	3	2	1
4	Journals on specific subject (print form)	1	2	5	4	3	2	1
5	Reference services	1	2	5	4	3	2	1
6	Digital reference services	1	2	5	4	3	2	1
7	Inter library loan & resource sharing	1	2	5	4	3	2	1
8	Clipping services	1	2	5	4	3	2	1
9	Institutional research repository	1	2	5	4	3	2	1
10	Special, archival collection and manuscripts	1	2	5	4	3	2	1
11	Access to HEC digital library	1	2	5	4	3	2	1
12	E-Journals subscription by the university libraries	1	2	5	4	3	2	1
13	Current awareness service	1	2	5	4	3	2	1
14	Selective dissemination of information services	1	2	5	4	3	2	1
15	Abstracting and indexing services	1	2	5	4	3	2	1
16	Document delivery services	1	2	5	4	3	2	1
17	New arrival alert services (Books and Journals)	1	2	5	4	3	2	1
18	Library portals linked e-repositories in specific subject (books, thesis, and journals)	1	2	5	4	3	2	1
19	Research support training programs in the library	1	2	5	4	3	2	1
20	Liaison librarian program	1	2	5	4	3	2	1
21	Provide online scholarly communication facility to researchers with experts in the library	1	2	5	4	3	2	1
22	Online research support tutorial	1	2	5	4	3	2	1
23	Research advisory desk for researchers	1	2	5	4	3	2	1
24	Reservation of study room for group discussion	1	2	5	4	3	2	1
25	Subscription to tools (SurveyMonkey, Google form, etc.) for online survey	1	2	5	4	3	2	1
26	Subscription to tools (SPSS/ SYSTAT and SSS etc.) for quantitative analysis	1	2	5	4	3	2	1
27	Subscription to tools (NVivo/Leximancer, etc.) for qualitative analysis	1	2	5	4	3	2	1

28	Subscription to tools (Turnitin/Safe Assign/ Eve and INSIT etc.) for plagiarism	<b>1</b>	<b>2</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>
29	Subscription to reference tools (Endnote/ Zotero/ BibTex/ Mendeley/RefWorks etc.	<b>1</b>	<b>2</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>
	Specify if any other.....							