Measuring the research performance of LIS academicians in Pakistan using Google Scholar, Scopus and Web of Science databases

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Abstract

Purpose: This study ascertains and compares the quantity of publications, citations, h-indices, rankings and the most cited papers of Pakistani LIS academicians in Google Scholar (GS), Scopus and World of Science (WOS) databases.
Design/methodology/approach: The publications of 32 LIS faculty members were scrutinized. Searches by academicians' name were performed in GS, Scopus and WOS in March 2021.
Research limitation(s): In case of co-authored publications, full credit was awarded to each author. Moreover, all citations received by a publication were counted and there was no exclusion for self-citations. The databases update their data very promptly, therefore, the time this paper get published the data would have changed.
Key findings: Seven LIS faculty members from GS, two each from Scopus and WOS had an h-index in double figure. Moreover, Khalid Mahmood and Kanwal Ameen both from the University of the Punjab, Lahore were ranked first and second respectively in all three databases. A significant correlation was observed in the h-indices of three databases. The most cited article got 185 citations in GS, 40 in Scopus and 19 in WOS.
Practical Implication(s): Citation analysis, despite limitations, is an important indicator for measuring the research performance of scholars. However, GS, Scopus and WOS provide different h-index ratings for LIS faculty members.
Contribution to knowledge: It is the first ever study on the subject as no study has evaluated the research performance of LIS faculty members in Pakistan as a whole.
Paper type: *Research*
Keyword(s): H-index, Google Scholar, Scopus, Web of Science, LIS research, Research performance

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Introduction

Library and Information Science (LIS) academicians are supposed to lead the LIS profession; therefore, publishing peer reviewed scholarly work is one of the ways to demonstrate academic professional leadership (Kwanya, 2020). Consequently, universities in Pakistan require at least 10 and 15 publications in Higher Education Commission (HEC) recognized journals for the recruitment of Associate Professor and Professor respectively along with PhD degree (Higher Education Commission, 2021). There are 13 LIS schools (departments) in Pakistan which offer LIS degrees ranging from bachelor to doctorate level (Ullah, 2021).

Citation analysis has been employed to assess the impact of publications in various disciplines including LIS. Despite limitations, citation analysis provides a better indicator of prestige and influence of an article in comparison with publication counts. The Hirsch-index (h-index) was introduced by Hirsch (2005). "A scientist has index h if h of his/her Np (total papers) papers have at least h citations each, and the other (Np − h) papers have no more than h citations" (Jan & Anwar, 2013, p. 3). For example, if an author has eight publications and each have been cited at least eight times then the author's h-index is eight. The other publications with less than eight citations will not contribute to the h-index. The h-index is used to assess the researchers' impact in their respective disciplines and ranking of the researchers and organizations. However, it is not a right indicator for novice researchers (Budd, 2015).

Google Scholar (GS) is a search engine that searches the scholarly literature such as books, theses, research papers, technical reports, conference proceedings, etc accessible across the web (Yang &Meho, 2006). It also provides citation counts and link to citing and cited publications. However, to calculate h-index the authors must create and maintain their Google Scholar profile. It has no list of specific journals, nevertheless, it is the most comprehensive resource of scholarly publications (De Groote & Raszewski, 2012). Elsevier Scopus and Web of Science (WOS) of Clarivate Analytics are multidisciplinary indexing, abstracting and citation databases. They link scholarly data and are considered exceptionally useful for obtaining

citation counts and h-index of authors. They index selected peer-reviewed journals, conference proceedings, book series, etc which meet their specific criteria. SCOPUS indexes 278 LIS journals in "Library Information Sciences" category (as of March 2021). Whereas WOS Core Collection indexes 166 LIS journals, 87 from Social Science Citation Index (SSCI) and 79 from Extended Science Citation Index (ESCI) in "Information Science & Library Science" category as per the lists updated on March 15, 2021 (Scopus, 2021; Web of Science, 2021).

Objectives

The objectives of this paper are to ascertain and compare the quantity of publications, citations, h-indices and ranking of Pakistani LIS faculty members in GS, Scopus and WOS databases. In addition, this study also aims to identify the top-10 most cited papers by LIS faculty members in Pakistan.

Problem Statement

While many studies analyzed the research performance of Pakistani LIS professionals and mostly focused on publication counts and how different factors affect the research performance of researchers. However, no study has analyzed the impact, visibility and presented comparison of research performance of Pakistani LIS academicians in different databases. Such an analysis has the benefits to provide widespread assessment of scholars' research performance. To bridge the research gap, the study analyzed the data in public domain to answer the following research questions:

- What are the total number of publications, citations, h-indices and rankings of Pakistani LIS faculty members in the GS, Scopus and WOS?
- Is there any correlation between the h-indices of GS, Scopus and WOS?
- What are the top ten highly cited publications by Pakistani LIS faculty members?

This study will encourage researchers in other countries and discipline to analyze data from multiple citation databases to provide comprehensive assessment of research performance, citations, h-index scores and ranking of scholars. The study is

also important for those who intent to use suitable databases for the assessment of academicians' research output and its impact in their employment and promotion deliberations.

Literature Review

Several studies have evaluated the research performance of LIS professionals. Meho and Spurgin (2005) opined that several databases might be searched to assess the research output of LIS faculty members and schools. Yang and Meho (2006) discoursed that WOS, Scopus and GS together identified considerable number of citations for an author. Erfanmanesh et al, (2010) reported that the number of citations increased significantly as compared to number of papers published in the field of LIS in WOS from 1998 to 2007. Moreover, top ten most contribution LIS institutions were from the USA. De Groote and Raszewski (2012) also found variations in the h-index ratings of nursing faculty from GS, Scopus and WOS. However, they found strong correlation between the h-indices of these databases. Budd (2015) founds that few LIS academicians contribute to the LIS literature and programs that are part of ischools, play a leading role in producing research publications. Jabeen, et al (2015) carried out a scientometric study of 40 LIS journals indexed in WOS from 2003 to 2012. They found that LIS professionals from the USA contributed 43% of the total publications and the contribution from Southeast Asian countries was meager. Borrego, Ardanuy and Urbano (2018) reported that research contribution of LIS professionals in collaboration with faculty members is increasing in non-LIS journals. Maurya, Shukla and Ngurtinkhuma (2019) revealed that Israel, Turkey and Iran from the Middle East were the leading contributors to Scopus indexed LIS journals during 1996 and 2015. Hugar, Bachlapur, and Anandhalli (2019) found that 1422 bibliometric studies were published in Web of Science indexed journals from 2013 to 2017. Kwanya (2020) found that the research publication productivity of Information Science faculty members in Kenya was low as nearly one-fourth of the academicians never published in GS indexed journals.

In Pakistan, Ahmad and Warraich (2013) revealed that LIS faculty members and students affiliated with LIS schools in Punjab preferred to conduct research in collaboration and published more papers in foreign journals than local journals. Jan and Anwar (2013) found that only 11 out of 53 LIS faculty members in Pakistan contributed 118 papers and received 536 citations in Google Scholar up to 2011. In addition, LIS department at the University of the Punjab contributed 99 publications and received 494 citations and was ranked first. Khurshid, (2013) revealed that the contribution of LIS researchers to foreign LIS journals was reasonable in quantity, however, the quality of papers was below average as per their JCR impact factor scores. Naseer and Mahmood (2014) identified that LIS researchers in Pakistan mostly focused on following subject areas: "information treatment for information services", "libraries as physical collection" and "industry, profession and education" while less attention was given to other subject areas. Ali and Richardson (2016) found that the contribution of LIS researchers from the province of Punjab was comparatively higher than other regions/provinces in Pakistan.

Sulehri, Najmi and Chaudhry (2017) documented that the research productivity of LIS professionals with research degrees were higher than master's degree holders and LIS professional serving in public sector institutions were more productive in research as compared to those serving in private sector institutions. They also identified that lack of time due to official workload and lack of guidance were the major obstacles in conducting research. Ali and Richardson (2019) revealed that 45 LIS professionals from Pakistan published 858 articles with 5.42 average number of citations per article. Muhammad and Zhiwei (2020) revealed that Rubina Bhatti, professor at The Islamia University of Bahawalpur, has contributed 26 out of 83 articles published by Pakistani female authors from 2008 to 2020. Siddique, et al, (2021) conducted a bibliometric study to assess the research productivity of Pakistani LIS professional from 1957 to 2018 using WOS, Scopus, LISTA and LISA databases. They found that Institute of Information

Management, University of the Punjab was the major contributor from Pakistan to LIS literature.

Gupta, Ganaie and Rehman (2022) examined the research contribution of LIS researchers in South Africa using WOS database and found upward growth in the research output over the time. Gupta and Chakravarty (2022) revealed that five BRICS nations collectively contributed about 3% of the world total LIS publications and China contributed the greatest number of publications. Siddique, et al (2023) evaluated the research output of LIS researchers in 22 countries of the Arab league using SCOPUS database. They observed upward trend in the growth of publications from 1951 to 2021. They also found that Kuwait and Saudi Arabia were the top contributing countries.

Previous studies have examined the research performance of LIS professionals; however, it is the first ever study on the subject as no study has measured the research performance of LIS faculty members in Pakistan as a whole.

Methodology

A list of 41 full-time and PhD degree holder faculty members from 13 LIS schools in Pakistan was compiled and were originally included in the study. The website of each Library and Information Science (LIS) and Information Management (IM) schools (institutes/departments) were consulted to identify the currently active LIS/IM faculty members employed at each institute/department. Head of the department or senior faculty member from each school was also contacted through phone calls to confirm the accuracy of list, qualification, and designation of each academician from their respective institute/department.

In March 2021, the investigator checked the Google Scholar profile of each faculty member and whether it was updated or not. It was found that most of the faculty members had updated Google Scholar profile, therefore, the data such as total number of publications, total citations and h-index rating were easily collected from their respective profiles. Since, eight faculty members had no Google Scholar profile or it was not updated, therefore, the investigator installed a free software

program called Harzing's Publish or Perish (POP) to search the number of publications, citations and h-index, for eight LIS faculty members who never had any Google Scholar profile. The irrelevant publications were deleted manually from retrieved publications before recording the required data.

Out of 41, nine faculty members had published less than 10 publications in GS. On that account, the investigator, measured the research performance of 32 faculty members as only those faculty members were included in the study who had PhD degree and published 10 or more publications in journals indexed in Google Scholar.

The investigator executed searches by author's name in GS, Scopus and Web of Science Core Collection in March 2021. The investigator extracted the total number of publications, total citations and h-index rating for 32 academicians who fulfilled the criteria for inclusion in the study. Moreover, the investigator confirmed the identity of each faculty member by verifying the university affiliation and subject area. The irrelevant publications were deleted before recording the required data.

All types of publications such as articles, editorials, book chapters, conference papers, etc. indexed in the databases were included in the study. In case of co-authored publications, the researcher awarded full credit to each author. Furthermore, all citations retrieved by any author were counted without excluding self-citations.

Total number of publications, citations and h-index for each faculty members from GS, Scopus and WOS Core Collection were updated on March 30, 2021, and reported separately. Faculty members were ranked from highest to lowest according to the h-index in GS, Scopus and WOS separately. If there was a tie, the faculty members with a greater number of citations were ranked higher. In case of same h-index and number of citations, the faculty members with a greater number of articles were ranked higher.

Findings

Demographic Information of LIS Faculty Members

Out of 41 PhD faculty members, 32 fulfilled the criteria for inclusion in the study. Table 1 provides the demographic information of LIS faculty members in Pakistan.

Table 1: Demographic information of LIS faculty members (N=32)

Demographics	**Frequency**	**Percentage**
Gender		
Male	21	66%
Female	11	34%
Sector		
Public	31	97%
Private	1	03%
Designation		
Assistant Professor	16	50%
Associate Professor	9	28%
Professor	4	13%
Lecturer	3	09%
Province		
Punjab	20	63%
Khyber Pakhtunkhwa	4	13%
Sindh	4	13%
Islamabad Capital Territory	3	09%
Baluchistan	1	03%

Table 1 shows that most faculty members were male and serving in universities located in the province of Punjab. Vast majority of faculty members were employed in public sector universities and half of them were assistant professors.

Ranking of LIS Faculty Members in GS, Scopus and WOS

Appendix presents the names of faculty members in rank order along with number of articles, citations, and h-index from Google Scholar. The number of articles, citations, and h-indices of each faculty member from Scopus and WOS along with their rank are also presented separately in Appendix.

Appendix shows that Professor Khalid Mahmood and Professor Kanwal Ameen from the Institute of Information

Management (IIM), University of the Punjab, Lahore were ranked first and second respectively in all three databases. Khalid Mahmood had an h-index of 32, 18 and 10 from GS, Scopus and WOS respectively. Kanwal Ameen (now Vice Chancellor at University of Home Economics, Lahore) had an h-index of 24, 14 and 10 in GS, Scopus and WOS respectively. Professor Rubina Bhatti from Department of Library and Information Science, Islamia University of Bahawalpur, Bahawalpur was ranked third in GS (h-index 20) and Scopus (h-index 9), however, she was ranked 6th in WOS (h-index 4). Associate professor Muhammad Rafiq from IIM, University of the Punjab, Lahore was ranked third in WOS (h-index 5). Though, he was ranked fourth in GS (h-index 31) and Scopus (h-index 9).

In addition to that, seven LIS faculty members from GS, two each from Scopus and WOS had an h-index in double figures. Seventeen faculty members had h-index between 6 and 9 and eight had h-index between 1 and 5 in GS. Nine faculty members had h-index between 6 and 9, 19 had h-index between 1 and 5 and two had zero h-index in Scopus. However, two faculty members had five h-index, 25faculty members had h-index between 1 and 4 and three had zero h-index in WOS.

Correlation between H-Indices from GS, Scopus and WOS

Table 2 provides results of correlation between h-indices from GS, Scopus and WOS.

Table 2. Correlation between h-indices from GS, Scopus and WOS

	GS	**Scopus**	**WOS**
Mean h-index	8.66	5.28	2.26
GS			
Pearson	1	.967**	.884**
Sig. (2-tailed)		.000	.000
N	32	32	32
Scopus			
Pearson	.967**	1	.913**
Sig. (2-tailed)	.000		.000
N	32	32	32
WOS			

Pearson	.884**	.913**	1
Sig. (2-tailed)	.000	.000	
N	32	32	32

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

All h-indices obtained for 32 LIS faculty members from GS, Scopus and WOS were found to be strongly correlated. As the strongest correlations were found between h-indices of GS and Scopus ($r(30) = .967$, $p < .001$), between GS and WOS ($r(30) = .884$, $p < .001$), and between Scopus and WOS ($r(30) = .913$, $p < .001$).

Top-Ten Highly Cited Publications

Table 3 enlists the top ten highly cited publication in GS, citations in Scopus and WOS are also given in the table for those publications indexed in these databases.

Table 3. Top 10 most highly cited articles by Pakistani LIS faculty

Rank	Article	GS Citations	Scopus Citations	WOS Citations
1	"Awan, M. R., & Mahmood, K. (2010). Relationship among leadership style, organizational culture and employee commitment in university libraries. Library Management, 31(4/5): 253-266."	185	40	19
2	"Mahmood, K., & Richardson, J. V. (2011). Adoption of Web 2.0 in US academic libraries: A survey of ARL library websites. Program: Electronic Library and Information Systems, 45 (4): 365-375."	180	77	48
3	"Khan, S. A., Bhatti, R. (2012). Application of social media in marketing of library and information services: A case study from	178	59	Not indexed

	Pakistan. Webology, 9(1): Article No. 93."			
4	"Arif, M. & Mahmood, K. (2012). The changing role of librarians in the digital world: Adoption of Web 2.0 technologies by Pakistani librarians. *The Electronic Library*, *30* (4), 469-479."	141	46	34
5	"Tahir, M., Mahmood, K., & Shafique, F. (2010). Use of electronic information resources and facilities by humanities scholars. *The Electronic Library*, *28*(1): 122-136."	117	41	24
6	"Mahmood, K. (2003). A comparison between needed competencies of academic librarian and LIS curricula in Pakistan. The Electronic Library, 21(2): 99-109."	107	Not indexed	Not indexed
7	"Bashir, S., Mahmood, K., & Shafique, F. (2008). Internet use among university students: A survey in university of the Punjab, Lahore. Pakistan Journal of Information Management & Libraries, 9: 49-65."	102	Not indexed	Not indexed
8	"Tahir, M. Mahmood, K., & Shafique, F. (2008). Information needs and Information- seeking behavior of arts and humanities teacher: A survey of the university of the Punjab, Lahore, Pakistan. Library Philosophy and Practice (e-journal), Article No. 227."	96	14	Not indexed

9	"Richardson, J. V., & Mahmood, K. (2012). eBook readers: User satisfaction and usability issues. *Library Hi Tech*, *30*(1), 170-185."	94	34	20
10	"Mahmood, K. (2016). Do people overestimate their information literacy skills? A systematic review of empirical evidence on the Dunning-Kruger effect. *Communications in Information Literacy*, *10*(2): 199-213."	93	Not indexed	Not index ed

Table 3 depicts that top-10 highly cited publications received citations between 93 and 185in GS, 14 and 77in Scopus database and 19 and 48 in WOS. Moreover, out of ten publications, seven were also indexed in Scopus and five in WOS. The top-10 highly cited papers were published during 2003 and 2016. Professor Khalid Mahmood affiliated with Institute of Information Management, University of the Punjab was principal author of three publications and co-author of six publications.

Discussion

The quality of research papers is evaluated by personal judgement of peers, quality of journal in which it appears and number of citations that it has received in other researchers' papers. Academic institutions all over the world uses citation-based quality evaluation measures such as impact factor of journals and h-index of authors for recruitment, promotion, tenure decisions and excellence award selection in addition to other criteria (Yang & Meho, 2006). In this study, it is observed that the h-index of LIS faculty members in GS is higher than Scopus and h-index in Scopus is also higher than WOS. It is due to the reason that Scopus is less inclusive of journals than GS and WOS than Scopus. Therefore, higher number of publications and their citations can be found in GS and Scopus as compared to WOS (Yang & Meho, 2006).

This study revealed that few LIS faculty members had h-index 9 or above in Scopus and WOS. This study also found that in WOS database only two academicians had an h-index of 10 while Gupta and Chakravarty (2022) documented that the top researchers from BRICS nations got an h-index of 20 and above. It shows that the h-index of Pakistani academicians is lower than the researchers from BRICS nations. Amongst the LIS schools, the faculty members affiliated with the Institute of Information Management (IIM), University of the Punjab were the leading contributors. In this regard our findings agree with the outcomes of Jan and Anwar (2013) and Siddique et al, (2021) who also reported that IIM faculty members at the University of the Punjab are the major contributors to the LIS literature from Pakistan. Professor Khalid Mahmood and Professor Kanwal Ameen affiliated with IIM, University of the Punjab are the most contributing faculty members in all three databases. Also, among top 10 ranked faculty members, in all three databases, five were from the IIM.

Moreover, eight out of 10 top ranked faculty members in GS and Scopus ranking and seven out 10 in WOS ranking were affiliated with LIS schools located in the province of Punjab. These findings agree with the findings of Ali and Richardson (2016). Only one faculty member each from Khyber Pakhtunkhwa and Islamabad Capital Territory (IC) found place in top 10 ranked faculty members in GS ranking. Besides, only one faculty member from Khyber Pakhtunkhwa was listed in top ten in Scopus ranking and one each from Islamabad Capital Territory, Baluchistan and Khyber Pakhtunkhwa in WOS ranking. No LIS faculty member from Sindh province could find place in top 20 authors in all three databases. Therefore, the findings of the study indicate low quantity, quality and visibility of research publications by academicians from the provinces other than Punjab.

This study found a strong coloration between the h-index of three databases. Therefore, it suggests that the use of different databases will not significantly affect the ranking and h-index of scholars. However, our results also revealed that the h-indices of authors vary in various databases. Therefore, the h-

indices of authors may be compared within a specific database (De Groote & Raszewski, 2012).

In top ten highly cited papers Dr. Khalid Mahmood of IIM at the University of the Punjab is author or coauthor in 9 out of 10 papers (Table 4). Dr. Khalid Mahmood is also the only LIS researcher in South Asia, included in top two percent of the most cited author's list of scientists in the world (Baas, Boyack & Ioannidis, 2021). It is also pertinent to mention that the scholars with more years of publishing experience have more chances to get citations as compared to scholars with less years of publishing experience (Budd, 2015).

Conclusions

This study provides an analysis of data available in public domain to measure the research performance of LIS faculty members in Pakistan. The findings of this study depict that research performance of academicians affiliated with the LIS/IM schools in Punjab is remarkable as compared to the academicians affiliated with LIS schools located in other regions/provinces. Certainly, citation analysis, despite limitations, is an important indicator for measuring the research performance of scholars. However, GS, Scopus and WOS provide different h-index ratings for LIS faculty members. Therefore, it is suggested that multiple databases should be used for judging the research output. This study also suggests that the comparison among academicians should be done only within a specified database.

This study also found that only two faculty members had an h-index rating 10 or more in three indexing and abstracting databases. Consequently, the study recommends that the universities should support and motivate LIS faculty members to publish quality research articles in reputed journals. LIS academicians and researchers could use the findings of this study to improve their research output. Further studies are required to be carried out using survey methods and interviews to identify the barriers in publishing research articles in journals indexed in well repute databases.

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Name	Google Scholar				Scopus				Web of Science			
	Articles	Citations	H-index	Rank	Articles	Citations	H-index	Rank	Articles	Citations	H-index	Rank
Khalid Mahmood	202	3622	32	1	129	1131	18	1	50	410	10	1
Kanwal Ameen	162	1659	24	2	103	605	14	2	66	273	10	2
Rubina Bhatti	120	1192	20	3	64	308	9	3	20	65	4	6
Muhammad Rafiq	58	527	13	4	31	231	9	4	13	66	5	3
Nosheen Fatima Warraich	85	523	12	5	44	215	9	5	25	66	4	5
Asad Khan	46	359	12	6	24	123	7	6	10	46	4	9
Shafiq Ur Rehman	64	319	10	7	34	87	6	9	7	14	3	18
Shahkeel Ahmed Khan	19	446	9	8	16	127	5	12	4	17	2	19
Muhammad Arif	29	357	9	9	18	104	5	13	8	53	4	7
Haroon Idrees	70	250	9	10	24	54	4	18	8	16	2	20
Muhammad Asif Naveed	56	246	9	11	25	86	6	11	10	32	3	12

Salman Bin Naeem	59	233	9	12	27	86	6	10	12	31	3	13
Shamshad Ahmed	29	231	9	13	21	95	6	7	8	9	2	25
Munazza Jabeen	19	148	9	14	14	88	6	8	11	46	4	8
Amjid Khan	38	189	7	15	15	62	5	16	3	5	1	28
Alia Arshad	21	163	7	16	14	55	4	17	8	36	3	11
Syeda Hina Batool	31	158	7	17	25	70	5	15	14	28	3	16
Pervaiz Ahmad	32	134	7	18	8	41	4	22	5	29	3	15
Saira Hanif Soroya	37	126	7	19	22	51	4	19	21	37	3	10
Khursheed Ahmad	21	107	7	20	17	71	5	14	15	46	5	4
Munira Nasreen Ansari	21	208	6	21	7	38	3	27	1	6	1	27
Saeed Ullah Jan	68	142	6	22	15	46	4	21	4	13	2	21
Misbah Jabeen	11	93	6	23	7	48	4	20	7	29	3	14

Muhammad Shahid Soroya	31	87	6	24	7	19	3	29	8	10	2	23
Sajjad Ahmad	28	126	5	25	7	40	3	26	5	7	2	26
Amara Malik	26	145	4	26	12	49	3	25	11	25	3	17
Ghulam Murtaza Rafique	13	96	4	27	10	31	4	23	2	5	1	29
Waqar Ahmed	16	63	4	28	7	23	4	24	7	12	2	22
Ghalib Khan	21	32	3	29	10	32	3	28	5	10	2	24
Muhammad Waseem Zia	11	22	3	30	5	3	1	30	0	0	0	-
Rifat Parveen Siddiqui	15	1	1	31	0	0	0	-	0	0	0	-
Farhat Hussain	14	1	1	32	0	0	0	-	0	0	0	-
Total	1473	12005	277	32	762	4019	169	30	368	1442	96	29

Appendix. Number of articles, citations, h-indices and ranks of LIS faculty members