Research Publishing by Library and Information Science Scholars in Pakistan: A Bibliometric Analysis

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ABSTRACT

Scholarly communication plays a significant role in the development and dissemination of research outputs in library and information science (LIS). This study presents findings from a survey which examines the key attributes that characterize the publishing by Pakistani LIS scholars, i.e. academics and professionals, in national journals. A pilot-tested, electronic questionnaire was used to collect the data from the target population. 104 respondents (or 69.3% of target) provided feedback on areas such as number of articles published, number of citations, and the nature of any collaboration with other authors. The findings of this survey revealed that, among the various designated regions of Pakistan, the Punjab region was the most highly represented. In articles published in national journals, there was a clear preference among all respondents to collaborate with at least one other author. The citation metrics for LIS articles in national journals were relatively low (30.22%), which aligns with Scimago's Journal and Country Rankings. The uptake of social scholarly networks mirrors international trends. Respondents were asked to score factors which could impact negatively on their ability to undertake research and/or publish the results. The study recommends that concerned stakeholders work together, as appropriate, to address concerns. In addition, it recommends that further research be undertaken to define patterns of Pakistani co-authorship in the social sciences.

Keywords: Scholarly Communication, LIS Researcher, Scholarly Publishing, Citation Analysis

1. INTRODUCTION

Scholarly communication is a process through which "scholars share their findings with colleagues and claim precedent for their ideas" (Case, 2002, p. 5). According to the Association of Research Libraries, scholarly communication can be defined as "the system through which research and other scholarly writings are created, evaluated for quality, disseminated to the scholarly community, and preserved for future use. The system includes both formal means of communication, such as publication in peer-reviewed journals, and informal channels, such as electronic listservs" (ARL, n.d.). Through this process, academics, scholars, and researchers share and publish their research findings so that they are made available to the wider academic community and beyond.

Scholarly communication is an integral part of the research lifecycle. All scholars, either directly or indirectly, are involved in this process. When compared with international approaches, the situation is quite different in Pakistan with respect to library and information science. There are only two major LIS research journals published in Pakistan: one is print-only format, *Pakistan Library & Information Science Journal* (PLISJ), and the other is digital-only format, *Pakistan Journal of Information Management & Libraries* (PJIM&L, formerly PJLIS). Whereas Naseer and Mahmood (2009) have done a bibliometric analysis of PLISJ, Warraich (2011) has done a bibliometrics analysis of the latter journal. A number of Pakistani LIS research outputs are also published in social science journals, i.e. other disciplines; these tend to be published in English. Mahmood (1996) has discussed in detail articles published by LIS scholars in foreign journals.

However, no user-based study has been conducted recently of the attributes which most accurately characterize LIS scholars' publications in national journals. This article reports on a survey which investigates this topic in an effort to determine the overall quantity and quality of publishing among LIS scholars in Pakistan. For the purposes of this paper, the authors have used the term "scholar" to encompass LIS academics, researchers, and professionals.

2. LITERATURE REVIEW

Scholars work in a "rapidly evolving and transformative landscape" (Wolski & Richardson, 2014, p. 84). The research lifecycle, which underpins their work, has been discussed by Kwon et al. (2012) from the perspective of the major research steps and research activities associated with research and development (R&D) projects, and by Lee et al. (2012) in regard to how scientists specifically locate the information required. Boote and Beile (2005) have made a valuable contribution in this arena with their analysis of what constitutes "good research." There has been a focus in recent years on how to refine academic services required to support the research lifecycle (Todd, 2012; Vaughan et al., 2013; Deng & Dotson, 2015).

The role which scholarly communication plays within this context has been explored by a range of contemporary thought leaders, including Liu (2003), Thorin (2006), Borgman (2007), and Maron and Smith (2008). Much has been written, for example, about the changing nature of scholarly publishing (Rowlands et al., 2004). According to Disabato (2012), the Internet has disrupted the former relationships and roles among authors, publishers, and readers. In addition, new publishing and pricing models are being explored for journals, scholarly monographs, textbooks, and digital materials, as all the stakeholders try to establish sustainable business models (Weller, 2011; Arts & Humanities Research Council, 2014), all of which is having a major impact on the ability of scholars to publish.

The actual measurable impact of scholarly publishing likewise continues to be widely discussed. Brody (2006) has reported on the potential contribution of open access to increasing research impact. Concern has been expressed as to whether citation analysis should continue to be the predominant standard by which research impact is measured, especially journal articles (Moed, 2006; Sarli et al., 2010; Aksnes et al., 2012; Nightingale & Marshall, 2012; Dowling, 2014). Meho and Yang (2007) have examined the implications of using major services such as Web of Science, Scopus, and Google Scholar on the citation counts and rankings specifically of LIS faculty.

Borgman and Furner (2002) have discussed the transformation of scholarly communication while posing fundamental questions about its impact:

But how much has human behavior really changed? How much has the infrastructure for scholarly communication changed? Are we witnessing a revolution in scholarly communication, or an evolution? Or a co-evolution of technology and behavior? … And how do we determine what kinds of change are occurring? (p. 4)

In response they have proposed bibliometrics as a powerful tool for studying scholarly communication, especially citation analysis. On the one hand, scholarly communication often involves a subjective assessment of quality, which is frequently undertaken through a peer-review process. Bibliometrics, on the other hand, is the application of mathematical and statistical, i.e. non-subjective, methods to books, articles, and other media of communication in order to measure attributes such as post-publication impact. According to Agyeman and Bilson (2015, p. 2), bibliometrics is a "research technique in library and information science that applies quantitative analysis and statistics to describe publication patterns in any field of knowledge." It can provide a useful tool for benchmarking research output.

Since the creation in 2002 of the Higher Education Commission (HEC), Pakistan has become much more focused on the importance of research in helping the nation achieve a range of socio-economic goals. A number of studies have examined the education system for LIS scholars as well as their research publications. According to Ahmad (2007), library education began at the university level at the turn of the twentieth century, with postgraduate diplomas offered as of 1956 and eventually progressing to the Master of Philosophy (MPhil) and doctoral levels. In 2006 Haider and Mahmood reported on LIS doctoral studies at Punjab University and made a number of suggestions to improve the then nascent program. Bhatti and Ariff (2006) suggested that a revised approach to distance education could enhance the LIS curriculum in general in Pakistan. The following year Haider and Mahmood (2007) examined the relative lack of success up to that time of a number of LIS doctoral programs. Issues included the absence of proper supervision, resulting in theses of poor quality; low esteem for national PhD degrees, when compared with international offerings, in the eyes of professional colleagues; and little or no impact of early degree recipients on the profession. Samdani and

Bhatti (2009) reported on a similar but updated study. Their findings reported that 9 LIS PhD theses had been produced by Pakistani universities and a total of 18 PhD degrees awarded by foreign universities. They provided a number of recommendations to improve the situation.

In more recent years Ameen (2010) has highlighted the challenge of creating reputable academic programs: "… library schools have their own deficiencies such as lack of senior PhD faculty members, lack of financial and other material resources to be able to deliver quality education: it varies from school to school in absence of accreditation standards though" (p. 174). Ahmad and Mahmood (2011) also have highlighted the lack of both finances and highly qualified staff; however, they do observe that LIS "faculty members are inclined towards research" (p. 3). In examining the changing LIS research environment in Pakistan, Mahmood and Shafique (2009) have reported "a wide gap between demand and supply of LIS professionals with research qualifications" (p. 291). They have expressed concern as to the flow-on effect in filling LIS leadership positions. In 2013, Ameen and Ullah reported on the results of a survey of the chief librarians of 18 university libraries located in Islamabad and Rawalpindi in regard to their perceptions about their positions being allocated faculty status. A major finding was that "… the main barriers in getting faculty status are the librarians themselves, lacking preparedness in terms of qualifications and research output" (p. 83).

From the perspective of research outputs, Mahmood (1996) reported on a review of articles published in foreign journals on various aspects of LIS services in Pakistan. In consulting four major abstracting services, several of which had in excess of 125,000 records, only 97 articles were found which contained information on Pakistani librarianship. Of the 66 authors affiliated with those articles, only 25 (37.88%) were affiliated with libraries and LIS schools in Pakistan. The majority of the articles (92.47%) had a single author. He concluded: "The promotion of research activities in the field of librarianship in Pakistan is direly needed in this era of communication" (p. 393).

More recently, Naseer and Mahmood (2009) have reported on their analysis of one of the two major Pakistani LIS journals in order to understand trends in LIS research in Pakistan. They examined the subject cover-

age and authorship characteristics of articles published in the *Pakistan Library & Information Science Journal* (PLISJ) during 1998-2007. Major findings included:

Mostly Asian authors, predominantly Pakistanis, contribute to the journal. The state of collaboration among authors of PLISJ is not very encouraging as majority of the authors prefer to work in isolation. Male authors lead the LIS research scene but contributions from female authors have increased. Descriptive articles still represent major part of PLISJ but articles based on empirical research have increased. Mostly, articles written in English language are published in the journal but number of articles written in Urdu has improved. (Naseer & Mahmood, 2009, p. 8)

Warraich and Ahmad (2011) have conducted a similar study but of the other major national LIS journal, the *Pakistan Journal of Library and Information Science* (PJLIS), recently rebranded as the *Pakistan Journal of Information Management & Libraries* (PJIM&L). They concluded that:

Authorship pattern shows that most of the papers were single authored and being Pakistani origin journal majority of the authors belonged to Pakistan. Authors from 12 foreign countries also contributed in this journal as found in the study of 11 volumes. It shows that the journal has been internationally circulated. It needs wider circulation and that is the reason that for the last few years its issues have been made available online. Authors from the University of the Punjab contributed maximum papers followed by the University of Karachi. Majority of the papers were research papers and 70 percent were written in English language. Fifty one papers (45.94%) have 1-20 references which seem to be a good trend in research while 44 contributions (39.64%) were without references. (p. 6)

From the literature reviewed to date, one can conclude that while scholarly communication, in particular scholarly publishing, is rapidly evolving at an international level with a range of consequences for scholars, the same cannot be said for LIS scholarship in Pakistan. The literature highlights a number of

factors which have slowed the rate at which quality LIS research is being undertaken at the national level. While several bibliometric studies have been done on LIS outputs in foreign journals and in two specific national LIS journals, no bibliometric analysis has been undertaken which examines LIS articles in national LIS and related social science journals. This study is intended to fill that gap.

3. OBJECTIVES OF THE STUDY

Within the discipline of library and information science, it is common practice for scholars to publish in a range of journals. The main purpose of this paper is to examine the key attributes of Pakistani LIS scholars' research outputs, based on their contributions in national journals.

Based on the current gap in knowledge identified through the literature review, the following objectives are framed:

1. To identify relevant demographic information, e.g. gender and geographical affiliation
2. To determine the extent of collaborative authorship
3. To determine the extent of publishing based on geographical regions
4. To determine the strength of association between job title (seniority) and number of publications
5. To determine the strength of citation metrics for national outputs
6. To identify factors which may impact negatively on LIS scholars' ability to undertake research and/or to publish it

4. METHODOLOGY

A questionnaire was designed based on the literature review undertaken for this project. Pretesting was done to refine the original set of questions. An online survey form was distributed via email, Yahoo Groups, and Facebook to LIS scholars within each province: Sindh, Punjab, Khyber Pakhtunkhwa (KPK), Baluchistan, Gilgat Baltistan & Azad Jammu and Kashmir (AJK), and Federal Capital. The survey was left open from June 28 to August 27, 2015. Collected data was

analyzed in SPSS version 21.

From discussions with several members of the Pakistan Library Association, it is estimated that there are currently about 600 LIS researchers / faculty members / postgraduate students. The authors chose 150 (25%) as the target sample size for a geographically scattered population. The process involved selecting a random sample of 25 respondents, where possible, from each of the designated provinces and administrative units so as to achieve adequate representation from each area.

Sindh, Punjab, and the Federal Capital were able to meet the target of 25 respondents from each province / administrative unit. Baluchistan, Khyber Pakhtunkhwa (KPK), Gilgat Baltistan (GB), and Azad Jammu and Kashmir (AJK) did not meet the target. Out of a target of 150 scholars, 104 responses were received, or a response rate of 69.33%.

5. SCOPE

The study was limited to articles by LIS scholars in Pakistani, i.e. national, LIS and other social science journals. It was understood that not all articles by the target group would necessarily be restricted to just the LIS domain. It is not uncommon, for example, for LIS scholars to publish on LIS topics in allied areas such as law and education.

6. RESULTS

6.1. Demographical Information

The data collected for this research was obtained from 104 respondents. Respondents were queried regarding the following demographic information: gender, organizational affiliation by sector, and geographical affiliation.

6.1.1 Gender

Table 1 shows that 77 (74.03%) respondents were male and 27 (25.97%) were female. In Naseer and Mahmood's study (2009), the ratio was male = 61.0% and female = 32.2%, with gender not determined for the remaining respondents. Although Fatima and Bhatti's study (2014) was limited to the Punjab Province, their results also indicated that male respondents were dominant.

6.1.2. Affiliation by Sector

The respondents were asked to indicate whether they currently were working in the public or private sector. 74 (71.15%) worked in public sector institutions and 30 (28.85%) respondents worked in private sector institutions. Table 2 indicates that public sector institutions were more highly represented in the results.

Table 1. Frequency Distribution of Respondents by Gender

Gender	Frequency	Percent
Male	77	74.03
Female	27	25.97
Total	**104**	**100.00**

Table 2. Frequency Distribution of Respondents' Affiliation by Sector

Institutions	Frequency	Percent
Public	74	71.15
Private	30	28.85
Total	**104**	**100.00**

6.1.3 Geographical Affiliation

Table 3 shows the respondents' geographical affiliation within Pakistan. Although the research objective was to have a random sample of 25 respondents from each designated province and administrative geographical unit, this was not achieved for all regions. Three provinces (Punjab, Federal Capital, and Sindh) accounted for 73.06% of all respondents' affiliations.

6.2 Publishing History

Respondents were asked to indicate when they had first begun to publish their research. Table 4 indicates that 46 (44.23%) respondents began publishing during 2011-2015; 21 (20.19%) began during 2006-2010; and 14 (13.46%) began during 2000-2005. In the ten-year period from 1991–2000, only 2 (1.92%) respondents had published their first output. Before 1990, only 4 (3.85%) had begun publishing.

Seventeen (16.35%) respondents indicated that they had not yet published in any research journals. These respondents have recently commenced either a Master of Philosophy or other postgraduate study. In addition, although they have also carried out research for a Master of Library and Information Science degree, they have not yet published either their thesis or any of their findings.

Respondents from the public sector accounted for 71.15% of the total first publications and respondents

Table 3. Frequency Distribution by Geographic Affiliation

Region	Frequency	Percent
Punjab	26	25.00
Federal Capital	25	24.03
Sindh	25	24.03
KPK	17	16.35
Baluchistan	7	6.73
Gilgat Baltistan & AJK	4	3.86
Total	**104**	**100.00**

Table 4. Frequency Distribution by Year and by Sector of Respondents' First Publication

Year	Public sector (a)	Private sector (b)	Sum (a + b)	Percent
2015-2011	30	16	46	44.23
2010-2006	19	2	21	20.19
2005-2001	9	5	14	13.46
1991-2000	2	0	2	1.92
Before 1990	2	2	4	3.85
Not Yet Published	12	5	17	16.35
Total	**74**	**30**	**104**	**100.00**

from the private sector accounted for 28.85%.

6.3 Patterns of Authorship

Respondents were asked to indicate the total number of their LIS scholarly publications which had been published in national, i.e. Pakistani, LIS and other social science journals. As of August 28, 2015, 104 scholars had published 354 research articles, with a mean = 3.39 and standard deviation (SD) = 4.45 as shown in Table 5.

Table 6 shows the authorship pattern of the 354 scholarly outputs published in national journals. Single-authored publications accounted for the highest percentage, i.e. 141 (39.83%, with mean = 1.36 & SD = 1.82); the number of two-authored papers was 138 (38.98%, with mean = 1.33 & SD = 1.76). The number

of three-authored publications was 57 (16.10%, with mean = 0.55 & SD = 1.09). Only 18 articles (5.08%, with mean = 0.17 & SD = 0.55) had four or more authors. It is not known to what extent the two-authored publications may represent collaboration between an early career researcher / professional and a more senior colleague or supervisor.

6.4 Publications by Sector

Table 7 shows that whereas 74 (71.15%) respondents from the public sector produced 273 (77.11%) articles, 30 (28.85%) respondents from the private sector produced 81 (22.89%) articles out of a total of 354 articles. This demonstrates a positive correlation between the sector with the largest percentage of respondents and

Table 5. Average Number of Scholarly Publications in National Journals per Respondent

Number of publications	Mean	SD
354	3.39	4.45

Table 6. Distribution of LIS Publications in National Journals by Authors' Contribution

Type of authorship contribution	No. of Publications	Mean	SD
Single author	141	1.36	1.82
Two authors	138	1.33	1.76
Three authors	57	0.55	1.09
Four or more authors	18	0.17	0.55
Total	**354**		

Table 7. Distribution of LIS Publications in National Journals by Sector

Sector	Respondents	Percent	Articles	Percent	Mean
Public	74	71.15	273	77.11	3.39
Private	30	28.85	81	22.89	1.29
Total	**104**	**100.00**	**354**	**100.00**	

the sector that produced the largest percentage of the total publications recorded.

6.5 Publications by Region

Table 8 shows the distribution of respondents and their publications by region. Out of a total of 354 articles, 67 articles were published by respondents from the Federal Capital, 158 from Punjab, 83 from Sindh, 43 from KPK 43, 2 from Baluchistan, and 1 from Gilgat Baltistan / AJK. While the top 2 provinces along with the Federal Capital accounted for 308 (87% of all publications), respondents from Punjab accounted for 51% of that sub-set alone.

Given the relatively small sample size, Spearman's rank correlation was used to test whether a significant association could be shown between the number of scholars in a given region and the number of articles from that region:

$$r_s = 1 - \frac{6 \sum D^2}{N^3 - N}$$

Where r_s = CoVariance / (X_{Ra} St. Dev. * Y_{Ra} St. Dev.); X_{Ra} = Rank of X Values; Y_{Ra} = Rank of Y Values; $X_{Ra} - M_x$ = X rank minus mean of X ranks; and $Y_{Ra} - M_y$ = Y rank minus mean of Y ranks.

X Rank had a mean = 3.5 and SD = 1.84. *Y Rank* had a mean = 3.5 and SD = 1.87.

The value of *rho* is 0.98561 and the two-tailed value of *p* is 0.00031. By normal standards, the association between the two variables (scholars and publications) would be considered statistically significant. While it is not surprising that regions with a greater number of scholars had more publications, this does not account for the considerable variance in the number of publications among the top 3 ranked provinces, all of which had nearly the same number of respondents.

6.6 Publications by Job Title

Table 9 examines the distribution of respondents across the major job titles / roles among LIS academics and professionals within Pakistan. "Other" encompasses titles such as Associate Dean, Assistant Manager, Information Officer, as well as the status of "unemployed."

As with Table 8, Spearman's rank correlation was used to test whether a significant association could be shown between job title / role and number of publications. *X Rank* had a mean = 5.5 and SD = 3.01. *Y Rank* had a mean = 5.5 and SD = 3.03. The value of *rho* is 0.41464 and the two-tailed value of *p* is 0.23349. By normal standards, the association between the two variables would not be considered statistically significant.

6.7 Citation Analysis

Respondents were asked how many of their LIS pub-

Table 8. Distribution of LIS Publications in National Journals by Regions

Location	No. of Scholars (X)	No. of Articles (Y)	Rank of X Values	Rank of Y Values	X rank minus mean of X rank=X_{Ra} - M_x	Y rank minus mean of Y rank=Y_{Ra} - M_y	Sum Diffs = (X_{Ra} - M_x) * (Y_{Ra} - M_y)
Federal Capital	25	67	4.5	4	1.00	0.50	0.50
Punjab	26	158	6	6	2.50	2.50	6.25
Sindh	25	83	4.5	5	1.00	1.50	1.50
KPK	17	43	3	3	-0.50	-0.50	0.25
Baluchistan	7	2	2	2	-1.50	-1.50	2.25
Gilgat Baltistan & AJK	4	1	1.00	1.00	-2.50	-2.50	6.25
Total	**104**	**354**					

Table 9. Distribution of LIS Publications in National Journals by Job Title

Job Title	No. of Respondents (X)	No. of Publications (Y)	Rank of X Values	Rank of Y Values	X rank minus mean of X ranks=X_{Ra} - M_x	Y rank minus mean of Y ranks=Y_{Ra} - M_y	Sum Diffs = (X_{Ra} - M_x) * (Y_{Ra} - M_y)
Assistant Professor	17	108	9.00	10.00	3.50	4.50	15.75
Librarian	31	74	10.00	9.00	4.50	3.50	15.75
Professor	2	61	1.00	8.00	-4.50	2.50	-11.25
Chief Librarian	10	29	6.50	7.00	1.00	1.50	1.50
Library Consultant	4	24	2.50	6.00	-3.00	0.50	-1.50
Other	15	21	8.00	5.00	2.50	-0.50	-1.25
Associate Professor	5	18	4.00	4.00	-1.50	-1.50	2.25
Assistant Librarian	10	8	6.50	3.00	1.00	-2.50	-2.50
Lecturer	6	7	5.00	2.00	-0.50	-3.50	1.75
Deputy Librarian	4	4	2.50	1.00	-3.00	-4.50	13.50
Total	**104**	**354**					

Table 10. Frequency Distribution of Number of LIS Publications Cited

Authorship Publications (N=104)	Article Citations (f)		Percent	
Number of publications	Yes	No	Yes	N
354	107	247	30.22	69.78

lications in national journals had been cited. Table 10 shows that 247 (69.78%) publications were not cited. This result is considerably higher than the figure of approximately 40% reported by Warraich and Ahmad (2014) for the *Pakistan Journal of Library and Information Science* (now the *Pakistan Journal of Information Management & Libraries*).

6.8 Support for LIS research in Pakistan

Respondents were asked to rate their level of agreement or disagreement with a series of statements regarding support for LIS research in Pakistan. Five factors were presented as a closed list with a 5-point Likert scale ranging from "Strongly agree" (1) to "Strongly disagree" (5).

The results are illustrated in Table 11. The predominant concern was Higher Education Commission of Pakistan (HEC) funding for publishing and participating in relevant conferences; many respondents (N=69, 66.34%) either strongly agreed or agreed that this was necessary for supporting LIS research. Another concern was the level of report writing skills among researchers; a substantial number of respondents (N=45, 43.24%) either disagreed or strongly disagreed that

the level was satisfactory. Respondents' satisfaction or dissatisfaction was fairly evenly divided for the level of support for the respondent's publishing by their parent institution and the delay experienced in getting submitted articles actually published. A large number of respondents (N=44, 42.31%) either strongly agreed or agreed that their parent institution supported their publishing activities.

6.9 Scholarly Networks

Scholarly communication has increased in recent years through scholarly networks such as Academia. edu, Google Scholar, ResearchGate, and Mendeley. These scholarly networks provide a new window of opportunity for Pakistani scholars to display their research works. There is also an opportunity to connect internationally with researchers in a similar discipline. In addition, researchers can remain up-to-date with current research trends in their field. Only 29 (27.88%) respondents indicated that they did not use any scholarly network.

7. DISCUSSION

In examining the key attributes of Pakistani LIS scholars' research outputs in national journals, survey results have shown a continued dominance of males among respondents. This gender distribution would seem to reflect the fact that in Pakistani culture many women do not continue to study after marriage. It can be challenging for female professionals to continue undertaking research once they have family and household responsibilities.

The overall predominance of (1) Punjab, Sindh, and the Federal Capital as most highly represented in terms of respondents' geographical affiliation and (2) the respondents' affiliation with public institutions, principally universities, reflects the pattern of distribution of universities within Pakistan.

In addition, a recent survey by Jan and Anwar (2013) offers further insights. In their study of 118 publications by LIS faculty from eight Pakistani universities, five faculty members from a single (public) university, University of Punjab, contributed 99 (83.9%). Eleven more publications (9.3%) were contributed by another

Table 11. Respondents' Satisfaction with Support for LIS Research in Pakistan

Variables	Scales*				
	1	2	3	4	5
There is sufficient funding for LIS research within my institution	14	30	29	24	7
%	13.46	28.85	27.88	23.08	6.73
My parent institution supports my publishing activities	19	25	34	17	9
%	18.27	24.04	32.69	16.35	8.65
HEC should fund LIS researchers to both publish and participate in relevant conferences	39	30	18	13	4
%	37.50	28.84	17.31	12.50	3.84
I am satisfied with current research report writing skills of LIS researchers	14	22	23	23	22
%	13.46	21.15	22.12	22.12	21.15
Articles submitted for publication are usually delayed in a very long queue	17	22	27	23	15
%	16.35	21.15	25.96	22.12	14.42

*Scales (1=Strongly Agree, 2=Agree, 3=Moderate, 4=Disagree, 5=Strongly Disagree)

(public) university, Islamia University. This may indicate that some universities, especially within the public sector, have been able to attract a number of faculty members who are motivated to undertake research and publish their findings. It would be useful in future to investigate the motivational factors for those LIS scholars, i.e. not just academics, who do publish.

Not all respondents had yet to publish an article. Significantly the largest percentage by far of those respondents who had begun to publish had only commenced doing so in the last five years. A major contributing factor may have been the more stringent criteria set by the Higher Education Commission of Pakistan (HEC) in recent years for academic promotion. Another contributor may have been the realignment by the HEC in 2008 of the length of bachelor and masters programs in Pakistan with international standards. As a result, some scholars who have wished to undertake doctoral study have first had to complete a two-year Masters of Philosophy (MPhil), whereas there would have otherwise been more LIS post-bachelor students in the educational system. It is conceivable that some would have commenced scholarly publishing while studying for the MPhil.

In the case of their first publication, respondents from the public sector accounted for 71.15% of the overall total number of first publications, and respondents from the private sector accounted for 28.85%. However, the ratio of public to private has seen a 25% increase from the private sector in the past five years. This is a trend which would be worthwhile to revisit within the next five years.

In national LIS and related social science journals, single-authored publications were the most common (39.83%), followed closely by two-authored outputs (38.98%); together they accounted for nearly 80% of all LIS publications in national journals. Three-authored publications represented 16.10% and publications with four or more authors were a distant 5.08%. As a whole, co-authored publications accounted for 60% of total publications, which shows a marked increase when compared with the recent analysis of a single national journal, *PJLIS*, undertaken by Warraich and Ahmad (2014), in which 89.19% of articles were single-authored. Further investigation would be useful to determine whether, for example, non-LIS disciplines in the social sciences tend to have more multiple-authored

publications than LIS publications.

It was found that Punjab Province was the most highly represented in terms of journal articles by LIS scholars. Sindh and the Federal Capital were followed by Khyber Pakhtunkhwa, which had a moderate level. Baluchistan, Gilgat Baltistan, and Azad Jammu and Kashmir reported very few journal articles. As indicated previously, although there was a significant association between the number of scholars and the number of publications, this did not account for the considerable variance in the total number of publications among the top 3 ranked provinces, all of which had nearly the same number of respondents.

In Punjab there are three public universities—University of the Punjab, Islamia University, and Sargodha University—which have LIS Departments conducting classes at the undergraduate, graduate, and doctoral levels. In the private sector, Minhaj International University also offers LIS education. In addition, Punjab has another 30 public universities and 25 private ones, which would account for many LIS professionals. LIS courses are offered at only two universities in Sindh, at one in KPK, one in Baluchistan, and one in the Federal Capital. This may help to account for the predominance of Punjab in the number of articles by LIS scholars in national journals.

Survey results showed that among LIS professionals there was no direct correlation between seniority of position and a higher rate of publishing. Although more Librarians were represented in the survey than Chief Librarians, the average number of publications for each was very close: Chief Librarians = 2.90; Librarians = 2.39. In academia, on the other hand, although unsurprisingly more Assistant and Associate Professors were represented than Professors, the average number of publications for each was markedly different: Professor = 30.50; Assistant Professor = 6.35. Associate Professors had an average of 3.6 publications.

In some cases, respondents will have published articles in international journals as well. Therefore, the above figures are not intended to present an overall profile of respondents by job title/rank. It would be useful in future to compare publishing in both national and international journals to determine any significant comparative trends.

Given that practitioners accounted for slightly more

than 40% of all reported publications, further investigation could be undertaken to compare these metrics with work done by Schlögl and Stock (2008) and Willard et al. (2008) regarding publishing practices among LIS practitioners and academics.

While citation metrics are commonly used in LIS bibliometric analysis, non-citation rates vary enormously by field. According to Larivière et al. (2009), 32% of articles in the social sciences are not cited, compared with 82% for the humanities. As mentioned previously, current survey results indicated that 69.78% of reported publications had not been cited. Although Warraich and Ahmad have reported a much lower figure (approximately 40%), their study was limited to a specific journal, the *Pakistan Journal of Library and Information Science* (now *Pakistan Journal of Information Management & Libraries*). It would be useful to examine (1) how many of the journals covered in the current survey were available only in print format, unlike the case of *PJLIS (PJIM&L)*; and (2) whether there was any correlation between year, i.e. age of publication, and number of citations.

The very low citation metrics (30.22%) for LIS publications in national journals align with Scimago's Journal and Country Rankings (http://www.scimagoir.com/). In fact, there is only one journal represented in the rankings, *PJLIS (PJIM&L)*. As of 2014, the average citation per document rate in a two year period was 0.17. There have been only 26 citable documents published between 2011 and 2013. The journal ranks 179 out of the 199 worldwide LIS titles listed in the Scimago database. Because the other major Pakistani LIS journal, *PLISJ*, is available only in printed format, it is not represented in this international resource. This indicates that national LIS publications may be struggling to compete at an international standard, an observation which has been corroborated by Jan and Anwar (2013).

There are various challenges faced by Pakistan LIS authors in undertaking and publishing their research. Respondents felt quite strongly that the Higher Education Commission of Pakistan (HEC) should provide funding for publishing and participating in relevant conferences.

The skills required to write an effective research report closely mirror those required for scholarly publishing. They include the ability to write clearly and concisely, a critical and thoughtful level of enquiry, and the ability to logically structure an argument. The survey results indicate that there may be a consequential training gap in this skills area; 43% either disagreed or strongly disagreed that the current research report writing skills of LIS researchers were satisfactory.

Pakistani LIS researchers are not alone in decrying unreasonable delays which may occur in the scholarly publishing process. However, unlike the case of the international "publishing giants," there may be an opportunity within Pakistan to address this concern directly with editors and publishers. The authors would recommend that all stakeholders involved work together to address this issue.

In addition to several of the impediments to either undertaking research or publishing the results as rated by respondents, it would be useful to gather additional data on the topic. Areas could include data analysis, language as a barrier, research training, and mentoring / coaching.

8. CONCLUSION

The purpose of this study was to analyze the key attributes of articles published by Pakistani LIS scholars in national journals. Compared with previous studies, results show that male authors continue to dominate and the Punjab region continues to produce the highest percentage of LIS articles. Given the historical challenges outlined by various authors in regard to the quality of academic LIS programs in Pakistan, it is significant that the largest number of articles represented in the study have only been published in the past five years. This may be a result of not only a comparatively recent emphasis at the national level on the importance of research to advance strategic imperatives but also the more stringent criteria set by the Higher Education Commission of Pakistan in recent years for academic promotion.

Because citation analysis contributes to an understanding of the publication patterns in disciplines, it is significant that a very high percentage of articles had not yet been cited, which correlates with the statistics generated by the international benchmarking tool, Scimago's Journal and Country rankings. At the same time, the results of the study have highlighted a sub-

stantial increase in multiple-authored publications in comparison with an earlier survey. Further research is indicated to determine whether there is any correlation between multiple-authorship and increased citation impact in general, and, if so, the potential impact on the citation metrics of national Pakistani LIS publications in future. Additionally, it is expected that further studies will be conducted by the authors in the use of scholarly networks among Pakistani LIS scholars to promote their publications.

The research reported in this paper has highlighted additional areas for follow-up investigation so as to gain an in-depth profile of Pakistani LIS scholars. The results of such research should enhance understanding as to those critical success factors which might assist these scholars to improve their research publishing, thereby supporting national strategic objectives.

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