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Mapping of Highly Cited Articles Published in The Journal of Academic Librarianship

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Abstract

The assessment of highly cited papers published in a single journal is an important parameter to appraise the research. The present study aims to analyze the attributes of 100 highly cited papers published in *The Journal of Academic Librarianship (JAL)*. The data of targeted papers was obtained from the Web of Science database on the 2nd Week of February 2022. The highly cited papers were published between 1983 to 2016 and these papers were cited 6,289 times with an average of 628.9 citations per paper. The highest number of cited papers were published in 2008 and the papers published in 2006 gained the highest number of citations. Slightly more than half of the papers were written by a single author pattern but the multi-author pattern papers yielded the higher citation impact. The authors belonged to 18 countries that contributed to the highly cited papers but the maximum number of papers (75%) were contributed by the United States. The keyword analysis was performed to assert the preferred area of research. The findings of the current study help to identify the trends of influential research published in *JAL* over the last four decades.

Keywords: Citation Impact; highly cited papers; Journal of Academic Librarianship;

Introduction

The libraries located inside the higher secondary (colleges) and degree-awarding (universities) institutions are known as academic libraries. These libraries play a significant role in the teaching process and research activities of the faculty and students (Ashiq et al. 2021; Tanveer & Karim 2019; Brundy 2015). Raja et al. (2009) stated the prime function of academic libraries as,

> *"support of the mission of their parent institutions to generate knowledge, and people equipped with the knowledge to serve the society and advance the well-being of mankind"*

The issues and problems faced by academic libraries are different from other libraries (Jain 2013). There has been need for a separate journal that focused on academic librarianship and this gap was filled by the *Journal of Academic Librarianship* (*JAL*) and the first issue of this journal was published in 1975 (Khanna et al. 2018).

Periodicals are the imperative mean of sharing information and a significant source for intellectual communication since 1665, when the first scientific journal was published (Ali et al. 2015; Tanveer

et al. 2020; Haq & Alfouzan 2019). Journals/Periodicals have been publishing current and up-to-date research findings with possible solutions as well as improving the existing theories of knowledge. The historical and current development of any branch of knowledge has been recorded in journals related to the specific branch of knowledge (Warriach & Ahmad 2011). The assessment of papers published in journals indicate the growth of literature, its characteristics and knowledge development (Tanveer et al. 2020a).

Bibliometric studies employed the quantitative research method based on mathematics and statistics on the published material (Prichard 1969). There are different indicators of bibliometric studies, citation analysis is one of them. Google Scholar, Web of Science and Scopus database provide the detail of citations. Citations denoted that how many times a paper has been cited by the other researchers (Haq & Alfouzan 2019a).

The citation analysis has got popular in the academic arena since the last quarter of the 20th Century (Moed 2010). Garfield was known as the originator of science of citation count and he explained that the citations count support to measure of the excellence, quality and characteristics of scientific and scholarly communication. (Garfield 1955). The growth of knowledge and scientific publications has increased tremendously during the last fifty years, now articles published in peer-reviewed journals and the journals indexed in globally accepted databases have more influence in the scholarly environment (Collet et al. 2006).

The majority of bibliometric studies of the highly cited papers have been performed in different areas of medical sciences, like orthopaedic surgery, urology, dentistry, oncology etc. (Lefaiver et al. 2011; Hennessey et al. 2009; Feijoo et al. 2014; Tas 2014). These studies make it possible to comprehend an overview of the research publication and scientific activities (Lefaiver et al. 2011). There are different indicators to assess the quality of an article but commonly, it evaluates the number of the specific paper has been cited in other papers. The study of the most cited paper helps to understand the quality and popularity of the article(s) or journal in a specific area of knowledge (Luo et al. 2018). Tsai et al. (2006) opined that the citation index is extensively accepted as a tool of recognition albeit, it doesn't measure the true worth or quality of the research.

JAL is one of the celebrated journals in the field of Library and Information Science (LIS) and offers a platform for researchers and authors to publish their innovative research, suggest practicable measures to solve the contemporary problems, evaluate the features of prevailing trends and examine the policies of academic libraries. *JAL* is an international peer-reviewed journal published by Elsevier, indexed in the globally accepted databases, Web of Science and Scopus databases with impact factor 1.533 and CiteScore 2.7, respectively, according to the citation metrics of 2020.

Library and Information Science (LIS) professionals have been doing bibliometric studies extensively, and they have not only been conducting studies on LIS but also collaborating with researchers of other specialities (Haq 2021). As far as *JAL* is concerned, few studies focused on the bibliometric evaluation on *JAL* (Khanna et al. 2018; Ali et al. 2015; Ganganna 2017), whereas a couple of studies explored the characteristics of 100 top-cited papers published in two different journals of LIS (Haq et al. 2021; Tanveer et al. 2020a). No study was found on the assessment of the features of top-cited papers published in *JAL*. The present study was intended to fill this knowledge gap. The current study aims to assess the bibliometric indicators of 100 highly cited papers published in *JAL* and indexed in the Web of Science.

Objective: -

The study was performed to accomplish the following objective

1. To review the growth of highly cited papers by years
2. To analyze the authorship pattern and its citation input
3. To point out productive authors
4. To highlight the most contributing countries
5. To find out the frequently used keywords

Research Methodology

In February 2022, we searched the core collection of the Clarivate Analytics-Web of Science and added the name of Journal "Journal of Academic Librarianship" in the main search box, then we selected the option of "publication title". Further, we opted out the highly cited documents and downloaded the bibliographic details of the top 100 highly cited documents without selecting any other filter.

The bibliometric method was used to evaluate the characteristics of these 100 highly cited papers published in *JAL*. Microsoft Excel, VOSviewer and Biblioshiny software were used for data analyses and visualization. The citation record of highly cited papers was limited to the Web of Science database only.

Review of Relevant Literature

Bibliometric studies on single journal has been a very common area of interest in LIS, even three studies were identified on *JAL* (Khanna et al. 2018; Ali et al. 2015; Ganganna 2017), but the bibliometric studies of top-cited papers have not been very frequent, two papers explored the characteristics of 100 top-cited papers published in two journals of LIS (Haq et al. 2021; Tanveer et al. 2020a).

The first bibliometric study on *JAL* was carried out by Ali et al. (2015), and the study covered the period of 16 years from 1999 to 2014. The analysis of document types showed that 47.81% of the papers consisted of articles. The highest number of papers were published in 1999 after that a sharp decrease in the growth of publications was observed. A large majority of papers (72.91%) were written by a single-author pattern. *Academic libraries* and *Information literacy* were the frequently used keyword with their occurrence rate of 30 and 27 papers, respectively.

Ganganna (2017) performed the bibliometric analysis of 477 papers of *JAL* published during 2012-2016. A majority of papers (89%) were written by multi-author pattern only eleven per cent were contributed by a single author. About one-third of the papers were the result of two author collaboration. This study also measured the length of pages per paper and it was found that a maximum number of papers (n=194; 42%) were written between the range of 6 to 8 pages.

Khanna et al., (2018) analyzed 656 papers published in *JAL* from 2007 to 2016 and these papers were cited 2,853 times with an average of 4.34 cites/papers. The study revealed that about one-fourth of the papers (n=160; 24.39%) didn't gain any citation. The highest number of papers (n=416; 63.41%) gained the range of citations from one to ten. Only 23 papers were having more than 20 citations each and these papers gained 680 citations with an average of 29.56 citations/paper. The study further indicated that the highest number of papers (n=95: 14.48%) were

published in 2015 and the lowest numbers (n=43; 6.65%) were published in the year 2012. The authorship pattern revealed that 44% of the papers (n=289) were contributed by a single author pattern while 56% (n=367) of papers were written by a multi-author pattern. The geographical distribution of authors showed that two-thirds of the total papers (n=484; 66.92%) were contributed by the United States, followed by Canada (n=45; 6.68%) and China (n=28; 4.27%).

Haq et al. (2021) evaluated the 100 highly cited papers of published *Library Philosophy and Practice*. These papers received an average of 16.78 and 81.58 citations/paper in the Scopus and Google Scholar databases, respectively. The highest number of papers were contributed by the Nigerian authors, tailed by the United States and India. Half of the papers were written by a single-author pattern and these papers acquire a higher ratio of citations as per the Scopus database but this situation was reversed in Google Scholar, where multi-author papers received the higher ratio of citations. Khalid Mahmood appeared as the most productive author with four papers. The subject distribution showed that *Electronic Resources* was the uppermost area of research in highly-cited papers.

Tanveer et al. (2020a) presented the attributes of the 100 highly cited papers published in the "*Scientometric*" and the targeted data was extracted from the Scopus database. Highly cited papers were published between the years 1979 and 2017 and these papers gained an average of 332.86 citations per paper. These papers were contributed by 221authors, with an average of 2.21 authors per paper. Thirty-two papers were written by a single author pattern and these papers gained a higher ratio of citations as compared to multi-author papers.

Naveed et al. (2021) analyzed a bibliometric investigation of the 925 papers published *Journal of Library Administration* from 2005-2020. A total of 13,821 references was utilized in these papers. The highest ratio of publications (n=77; 8.32%) was recorded in 2008 followed by 73 (7.892%) papers each in the years of 2009 and 2016. The lowest number of papers (n=17; 1.838%) was found in 2007. The Montana State University of the United States was on top with the highest publications, followed by the University of Illinois, United States. The United States emerged as the most contributing country with 816 papers followed by Canada (n=28) and Australia (n=9). The most frequently used keywords were "*Academic Libraries"* and *"Libraries*" with the occurrence rate of 142 and 59, respectively.

Lijina (218) examined 161 papers published in *the International Journal of Library and Information Science* from 2012 to 2017. Nearly half of the papers (48%) were written in a two-author pattern followed by a single author pattern (28%) and only five papers having more than three authors collaboration. The maximum number of papers (n=17; 10.56%) were published in Issue no.3 of 2016 and the lowest number (n=4; 2.48%) was published in the 2nd Issue of 2012 and 4th issue of 2017. The frequent growth in the number of papers from the year 2012 to 2017 was observed. The minimum number of papers (n=11) was published in 2013 and the maximum number of papers (n=54) were published in 2017. India emerged as a leading contributor (85%) followed by Nigeria, Bangladesh and Sri Lanka.

Haq and Alfouzan (2019) analyzed the 369 papers published in ten years (2008 to 2017) in *Pakistan Library and Information Science Journal* (*PLISJ*). Two-thirds of the papers were written in English while the others were written in the Urdu language. Fifty-eight per cent of the papers were written by a single author. The share of female authors was counted as 29%. The authors affiliated with the institutions in Karachi contributed the highest number of papers (n=138), followed by Lahore

(n=63) and Bahawalpur (n=37). The editorial board members of the journal contributed 82 papers, while at the institutional level, the Islamia University of Bahawalpur and the University of Punjab contributed 39 and 38 papers, respectively.

Another study on the *PLISJ* focused on 361 papers extracted in the LISTA-EBSCO Host database published from 2004 to 2020. These papers gained 645 citations as per the record of Google Scholar. One hundred and thirty papers written by two-author pattern gained 290 citations with an average of 2.23 cites/paper while 148 single-authored papers gained 257 citations with an average of 1.78 cites/paper. The papers contributed by Mirza Muhammad Naseer and Khalid Mahmood got the highest citation impact. The papers are written on subject categories of *Reference Services* and *Bibliometric* gained more citations as compared to other subject categories (Haq 2021a).

Naveed et al. (2021a) assessed 469 documents published in *The Library Quarterly* from 2010 to 2019 and these documents were cited 1,464 times with an average of 3.12 cites per document. Sixty-six documents published in 2014 got the highest citation impact (14.07 cites/doc). *Information* and *Public-Libraries* were the top two keywords and Paul T. Jaeger emerged as the most contributing author with 47 documents the University of Maryland was found to be the most productive institution with 86 documents. Eighty-five per cent of the documents were generated by the author's geographical belonged to the United States and the rest of the world contributed just 15% of the total documents in *The Library Quarterly* during ten years.

Similarly, bibliometric studies on the distinct subject category of LIS was also performed as Ahmad et al. (2018) assessed the research growth on digital library. A total of 4,206 documents were found published between 2002 to 2016 indexed in the Web of Science database. The highest number of documents was published in *Electronic Library* (n=427) followed by *Library Hi-Tech* (n=219). Thirty-nine per cent of documents were produced by the United States, followed by England (9.18%), Spain (4.40%) and Canada (n=3.95%). Amongst the top-10 most contributing research institutions, seven belonged to the United States and the University of Illinois was on the top with 65 documents. Fourie, I. of Department of Information Science, University of Pretoria, South Africa appeared to be the most productive research with 27 documents.

Results

The 100 highly cited papers gained 6,289 citations with an average of 628.9 citations per paper. The highly cited papers were published in 34 years from 1983 to 2016 and the maximum number of papers (n=12) were published in 2008 followed by 10 papers in 2006 (Figure-1). The distribution of papers into four intervals showed that only two papers were published in the first interval from 1981 to 1990, and these papers were cited 125 times (62.5 cites/paper). A total of 18 papers were published in the second interval (1991 to 2000) and these papers gained 1,227 citations, with an average of 68.16 citations/paper. The highest number of papers (n=58) were published in the third interval (2001-2010), and these papers were cited 3,763 times (64.87 cites/paper). Twenty-two highly cited papers were published in the last interval (2011 to 2020) and these papers were cited 1,174 times (53.36 cites/paper). The papers published during the second interval gained the maximum citation impact as compared to the papers published in other intervals.

Figure 1; Distribution of papers and citations by year
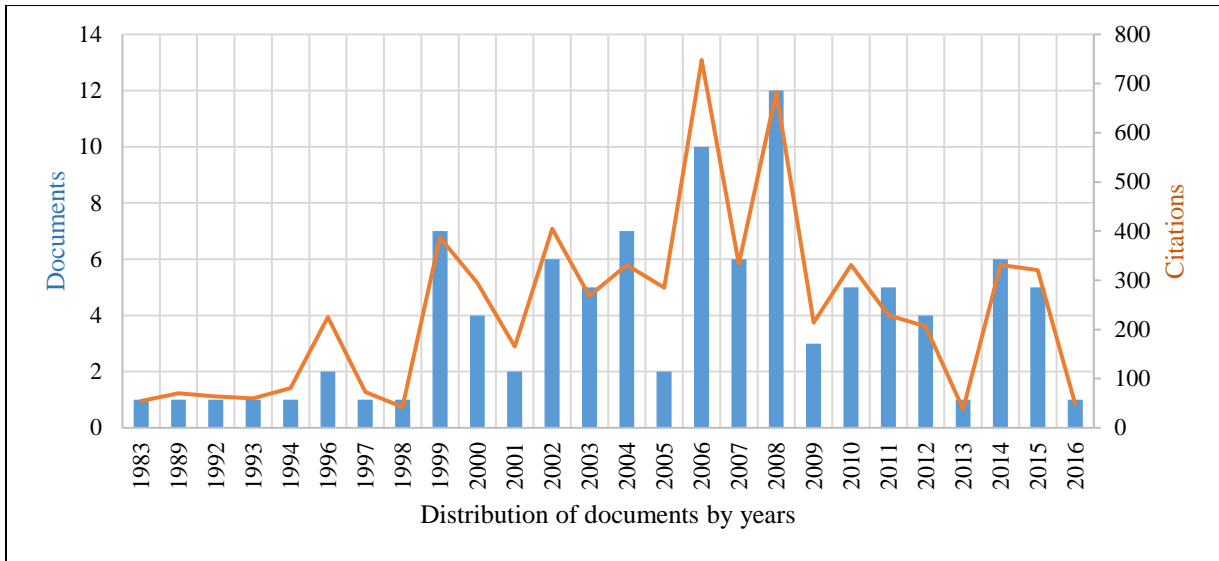
The details of authorship pattern with the number of papers, total citations and citation impact have been given in Table-1. The analysis of authorship patterns of highly cited papers exposes that more than half (n=53) of the papers were contributed by a single-author pattern followed by two-author, and three-author pattern. The papers contributed by a single author pattern gained the highest number of citations (n=3,506; 55.74%) and even the highest citation impact 66.15 citations per paper. Forty-seven papers were the result of the research collaboration of more than one author and these papers gained 2,763 citations with an average of 58.78 citations per paper.

Table -1, Distribution of papers by authorship patterns

Serial Number	Authorship Patterns	Numbers of Papers	Total Citations	Citation Impact
1.	Single-Author Pattern	53	3,506	66.15
2.	Two-Author Pattern	25	1,503	60.12
3.	Three-Author Pattern	15	873	58.20
4.	Four-Author Pattern	4	248	62.00
5.	Five-Author Pattern	2	121	60.50
6.	Six-Author Pattern	1	38	38.00

A total of 169 authors contributed to 100 highly cited papers with an average of 1.69 authors per paper. Ninety-five per cent of the authors contributed in one paper only while eight authors mentioned in Table-2 contributed more than one paper.

A total of 169 authors affiliated to 18 countries of the world contributed to 100 highly cited papers in *JAL*. Three-fourths of papers (n=75) were contributed by the authors of the United States, followed by Canada (n=9), Korea (n=2) and Singapore (n=2). Two authors didn't mention their country's affiliation, while authors who belonged to 14 countries contributed in one paper each. The citation analysis by country showed that the United States gained 4,728 citations with an average of 63.04 citations/paper, whereas the Canadian authors gained 596 citations (62.44 citations/paper). Although the authors of Singapore contributed two papers their citation impact (72.50 cites/paper) was higher than the United States and Canada. The analysis of a single paper

contribution showed that the author of Sweden got 88 citations, followed by Ireland (87 citations) and China (n=74).

Table 2; Productive authors having more than one paper each with their affiliation, number of papers and citation impact

Authors' Name	Institutional and Country Affiliation of author	Number of Papers	Total Citations and Citation Impact
Danuta A. Nitecki	Yale University, United States	3	250 (83.33)
Laura Saunders	Simmons College, United States	3	180 (60.00)
Peter Hernon	Simmons College, United States	3	179 (59.67)
Austin Booth	University at Buffalo, United States	2	175 (87.50)
Erin Dorris Cassidy	Sam Houston State University, United States	2	84 (42.00)
Edward K Owusu-Ansah	College of Staten Island, City University of New York United States	2	119 (59.50)
Lisa Shen	Sam Houston State University, United States	2	84 (42.00)
Sei-Ching Joanna Sin	Nanyang Technological University, Singapore	2	141 (70.50)

*Figure-2; Distribution of papers by Counties*
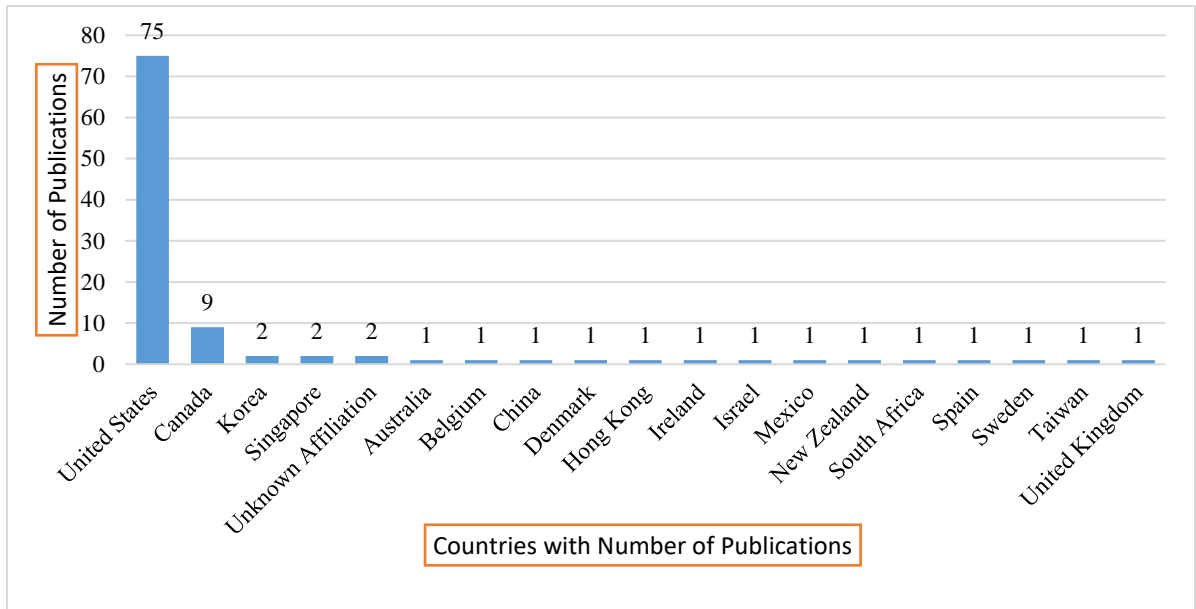
The examination of keywords occurrence was done by VOSviewer software. A total of 180 keywords were identified and 14 keywords were used four and more than four times as shown in Table-3. The keyword of "*Library*" has been occurred eight times followed by three keywords "*Academic libraries*", "*Perceptions*" and "*Students*" with six times each. The keywords of "*College*" and "*University*" have the strongest link strength followed by "*Students*" and "*Perceptions*".

Table-3; Occurrence of Top-14 keywords with link strength generated by VOSviewer Software

Serial Number	Keywords	Occurrences	Total Link Strength
1.	Library	8	2
2.	Academic libraries	6	4
3.	Perceptions	6	6
4.	Students	6	6
5.	College	5	7
6.	Patterns	5	2
7.	University	5	7
8.	Academic-libraries	4	3
9.	Bibliographic instruction	4	2
10.	Faculty	4	5
11.	Information	4	2
12.	Satisfaction	4	2
13.	Trends	4	4
14.	Usage	4	4

Figure-3 explained that 14 keywords consisted of four clusters, the red coloured circles identified the first cluster of 6 keywords (*academic libraries, academic-libraries, college, perception, satisfaction and trends*). The green coloured circle represented the second cluster of four keywords (*faculty, information, library and usage*). The third and four clusters consisted of two keywords each (*bibliographic instruction; students*), and (*patterns; the university*).

Figure-3; Clusters of top-14 keywords occurrence generated by VOSviewer software
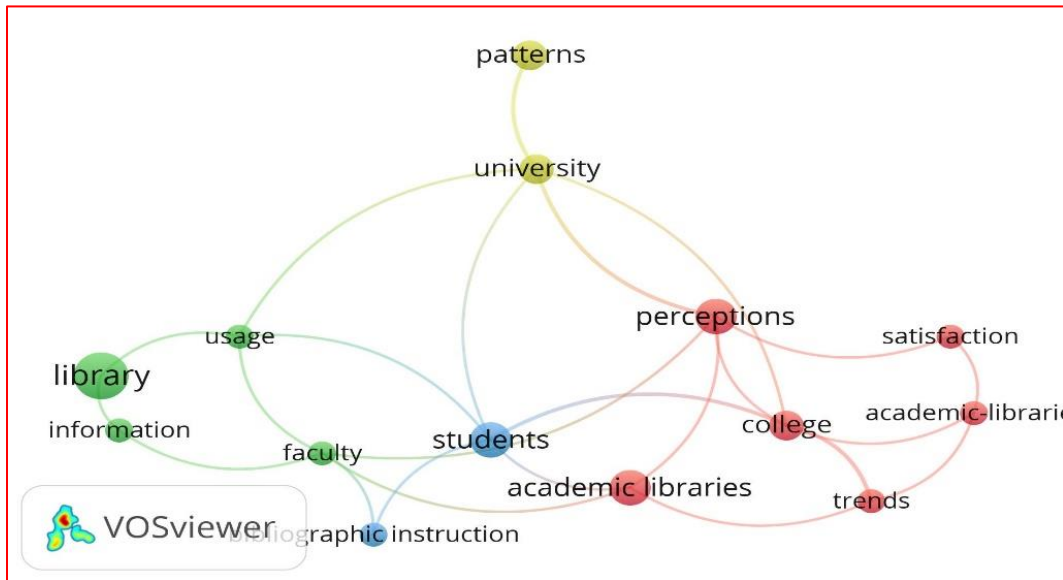
The examination of the author's used keywords was performed by Biblioshiny Software and the top 30 keywords were analyzed. Figure-4 identified that *academic library, social media, college students, faculty, information literacy* and *undergraduates* were frequently used keywords occurred more than one time while other 23 keywords were applied one time in top-cited papers.

Figure-4 Author's used keywords analysis by Biblioshiny Software

Discussion

JAL is an international peer-reviewed journal published by renowned publisher Elsevier. *JAL* has been publishing papers focusing on the research areas related to academic libraries and librarianship. *JAL* has a descent history comprising of about five decades and its frequency of publication is bimonthly. This journal was introduced by notable LIS professionals Mr Richard M. Dougherty and Mr William H. Webb in 1975. Mr Richard M. Dougherty served as Director Libraries at the University of California, Barkley and the University of Michigan. He also served as President of the American Library Association during 1990-1991. He was a great supporter of children's literacy and information access (Dougherty 2013).

Some bibliometric studies have been conducted to examine the characteristics of papers published in *JAL*. The assessment of the publication output along with citation analysis is an important indicator for research evaluation. The bibliometric method has been utilized for this purpose. The citation count is one of the quality parametric of the research publications. Nowadays, the studies on most cited papers are common in different areas of medical sciences. These studies help to recognize the hot trends and prevailing patterns of research. Few studies also examined the trends of most cited papers in LIS (Kharabati-Neshin et al. 2021; Haq et al. 2021; Tanveer et al. 2020a; Sun & Yuan 2020; Levitt & Thelwall 2009).

The data for the present study was obtained from the Web of Science database, as this database has been extensively used for bibliometric studies and indexed the quality scholarly material. (Hu et al. 2019).

The findings of our study reported that 100 highly cited papers of *JAL* were cited 6,289 times with a mean ratio of 628.9 cites/paper. These papers were published in 34 years from 1983-2016. The majority of papers (n=12) were published in the year 2008 and the highest number of citations (n=748) were gained by the papers published in 2006. Khanna et al. (2018) explored 656 papers of *JAL* published from 2007 to 2016, only 23 papers were cited more than 20 times and these papers gained 680 citations with an average of 29.56 cites/paper. Tanveer et al. (2020a) inspected 100 highly cited papers of *Scientometrics*. These papers gained 33,286 citations with an average of

332.86 citations/paper and these papers were published between 1978 to 2017 and 74 papers were published during the last 20 years from 1998 to 2017.

In our study, slightly more than half of the papers (n=53) were written by a single-author pattern and these papers were cited more times as compared to other authorship patterns. Only seven papers were produced by more than three authors collaboration, 93 papers were written either in a single, double or three-authored format. Ali et al. (2015) studied the publication growth of *JAL* from 1999 to 2014 and about 73% of the total papers were contributed by a single author pattern. But the study was done by Ganganna (2017) that covered the publication growth of *JAL* in the five years from 2012 to 2016 revealed that the pattern of single-authored papers had been reduced and only 11% of the papers were found by the solo author. Another study focused on a ten-year bibliometric analysis of *JAL* from 2007 to 2016 exposed that more than half (56%) of the papers were multi-authors (Khanna et al. 2018). Another study analyzed the 100 highly cited papers published in *Library Philosophy and Practice (e-journal)* showing that half of the papers were single-authored (Haq et al. 2021). This study also endorsed that as per the Scopus database, the single author's paper gained a higher ratio of citations as compared to multi-author's papers.

The findings of our study showed that 69% of the highly cited papers were published before 2009 that's why 53% of the papers were single-authored. Over the period, the research collaboration practices have improved as Ganganna's (2017) study proved that 89% of the *JAL's* papers published from 2012 to 2016 were multi-authored.

Amongst the top-eight authors, who contributed in more than one paper each, seven authors were geographically associated with the United States and one from Singapore. The analysis of productive authors showed that Danuta A. Nitecki of Yale University-United States; Laura Saunders and Peter Hernon of Simmons College-United States were found on the top with three papers each, while the other five authors contributed in two papers each. The scrutiny of the country's affiliation of authors showed that authors belonged to the different institutions of the United States outclassed the rest of the world as they contributed in three-fourths (75%) of the papers, followed by Canada (n=9), Korea (n-2) and Singapore (n=2). Another study (Khanna et al. 2018) also endorsed that two-thirds of the total papers (n=484; 66.92%) in *JAL* from 2007 to 2016 were contributed by the United States, followed by Canada (n=45; 6.68%). The United States has been the most productive country in another study also that examined the 501 highly cited articles on Information Science & Library Science category indexed in the Web of Science database. It revealed that 67% of the papers were contributed by the United States, followed by Canada and United Kingdom with 10% and 9%, respectively (Ivanović and Ho 2016).

The bibliographic data and citation count of 100 highly cited papers of *JAL* for the current study was extracted from the Web of Science database, the findings highlighted the characteristics of highly cited papers. Future studies could compare the citation count of highly cited papers based on the Scopus and Google Scholar databases. In-depth distribution of articles on subject dispersion along with citation count could help to understand the influential subject areas of academic librarianship. Some researchers opined that the citation count couldn't determine the quality of paper albeit these studies highlight the prolific authors, institutions and countries. The contents, subject matter and research methodology as well as the implication of theories determine the quality of research (Feijoo et al. 2014).

Conclusion

The analysis of papers based on the citation count is a significant area in bibliometric studies. The number of citations gained by a paper is not only the quality metric of research but also shows the worth, excellence and popularity of the paper(s). The number of citations also indicate the impact of the author(s) on his(their) specific area of knowledge. The examination of highly cited papers on the specific area of knowledge support comprehending the theory and understanding the subject in a befitting manner. The evaluation of subject areas in our study was based on the keywords used by the authors and "*academic library*", "*social media*", "*college students*", and "*information literacy*" were found the preferred areas of research. This study would also motivate the potential LIS researchers to conduct more studies on the highly cited papers.

Conflict of Interest

There is no conflict of interest among the contributors on the text and findings of the manuscript.

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