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Abstract

Purpose: This study investigated the information-seeking behaviour (ISB) of the research students in terms of information needs, sources, resources, barriers to information seeking, significances of the libraries towards the quality of research and factors motivating the use of libraries at the University of Peshawar.

Design/Methodology/approach: This study used a quantitative approach, adopting a survey questionnaire method for data collection. The population of this study was composed of the Master, M.Phil. and PhD research students in the faculties of Arts and Humanities, Social Sciences and Management Information Sciences at the University of Peshawar. The sample size was 300 research students selected conveniently. The study response rate was 85% and data were analyzed through SPSS (20 version).

Key findings: The findings revealed that research students sought information to satisfy their information needs related to the identification and selection of the research problem, access to the current information, writing of the research proposal, article and theses. To fulfil their information needs, these researches indicated the use of different sources and resources. Regarding the sources, most of the research students preferred the research-related workshops and taking help from other researchers to fulfil their information needs. Furthermore, research students used the internet and online research databases to satisfy information needs. They also utilized research and information services provided by their libraries to retrieve the needed information. While seeking the needed information, research students have reported different barriers designating poor internet connectivity, ICT facilities and unavailability of study rooms in libraries as the major barriers. Reliable information sources and e-databases were the significant motivating factors for using/visiting library.

Limitations of the study: This study has two major limitations; 1) as the sample was conveniently recruited, thus there is a possibility of sample bias and; 2) likewise this study was undertaken at the University of Peshawar, thus generalization of findings is limited to the study context.

Practical implication(s): the findings might motivate librarians towards the restructuring of information literacy programs to enhance the current ISB of the research students. It may inform the authorities about the barriers faced by the research students in information seeking and thus stimulate them towards the up-gradation of Internet and ICT facilities in the university.

Contribution to the knowledge: This study addressed the gap in the literature on ISB in the context University of Peshawar. It revealed factors that impede and/or augment researchers' use of libraries. The insights may include the formulation of a stable information literacy program at the University of Peshawar to support research-based learning.

Keyword(s): Information needs; information seeking behaviors; information sources and services; Research students, Postgraduate students; university libraries; University of Peshawar; Pakistan.

Introduction

In the modern era of innovations, individuals need information for personal use, professional development and social survivals. However, the information needs of these individuals are different (Silva & Chandrawamsa, 2016). The past researchers have validated that research students have different information needs regarding their topic of research, writing of articles, thesis and dissertation, searching techniques and literature review (Manjunath & Babu, 2018). For searching, identification, selection, retrieval, use and sharing of their information, research students use multiple approaches. Such approaches, methods or practices are named information seeking behaviour (ISB). The information seeking behaviour occurs at the time when research students realize that their current information is not enough for decision making or their research works (Kumar, 2013). As a result, research students also use numerous sources of information including libraries to fulfil their needs. The sources of information in libraries refer to books, journals, encyclopedia, theses, dissertations and online research databases. In this regard, librarians are responsible to recognise research students' information needs and grant them appropriate sources and resources to facilitate achievement of their academic goals.

Even though the concept of information is debatable and manifold terms are used among the researchers such as knowledge, facts, data, news and message, it is still perceived a critical success factor for the accomplishment of research projects (Kumar, 2013). According to Majid, Anwar, and Eisenschitz (2010), information resources in libraries are accurate, relevant, and easy to access and have greatly supported students in their research activities. However, rapid increase, proliferation and multiple storage formats and devices of information are creating immense challenges for librarians in its management. Likewise, the phrase information needs to demonstrate multiple perspectives and is also perceived differently among the researchers (Sani, 2017). It refers to the demand of information required in a specific time about a specific situation or topic of the study (Chinnasamy, 2016). Information need arises at the time when something is missing in individuals' knowledge and is called the knowledge gap (Lone, Mir & Gani 2017). To fulfil information needs research students use different type of seeking and searching behaviours. According to Majid *et al.,* (2010) and Chinnasamy (2016), ISB includes techniques articulating needs, seeking, evaluation, selection, and usage of information. Thus, ISB signifies researchers' behaviour patterns exhibiting information need and choice of where and how to identify and utilize information. Such behaviours also consisted of identification and selection of information sources, formulation of research questions or problem, extraction or evaluation of information. For information seeking the research students utilize different sources, for example, the Internet, teaching faculty, supervisor and libraries. Out of these, libraries are regarded as the dominant source among the research students because of their significant contributions (Law,2009).

In the modern age, libraries especially the digital library plays a pivotal role in fulfilling the information needs of the researchers and thus promote research, learning and teaching. Accordingly, university libraries are indispensable for researchers to fulfil their research

information needs regarding topic selection, literature review, databases searching, data analysis techniques, learning of information searching skills, information literacy, publishing, citation analysis and writing of theses and dissertations. Even though libraries play a fundamental role in ISB, promote research and are regarded as a significant source of information, still it is unknown whether research students perceive them significant.

Also, it has been reported that libraries in Pakistan are less utilized due to the lack of collaboration between the teaching faculties and librarians, librarians' less or no access to the classrooms, absence of inquiry-based curriculum and students' unfamiliarity with sources and resources of information. Thus, students are mostly dependent on traditional teaching methodologies where less or no opportunities of libraries usage are provided (Khan & Masrek, 2017). Further, it is a fact that libraries provide online research databases and other research publications that augment human knowledge and ensure organizational growth (Khan, 2020).

In this situation, it is crucial to investigate how research students perceive the significances and contributions of libraries in terms of fulfilling information needs. In the last few years libraries have passed through multiple but significant changes. Such changes have moulded the fundamental ideologies of librarianship and thus libraries are no more physical entities but have become a virtual reality. This has facilitated researchers' access to information 24/7 days of the week. However, Balog, Badurine and Lisek (2018) posited that such changes are not always positive but might have negative impacts on information users that perhaps result in low usability of libraries. Besides, it is expected that these research students probably encounter certain issues or barriers while interacting with the information resources or to accomplish their information needs. These issues may include lack of knowledge about the use of information retrieval services and tools provided in the libraries. According to Sani (2017), most of the researchers are not able to accurately utilize library information retrieval tools, especially in digital format. Since Pakistan is a developing country where it is expected that research students possibly face difficulties during information seeking behaviour for instance absence of internet, access to and absence of needed information, information retrieval tools, identification and location of information, and disorganized patterns in information management.

Statement of the Problem

Researchers in the past have identified that information needs are not homogeneous. It is important to provide library information services according to the users' understandable styles. This situation equally implies to the research students at the University of Peshawar, Pakistan. The University of Peshawar, being one of the oldest and mother Institution of the Khyber Pakhtunkwa Pakistan is fulfilling the academic and research needs of researchers and academicians. The highly qualified and trained teaching faculty, modern curricula, conducive academic environment and excellent infrastructure are the hallmarks of the University. The role of this university in political, industrial and government leadership is recognized at the national level. To enhance the quality of research work at the University of Peshawar, the provision of adequate library information services is mandatory. This study assumed that research students in University of Peshawar are not adequately trained in the identification, location, retrieval and use of information services due to the absence of both information literacy skills and librarians' guidance (Khan, 2020) or meagre information seeking behaviour. Moreover, research students at the University of Peshawar are from diverse educational backgrounds and thus supposed to have heterogeneity in information needs. It may further create issues in their information seeking behaviours that perhaps affect the quality of their research outcome. The ISB is a significant construct and extensive studies have been undertaken worldwide. Though, very limited studies have documented the ISB of the students

of various disciplines in the study context (e.g. Khan & Bhatti, 2012; Khan, Bhatti, Khan, & Ismail, 2014; Khan, Ismail & Khan, 2014). Consequently, university librarians in Pakistan are provided with fewer opportunities of direct interaction with researchers and thus little is known about researchers'' information needs and seeking behaviours. Thus, this study aimed to cover the above gaps in the literature on ISB from the perspective of research students.

The objective of the study

The objective of this research was to determine: -

- the information needs and seeking behaviour of the research students;
- barriers are faced by research students in information seeking;
- researchers' perception about the significances of university library towards research;
- factors that motivate research students towards the use of the library;

Literature Review

Information needs- According to Kalbande (2019), information refers to data converted through processing and manipulating into useful forms. Likewise, Meijer (2013) elaborated that information brings changes and differentiates one thing from the other. Further, Madden (2004) stated that information is a stimulus expanding researchers' vision. According to Wilson (1997), information need is a subjective experience related to thinking and opinions, and information needs among the people are heterogeneous. Savolainen (2016) stated that information need has two standpoints; 1) activate body and brain towards seeking and; 2) stimulation towards the continuous seeking process. Researchers' information needs are variable and change over time. Similarly, information need is regarded as a gap in knowledge essential for decision making or solution of a problem (Nwobasi, UWA & Onah, 2013). It motivates researchers towards information seeking which further manifested in the form of manifold behaviours (Ikoja-Odongo & Mostert, 2006). Besides, information need is related to searching for a research topic, literature review, journals, online research databases and other research, academic activities and life events. According to Shuhidan *et al.* (2019), researchers need information about research projects, processes and institutional guidelines for research. Several other studies on information-seeking behaviour such as Chaurasia and Chaurasia (2012); Jazeel and Dehigama (2017) and Natarajan (2012) revealed that researchers' seek information to accomplish their research needs relating to knowledge updates, research strategies, innovative searching techniques, article publishing, workshop and seminar presentations, and other academic and research assignments.

Information seeking and searching behaviour- ISB consists of behaviours and actions for gathering and achieving the needed information. Such behaviours originate when researchers feel that their current knowledge is insufficient for addressing a question (Sheeja, 2010). ISB is exhibited due to psychological, affective and cognitive needs (Wilson, 1999). Similarly, Anwar (2007) mentioned that researchers use ISB for different purposes such as discussion, seminars workshops, conferences, and other research activities. It is consisted of identification of needed information, choosing information sources and adopting diverse techniques to fulfil information needs. Wright *et al.* (2006) reported that ISB encompasses activities that facilitate accessing, retrieving, searching, and evaluation of information. The techniques utilized for information accessing from online or library resources known as searching behaviour. Brindesi Monopolib and Kapidakisa (2013) and Sinh and Nhung (2012) found that research students mostly preferred simple searching technique and avoid the use of advanced search techniques such as Boolean operators and truncations. Similarly, Chinnasamy (2016) reported that researchers' searching techniques are limited to the use of author, title,

subject and keyword. However, few researchers such as Lone *et al.* (2017) pointed out the searching strategies of the researchers also use advanced searching techniques such as Boolean operators, truncations, proximity and phrase search.

The advent of technologies especially search engines has brought significant changes in researchers' seeking behaviour (Zhang & Fei, 2010). Researchers retrieve needed information through the internet and search engines that have reduced their information-overloaded (Hochstotter & Koch, 2009). Different search engines fulfil information need through providing access to different databases. Researchers utilize different searching behaviours to for the adoption of online research databases and thus highly prefer Internet-based information resources as compared with manual library system (Kumar, 2013). According to Adekunle (2014), researchers use both offline and online sources of information.

Information sources: It includes persons, books, journals, databases, theses, dissertations, pamphlets and internet (Bates, 2006). Information source can be categorized as social and subjective sources or objective and non-relational where social is more significant (Nwagwu, 2012). Information sources, also called a repository of information have significant effects on ISB. Further, Landry (2006) stated that information source may act as a facilitator of or barrier to information seeking. Likewise, Majid *et al.,* (2010) explained that researchers prefer to use primary sources of information such as journal and articles databases, professional networks, conference abstracts and proceedings, meeting minutes and workshops. Similarly, Nwagwu (2012) affirmed journals, library collection, textbooks, dissertations, lecture notes, seminar papers, email, and the Internet as sources of information. Furthermore, Ahmed and Khan (2014) indicated that university research students in Pakistan use electronic information sources and resources to fulfil their information needs. Another study in Pakistan by Arshad and Ameen (2018) explored that academic scientists mostly use electronic information sources to perform their research activities. Conversely, their findings elaborated that researchers rarely used library print information sources. Furthermore, Brown Lund and Walton (2007), Hemminger *et al.*, (2007) and Wang (2013) indicated that a large number of information sources are currently existed, however the most dominant are library online databases, e-publications, Google, open access journals and online institutional repositories. Further, these studies explained that effective use of information sources are dependent on researchers' ability in the use of technology and thus the majority of the researchers are facing manifold barriers in ISB.

Barriers in information seeking - While seeking information researchers face several barriers which are defined as obstacles which don't allow to identify, select, access, evaluate and utilize the needed information (Ogaba, 2012). The phrase information barrier was first introduced as intervening variables (Wilson, 1999) due to its nature of hindrance and facilitation. Wilson (1997) classified information barriers as personal, social/interpersonal and environmental. It has a negative influence on INB. Information barrier arises when the difference between ideal and actual access to information exist. Extensive studies are available on barriers to ISB but are contextually different. In terms of developing countries, Kumar (2013) reported that lack of access to up-to-date information, obsolete library collection, untrained library staff and insufficient ICT facilities are the foremost barriers. Lone *et al.,* (2017) identified several barriers faced by researchers during information seeking such as the location of information, price, no access to information, lack of access to online databases and research publications, lack of information retrieval skills and absence of collaboration between researchers and library staff. Similarly, Kumar (2013), Chinnasamy (2016) also recognized several barriers in information seeking. However, the major obstacles included inadequate knowledge of using OPAC and uncooperative attitude of librarians. Also, Natarajan (2012),

Pareek and Rana (2013) and Sani (2017) identified multiple barriers faced by researchers in seeking the needed information such as librarians' lack of support and cooperation, irrelevant library collection, lack of internet and ICT facilities, inadequate library operation hours, lack of skills in the use of online information sources and library. Singh, Kumar and Khanchandani (2015) presented several barriers including lack of ICT facilities in library, inadequate library collection and lack of knowledge of OPAC. According to Marouf and Anwar (2010), obstacles faced by researchers in information seeking include untrained library staff and lack of searching techniques. Furthermore, Mairaj and Naseer (2013) found that students are not satisfied with the library study environment and study space and thus are barriers in information seeking.

Motivators of library usage and ISB- a significant contribution of the library is to facilitate users' access to the needed information. To this end, the library organizes and disseminate information through physical and online channels (Rasul & Singh, 2010). The role of university libraries is very significant in the fulfilment of information needs and thus have positive impacts on researchers' ISB. It has improved the quality of research and provided OPAC, research spaces, institutional repository, reference materials and training on information seeking. Moreover, Rasul and Singh (2010) posited that motivators of the use of the library are explicitly researchers' satisfaction with library services, collection, contents reliability, quality of information and training on searching techniques. However, their findings further elaborated that demotivators such as unawareness about library services and inadequate marketing of research and information resources have negatively influenced the ISB. According to Hart and Kleinveldt (2011), researchers use libraries to have access to books, journals, and e-databases. Moreover, Marija and Kriviena (2013) posited that research and reference services, online open-access information resources, and research data management are the dominant motivators towards the use of library and information sources.

According to Hussain and Abalkhail (2013) findings, respondents' motivating factors include access to the reference collection, information and research services. On the other hand, Rowlands, Wright and Jazeel (2008) mentioned that due to the arrival of the Internet and other technological innovations, the researchers' seeking behaviours are now dependent on digital gadgets instead of a physical visit to a library. Likewise, the findings of Law (2009) described that research scholars preferred google scholar, research Gate, online databases and journals instead of the library to fulfil their information needs. This study further suggested that the library should provide relevant and latest research resources to augment its usability. Other researchers such as Majid *et al.* (2010), Gabbay and Shoham (2017) and Balog *et al.* (2018) found that research students are not satisfied with the current role of the library towards information seeking and research activities and that is why the library is rarely used for research purpose as compared with Google and other online research databases. Further, keeping in view the ISB, library usage and technological influences, Rasul and Singh (2010) and Khan, Bhatti, Khan, & Ismail (2014) suggested that library should provide up-to-date collection, latest and accessible information services, research guidelines and activities, awareness about plagiarism and research-related workshops and seminars. The above literature indicated that results are contradictory on ISB and the role of the library worldwide. Hence, it is essential to undertake the present study to examine researchers' ISB and their insight into the role of the library.

Research Methodology

This study used exploratory research design to explore researchers' ISB and significances of the library towards research. Adopting a quantitative approach, the cross-sectional survey method was used. The cross-sectional survey method is appropriate for generalization (Creswell, 2003; Masrek & Hakimjavadi, 2012). Also, it is a low cost, easy and convenient in

terms of data collection (Kumar *et al.,* 2013). The unit of analysis and population of the present study were graduate and postgraduate research students (i.e. Master, MPhil/MS & PhD) of three different academic faculties namely Arts and Humanities (AH), Social Sciences (SS), and Management and Information Sciences (MIS) in the University of Peshawar. A convenience sampling technique was used and a sample of 415 researchers was randomly selected because of the unavailability of a complete list of target participants at these three faculties. A structured questionnaire was used as data collection tool because it is simple, cost-effectiveness, easy to distribute and suitable for the study a large population (Creswell, 2003; Kumar *et al.,* 2013). Out of 415 distributed questionnaires, only 300 were returned yielding a response rate of 72%. For the construction of the measurement scale, items on the study constructs were selected from previously validated instruments. Multiple five-point Likert scales were used to measure respondents' responses towards the questions. For the pretesting of data instrument, an expert panel of three professional authorities was requested to examine its suitability. Since, no specific and standard size for expert panel exists, thus it is not appropriate to verify the validity of instrument on smaller sample size. Accordingly, in this study, only face and content validities were performed by the expert panel. The recommended changes such as the reduction in the number of questions, rephrasing of questions, correction of typos, and items reshuffling by the expert panel review were incorporated into the final version of the data instrument. After that, the instrument was tested in a pilot study on a randomly selected sample of 45 research students who were excluded from the actual survey. Again, after the pilot study, necessary changes were integrated into the data instrument. Based on the pilot study the overall scale reliability indicated a high internal consistency that is Cronbach alpha values were between 0.68 and 0.88. Sekaran and Bougie (2010) recommended 0.60 as the minimum accepted a level of reliability. Thus, study constructs were then considered appropriate for further analyses. The reliability values are provided in Table 1. Lastly, for data analyses, SPSS (ver. 20) was utilized.

Table 1

Constructs, items and reliability values

Constructs	α values based on Pilot-Testing	α values based on Actual Survey
Information need	0.68	0.71
Seeking behaviour	0.87	0.82
Barriers	0.73	0.69
Significances of library	0.88	0.79
Motivators	0.79	0.84
Integrated values	0.79	0.77

Findings

Demographic profiles; The result showed that out of 300 respondents, 65% (n=195) male and 35% (n=105) female respondents participated in the survey. Based on qualification, 80% (n=239) of the respondents were enrolled in Master program, 18% (n=55) were enrolled in MPhil/MS program while 2.0% (n=6) were enrolled in PhD program. Faculty-wise data distribution showed that most of the survey respondents (58%, n=174) belonged to the Faculty of social science, 22% (n=65) were from the Faculty of Arts and Humanities and 21% (n=61) were from the Faculty of the Management and information science. Further, results indicated that 80% (n=241) respondents were in the age range of 20-25 years, followed by 14% (n=42) in the range of 26-30 years, 3% (n=10) in the range of 31-35 years, 2% (n=5) in range of 36-40. However, no respondent was above 40 years of age.

Information needs of the research students: As shown in Table 2, the highest need (42%) of information regarding the research topic selection of the respondents followed by a literature review (41%), research proposal (40%), thesis /dissertation and assignment writing (39%), article writing (36%), and citation management (33%).

Table 2

Information needs of the research students (n=300)

Scale items	SD	Disagree	Neutral	Agree	SA
	%	%	%	%	%
Research proposal	15	8	9	40	27
Research topic selection	7	8	13	42	30
Article writing	3	13	25	36	23
Thesis /dissertation writing	4	7	19	39	31
Citation management software	6	9	28	33	24
Understanding plagiarism	4	11	25	29	30
Literature review	3	5	15	41	35
Assignments writing	4	8	18	39	31

SD=strongly disagree, SA=strongly agree

Furthermore, Table 3 showed the ISB of research students. Twenty-one items were used to measure the three dimensions of ISB namely information sources (seven items), information resources (eight items) and perception about research and information seeking skills (six items). It was found that most of the respondents (69%) attended workshops for gaining information, followed by contacting other researchers for research-related information (69%) and supervisor assistance (68%). Further, 41% of respondents showed disagreement over getting information from other teaching faculty members, followed by consultation with a subject librarian (33%) and reference librarian (28%).

The results about the information resources indicated that most of the respondents (74%) used the internet as their 1st choice, followed by online databases (71%), and central library collection (59%). However, 43% of the respondents showed disagreement over the use of OPAC for research-related information, followed by using electronic databases (41%) and electronic journals (41%). For the measurement of the 3rd dimension of ISB (i.e. perception about research and information seeking skills), 61% of the respondents reported that ability of understanding of copyright issues are extremely important followed by the skills related with avoiding plagiarism (61%), and information searching (56%). However, results further showed that 5% of the respondents indicated that skills regarding copyright issues are not important, followed by the skills related with avoiding plagiarism (6%) and information searching (3%) respectively.

Next, Table 4 shows that during information seeking a major barrier faced by respondents was the unavailability of the special study room in the library for research activities (69%), followed by poor internet speed (67%), poor ICT facilities (59.3%), insufficient number of information materials (56.7%), the unhelpful attitude of library staff (56.3%), limited borrowing facilities in the library (55%), poor research services of the library (51%), use of the manual system in libraries (51%), outdated information resources (50%) and poor organization of information materials in libraries (49.7%).

Table 3

Information seeking behaviours of the research students (n=300)

No.	Scale items	SD %	Disagree %	Neutral %	Agree %	SA %
		1-Information sources				
1	Supervisor assistance	7	5	17	40	28
2	Other researchers help	4	8	19	47	22
3	Reference librarian	8	19	36	15	21
4	Subject librarian	12	22	28	20	19
5	Other teaching faculty	13	28	31	16	11
6	Theses and dissertations	4	6	21	47	22
7	Workshops	5	10	19	44	23
		2-Information resources				
8	Use of Internet	5	6	15	39	36
9	OPAC	13.0	30	27	15	15
10	Use of HEC digital library	8	21	20	33	18
11	Use of central library	13	11	17	40	19
12	Use of seminar library	9	18	28	35	11
13	Electronic journals	19	22	31	13	15
14	Electronic databases	17	25	27	18	14
15	Online databases	4	8	17	44	27
		3- Perceptions about research and information seeking skills				
16	Citation styles	26	26	23	15	9
17	Copyright issues	26	35	24	10	5
18	Avoiding plagiarism	30	31	24	9	6
19	Information searching	22	34	24	16	3
20	Use of library catalogue	22	30	25	15	8
21	Reference software	29	24	26	10	10

SD- strongly disagree, SA- strongly agree; frequency of Agree and SA were combined

Table 4

Barriers faced during information seeking (n=300)

Scale items	SD %	Disagree %	Neutral %	Agree %	SA %
Limited borrowing facilities in library	8.7	11.0	25.0	32.0	23.3
Insufficient information resources	5.0	13.3	25.0	36.7	20.0
out-to-dated information	5.0	18.7	26.0	27.0	23.3
Manual system in libraries	7.7	17.7	23.0	27.0	24.7
Poor organization of materials	5.0	18.0	27.3	27.0	22.7
Poor research services	5.0	17.7	25.7	26.7	25.0
No special study room	4.3	11.3	15.3	34.7	34.3
Poor internet speed	7.3	10.0	15.0	27.7	40.0
Poor ICT facilities	5.0	12.3	23.3	30.3	29.0

Library staff is not helpful	5.7	16.0	22.0	25.0	31.3

SD = strongly disagrees, SA= strongly agree; *frequency of Agree and SA were combined*

Regarding the perception about significances of the library, the results shown in Table 5 indicated that majority of the respondents (56%) were satisfied with the research services provided by libraries, followed by an attitude of library staff (55.7%) and training on the use of research collection (55%). However, 37% of the respondents were strongly dissatisfied with the awareness programs about plagiarism, followed by support from librarians in research activities (33%) and significances of the library towards research (29%).

Table 5
Significances of the Library

Scale items	Strongly dissatisfied (%)	Dissatisfied (%)	Neutral (%)	Satisfied (%)	Strongly Satisfied (%)
Significant in research	15.7	13.7	25.3	26.3	19.0
Library Research services	07.0	17.0	20.0	35.3	20.7
Infor. about the research services	06.3	13.3	26.7	33.3	20.3
Researchers training	09.0	11.0	25.0	31.7	23.3
Help in research activities	16.3	16.7	18.3	26.7	22.0
Attitude of library staff	07.3	16.7	20.3	35.0	20.7
Searching of information	06.7	15.7	26.7	31.0	19.7
Awareness about plagiarism	17.7	19.3	22.3	25.	15.3
Satisfied over all research activities	15.3	09.3	26.7	29.7	19.0

Furthermore, Table 6 explore factors motivating the use of libraries among the research students to fulfil their information needs. The results found that most of the respondents believed that 'library is a place of learning and research activities' (71.7%), followed by the library is a 'place for obtaining reliable information' (66.4%) and 'library plays a major role in the projects and research activities' (65%). However, 23.3% of the research students strongly disagreed with the quality of library awareness program about plagiarism, followed by support provided by the library in the research activities (18.3%) and help provided by libraries in information seeking (16.4%).

Table 6
Factors motivating the use of libraries

Scale items	SD (%)	Disagree (%)	Neutral (%)	Agree (%)	SA (%)
Major role in research	7.7	8.3	19.0	38.7	26.3
Learning and research gateway	3.3	9.0	16.0	47.0	24.7
Reliable information	3.7	9.3	20.7	40.7	25.7
Efficient in research	4.3	14.0	26.3	36.0	19.3
Searching of information	4.7	11.7	22.3	37.3	24.0
Awareness about plagiarism	8.0	15.3	28.0	33.0	15.7
Writing and publishing of research	6.3	10.0	26.7	35.3	21.7

Discussion

This study has reported that the level of information needs of the research students is very high. These results supported the findings of Shuhidan *et al.* (2019) which stated that student's information needs are mostly related to the literature review. Since the literature review is an integral facet of a research project, it is suggested to educate research students about different aspects of the literature review including process, types, techniques and other relevant features. The findings also indicated that research students need information are related to the selected research problem. These findings supported the results of Premsmit (1990) who stated that researchers' information needs are related to the problem selection. Thus, it is equally important to instruct the research students on the procedure of selecting a research topic. An interesting aspect of this study is that research students are neutral about information needs in terms of research journals, article writing, citation management software and understanding of plagiarism. This situation needs immediate attention of the authorities to create awareness about the consequences of plagiarism and benefits of article writing.

Since results showed several important areas where researchers have high to moderate level of information needs. Their information needs are not surprising because at university level researchers understand the value and significance of the information. Therefore, research supervisors, librarians and other faculty members are suggested to extend collaborate in these areas to effectively fulfil researchers' information needs. It may further ensure successful completion of the research projects, access to accurate information and possibly to cover the gap in the acquired information related to their area of research. Similarly, the results revealed that the ISB of the research students is not uniform. These findings are parallel with the findings of Majid *et al. (*2010) and Wang (2013) which reported that researchers use different sources of information retrieved from different sources. To bring homogeneity in information needs with the intention to enhance the quality of library services, it is suggested to organize different training sessions on information retrieval and different searching strategies. This study further indicated that the Internet is the primary source for researchers including browsing of research articles, journals and other research-related information. It implies that the trend of use of electronic resources is higher than print materials. To enhance ISB, it is suggested to provide high-speed internet facility to the research students.

Likewise, findings of this study established that during information seeking research students are facing several barriers. For example, unavailability of a special research study room in their libraries and respective academic departments. These results supported the findings of Mairaj and Naseer (2013) which specified that students in Pakistan are facing the issue of absence of research rooms in their libraries. It is deduced that a proper research environment is required. In this regard, librarians should provide special accommodations for researchers in libraries to facilitate the successful completion of their research projects.

The results of this study also validated that research students in the study context faced the barrier of poor internet speed in their libraries and at respective departments. This has further generated the issue of access to online research databases and journals. These results have supported multiple studies in the past such as Mairaj and Naseer (2013) which indicated that research students are facing the barrier of slow Internet-speed speed that creates the issue to access to online scholarly research publication. To manage this issue a high-speed internet connection in libraries and all academic departments of the University of Peshawar should be provided. Likewise, this study also reported that the majority of the research students have come across the barrier of poor ICT facilities that hinder researchers' access the needed information. These findings supported the results of Sani (2017) which presented that university students in the developing countries are facing the issue of poor ICT facilities that impede their research productivity and negatively impact the quality of their research outcome.

Regarding the research students' perception about the significances of libraries, the findings of this study showed that research students understand the significant role of libraries towards research. In this regard students also indicated that they are satisfied with the existing services of the libraries. However, it has been suggested that librarians' role should be more relevant and contemporary. These results are similar with findings of Hussain and Abalkhail, (2013) which stated that researchers are adequately satisfied with the status of the library services but moderately satisfied with librarians' ICT skills and the methods of delivering information and research services. Besides, the findings showed that many research students are neutral in response to their perception of the significance of libraries. This situation needs immediate attention of the university authorities, teaching faculty, supervisors and librarians to augment ISB and ensure the quality of research quality.

Lastly, this study identified that research students are motivated towards the use of the library because it is a more effective source of information and a place for effective learning and successful completion of research projects. Equally, research students perceived the library as a reliable place for access to reliable online scholarly publications. These findings supported several studies in the past such as Rasul and Singh (2010) and Kumar (2013) which described that research students perceive the library as a learning place which provides reliable information. Based on the findings it is deduced that librarians should ensure the library as a learning and research entre. Also, librarians should provide pertinent information services for the research students including facilities to enhance information seeking skills, access to the different databases and research journals, current awareness services, printing and photocopy services, scanning and reference services.

Conclusion

This study investigated the ISB of the research students at the University of Peshawar in terms of information needs, seeking behaviours, barriers faced during information seeking, significances of the libraries towards research and factors motivating toward the use of libraries. The ISB of the research students at the University of Peshawar was found motivated by their academic and research needs. Majority of the research students' information needs are related to the research problem identification, access to the current literature and writing of articles, proposal and thesis or dissertation. However, several research students are unaware of the information and research services provided by their libraries. To fulfil their information needs, the research students in the university of Peshawar have used different type of sources and resources including workshops, online research databases, supervisor assistance, contact with other researchers and teaching faculty, electronic journals, OPAC, central and seminar libraries and HEC digital library. However, the findings established that the internet and online databases were the most preferred information resources among the research students. It implies that the trend of use of electronic resources is higher than conventional resources. Besides these, findings also affirmed that research students are satisfied with the contributions of the libraries and attitude of librarians towards the fulfilling of information needs of the research students. These research students perceived libraries as a significant place for information retrieval and fulfilling of research and information needs. The research students indicated that library research services and training programs arranged by the librarians are very productive. Regarding barriers in access to the needed information, research students reported several challenges. These research students were not adequately satisfied with the environment of their libraries due to the absence of separate study/research room and unable to perform research activities properly. Also, the research students pointed out that the poor speed of the internet and ICT facilities in the libraries and departments are the big barriers.

Despite these problems, the research students are still motivated towards the use of libraries and perceive them a productive place for research.

Recommendations and future research

The findings of this study inform university librarians, policymakers and related authorities about multiple issues affecting the ISB of the research students. Accordingly, the following recommendations are noteworthy:

- the university authorities should provide special study rooms for the researchers in libraries.
- awareness about these important aspects of the research and access to the needed information is required;
- high internet speed in all departments and libraries should be provided.
- study on the effect of information seeking behaviours on the quality of research productivity should be conducted;
- study on the awareness and use of online research databases among the research students should be carried out.

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