Correlation between the University Librarians' Information Literacy Skills and Research Support Services

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The purpose of the current research is to determine the correlation between the Pakistani university librarians' information literacy skills (ILSs) and their provided research support services (RSSs) to faculty/researchers. To collect data from the respondents a purposive sampling technique was used. A questionnaire was managed offline as well as online to collect data from 259 librarians of the universities of Pakistan. The tool consisted of eight dimensions of ILSs and four of RSSs. The Pearson correlation coefficient test was applied to gauge the strength of the correlation between ILSs and RSSs. The findings reveal that there is a strong positive significant correlation between all of the factors of ILSs and RSSs except for three sub-factors whose correlation is medium. The value of the overall correlation between ILSs and RSSs is r = .80 which indicates a strong positive significant correlation. The study reveals that ILSs of the university librarians are imperative and a precondition for offering better RSSs.

Keywords: Information literacy; information literacy skills; research support services; librarians; correlation

INTRODUCTION

The information was mainly accessible in print form before the 20th century, conserved in the libraries for conducting research and augmenting individuals' knowledge, but now it is available in sophisticated formats and accessible via the internet 24/7(Cazden et al., 1996; Nwosu, Obiamalu, & Udem, 2015).

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https://doi.org/10.47657/5329

However, according to Kinengyere (2007), the existing information may not essentially be accessed and used by users if they are not aware of its availability, access and what it has to offer. There are numerous drawbacks in recognizing information needs, trustworthy sources, retrieval, evaluation, and usage of the required information (Zeeshan, Idrees & Siddique 2020).The evaluation, repossession, and application of information, test staff's information literacy skills (ILSs) in this age of information detonation (Chang & Hsu, 2015). Diverse techniques are required by the individuals to access appropriate and filtered information from piles of continuously growing information (Bundy, 2004; Okiki & Mabawonku, 2013).

According to UNESCO (2005), IL is the gripping capability of users or producers of information through which they can interpret it according to their research goals. It could be defined as a cluster of expertise to identify, locate, evaluate, organize, create, use, and converse information to solve problems. The librarians have been offering this assistance to users for decades, however, earlier, these were known as library usage and bibliographic instructions, research instructions, and user education. However, IL is the latest title for them. (Anwar, 1981; Batool & Mahmood, 2012; Bavakutty & Nasirudheen, 2008; Bundy, 2004; Corrall, 2008; Corrall, 2014; John 2019; Okiki & Mabawonku, 2013; Rader, 1995; Ranaweera, 2008; Skov & Skærbak, 2003).

According to Raju and Schoombee (2014), the proactive commitment of librarians toward the researchers is known as research support (RS). It is a prerequisite for an extended set of services like research data management (RDM), open-access facility, curation, preservation, and metrics assessment. Librarians have been offering bibliographic reference and research services to teachers/researchers at various stages for several years. However, these services are required more efficiently in today's academia.

The real challenge for librarians is to find out and fulfill the research-related requirements of the faculty/researchers (Epstein & Rosasco, 2015). The librarians have to seek innovative skills in order to offer new services to researchers/faculty (Brown, Wolski, & Richardson, 2015).

Information Literacy (IL)

The IL is a factor of lifelong learning and is a necessity for every individual at all stages of life.

https://doi.org/10.47657/5329

It starts from basic school level to higher education; from community to official life; and lasts a lifetime (Boeriswati, 2012; Kousar & Mahmood, 2015; Mokhtar & Majid, 2008). Moreover, it is common in all educational disciplines for any learning environment. It also facilitates individuals to master the content and expand their ability of investigation and self-directed learning (Etim & Nssien, 2007). Additionally, IL is necessary for achieving personal empowerment and economic growth and to spend quality life in an information-based society (ACRL, 2000; Boeriswati, 2012; Zeeshan, Idrees & Siddique 2020).

Zurkowski (1974, p. 6) was the first to introduce the term information literacy (IL). He defined information literate human beings as ‘‘people trained in the application of information resources to their work”. Although many terms appeared to explain this notion since 1990s however, IL is considered an appropriate widely used term to portray this idea (Bawden, 2001; Virkus, 2003).

Eisenberg and Berkowitz (1992) developed their model of big six skills which have all the characteristics described by the American Library Association (ALA). In the IL Competency Standards for Higher Education, ACRL (2000) presented the realistic goals and academic instructions to promote IL education. The ACRL pursues ALA, Doyle, Berkowitz and Eisenberg, Bruce, Kuhlthau, and several other authors to develop IL Standards. While, Savolainen (2002) suggested that competencies associated with information such as IL, media literacy, and library literacy are called IL.

Rader (2002) reviewed approximately 5000 documents (published in the English language) on IL and library instructions, published globally in the last three decades of the 20th century. She observed phenomenal growth in these fields during these three decades and especially in the last decade. Johnston and Webber (2006) area step ahead and portrayed that IL is not a subject but a complete discipline of study. Hunt and Birks (2004) explained that no unique definition of IL is available. However, majority of individuals use the phrase IL instead of library instruction or information fluency. The use of identical terminology will create awareness regarding the significance of IL (Koltay, 2017).

In 1989, ALA Presidential Committee on IL presented the primary conceded definition of the IL concept which has been extensively acknowledged by professional librarians and became the primary source for subsequent definitions. To be information literate, a person must be able to recognize when information is needed and have the ability to locate, evaluate and, use effectively

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the needed information (ALA, 1989).In 2018, Charted Institute of Library and Information Professionals (CILIP) also defined IL as the ability to think critically and make a balanced judgment about any information we find and use (CILIP, 2018, p. 3).

The literature shows that various terms have been coined and used by numerous authors for IL like information empowerment, ILSs, IL and skills, information skills for problem-solving, information handling skills, event information, information competency, library literacy, computer literacy, internet literacy, media literacy, television literacy, film literacy, digital literacy, technological literacy, critical literacy, academic information literacy, business information literacy, agricultural information literacy, health information literacy, legal information literacy, political information literacy, and social media literacy (Bawden, 2001; Boeriswati, 2012; Lau, 2006; Stordy, 2015). Similarly,Stordy (2015) reviewed the pertinent literature regarding digital technology and literacy and concluded that IL and digital literacy are the most quoted literacy's.

According to Idiodi (2005), attaining ILSs is an aspect of IL and might be the way of acquiring tools to support the growth of IL in researchers.. However, the term ILSs is considered as the skill set to solve information problems (ALA, 2000). Nwosu, Obiamalu, and Udem (2015) after reviewing the previous definitions, defined ILSs as: the ability of an information literate person, to recognize when information is needed; have the capacity to identify the scale and degree of needed information; capability to find and access needed information from any source; have the capacity to synthesize information to discover facts and to know the currency of information; have the ability to utilize information in a rational and ethical way, and have the capability to wrap up l the located and accessed information for effective communication and critical decision making of other users on later stages.

The altering information scenario and library services require a definite extent of capability from librarians to take up the challenging tasks. The energetic attitude for managing the requirements of the 21st-century , updating of latest dimensions, and pathways to make the librarians distinguished from other relative professions, and also in order to remain effective and relevant, the upcoming librarians are needed to be trained in web designing, developing databases, and using multimedia(Ali & Richardson, 2018; Chanetsa & Ngulube, 2016; Heinrichs & Lim, 2009). Now librarians are supporting the online purchase,

https://doi.org/10.47657/5329

digital reference services, online lectures, designing a Web site, and the management of data, references, and institutional repository which means that ILSs have become a primary factor of the LIS profession (Ali & Richardson, 2018).

According to Ameen and Ullah (2016), the librarians are required to be an authority on IL before they communicate it to researchers. Various librarians are tremendously imaginative and think "out of the box" to integrate visual literacy (Schwartz, 2018). Correspondingly, Bird et al. (2012) illustrated that the ratio of improving ILSs among university librarians is much more than their counterparts.

The literature review discloses that IL is a key factor in the profession of librarianship. Librarians of developed countries have more ILSs as compared to developing countries. Very little literature is available that gauge the ILSs of the librarians so; there is a dire need to do research on this topic. Though the librarians possess ILSs however, they have to improve the level of their ILSs tremendously in order to compete with the speedy information explosion.

Research Support Services (RSS)

Helping out the researchers to do their research work is called RSSs. This help may consist of choosing a research topic, searching the literature, writing for grants, analysis of results through software, publishing, promoting, managing research data, etc. Richardson et al. (2012) disclosed the fact that RSSs are usually provided as part or under the umbrella of academic services or information services. Keeping in view the local, national and international environment, various higher education institutions and authors have introduced the new and emerging designations for librarians according to their new RSSs-related roles and responsibilities: RSSs librarians, faculty research support librarian, assistant director for research, scholarly communication technician/officers, liaison/subject librarians, repository/ records/knowledge managers, copyright and repository officers, data librarians, subject specialists, RS librarian, and data management coordinators (Auckland, 2012; Chanetsa & Ngulube, 2016; Jaguszewski & Williams, 2013; Keller, 2015; Mitchell, 2013).

Library and Information Science experts and prominent researchers from social sciences have introduced various types of RSSs as article publishing, institutional repositories, knowledge of IT tools, training, collection management, scholarly communication, intellectual property rights, copyright, research data administration, metadata, research data management, application of social

https://doi.org/10.47657/5329

media tools, etc. (Corrall, Kennan, & Afzal, 2013; Kaiponen & Nykyri, 2016; Keller, 2015; Parker-Gibson & Houpert, 2017; Raju & Schoombee, 2014).

In recent academic circumstances, it is believed that faculty/researcher who has published more research work is considered more successful and it has a positive impact on their recruitment, promotion, and salary.

These factors motivates the faculty/researchers to conduct researches continuously and publish it in impact factor journals (Dorner & Gorman, 2006; Olakunle & Olanrewaju, 2019). According to Rafique (2014), faculty members have to up-date themselves by seeking and learning the latest trends in searching, teaching, and learning.

Therefore, the faculty's motivation to work with librarians depends upon what they offer to them (Cannon, 1994).On the other hand Parker-Gibson and Houpert (2017) discussed that several faculty members/researchers were astonished that librarians would work with them to discover resources; complete tasks; teach classes; and find other tools.

Librarians have always played a central role in supporting researchers and faculty members for years. In the present era of information explosion, these efforts are needed to be intensified and accelerated. Bradbury and Weightman (2010) disclosed that librarians are capable, of searching advanced literature, doing critical assessments, summarizing the existing facts, and developing evidence-based methods. Raju and Schoombee (2014) also revealed that librarians involved in research are active partners in the research production process i.e. from the initiation, to the publication of the final product as an article, thesis, or dissertation. Hence there is a shift in the role of librarians, from a supporter of the research process to a contributor to the process. Furthermore, the librarians have initiated to help out the researchers to find out resources, review the literature to gain funds, citations management, publishing, bibliometrics analysis, and data management and preservation (Federer, 2013; Parker-Gibson & Houpert, 2017).

Corrall, Kennan, and Afzal (2013) also observed that librarians are required to acquire multi-dimensional expertise in research techniques to assist the researchers. Additionally, to cater to the needs of researchers, librarians must gain expertise in every step of research: from proposal submission and grant seeking to final publication, using ICT tools, use of social media actively and efficiently, knowledge of databases of various disciplines, understanding of legal

https://doi.org/10.47657/5329

issues like copyright and licensing, research assessment, and knowledge of data management and preservation (Darch & de Jager, 2012; Federer, 2013; Zhao 2014). As the research needs of the researchers vary depending on multiple factors like discipline and various stages of their careers, therefore, the librarians must be aware of and understand and evaluate the differences in the needs of the individuals and group of researchers whom they are supporting (Auckland, 2012).

The literature review discloses that various studies are accessible on the topics of IL (Ahmad et al., 2020; Ali & Richardson, 2018; Mishra, 2019; Nisha & Varghese, 2021; Safdar & Idrees, 2020) and RSSs (Hanif et al., 2018; Kaiponen & Nykyri, 2016; Keller, 2015; Parker-Gibson & Houpert, 2017) separately. Very few studies are available which address the correlation issues. These studies investigate the correlation between ILSs and the research output of academic staff (Li & Hung, 2010; Madu & Dike, 2012; Olakunle & Olanrewaju, 2019).But the present study will examine the correlation between ILSs and RSSs of the university librarians as no study is available which has examined this correlation.

Problem Statement

Information literacy skills are considered the skills of the 21st century and is a process of developing persons to work smart instead of fast (Eisenberg, 2003).In this age of information explosion, IL is considered an evolving ability (ALA, 1989), and librarians are masters of it (Rustic & Wood, 2018).

Multiple Worldwide studies are accessible which determine the correlation between ILSs and academic research productivity of researchers (Olakunle & Olanrewaju, 2019); ILSs and research output of academic staff (Nwosu et al., 2015) and IL and creativity of employees (Chang & Hsu, 2015). Hanif et al. (2018) conducted a survey to gauge the offered RSSs of university librarians in Pakistan. Ali and Naveed (2020) discovered the RS resources and services provided by the Pakistani university libraries. Various studies like Aharony and Bronstein (2013); Anyaoku et al. (2015); Durodolu and Adekanye (2017); Khatun (2013), Umeji et al. (2013) discovered the perceived IL/ILSs/ICT/DIL of academic librarians. A study by Khan (2020) investigated the digital skills of Pakistani university librarians; Ullah and Ameen (2015) uncovered the medical librarians' awareness regarding the worth of ILSs, Ali and Richardson (2018) explored the ILSs of the librarians of universities situated in Karachi (Pakistan). Though, no study has been conducted

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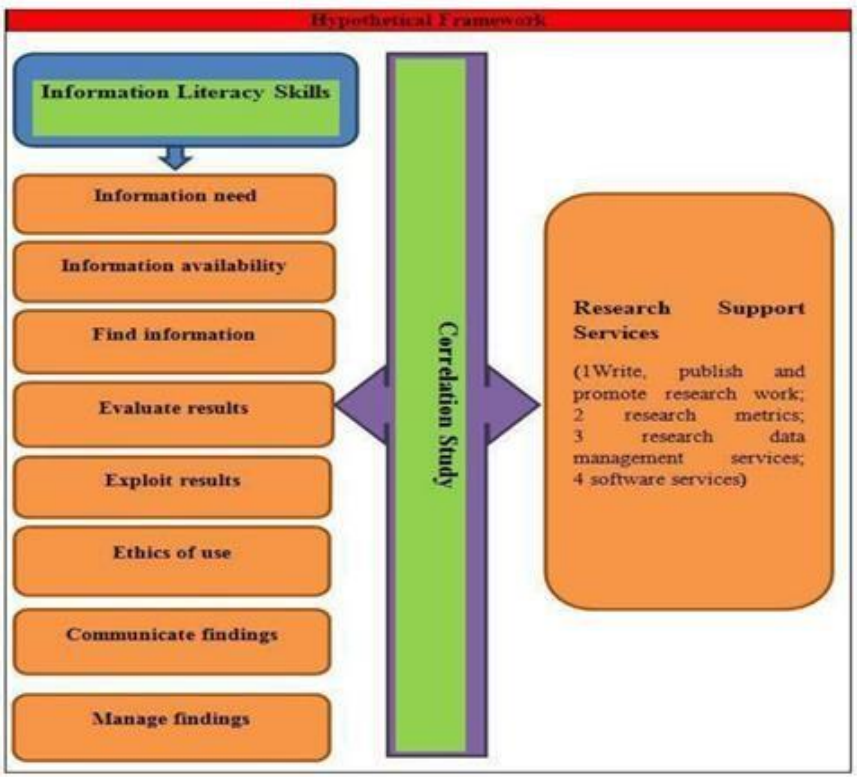
to investigate the correlation between the ILSs and RSSs of university librarians in Pakistan.

A significant positive correlation exists between the workers' ILSs and their creativity/research output (Chang & Hsu, 2015; Nwosu, et al., 2015). However, no study is available which determines the correlation between ILSs and RSSs. So, to fill the gap, the study has investigated the correlation between the ILSs of university librarians and their provided RSSs. The study results may fill the gap to assess the significance of ILSs for the post of librarians and guide the policymakers to design criteria for jobs and training programs for librarians in Pakistan and other developing countries. This study might present new dimensions for ILSs because locally negligible literature is available in this area of research.

Hypothetical Model of the Study

Figure 1

Hypothetical Framework



https://doi.org/10.47657/5329

The research study intends to examine the subsequent hypotheses:

H1 There is a significant positive correlation between university librarians' 'need for information' and their ability to provide RSSs to researchers.

H2 There is a significant positive correlation between university librarians' 'understanding of information availability' and their ability to provide RSSs to researchers.

H3 There is a significant positive correlation between university librarians' 'understanding of how to find information' and their ability to provide RSSs to researchers.

H4 There is a significant positive correlation between university librarians' 'understanding the need to evaluate results' and their ability to provide RSSs to researchers.

H5 There is a significant positive correlation between university librarians' 'understanding how to work with or exploit results' and their ability to provide RSSs to researchers.

H6 There is a significant positive correlation between university librarians' 'understanding of ethics & responsibility of use' and their ability to provide RSSs to researchers.

H7 There is a significant positive correlation between university librarians' 'understanding of how to communicate or share findings' and their ability to provide RSSs to researchers.

H8 There is a significant positive correlation between university librarians' 'understanding of how to manage findings' and their ability to provide RSSs to researchers.

H9 There is a significant positive correlation between university librarians' ILSs and RSSs.

RESEARCH DESIGN

A survey method was applied to conduct the study. To collect quantitative data, a cross-sectional survey was practiced. The current research

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exercised a closed-ended questionnaire as an instrument to collect data. The librarians working in 219 universities/degree awarding institutes of Pakistan were the potential population of the study (HEC, 2020). The present study implemented the purposive sampling technique of non-probability. The purposive sampling technique selects individuals having some common attributes that investigators want to examine (Creswell, 2012). Due to this reason, the researchers adopted this sampling method. Therefore, librarians who were offering RSSs to faculty/researchers were included in the study.

Approximately 900 LISPs were working in these universities. So according to Krejcie and Morgan (1970), the sample of the study comprised of 269 university librarians. Moreover, for taking an appropriate sample for judgmental sampling, all 219 university libraries were surveyed and at least one LISP from each university was selected through purposive sampling for inclusion in the study.

In order to help the subjects, the investigators managed questionnaires both in hard and soft forms. Data was collected applying four methods: phone calls, visits (14), emails (162), and WhatsApp (83). As a response, data was collected in both soft (252) and hard forms (07). The process of data collection was completed by December 2020. Overall, 259 (96%) university librarians responded. Out of 259 responses, six were rejected as they were found incomplete or illogical. So far253 replies were integrated to examine data.

Scale Development

Creswell (2012) argued that quantitative studies help to congregate data in massive quantity in very less time and presents a numerical outline of respondents 'points of view. So, the data was collected by applying a quantitative survey method. An appropriate scale to measure the librarians' ILSs and RSSs does not exist. In order to measure the ILSs and RSSs of the librarians, a systematic technique was applied to develop the most up-to-date scale. Various previous studies have practiced this stepwise technique to develop a scale (Ahmad et al., 2020; Miron-Spektor *et al.*, 2017; Moore & Benbasat, 1991).

Initially, to identify the scales applied in the previous studies, the researchers conducted a comprehensive literature review regarding the various aspects of ILSs and RSSs. Various scales were available which could measure the IL (Kurbanoglu et al., 2006) and RSSs (Richardson *et al.*, 2012), separately. The used tools were not fully capable to meet the requirements of the librarians.

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Therefore, to tackle the key features of IL and RSSs, minor modifications were applied and diverse statements of these tools were incorporated in the current survey. A five-point Likert scale from "strongly disagree to strongly agree" was applied to determine the responses of subjects.

Subsequently, the investigators assessed the content validity of the tool. Five LIS experts and two social scientists having sufficient knowledge regarding IL and RSSs as well as scale development judged the statements selected for the scale. In response to the experts, 89 highly recommended statements were included in the final scale. Lastly, a pilot study was conducted on only ten librarians to eradicate discrepancies in language, etc. and to ensure the suitability of the scale.

RESULTS

To find out the inner consistency and reliability of the current study's measurement tool, the Cronbach alpha coefficient was exercised. Results portrayed the cumulative Cronbach alpha values of ILSs as 0.93and RSSs as 0.82 which showed higher inner consistency and reliability of the tool elements. The suggested degree of inner consistency is 0.60 (Creswell, 2012; Sekaran, 2003), and the obtained scores are greater than the recommended values.

Correlation between eight Dimensions of ILSs and four of RSSs

Pearson correlation coefficient test was exercised to gauge the strength of all the correlations that exist between ILSs and RSSs. The score of the correlation coefficient demonstrated the strength of the two variables' relationship. According to Pallant (2011), this value may be within the limit of - 1.00 to 1.00. The negative and positive signs with the values show only the direction of association instead of its strength. The researcher has applied the criteria offered by Cohen (1988) and Pallant (2011) to gauge the direction and strength of correlations. According to them, the correlation values ranges from r =.10 -.29 means a smaller correlation, r =.30 - .49 means a medium correlation and r =.50 - 1.00 means a strong (big) correlation.

The correlation between 'a need for information' and RSSs was examined. To achieve the said goal, the hypotheses (H1) were developed and practiced (Table 1). Furthermore, H1 was divided into four parts. The results exposed that there was a strong positive significant correlation between 'a need for information' and 'write, publish and promote research work', i.e. r= .61. The findings showed a strong positive significant correlation between 'a need for information' and 'research

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metrics/bibliometrics' as r= .51. Correspondingly, the results illustrated that there was also a strong positive significant correlation (r =.61) between 'a need for information' and 'research data management services'. As for the fourth part, the findings of the study revealed that it had also a strong positive significant correlation as r= .53, between 'a need for information' and 'software services'.

Table 1

Correlation between 'a need for information' and factors of RSSs (n = 253)

Variables	1	2	3	4	5	P
1. A need for information	1					
2. Write, publish and promote research work	.61**	1				.000
3. Research metrics/Bibliometrics	.51**	.86**	1			.000
4. Research Data Management services	.61**	.81**	.77**	1		.000
5. Software services	.53**	.78**	.76**	.80**	1	.000

**. Correlation is significant at the 0.01 level (2-tailed).

The relationship between 'understanding availability' and RSSs was checked. Thus, to accomplish the said goal, hypotheses (H2) consisting of four parts were developed and experienced (Table 2). The results of parts one and third demonstrated a strong positive significant correlation between the 'understanding availability' and 'write, publish and promoted research work,' and 'research data management services' respectively, i.e. r= .60 & .54. The findings of the second & fourth parts illustrated that a medium positive significant correlation has existed between 'understanding availability' and 'research metrics/bibliometrics' as well as between 'software services', as r= .46 & .45 correspondingly.

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Table 2

Correlation between 'understanding availability' and factors of RSSs (n = 253)

Variables	1	2	3	4	5	P
1. Understanding availability	1					
2. Write, publish and promote research work	.60**	1				.000
3. Research metrics/Bibliometrics	.46**	.86**	1			.000
4. Research Data Management services	.54**	.81**	.77**	1		.000
5. Software services	.45**	.78**	.76**	.80**	1	.000

**. Correlation is significant at the 0.01 level (2-tailed).

The correlation between 'understanding how to find information' and RSSs was determined. To achieve this purpose, a hypothesis (H3) having four parts was constructed and tested (Table 3). The results of the first, third, and fourth parts, showed that there was a strong positive significant correlation between 'understanding how to find information' and 'write, publish and promote research work'; 'research data management services'; & 'software services'; i.e. r= .52, .55 & .51respectively. However, the findings of the second part showed a medium positive significant correlation between 'understanding how to find information' and 'research metrics/bibliometrics' as r = .48.

Table 3

Correlation between 'understanding how to find information' and factors of RSSs (n = 253)

Variables	1	2	3	4	5	P
1. Understanding how to find information	1					
2. Write, publish and promote research work	.52**	1				.000
3. Research metrics/Bibliometrics	.48**	.86**	1			.000
4. Research Data Management services	.55**	.81**	.77**	1		.000
5. Software services	.51**	.78**	.76**	.80**	1	.000

**. Correlation is significant at the 0.01 level (2-tailed).

The correlation between 'understand the need to evaluate result' and RSSs. To accomplish this aim, a hypothesis (H4) was developed, subdivided into four

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statements and tested. Table 4 illustrated that 'understand the need to evaluate result' had a strong positive significant correlation with all the four factors of RSS. The individual correlation of **'**understand the need to evaluate result' with 'write, publish and promote research work' was r = .65, followed by 'research data management services' as r = .63, 'research metrics/bibliometrics' as r = .56, and 'software services' as r = .55.

Table 4

Correlation between 'understand the need to evaluate result' and factors of RSSs (n = 253)

Variables	1	2	3	4	5	P
1. Understand the need to evaluate results	1					
2. Write, publish and promote research work	.65**	1				.000
3. Research metrics/Bibliometrics	.56**	.86**	1			.000
4. Research Data Management services	.63**	.81**	.77**	1		.000
5. Software services	.55**	.78**	.76**	.80**	1	.000

**. Correlation is significant at the 0.01 level (2-tailed).

The correlation between 'understand how to work with or exploit results' and RSSs was gauged. For this purpose, a hypothesis (H5) consisting of four fractions was developed for testing purposes. The findings of table 5 demonstrated that the entire four fractions of the hypotheses (H5) had a strong positive significant correlation with 'understand how to work with or exploit results' and 'write, publish and promote research work' as r = .71; 'research metrics/bibliometrics' as r = 68; 'research data management services' with a minor difference of .1 (r = .67); and 'software services' as r = .62.

The correlation between 'understand ethics and responsibility of use' and RSSs was checked. To achieve the said objective, a hypothesis (H6) subdivided into four parts was constructed and analyzed. Table 6 displayed that there existed a strong positive significant correlation between 'understand ethics and responsibility of use' and four factors of RSSs. The correlation between 'understand ethics and responsibility of use' and 'research data management services'; 'write, publish and

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promote research work; software services'; and 'research metrics/bibliometrics' were r = .66, .64, .61 & .55 respectively.

Table 5

Correlation between 'understand how to work with results' and factors of RSSs (n = 253)

Variables	1	2	3	4	5	P
1. Understand how to work with or exploit results	1					
2. Write, publish and promote research work	.71**	1				.000
3. Research metrics/Bibliometrics	.68**	.86**	1			.000
4. Research Data Management services	.67**	.81**	.77**	1		.000
5. Software services	.62**	.78**	.76**	.80**	1	.000

**. Correlation is significant at the 0.01 level (2-tailed).

Table 6

Correlation between 'understand ethics and responsibility of use' and factors of RSSs (n = 253)

Variables	1	2	3	4	5	P
1. Understand ethics and responsibility of use	1					
2. Write, publish and promote research work	.64**	1				.000
3. Research metrics/Bibliometrics	.55**	.86**	1			.000
4. Research Data Management services	.66**	.81**	.77**	1		.000
5. Software services	.61**	.78**	.76**	.80**	1	.000

**. Correlation is significant at the 0.01 level (2-tailed).

The correlation between 'understand how to communicate or share your findings' and RSSs was determined. For the said target, a hypothesis (H7) having four statements was constructed and examined (Table 7). The findings depicted that there was a strong positive significant correlation between 'understand how to communicate or share your findings and 'write, publish and promote research work', i.e. r= .70; 'research metrics/bibliometrics' was r= .62; 'research data management services' was r = .71and 'software services' was r = .68.

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Table 7

Correlation between 'understand how to share your findings' and factors of RSSs (n = 253)

Variables	1	2	3	4	5	.P
1. Understand how to share your findings	1					
2. Write, publish and promote research work	.70**	1				.000
3. Research metrics/Bibliometrics	.62**	.86**	1			.000
4. Research Data Management services	.71**	.81**	.77**	1		.000
5. Software services	.68**	.78**	.76**	.80**	1	.000

**. Correlation is significant at the 0.01 level (2-tailed).

The correlation between 'understand how to manage your findings' and RSSs was investigated. To attain this idea, hypotheses having four factors (H8) were constructed and investigated. Results of table 8 explained that a strong positive significant correlation exists between 'understand how to manage your findings' and factors of RSSs. The correlation with 'write, publish and promote research work'(r = .77) was at the highest level. The second highest correlation was with 'research data management services'(r = .75). The third level correlation was with 'research metrics/bibliometrics'(r = .68). The fourth level relationship was found with 'software services' (r =.65).

Table 8

Correlation between 'understand how to manage your findings' and factors of RSSs (n = 253)

Variables	1	2	3	4	5	P
1. Understand how to manage your findings	1					
2. Write, publish and promote research work	.77**	1				.000
3. Research metrics/Bibliometrics	.68**	.86**	1			.000
4. Research Data Management services	.75**	.81**	.77**	1		.000
5. Software services	.65**	.78**	.76**	.80**	1	.000

**. Correlation is significant at the 0.01 level (2-tailed).

Correlation between ILSs and RSSs

Parsons' correlation coefficient test was applied to gauge the correlation

https://doi.org/10.47657/5329

between ILSs and RSSs (H9) of the university librarians. Study results demonstrated (Table 9) that a high level of positive significant correlation (r = .80) existed between ILSs and RSSs of the university librarians of Pakistan.

Table 9

Correlation between ILSs and RSSs (n = 253)

Variables	1	2	P
1. Information Literacy Skills (ILSs)	1		
2. Research Support Services (RSSs)	.80**	1	.000

**. Correlation is significant at the 0.01 level (2-tailed).

DISCUSSION

Parsons' correlation coefficient test has been applied to check the correlation between the university librarians' ILSs (information needs, information availability, finding information, evaluating results, exploiting results, ethics of use, sharing findings, and managing findings) and their ability to provide RSSs (write, publish and promote research work; research metrics/bibliometrics; research data management services; software services) to researchers.

The findings show that a strong positive significant correlation exists between 'information need' and all subdivisions of RSSs. Knowing what type and level of information is required is the primary step for researching. Therefore, the results demonstrate that if LISPs have the capability to indicate the needed information, they will be able to provide efficient RSSs to researchers. This strong positive significant correlation confirms the authenticity of the 1st hypothesis.

The results demonstrate that a strong positive significant correlation exists between the 'information availability' and two subdivisions of RSSs, however remaining two aspects (research metrics and software services) have a medium positive significant correlation. There are two forms of information availability: accessible and non-accessible. The university librarians must have the skills to reach the accessible information and also try to access the non-accessible information through various ways like personal contacts, official letters, information exchange, etc. In this way, they will be able to support the researchers in their research work effectively. The values of positive significant correlation authenticate the 2nd hypothesis.

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The outcomes of the research display that a strong positive significant correlation is found between the 'find information' and three subdivisions of RSSs, though the remaining one factor (research metrics) has a medium positive significant correlation. The findings reveal that if librarians possess an efficient capacity to find the information they will be capable to help the researchers at every step of their research. The values of correlation verify the accuracy of hypothesis number three.

The findings of the study reveal that a strong positive significant correlation exists between the five factors of ILS i.e. 'evaluate result'; 'work with results'; ethics of use'; 'share findings'; and 'manage findings'; and four subdivisions of RSSs. The results reveal that if librarians want to become good researchers; earn respect among their professional colleagues and researchers; construct research collaborations, they would have to learn the five afore mentioned skills. These skills will make them information literate as well as perfect researchers. The said correlations also verify that H4, H5, H6, H7, and H8, are true.

The outcomes of the study also prove the authenticity of the 9th hypothesis and disclose that the value of relationship (r) is .80 which confirms that a strong positive significant correlation exists between the ILSs and RSSs of university librarians. It is a fact that people contact and respect only those persons who can help them in complex situations. Therefore, if the librarians have more ILSs they will be more engaging to researchers. If they help out the researchers in writing, publishing, managing data, using data evaluation software, etc., they will perform as advertising agents of these services.

The outcomes of the study are analogous to the findings of the previous study of (Nwosu et al., 2015). They acknowledged that a significant positive correlation was found between ILSs and the research output of academic staff. The results are steady with the findings of Okiki and Mabawonku (2013) and Madu and Dike (2012) who confirmed that a significant correlation existed between ILSs and academic research productivity of the academic staff in Nigeria. The research outcomes are somewhat similar to the findings of Ndagi and Madu (2018) who divulged that a strong positive correlation existed between staffs' ILSs and their utilization of electronic resources. The findings are also similar to the outcomes of Olakunle and Olanrewaju (2019). They declared that a significant positive relationship was found between ILSs and the research productivity of researchers. The study of Chang and Hsu (2015) also confirms the study findings. They confirmed that a significant positive relationship was found between employees' IL and their creativity.

https://doi.org/10.47657/5329

The findings of the study could be utilized by: practicing LISPs, the establishment of the university, human resource management, human resource development, professional bodies of LIS, policymakers, and other government stakeholders in Pakistan as well as other developing countries as a supporting document and justification to draw policies in order to manage ILSs and RSSs in libraries and to develop the career of practicing LISPs. The findings of the study might be utilized by library administration and working LISPs to formulate grant applications for the training and development of ILSs among the LISPs.

Based on the existing study findings, it is recommended that IL-related courses for LIS students and continuous training programs for in-service LISPs should be introduced. The LISPs have to give a chance to teach IL courses. The findings advocate that interaction and communication regarding ILSs amongst the individual LISP, teams, and groups, should be augmented regularly and awarded. This activity will enhance their personal performance and earn laurels for their institution too.

CONCLUSION

This study aims to determine the correlation between eight subdivisions of ILSs and four of RSSs. The findings of the study revealed that a strong positive significant correlation existed between the five subdivisions of ILSs and RSSs however; the other three factors have a strong and medium positive significant correlation. The correlation between overall ILSs and RSSs is also strong positive significant ($r = .80$). The study concludes that Librarians must have requisite ILSs so that they can make themselves useful for the researchers at their institution. University librarians possess good ILSs; however, they may improve these skills by joining professional groups/associations as well as participating in professional training programs. Though, self-education through social media/literature may also be a good source to enhance their ILSs. The present investigation would be a valuable addition to the current literature on workplace IL and may be helpful to develop a standard scale for further research. Finally, this study might present new dimensions for ILSs because locally available literature is insignificant in this area of research.

https://doi.org/10.47657/5329

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