Qualitative and Quantitative Methods in Libraries (QQML) 10,3: 283-300,2021

Assessing Information Literacy Skills of Mathematics Faculty Members in Pakistan

Amara Malik, Shahbaz Ali, Hina Batool, Kanwal Ameen

University of the Punjab

Abstract: Information literacy (IL) skills comprise the set of competencies, which are useful for research, lifelong learning and to become the critical consumer of information in 21st century. The present study aimed to assess IL skills of mathematics faculty members in higher education institutes of Pakistan. The study explored their ability to identify the information need and sources; to plan strategies for locating, accessing, evaluating and ethically applying the needed information effectively and efficiently. The study employed a quantitative research approach and structured questionnaire based on SCONUL Seven Pillars of Information Literacy, was sent to 300 faculty members from 36 HEC recognized public sector universities of the Punjab province. After repeated follow up calls, 185 filled questionnaires were received. The data were analyzed using SPSS-24. The major findings of the study showed that the mathematics faculty members had reasonable IL skills of basic level. They were able to identify information need and related information sources. They were able to scope, plan, gather, evaluate, manage and present information legally and ethically. However, they were less competent at the advanced level of IL skills. The study suggested that information professionals/librarians working in university libraries should design need-based IL programs to cater the needs of faculty members.

Keywords: IL skills, Faculty members, mathematicians, Pakistan, Universities.

Received: 31.05.2021 Accepted: 20.09.2021 ISSN 2241-1925
© ISAST

Background

In this information age, knowledge creation and dissemination are very much dependent on modern technology (Yeh, Chang & Chang, 2011) that requires proficiency in information searching and retrieval skills. The ability of identifying, locating, evaluating and utilizing information effectively, efficiently and ethically is called information literacy that is direly needed in academia, research and development sector. Information literacy (IL) skills comprise the set of competencies, which are useful for research, lifelong learning and to become the critical consumer of information in 21st century. According to Johnston and Sheila (2003) "information literacy is the adoption of appropriate information behavior to obtain, through whatever channel or medium, information well fitted to information needs, together with critical awareness of the importance of wise and ethical use of information in society" (p.36). Williams and Coles (2007) established that IL skills can develop teachers' confidence in evaluating and using multiple formats of information. With the appearance of more and more scholarly communication in multiple formats, IL skills have become the fundamental and integral need of higher education sector. It is increasingly important to incorporate IL skills among faculty members for enhancing their academic performance and research productivity. Previous studies considered IL skills set mandatory for university academic staff (Usang, et.al. 2007; Christopher & Iyabo, 2013).

Over the years, several IL models/frameworks have been developed globally. There are some significant examples of national IL frameworks focusing curriculum and teaching practices including National Framework of Scotland, Wales, Australia, New Zealand. Some very popular are developed by professional organizations such as ACRL framework and CILIP information literacy model. To cater the needs of higher education, Society of College, National & University Libraries (SCONUL) developed a research-based and widely used IL model in 1999. The updated version of this model (Seven Pillars of Information Literacy) challenged the traditional linear form of IL. The developers claimed that IL skills can be learnt in a variety of ways, IL literate

may adopt any skills at any point based on background and context (Infolit, n.d.). Reflecting on this aspect, the present study is framed around SCONUL model.

Government and professional organizations are continuously striving to bridge gap between teachers' research and practice. In Pakistan, Higher Education Commission (HEC) has a special unit for continuing professional development of in-service teachers. This unit offers a number of courses related to computer learning, assessment and research skills (HEC, n.d.) for college and university teachers. This is unfortunate that the most significant component of IL is missing in national agenda. However, during COVID-19, National Academy of Higher Learning (NAHE) recognized and generated a list of online resources to prepare teachers for online teaching. However, the element of training is missing to make faculty members digital information literate.

From a disciplinary lens, the field of mathematics is based on logic and inquiry. In this domain, learning outcomes are closely associated with investigation, gathering information and making decisions. In similar, the concept of IL is also embedded in searching, organizing and evaluating information sources. To prepare more active and efficient scientists (mathematicians), it is necessary to acquaint them with IL skill set (Julien & Barker, 2009). Considering this, present study aims to assess the IL skills of mathematics faculty members in higher education institutes of Pakistan. The study explores their ability to identify the information need and sources; to plan strategies for locating, accessing, evaluating and ethically applying the needed information effectively and efficiently. The study is helpful in determining IL related deficiencies among mathematicians faculty and provide the guidelines to the information professional for developing the IL programs.

Review of Literature

Globally, LIS researchers explored IL domain in their works while considering its various aspects such as IL status, assessment, pedagogies, models/frameworks and curriculum through perceptions. A growing body of IL

studies focused academia specifically students. A good number of research studies evidenced significant relationship between IL skills of university teachers and their lifelong learning. A study conducted in China identified a strong association between IL, school effectiveness and lifelong learning (Feng & Ha, 2015). Another mixed methods study reported low confidence of Scotland teachers in finding and using research information. About 312 teachers and 78 head teachers were interviewed and results found lack of relevant skills and knowledge. The study suggested that IL skills should be developed among the respondents (Williams & Coles, 2007). Usang, et.al. (2007) also outlined that lack of IL skills was one of the significant barriers, hindered research productivity of academic staff in Nigeria. The study recommends regular trainings on IL skills in higher education institutes. Similar study identified that web-based IL training enabled university academic staff to do quality research in one of the states of Nigeria (Christopher & Iyabo, 2013).

A Study with specific reference to science faculty and students in University of California revealed less use of evidence-based practice among residency physicians (Ramos, Cheid & Schafer, 2003). Another study of teachers' perceptions indicated less use of academic sources among science students of several Boston-area colleges. Teachers considered it a serious threat to research quality and integrity (Perry, 2017). The situation is not very different in developing countries, a research work conducted in Bangladesh about faculty information needs and seeking highlighted gaps in information searching and evaluating process (Mostofa, 2013).

In Pakistan, several studies (Batool, Rehman & Sulehri, 2021; Batool & Sheila, 2019; Batool & Khalid, 2012; Ullah & Ameen, 2014) recorded the importance and status of IL skills, however, mostly are focused on students' perceptions. These research works identified low level of advanced IL skills among respondents. Also, prior studies reported slow progress of IL in the country (Ullah & Ameen, 2014). However, one significant work (Rafique, 2014) assessed university faculty IL skills. This study found lack of such skills among university teachers as they were not able to search and select relevant

information sources. This study suggested regular and comprehensive IL programs for higher education.

The above reviewed literature pointed out that status of IL skills among faculty members has been less researched in the country. Therefore, the present study aims to fulfil this literature gap by identifying IL skills status of mathematics discipline faculty members.

The study attempts to answer the following research question:

- What are the IL skills of mathematics faculty members in the public-sector universities of the Punjab?

Methods and Procedures

The study employed a quantitative research approach and a structured questionnaire based on SCONUL Seven Pillars of Information Literacy, was developed. The instrument comprised two parts: (1) demographic information, and (2) IL skills. In the first part, demographic details of the participants (i.e. gender, designation, qualification, nature of job and experience) were asked. The second part covered SCONUL-7 Pillars of Information Literacy including (1) identification of need for information; (2) assessment of current knowledge and identification of gaps; (3) construction of strategies for locating information and data; (4) location and accessibility of information and data needed; (5) reviewing, comparison, and evaluation of information and data; (6) professional and ethical organization of information; (7) application, presentation, synthesis, and dissemination of information. Total 41 items were devised to cover the seven constructs. A 5-point Likert-type scale from 1=strongly disagree to 5=strongly agree was used to measure each item. Four experts were enticed to check the content validity of items and necessary modifications were made to the draft of questionnaire. Pre-testing process was carried out among 20 volunteer faculty members of mathematics from two private universities to ensure reliability. Cronbach's alpha (CA) was applied to check the internal consistency and reliability of the scale. A determined value of CA (.926) was found, which is above the reasonable value.

The population of the study comprised all faculty members from mathematics departments of HEC recognized public sector universities of the Punjab. There were total 36 public sector universities in the Punjab; only twenty universities were offering academic programs in mathematics (list of these universities along with the number of respondents from each is provided as Appendix A). Total 300 faculty members were listed after visiting the websites of these universities. Questionnaires were sent to all the faculty members through personal visits, email and postal service. After repeated follow up calls, 185 filled questionnaires were received. The data were analyzed using SPSS-24.

Findings

Demographic Information of Participants

The first part of the questionnaire covers demographic information of the participants regarding (i) gender (ii) designation, (iv) qualification, (v) nature of job and (vi) teaching experience and is presented in Table 1. Gender distribution of the respondents showed that more than fifty percent respondents were male with a reasonable representation of female respondents (45%) as well. Almost 75% of the respondents were junior faculty members either lecturers (33.5%) or assistant professors (41%) while one quarter held senior faculty positions such as associate professors (16.2%) or full professors (9.2%). The data showed that the majority of the respondents had research degree either PhD (52.2%) or MPhil (38.4%). Only a few respondents (5.4%) had master's degree. Teaching experience of the participants showed that most of the respondents (65, 35%) had 1 to 5 years teaching experience followed by 45 (24.3%) respondents who had 6-10. Forty one percent of the respondents had teaching experience of more than 10 years (Please see table 1for complete data). The demographic profile indicates diversity among the study respondents in terms of gender representation, length of service, and qualification level. A reasonable participation from all faculty ranks from junior to senior is also present.

Table 1

Demographic Profile of the Participants (N=185)

Demographic	**Frequency**	**Percentage**
Gender		
Male	101	54.6
Female	84	45.4
Designation		
Professor	17	9.2
Associate Professor	30	16.2
Assistant Professor	62	33.5
Lecturer	71	41.1
Qualification		
PhD	104	56.2
M.Phil	71	38.4
Master	10	5.4
Experience		
1-5 Years	65	35.1
6-10 Years	45	24.3
11-15 Years	32	17.3
Above 16 Years	43	23.2
Nature of Job		
Permanent	170	92
Contractual	15	8

IL Skills of Mathematics Faculty Members

In the second part of the questionnaire, the respondents were asked to assess their IL skills based on SCONUL Seven Pillars of IL. The purpose of this section was to answer the research question of the study. The data analysis is presented and discussed under the following sections.

Identify: Identification of need for information.

First component of the SCONUL model is "identify". The respondents were asked to assess their ability to identify the need of information through seven statements using a 5-point Likert-type scale. Majority of the faculty members (mean=3.94) agreed that they were able to identify a search topic or question and could define it using simple terminology. They agreed that they were able to take personal responsibility for an information search (mean=3.92) and could manage time effectively to complete a search (mean=3.91). The remaining four statements (table 2) got mean scores close to four that indicates that the academics had the ability to identify their need for information. The overall mean score of this first pillar of SCONUL model is 3.86 which indicates that the respondents considered that they are confident in performing the tasks related to the identification of need for information.

Table 2

Identify: Identification of Need for Information (N=185)

Statements	**Mean**	**SD**
I can identify a search topic/question and define it using simple terminology	3.94	.763
I can take personal responsibility for an information search	3.92	.814
I can manage time effectively to complete a search	3.91	.880
I can use background information to underpin the search	3.89	.843
I can recognize a need for information and data to achieve a specific end and define limits to the information need	3.82	.779
I can identify a lack of knowledge in a subject area	3.70	.930
Identify: Identification of need for information	***3.86***	***.615***

Scale: 1=Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree, SD=Standard Deviation

Scope: Assessment of current knowledge and identification of gaps.

The second pillar of SCONUL model is "scope". Here five items were asked to explore the respondents' ability to assess their current level of

knowledge and identification of gaps. Descriptive result in Table 3 indicates that the faculty members were able to assess their *current level of knowledge. They also had an ability to identify gaps in their knowledge about a topic.* Specifically, the majority of the respondents were able to identify the available search tools, such as general and subject specific resources (mean=3.97). They were able to identify the best information resources to meet their need along with the different formats in which information may be provided (mean=3.96). The faculty members were able to articulate their current knowledge on a topic (mean=3.94), along with the identification of any information gaps (mean=3.89).

Table 3

Scope: Assessment of Current Knowledge and Identification of Gap (N=185)

Statements	**Mean**	**SD**
I can identify the available search tools, such as general and subject specific resources at different levels	3.97	.748
I can identify which types of information resources will best meet the need	3.96	.710
I can identify different formats in which information may be provided	3.96	.713
I can articulate current knowledge on a topic	3.94	.673
I can identify any information gaps	3.89	.840
Scope: Assessment of current knowledge and identification of gap	***3.94***	***.532***

Scale: 1=Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree, SD=Standard Deviation

Plan: Construction of strategies for locating information and data.

Plan is the third pillar of SCONUL model and five items were asked from the respondents to judge their skills of constructing strategies for locating information. The results presented in Table 4 shows that a vast majority of the respondents were able to state search question clearly using appropriate language (mean=4.02). They could define a search strategy by using appropriate

keywords and concepts, defining and setting limits (mean=3.99). They could identify specialized search tools appropriate to each individuals' information need (mean=3.94) and appropriate search techniques to use as necessary (mean=3.93). Similarly, they were also able to identify controlled vocabularies and taxonomies to aid in searching (mean=3.75). Overall, results demonstrate that respondents had the ability to plan and construct strategies to locate needed information and data.

Table 4

Plan: Construction of Strategies for Locating Information and Data (N=185)

Statements	**Mean**	**SD**
I can state search question clearly and in appropriate language	4.02	.741
I can define a search strategy by using appropriate keywords and concepts, defining and setting limits	3.99	.797
I can identify specialist search tools appropriate to each individual information need	3.94	.791
I can identify appropriate search techniques to use as necessary	3.93	.707
I can identify controlled vocabularies and taxonomies to aid in searching if appropriate	3.75	.842
Plan: Construction of strategies for locating information and data	***3.92***	***.597***

Scale: 1=Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree, SD=Standard Deviation

Gather: Locate and access the needed information and data.

Fourth pillar of SCONUL is "gather", consisted of eight items, which were asked from the faculty members to determine whether they are able to locate and access their needed information and data. The results presented in Table 5 demonstrated that the majority of the faculty members claimed of having ability to use appropriate techniques to collect new data (mean=3.97). They were able to keep themselves up to date with new information (mean=3.96) and could use and find online, printed personal and expert help (mean=3.96). They were confident to engage with their community to share information (mean=3.87). They considered themselves able to access, read and download full text printed and digital information (mean=3.86). They believed that they could construct complex searches appropriate to different digital and

print resources (mean=3.81). Overall, results indicate that the respondents were confident in gathering, locating and accessing needed information and data.

Table 5

Gather: Locate and Access the Needed Information and Data (N=185)

Statements	**Mean**	**SD**
I can use appropriate techniques to collect new data	3.97	.814
I can keep up to date with new information	3.96	.772
I can use online and printed help and can find personal, expert help	3.96	.751
I can engage with their community to share information	3.87	.824
I can access full text information, both print and digital, read and download online material and data	3.86	.833
I can construct complex searches appropriate to different digital and print resources	3.81	.824
I can identify when the information need has not been met	3.76	.806
I can use a range of retrieval tools and resources effectively	3.75	.836
Gather: Locate and access the needed information and data	***3.86***	***.554***

Scale: 1=Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree, SD=Standard Deviation

Evaluate: Review, compare and evaluate information and data

Evaluate is the fifth pillar of SCONUL model. Here, the respondents were asked to gauge their ability of reviewing, comparing and evaluating information and data. Table 6 reveals that the majority of the faculty members were able to read critically, identifying key points and arguments (mean=4.11). They were able to critically appraise and evaluate their own findings and those of others (mean=4.08) and could assess the credibility of the data gathered (mean=3.91). They considered themselves able to assess the quality, accuracy, relevance, bias, reputation and credibility of the information resources found (mean=3.89). Overall, results portray a positive picture of faculty members in terms of their ability to review, compare and evaluate the information and data.

Table 6

Evaluate: Review, Compare and Evaluate Information and Data (N=185)

Statements	**Mean**	**SD**
I can read critically, identifying key points and arguments	4.11	.650
I can critically appraise and evaluate my own findings and those of others	4.08	.762
I can assess the credibility of the data gathered	3.91	.792
I can assess the quality, accuracy, relevance, bias, reputation and credibility of the information resources found	3.89	.800
Evaluate: Review, compare and evaluate information and data	***3.99***	***.586***

Scale: 1=Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree, SD=Standard Deviation

Manage: Organize information professionally and ethically

Table 7shows the descriptive statistics of respondents' opinion about "organizing information professionally and ethically". This pillar of SCONUL model consisted of four items. The results show that most of the faculty members claimed having awareness of issues relating to the rights of others (ethics, data protection, copyright, plagiarism and any other intellectual property issues) (mean=4.08). The respondents reported that they met the standard of conduct for academic integrity and were able to cite printed and electronic sources using suitable referencing styles (mean=4.03). They were also able to use various bibliographical software (i.e. Endnote, Mendeley, etc.) to manage information (mean=3.72).

Table 7

Manage: Organize Information Professionally and Ethically(N=185)

Statements	**Mean**	**SD**
I can demonstrate awareness of issues relating to the rights of others including ethics, data protection, copyright, plagiarism and any other intellectual property issues	4.08	.758
I can cite printed and electronic sources using suitable referencing styles	4.03	.817
I can meet standards of conduct for academic integrity	4.03	.820
I can use bibliographical software (endnote, Mendeley, etc.) if appropriate to manage information	3.72	1.009
Manage: Organize information professionally and ethically	***3.96***	***.655***

Scale: 1=Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree, SD=Standard Deviation

Present: Application, presentation, synthesis and dissemination of information

The last pillar of SCONUL model of IL is "Present". The respondents were asked to measure their ability of presenting, synthesizing and disseminating information. According to the results (Table 8), majority of the respondents claimed that they were able to analyze and present data appropriately (mean=4.05) and able to summarize documents and reports verbally and in writing (mean=4.02). They were also able to select appropriate publications outlets (mean=3.95); to synthesis and appraise new and complex information from different sources (mean=3.94); and to incorporate new information into the context of existing knowledge (mean=3.93). They had ability to communicate effectively using appropriate writing styles in a variety of formats (mean=3.90). Overall, the respondents showed a highly positive response regarding all the components of IL skills.

Table 8

Present: Application, Presentation, Synthesis and Dissemination of Information (N=185)

Statements	**Mean**	**SD**
I can analyze and present data appropriately	4.05	.686
I can summarize documents and reports verbally and in writing	4.02	.703
I can select appropriate publications and dissemination outlets in which to publish	3.95	.771
I can synthesis and appraise new and complex information from different sources	3.94	.749
I can incorporate new information into the context of existing knowledge	3.93	.766
I can communicate effectively using appropriate writing styles in a variety of formats	3.90	.719
I can develop a personal profile in the community using appropriate personal networks and digital technologies	3.89	.793
I can use the information found to address the original question	3.87	.755
Present: Application, presentation, synthesis and dissemination of information	***3.95***	***.523***

Scale: 1=Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree, SD=Standard Deviation

Discussion and Limitations

The present study aimed to assess IL skills of Mathematics faculty members in higher education institutes of Pakistan. The study explored their ability to identify the information need and sources; to plan strategies for locating, accessing, evaluating and ethically applying the needed information effectively and efficiently. The findings revealed that mathematics faculty members perceived themselves as information literate. They considered themselves as competent in all the seven sub-dimensions or pillars of IL. These

findings may be overestimation of the participants and can be named as Dunning-Kruger Effect, which is a cognitive bias of illusionary superiority. The prior research indicates that people tend to overestimate their IL skills in most of the cases (Mahmood, 2016). The other reason may the nature of job of the study participants. As it is obvious that in universities, teaching and research are two most important work activities of faculty members and they have to put substantial amount of time and effort to access, consult and apply information available in multiple formats. Their constant exposure with information sources may lead them to learn how to identify, locate, filter, organize, store and use information efficiently, effectively and ethically.

A close look of individual items-based analysis revealed that mathematics faculty members were less confident with the advanced level of IL skills if compared with those of basic level. For example, use of controlled vocabularies and taxonomies to aid in searching, use of retrieval tools and resources to locate and access needed information and application of bibliographical software (Endnote, Mendeley etc.) to manage retrieved information were the items, representing the advanced IL skills but got low score. These findings may have serious implications to teaching and research productivity of university faculty members. While more research needs to be conducted, it might be the key contributing factor for creativity crisis in universities as only one university got place in top five hundred universities as per QS ranking for mathematics subject for the year 2020. It is worthy to mention that unlike Times Higher Education (THE) and Shanghai academic ranking agencies, QS denotes a considerable amount of weightage to research and publications indexed in Clarivate Analytics and Scopus.

The findings implied that university authorities should plan out to develop IL programs for faculty members particularly offering advanced level of IL instructions as faculty members considered these skills deficient. A number of studies indicated the importance of IL skills in teaching and research.

The study has some limitations also. We surveyed faculty members from a single discipline while covering only public sector universities. Future

studies may consider both public and private sector universities and can adopt qualitative approach for more in-depth explore of this phenomenon. Moreover, we have presented our findings based on descriptive statistics only while future researchers can consider applying parametric statistics to see relationships or associations of demographic data such as gender, qualification, designation, and age with IL skills.

References

Batool, S. H., ur Rehman, A., & Sulehri, I. (2021). The current situation of information literacy education and curriculum design in Pakistan: A discovery using Delphi method. *Library Hi Tech*. ahead-of-print. https://doi.org/10.1108/LHT-02-2021-0056

Batool, S. H., & Webber, S. (2019). Mapping the state of information literacy education in primary schools: The case of Pakistan. *Library & Information Science Research*, *41*(2), 123-131.

Batool, S. H., & Mahmood, K. (2012). Teachers' conceptions about information literacy skills of school children. *Pakistan Journal of Library and Information Science*, *13*.

Christopher, O., & Iyabo, M. (2013). Impact of information literacy skills on academic staff research productivity in Nigerian Federal Universities. *Information and Knowledge Management*, *3*, 9–18.

Rafique, G. M. (2014). Information literacy skills of faculty members: A study of the University of Lahore, Pakistan. *Library Philosophy and Practice*. http://digitalcommons.unl.edu/libphilprachttp://digitalcommons.unl.edu/libphilprac/1072

Feng, L., & HA, J.-L. (2016). Effects of Teachers' Information Literacy on Lifelong Learning and School Effectiveness. *Eurasia Journal of Mathematics, Science and Technology Education*, *12*(6), 1653-1663.

Higher Education Commission, Pakistan [HEC]. (n.d.). Continuing Professional Development Courses. Retrieved from: https://hec.gov.pk/english/services/faculty/ELTR/Pages/Continuous%20Professional%20Development%20Courses.aspx

Infolit, CILIP [The Library & Information Association]. (n.d.). Definitions and Models. Retrieved from https://infolit.org.uk/definitions-models/.

Johnston, B., & Webber, S. (2003). Information Literacy in Higher Education: A review and case study. Studies in Higher Education, 28(3), 335–352.

Mostofa, S. M. (2013). A study of information needs and seeking behavior of faculty members of Darul Ihsan University in Bangladesh. *Library Philosophy and Practice* https://digitalcommons.unl.edu/libphilprac/983

Perry, H. B. (n.d.). Information literacy in the sciences: Faculty perception of undergraduate student skill. *College & Research Libraries*, *78*(7), 964.

Ramos, K., Lins Cheid, R., & Schafer, S. (n.d.). Real-time information-seeking behavior of Residency Physicians. *Family Medicine-Kansas City-*, *35*(4), 257-260. Ullah, M., & Ameen, K. (2014). Current status of information literacy instruction practices in medical libraries of Pakistan. *Journal of the Medical Library Association*, *102*(4), 281–287.

Usang, B., Basil, A., Lucy, U., & U. Franca, U. (2007). Academic staff research productivity: A study of Universities in South-South Zone of Nigeria. *Educational Research and Review*, *2*(5), 103–108.

Williams, D., & Coles, L. (2007). Teachers' approaches to finding and using research evidence: An information literacy perspective. *Educational Research*, *49*(2), 185–206.

Yeh, C. C., Chang, D. F., & Chang, L. Y. (2011). Information Technology Integrated into Classroom Teaching and Its Effects. *US-China Education Review*, *778-775*.

Appendix A

University wise Distribution of Respondents (N=185)

Sr.	**University Name**	**Frequency**	**Percentage**
1	Government College University Lahore	31	16.2
2	Government College University Faisalabad	15	8.1
3	University of the Punjab	15	8.1
4	University of Engineering & Technology	15	8.1
5	University of Sargodha	12	6.5
6	University of Education	10	5.4
7	Lahore College for Women University	10	5.4
8	Government College Women University Madina Town Faisalabad	9	4.9
9	University of Gujrat	8	4.3
10	University of Okara	8	4.3
11	Kinnaird College for Women University	8	4.3
12	Bahauddin Zakariya University Multan	7	3.8
13	Government College Women University Sialkot	6	3.2
14	Ghazi University Dera Ghazi Khan	6	3.2
15	The Government Sadiq College Women University Bahawalpur	4	2.2
16	Fatima Jinnah Women University Rawalpindi	4	2.2
17	The Islamia University Bahawalpur	4	2.2
18	The Women University Multan	4	2.2
19	The University of Narowal	3	1.6
20	Khwaja Farid University	1	0.5
	Total	**185**	**100.0**