Global Knowledge, Memory and Communi

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Introduction

Scientific research plays a crucial role in advancing knowledge and driving progress in various fields (Caparlar and Donmez, 2016). However, conducting research requires substantial resources, both in terms of infrastructure and funding. Research funding, obtained through competitive grants and financial support from institutions, governments, and organizations, enables researchers to cover expenses, secure research facilities and manpower, and pursue their investigations with greater autonomy and flexibility (Pakkan *et al*., 2022). The availability of research funding varies across disciplines and countries; with different nations investing in science and research based on their potential and development goals (Smits and Denis, 2014; Deori *et al*., 2022).

Funding plays a significant role in shaping the research landscape and driving scientific output. It enables academic and research institutions to recruit talented researchers, provides access to cutting-edge technology and equipment, and promotes high-quality research (Garcia and Sanz-Menendez, 2005; Jowkar *et al*., 2011). As a result, funding stimulates scientists to conduct impactful studies and contributes to economic and societal development (Gondaliya and Shah, 2012).

While the importance of research funding is widely acknowledged, the scholarly impact of funded research compared to non-funded research has been a subject of academic debate. Funded research is often perceived to have an advantage over non-funded research due to its originality, availability of resources, and infrastructure. Previous studies have examined the relationship between funding characteristics and scientific productivity (Huang *et al*., 2006; Zhao, 2010; Jacob, 2011) but have given limited attention to assessing the scholarly impact of funded research.

Investigating the scholarly impact of funded research is crucial to understanding the effectiveness of research funding and its implications for the scientific community. Studies in Nanotechnology and other fields (Science, Technology, Engineering, Mathematics, and

Medicine) have shown that grant-sponsored research tends to have higher impacts in terms of journal ranking and citation counts (Wang and Shapira, 2015; Yan *et al*., 2018). However, there is a need for more comprehensive research on the specific relationship between funding and scholarly impact, particularly in the field of Library and Information Science (LIS).

This study aims to address this research gap by examining the scholarly impact of funded and non-funded research published in high-impact LIS journals. It explores whether funded research exhibits greater scholarly impact and considers factors such as the availability of Open Access (OA) to publications, specific research areas, and sources of funding that may influence scholarly impact in the field. The analysis utilizes funding acknowledgment text, article-level OA indicators, and citation data from the Scopus database to assess the differences in citation impact between funded and non-funded articles.

While this study focuses on the LIS domain, the methodology employed can be applied to other fields, providing valuable insights into the link between research funding and scholarly impact. Understanding the relationship between funding and scholarly impact can help researchers, funding agencies, and institutions make informed decisions regarding resource allocation and support the advancement of knowledge in various disciplines. By examining the impact of research funding, this study contributes to the broader understanding of the dynamics between funding, research outcomes, and the scientific community.

Research questions

The primary objective of this study is to assess the impact of funded research in comparison to non-funded research published in ten core LIS journals in the year 2016. In pursuit of this objective, the study addresses the following specific research questions:

1. What is the current landscape of funded and non-funded research in the field of LIS? This question aims to provide an overview of the prevalence and distribution of funded and non-funded research within the LIS domain.
2. Which funding agencies have prominently supported research in various areas of LIS? This question seeks to identify the key funding agencies that have contributed to research in different research areas within the field of LIS.
3. Does funded research in LIS exhibit a greater scholarly impact than non-funded research? This question explores the potential disparity in scholarly impact between

funded and non-funded research in LIS, assessing factors such as citations, journal rankings, and other relevant indicators.

4. Is there a difference in scholarly impact between funded research published with open access and closed access? This question investigates whether the open access availability of funded research in LIS influences its scholarly impact compared to research published behind closed access barriers.
5. What types of research topics and researchers have received funding within the field of LIS? This question aims to identify the specific areas of research and researchers who have been awarded funding, providing insights into the focus and distribution of funded research within the LIS domain.

Review of Literature

Previous research related to the topic examined the robustness and comparability of the sources of funding acknowledgments in scientific publications; the relationship between funding characteristics and scientific productivity; OA policies and OA availability of funded research; the relationship between research funding and the scholarly impact at various levels of analysis, such as subject, country, and funding agency.

Funding acknowledgments in publications

Funding acknowledgments in publications have been the subject of previous research. , ~~as outlined in the previous research~~. Costas and van Leeuwen (2012) conducted a study to examine the presence and length of funding acknowledgment text in publications indexed in the Web of Science (WoS) database for the year 2009. They also investigated the presence of peer interactive communication, impact indicators, distribution of papers by fields, countries of the authors, and levels of collaboration. The findings indicated that articles containing funding acknowledgments tend to have a greater impact compared to those without such acknowledgments. The study also revealed that China had the highest share of publications with funding acknowledgments, while the presence of funding acknowledgments in the humanities and social sciences was relatively low in comparison to more fundamental subjects.

Daz-Faes and Bordons (2014) examined 38,257 English-language papers published by Spanish researchers in 2010 and found that approximately two-thirds of these papers contained funding acknowledgments. However, considerable variations were observed across different subject areas. Humanities and social sciences showed the lowest values of funding acknowledgments, while experimental subjects like chemistry and physics exhibited the highest values.

Chankseliani (2023) utilized Scopus publication data to investigate the sources of funding for globally visible research conducted in Central Asia. The study revealed that funding for this research came from 98 different countries across North America, Europe, Asia, Latin America, the Middle East, and Australia. The United States and the Russian Federation were the two most frequently mentioned countries, accounting for approximately 20% of the total funding acknowledgments. The research carried out by globally visible authors predominantly received funding from bilateral agencies (68% of all funding acknowledgments), followed by philanthropies (7%) and multilateral organizations (5%).

Funding characteristics and scientific productivity

Wang *et al.* (2012) conducted a study on research papers published in SCI-indexed journals in 2009 to examine the impact of government funding on research productivity. The results showed that nearly 70% of research papers in China were the outcome of funding support. The study also revealed that the National Natural Science Foundation of China (NSFC) was the leading funding agency, contributing to almost 90% of the research papers. The average grant for funded research was 2.95 in China, followed by 2.93 in the United States and 2.40 in Japan. Ebadi and Schiffauerova (2016) investigated the impact of research funding and other factors on the quantity and quality of scientific productivity among individually sponsored researchers in Canadian natural sciences and engineering from 1996 to 2010. The findings indicated that while career age had a detrimental impact on publication quality, overall, funding had a positive effect on both the quantity and quality of publications. Young researchers working in large teams were more likely to produce high-quality publications, and academic researchers contributed more publications compared to industry-affiliated researchers who produced higher-quality publications.

Huang and Huang (2018) examined the distribution of research funding and funding agencies in 5,856,744 journal articles collected from the Web of Science (WoS) database, published between 2009 and 2014 by authors from the G9 countries. The findings revealed that government agencies were the major sponsors of funded articles in the G9 countries. China had the highest proportion of funded articles in its total scientific output, while Italy had the lowest. Life sciences had the highest proportion of funded articles compared to overall paper output, whereas natural sciences had the highest share of papers compared to all funded publications in a country. The top three funding agencies in each G9 country were predominantly domestic, with a significant portion of their funding allocated to domestic research projects.

Zhou *et al* (2020) analyzed papers acknowledging funding from governments in developing and developed countries such as China, the United States, Germany, the Netherlands, South Africa, and Brazil. The study focused on national funding agencies (focal agencies) that support competitive science research, including NSFC, NSF, DFG, NWO, NRF, and CNPq. The findings revealed variations in the arrangement of government funding sources for competitive scientific projects across countries. While NSFC and CNPq were centralized in China and Brazil, respectively, the remaining four countries had relatively decentralized sources. The six focal national funding agencies demonstrated greater efficiency in enhancing citation impact compared to non-focal agencies, with NWO, NSF, and NSFC performing particularly well in their respective countries.

Alvarez-Bornstein and Bordons (2021) investigated the effects of funding on various aspects of research performance over a five-year period, analyzing scientific publications from Spain-based researchers across seven disciplines. The findings indicated that funding played a role in promoting high-impact research, reducing the number of uncited papers, and fostering collaboration. Shueb *et al.* (2021) studied COVID-19 research funding, journals publishing funded research, and funding institutions using the Web of Science database. The findings revealed that 32% of publications on COVID-19 were funded. China emerged as the leading contributor with 43.18% of the literature on COVID-19 in funded research, followed by the United States (27.38%) and the United Kingdom (10.17%). The NSFC was the leading funding agency, followed by the United States Department of Health and Human Services (DHHS) and the National Institutes of Health (NIH). The study also found that a significant number of articles on COVID-19 were available through the green and bronze routes of OA. Zhao *et al.* (2021) analyzed literature in the field of LIS published between 2016 and 2020 in Chinese and foreign journals to track the progress of funded papers during the five-year period. The findings indicated a slight decrease in research publications in Chinese journals but an increase in publications in foreign journals annually. The study also revealed that research funded by municipal foundations was more prominent and published in Chinese journals.

Open Access policies and OA availability of funded research

Kim *et al.* (2016) analyzed the OA policies of foreign public organizations in Korea. The study showed that most organizations had mandatory policies for depositing published research in repositories resulting from funded research. The study also found that funding agencies had progressive policies to reduce the embargo period. Borrego (2016) examined the impact of the Spanish government's OA mandates after 2.5 years of implementation. The results showed that approximately 58% of publicly funded research had at least one OA copy available one year after publication. The study revealed that about 25% of research was published as gold OA, approximately 22% as green OA, and almost 13% as grey OA. The findings also indicated that PubMed Central and ArXiv were the major repositories for self-archiving articles, and around 14% of funded research was accessible through institutional repositories. Over two-thirds of the non-OA publications were published in journals that allowed preprint or post-print deposition.

Scaffidi *et al.* (2021) analyzed 851 research papers to examine the OA availability of research funded by the Canadian Institutes of Health Research (CIHR) and published from 2014 to 2017 in WoS-indexed journals. The study found that the OA publishing of CIHR-funded research decreased from 79.6% in 2014 to 70.3% in 2017. A comparative study of four years of publication showed no significant difference between the percentages of CIHR-funded research published as OA in 2014-15 compared to 2016-17. OA-funded research had higher impact and attention scores. Deori *et al* (2022) examined the OA availability of India's funded research published from 2016 to 2020. The study found that national and international funding bodies funded 26% of India's research. Of the funded research, approximately 29% was freely accessible with few reuse restrictions. The green route to OA was the primary mode of OA availability for funded research, followed by the gold and bronze routes of OA. The Ministry of Science was the leading funding agency, followed by Horizon 2020, ICT, and Future Planning.

Manikandan and Vani (2010) investigated funded research and its OA status in biomedical sciences in India. The study found that the Indian Council of Medical Research (ICMR) and the Department of Biotechnology (DBT) funded many research projects in biomedical sciences. However, the funded research was published in subscription-based journals, and publicly funded research was not available in the public domain. Mugnaini et al. (2022) examined the productivity of literature by faculty members of Brazilian institutions in Brazil from 2009 to 2016 and explored the association between funded research and open-access publishing. The study results showed that funded research was mostly available behind paywalls. However, there was a slight increase in the availability of non-funded articles through subscriptions. The highest number of OA articles was accessible via the bronze route of OA, followed by gold OA. Additionally, the findings indicated that SciELO (a database) alone provided 50% of non-funded OA articles and 20% of funded research papers.

Scholarly impact of funded research

Funding plays a crucial role in scientific research, and numerous studies have explored the relationship between funding and citation impact. Peritz (1990) focused on the citation impact of funded and non-funded research in economics. The study revealed that even when both funded and unfunded research works are published in high-impact journals, funded research receives more frequent citations than unfunded research. This suggests that funding plays a role in increasing the visibility and recognition of research outputs. Huang *et al.* (2006) investigated the funding scenario in Nanoscale Science and Engineering at the NSF (USA) and its impact on technology innovation. By analyzing patent citations, the study found that researchers and patents supported by the NSF had a significantly greater influence over a four-year period compared to other comparator groups. This highlights the long-term significance of basic research supported by funding, as evidenced by the increasing impact of NSF-authored patents.

Stamou *et al.* (2009) employed natural language processing techniques to examine the citation impact of publicly funded scientific research. The study aimed to support funding organizations in determining efficient research investments. The findings indicated that funded research represents approximately 23% of scientifically published papers and often has a more significant impact than non-funded research. This suggests that funding organizations are adept at evaluating research potential, and investments in research yield meaningful effects. Jacob and Lefgren (2011) assessed the impact of receiving an NIH grant on subsequent publications and citations. Their study, based on a sample of research grant applications to the National Institutes of Health (NIH), revealed that receiving an NIH research grant results in only one additional publication over the next five years, corresponding to a 7% increase. Although modest, this increase demonstrates the positive influence of funding on research output. Jowkar et al. (2011) examined 80,300 Iranian articles produced between 2000 and 2009 to compare the citation impact of funded and non-funded research publications. The study found that around 12.5% of Iranian publications received funding, and the citation impact of funded publications was greater in nearly all subject fields. The universities subordinate to the Ministry of Science, Research, and Technology had the highest number of funded publications, indicating the impact of institutional support.

Wang and Shapira (2015) conducted a study investigating the relationship between funded research and citation impact in nanotechnology. By examining funding acknowledgments in scientific papers published in WoS-indexed journals, the study found a positive relationship between funded research and research impact. Funded research had a higher citation impact at both the article and journal levels, indicating the influence of funding on research visibility and recognition. Gok *et al.* (2016) analyzed 240,000 papers authored by researchers from six European countries to investigate funding-related relationships. The study found that funding is highly correlated with the number of citations, and citation impact is positively related to funding variety but adversely related to funding intensity. This suggests that a diverse funding portfolio contributes to higher research impact.

Morillo (2016) examined the impact and collaboration of funded and unfunded articles published in Spain. The study revealed disparities in terms of funding acknowledgments and the types of funding sectors, with papers funded by both public and private sectors having significant impact and collaboration. Different fields, such as Clinical Medicine, Life Sciences, and Physics, showed greater international collaboration when funded by both public and private sectors. Yan *et al.* (2018) investigated the relationship between science funding and citation impact in STEMM disciplines. The study found a significant positive relationship between funding and citations in STEMM papers. Multi-author and multi-institution papers frequently received more citations for funded research, highlighting the collaborative nature of funded research projects. Llewellyn *et al.* (2018) analyzed the productivity and influence of articles supported by Clinical and Translational Science Awards (CTSA) hub grants. The study demonstrated that CTSA-funded research yielded a substantial and growing corpus of influential research findings with consistently high indices of relative citation impact. CTSA-funded articles were cited more frequently than expected for articles from the same disciplines and publication years, indicating the significant impact of funding on research outcomes. McManus and Baeta Neves (2021) examined the impact of Brazilian-funded research contributed by Brazilian authors. The study found that Capes, CNPq, and FAPESP funded a significant portion of the research in Brazil. FAPESP had a higher impact in Brazil, but North American and European-funded research had more impact globally. This suggests the influence of funding sources on research impact at both national and international levels.

The reviewed studies consistently show that funding has a positive correlation with research impact, resulting in more citations, increased visibility, and enhanced collaboration. Factors such as funding variety, institutional support, and international collaborations also contribute significantly to research impact. These findings emphasize the importance of funding for advancing scientific knowledge and promoting innovation in various fields. However, in the field of LIS, no study has explored the academic impact of funded and non-funded research. Therefore, to address this research gap, the present study aims to investigate the relationship between the scholarly impact of funded and non-funded LIS research.

Methodology

Selection of Journals

Different metrics, such as the Scimago Journal Ranking score and the Journal Citation Report (JCR) from Clarivate Analytics, are employed to select core journals in specific subjects. However, when these metrics are used to identify core LIS journals, some non-core LIS journals end up in the ranking list. Additionally, Google Scholar offers researchers a metrics facility to find the top 20 core journals in various subjects based on their 5-year metrics and publication median. Google Scholar metrics assist researchers in exploring the leading journals in any particular area or discipline. Given that most of the top 10 journals listed in the JCR under Information Science & Library Science and Scimago Journal Ranking under the Library & Information Subject category pertain to subjects other than LIS, Google Scholar metrics are utilized to select 10 core LIS journals for this study. The list of top ten journals from three sources (Google Scholar, Scimago Journal Ranking and JCR) is presented in Appendix 1.

Collection of article metadata

Research articles published in the top 10 ranked journals of the LIS discipline in 2016 were identified by conducting a search in the Scopus database. The 'source title' of each journal was used as a search term in the 'search document' box of the Scopus database to retrieve articles specifically from these core LIS journals. The search was limited to journal articles published in 2016, while the citation analysis encompassed the period from 2016 to 2021, capturing the citations received by these publications during that timeframe.

For each article retrieved, detailed information including the author(s), title, source title, number of citations (cited by), authors' affiliations, funding details, and OA status was collected from the Scopus database. To facilitate data management and analysis, all the information from each journal was exported to individual CSV files, and subsequently merged into a single Microsoft Excel file. The dataset for study is uploaded at data repository. This consolidation of data allowed for comprehensive examination and comparison across the ten core LIS journals, providing insights into the scholarly impact of funded and non-funded research.

Data analysis

Descriptive analysis was conducted using Microsoft Excel to calculate the frequency, percentage, and mean of publications within the dataset. Statistical analysis was performed using Minitab software, version 19.2020.1 (Minitab, LLC, State College, PA, USA). The Mann-Whitney U test was employed to determine whether there were any statistically significant differences in the citation rates between different article groups, including funded versus non-funded articles and funded OA versus funded close access articles.

In addition, a ranking list of countries was generated based on the weighted value of contributions (by authorship) from each country using the fractional counting method. This method assigns equal credit to each unique collaborating country. For example, if an article has three affiliation addresses, two from India and one from the USA, then India would receive 2/3 credit and the USA would receive 1/3 credit. By applying this approach, the relative contributions of different countries were evaluated and reflected in the ranking list.

The prominent research areas of the funded research were identified by searching the title of each article in the WoS database. The WoS provides two types of research areas: (i) Topic Meso and (ii) Topic Micro. For the present study, the Topic Micro has been used.

Results

Journal-wise distribution of funded and non-funded research

Table 1 shows the journal-wise distribution of funded and non-funded articles. Among the top 10 leading LIS journals, "The Journal of Informetrics" published 38.75% (31 out of 80) funded papers and secured the highest position, followed by the "Journal of Information Science" published 30.9% (17 out of 55) funded articles and the "Journal of the Association for Information Science and Technology" has 18.98% (41 out of 216) funded papers. As mentioned in Table 1, the journals "Journal of Information Science", "The Journal of Academic Librarianship" and "Learned Publishing" published a considerable percentage of funded publications. While "Online Information Review", "Information Development" and "Journal of Librarianship and Information Science" have lower publications of funded research. In contrast, "Journal of Documentation" did not have any funded publication among the core 10 journals of LIS.

(INSERT HERE TABLE 1)

Funding Agencies

Table 2 provides the details about funding agencies that had actively supported LIS studies in different research areas. As shown in Table 2, the "National Natural Science Foundation of China" is the leading organization that funded 30 LIS studies in the areas of Bibliometrics, Collaborative Filtering and Customer Satisfaction. Other prominent funding bodies which supported LIS research on Bibliometrics, Academic Entrepreneurship, Intellectual Property, Knowledge Management and Crowdsourcing include the "Japan Society for the Promotion of Science" and the "Ministry of Science, ICT and Future Planning" with 8 studies each. The "National Science Foundation", "Seventh Framework Programme" and "Coordenação de Aperfeiçoamento de Pessoal de Nível Superior" supported 7, 6 and 5 studies respectively on Bibliometrics, Semantic Web, Complex Networks and Plagiarism. Other funding agencies which supported 4 studies each on diverse research areas such as Augmented Reality, Information Literacy, Internet Addiction, Semantic Web and Big Data include the "Engineering and Physical Sciences Research Council", "Horizon 2020 Framework

Programme" and the "Institute of Museum and Library Services". Furthermore, the remaining 71 studies were supported by other funding bodies.

(INSERT HERE TABLE 2)

Journal-wise distribution of citations to funded and non-funded articles

Table 3 shows the overall citation impact of funded research and non-funded research published in ten core LIS journals. As shown in Table 3, of the total 22397 citations received by a total of 1064 articles during 6 years (2016-2021), 3611 citations were received by funded articles (n=147) with a mean citation rate of 24.56 and 18786 citations were obtained by non-funded articles (n=917) with mean citation rate of 20.49. Funded articles published in the "Journal of the Association for Information Science and Technology", "Journal of Informetrics", "Journal of Information Science", "Journal of Academic Librarianship" and "Journal of Librarianship and Information Science" have a greater scholarly impact of funded articles because the mean citation rates of funded articles published in these journals are higher than non-funded articles. However, Non-funded publications published in "Scientometrics", "Online Information Review", "Information Development" and "Learned Publishing" have a better scholarly impact than funded articles since their mean citation rates are higher.

(INSERT HERE TABLE 3)

Measurement of scholarly impact of different groups of articles

Citation counts are one of the quantitative methods used for measuring the scholarly impact of research. To measure the scholarly impact of research, the articles were classified into six groups: (i) funded articles, (ii) non-funded articles, (iii) funded-OA articles, (iv) funded-close access articles, (v) non-funded OA articles and (vi) non-funded-close access articles. A summary of citation counts of different article groups is shown in Table 4.

As shown in Table 4, 147 (13.82%) articles of the total 1064 articles published in 2016, were identified as funded and 917 (86.18%) as non-funded. About 42% (n=63) of the funded studies were published OA, while about 58% (n=84) were published closed access. Among the non-funded studies, about 32% (n=292) were published OA, while 68% (n=625) were closed access. Table 4 also shows the mean citation rate of different groups of articles. The mean citation of funded articles (24.56) is greater than non-funded articles (20.49). Analysis of data also indicates that funded articles that were published OA have received more citations (mean citation rate=32.39) compared to funded articles published closed access (mean citation rate=18.69). A similar citation pattern is observed in the non-funded article category. Non-funded articles published OA received more citations (mean citation rate=25.78) compared to non-funded articles published closed access (mean citation rate=18.01).

(INSERT HERE TABLE 4)

Determining the significance of scholarly impact between different article groups

An analysis of citations of different groups of articles shown in Table 4 indicates a significant difference between article groups and their mean citation rates. However, to statistically test the significance of these differences, the Mann-Whitney U test was conducted using Minitab. The Mann-Whitney U test determines whether there is a statistically significant difference between two independent groups when the dependent variable is either ordinal or continuous, but not normally distributed. The results are shown in Tables 5 and 6.

Scholarly impact: funded vs. non-funded articles

Looking at the "Median" column in Table 5, it may be observed that the median citation score is higher for funded articles compared to non-funded articles. The median difference in citations between the two groups (i.e., funded and non-funded articles) is 4.00 (the Point estimate for ETA1-ETA2 row) with 95% confidence intervals for the median difference in citations of 1.999 to 6.00 (the 95.0 Percent CI for ETA1-ETA2 row). The Wilcoxon test statistic, W (W), of 91572.5 is also shown, along with the statistical significance (2-tailed p-value) of this test (the Test of ETA1 = ETA2 vs. ETA1 not = ETA2 is a significant row), which is 0.0001 (the p-value is adjusted for ties and is equivalent to the Mann-Whitney U test). As the p-value is lesser than 0.05 (i.e., $p > .05$), it can be concluded that there is a statistically significant difference in the median citation rate between funded and non-funded articles and the citation rate of funded articles is statistically significantly higher than non-funded articles.

(INSERT HERE TABLE 5)

Scholarly impact: funded-OA vs. funded-close access articles

It may be observed in Table 6 that the median citation score is higher for funded-OA articles compared to funded-close access articles. The median difference in citations between the two groups is 5.00 with 95% confidence intervals for the median difference in citations of 1.00 to 10.00. The Wilcoxon test statistic, W (W), of 5270.5 is also shown, along with the statistical significance (2-tailed p-value) of this test (the Test of ETA1 = ETA2 vs. ETA1 not = ETA2 is a significant row), which is 0.0173 (the p-value is adjusted for ties and is equivalent to the Mann-Whitney U test). As the *p*-value is lesser than 0.05 (i.e., $p > .05$), it can be concluded that there is a statistically significant difference in the median citation rate between funded-OA and funded-close access articles and the citation rate of funded-OA articles is statistically significantly higher than and funded-close access articles.

(INSERT HERE TABLE 6)

Year-wise distribution of citations to funded and non-funded articles

Table 7 deals with an examination of the year-wise distribution of citations to explore how funded research has been cited over a period of six years as compared to non-funded research?. As shown in Table 7, the higher impact of both funded and non-funded research can be observed especially during the end years of the 6-year period. It appears that citations to both funded and non-funded research consistently increased over time and their increased peak of citations can not be determined during the 6-year citation window. Thus, ten to fifteen year time after the publication of an article is required to find out the increase-peak and decrease process of citations. Little difference in the cited half-life was observed between funded and non-funded research (4.77 vs. 4.15), both close to half the 6-year citation window considered here). However, funded research appears to have attracted attention more quickly than non-funded research as indicated by the difference in the mean citation (Table 7), i.e., the average number of citations that papers received in the publication year 2016: funded research has a slightly higher mean citation rate than non-funded research (1.34 vs. 1.13).

(INSERT HERE TABLE 7)

Distribution of funded articles and citations by research areas

Table 8 presents the distribution of funded articles and their corresponding citation counts across different research areas. The research area with the highest number of funded articles is bibliometrics with 68 articles, while the research area with the lowest number of funded articles is internet addiction with only 2 articles. The highest number of citations is observed for the research area of bibliometrics, with a total of 1676 citations and a mean citation count of 24.64. The most highly cited article in this research area has 322 citations and is titled "Constructing bibliometric networks: A comparison between full and fractional counting." The research area with the second-highest number of citations is information literacy, with a total of 392 citations and a mean citation count of 18.66. The most highly cited article in this research area has 62 citations and is titled "Is exploratory search different? A comparison of information search behavior for exploratory and lookup tasks."

The research areas with the lowest number of funded articles are collaborative filtering, complex networks, knowledge management, privacy, semantic web, internet addiction, and customer satisfaction, each with only 2-4 funded articles. The mean citation count for these research areas ranges from 12.5 to 35.0, with the most highly cited articles having citation counts ranging from 19 to 84. Overall, the results indicate that bibliometrics and information literacy are the research areas with the highest citation counts, while the other research areas have lower citation counts with varying degrees of mean citation counts.

(INSERT HERE TABLE 8)

Highly cited articles reporting funded research

Table 9 lists the top ten highly cited articles among the funded research, along with their titles, authors, journals, volume, issue, and citation counts. The table shows that the most cited article is "Constructing bibliometric networks: A comparison between full and fractional counting," with 265 citations, followed by articles “Comparing keywords plus of WoS and author keywords: A case study of patient adherence research ” and “Tweets as impact indicators: Examining the implications of automated “bot” accounts on Twitter” that got 121 and 121 citations respectively. However, the article entitle “Diversity of references as an indicator of the interdisciplinary of journals: Taking similarity between subject fields into account” with 96 citations, “Measuring the efficiency of university-industry Ph.D. projects using the best worst method” with 80 citations, “Gender differences in research performance and its impact on careers: a longitudinal case study ” obtained 75 citations, and “Arabic tweets sentiment analysis - A hybrid scheme” with 73 citations have a significant impact. Articles such as “Software in the scientific literature: Problems with seeing, finding, and using the software mentioned in the biology literature”, “ Using network science and text analytics to produce surveys in a scientific topic ” and “A relational altimetric? Network centrality on Research Gate as an indicator of scientific impact” are also coming under the top-funded research publications that received 72, 71, and 63 citations respectively.

(INSERT HERE TABLE 9)

Highly cited articles reporting non-funded research

Table 10 deals with the non-funded articles that received the highest number of citations in LIS core 10 journals published in 2016. As mentioned in table 10, the paper entitled "The sharing economy: Why people participate in collaborative consumption" received the highest no of citations (1380) during the 6 years period followed by the articles "The journal coverage of Web of Science and Scopus: a comparative analysis"(916), "Google Scholar, Scopus and the Web of Science: a longitudinal and cross-disciplinary comparison" (505) and "Factors affecting a number of citations: a comprehensive review of the literature" (246). However, the article "A review of emerging trends in global PPP research: analysis and visualization" with 147 citations and the article "Grand challenges in altmetrics: heterogeneity, data quality and dependencies", with (132) citations, are the leading non-funded research papers.

Although the articles entitled "Academic research in innovation: a country analysis " with (123) citation, " Large-scale analysis of the accuracy of the journal classification systems of Web of Science and Scopus " (118) citation, and "An investigation of users' continuance intention towards mobile banking in China" with (117) citations also come in the list of top 10 highly cited non funded articles. The research paper "The influence of learning value on learning management system use: An extension of UTAUT2" also comes in the top leading cited non-funded research publications with 86 citations.

(INSERT HERE TABLE 10)

Funded research by author affiliation

Table 11 shows the distribution of funded articles by author affiliation type. The majority of articles were from the field of LIS, with 32 articles. Computer Science had the second-highest number of articles with 26 articles. Economics and Management had 10 articles, followed by each Science & Technology and Public Administration with 8 articles, Business with 5, Education with 3, and Medical with 3 articles.

(INSERT HERE TABLE 11)

Distribution of funded research by the country

The analysis of Table 12 reveals the share value of contributions by authors' affiliations to different countries. The table presents the count and weight values for each country based on the fractional counting method. The United States holds the top position with a count of 50 and a total weight of 24.52, followed by China and the United Kingdom securing the second and third positions, respectively, with a count of 62 and 29. China's total weight is 24.46, while the United Kingdom's total weight is 14.48. Upon analyzing the share values of contributions, it becomes evident that the top ten countries, namely the United States, China, the United Kingdom, South Korea, Japan, Brazil, the Netherlands, Belgium, Taiwan, and Finland, make significant contributions to the authorship of the publications. Collectively, these countries account for 213 out of the total 310 occurrences, representing 108.79% of the weighted score.

The analysis also highlights the diverse international participation in the field, with countries from various regions making contributions. This indicates the global involvement and recognition of the subject matter in different research communities. Overall, the analysis provides valuable insights into the distribution and share value of contributions by authors' affiliations to different countries, emphasizing the significance of international collaboration and the diverse perspectives brought forth by authors from around the world.

(INSERT HERE TABLE 12)

Discussion and implications

The findings of the present study revealed that funded research demonstrated a higher academic impact compared to non-funded research. The analysis indicated that across all the journals, funded articles received higher mean citation counts than non-funded articles, with an average citation count of 24.56 for funded articles and 20.49 for non-funded articles. This difference in citation rates between funded and non-funded articles was statistically significant. However, it is important to note that these trends varied across different disciplines. For instance, a parallel study by Zhao *et al.* (2018) on the WOS database found that funded research in Chemistry and Material Science received an average of 8 citations per paper, while non-funded research received fewer citations.

Several other studies, including those conducted by Stamou *et al.* (2009), Shapira (2015), Shen *et al.* (2016), and Yan *et al.* (2018) have also reported higher citation rates for funded research compared to non-funded research in various fields. The average citation ratio in the field of LIS has shown an increase over the past two decades, with Zhao (2010) reporting an average of 18 citations per paper for articles published in 1998 in the top seven LIS journals. Furthermore, the current study found that funded OA articles had a higher scholarly impact, as indicated by the median citation score, compared to funded closed-access articles. This finding aligns with a study by Scaffidi *et al.* (2021) that reported a higher impact and attention scores for OA-funded research supported by the Canadian Institutes of Health Research (CIHR) published between 2014 and 2017.

The year-wise analysis of citations revealed a consistent pattern of higher citation counts for funded research articles compared to non-funded research articles across all years. This trend was also reflected in the higher mean citation scores for funded articles throughout the years. The study identified the United States as the leading funding country among all countries, consistent with previous findings in other research areas such as nanotechnology (Wang and Shapira, 2015), where the United States was also the top funding country.

The distribution of funded articles and their citation counts across different research areas highlighted variations in citation counts and mean citation scores among fields. The research area with the highest number of funded articles was "Bibliometrics" with 68 articles, and it also received the highest number of citations, totaling 1676 with a mean citation count of 24.64. However, in 1998, when Zhao (2010) conducted a study on the core seven LIS journals, the findings indicated that "Information retrieval" was the primary area of supported research.

The findings of this study have several implications for researchers, practitioners, and policymakers in the field of LIS. The study highlights the importance of securing funding for research in LIS. The higher academic impact and citation counts associated with funded research indicate that financial support plays a crucial role in promoting research visibility and recognition. Researchers should actively seek funding opportunities to enhance the quality and impact of their work. The study underscores the scholarly impact of funded OA articles compared to funded closed-access articles. This finding suggests that making research openly accessible can lead to greater dissemination and visibility, ultimately increasing its academic influence. Researchers and institutions should consider prioritizing OA publishing to maximize the reach and impact of their funded research. The study reveals discipline-specific variations in citation rates for funded research. Researchers should be aware that the impact of funding may differ across different research areas within LIS. Understanding these variations can help researchers identify areas where funding plays a more significant role in driving academic impact and tailor their strategies accordingly. The study highlights the leading funding sources in the LIS field, with the National Natural Science Foundation of

China and other agencies being prominent contributors. Policymakers and funding agencies should take note of these findings to ensure continued support for research in LIS. Diversifying funding sources can help foster a robust research ecosystem and facilitate innovation and advancement within the field. The study indicates an increase in the average citation ratio in the field of LIS over the past two decades. This suggests that research in LIS is gaining greater recognition and influence. Researchers and institutions should continue to strive for high-quality research and disseminate their findings effectively to contribute to the growing impact of the field.

Overall, the implications of this study emphasize the significance of securing funding, embracing OA publishing, recognizing discipline-specific variations, diversifying funding sources, and striving for increased citations. By considering these implications, researchers, practitioners, and policymakers can contribute to the advancement and impact of research in the field of LIS.

Limitations and future research

The study has certain limitations. First, the study was limited to a specific set of ten LIS journals published in 2016, which may not represent the entire landscape of funded research in the field. A larger and more diverse sample would provide a more comprehensive understanding of funding patterns and their impact. Second, the study focused on articles published in 2016 and considered citations received until 2021. This timeframe may not capture long-term trends or recent developments in funding research. Including a broader range of years would offer a more comprehensive analysis of funding patterns over time. Third, the study relied on the selected set of journals, which may introduce publication bias. Journals that were not included in the analysis may have different funding patterns and citation counts, leading to potential bias in the results. Fourth, the findings of this study may not be generalizable to other disciplines or research areas outside of LIS. Funding patterns and their impact can vary across different fields, so caution should be exercised when applying these findings to other domains.

To address these limitations, future research should consider several aspects. Firstly, increasing the sample size by including a larger and more diverse set of journals would provide a broader representation of funded research in LIS. This could involve including journals from different regions and languages to capture a more global perspective. Secondly, conducting a longitudinal analysis spanning multiple years would enable a more comprehensive examination of funding trends and their impact over time, capturing evolving patterns and changes in the academic impact of funded research. Thirdly, comparative studies across different disciplines or research areas would help identify similarities and differences in funding patterns and their impact, providing insights into the unique characteristics and challenges of funding research in LIS. Fourthly, incorporating qualitative research methods such as interviews or surveys can offer a deeper understanding of the factors influencing funding decisions and the experiences of researchers in securing funding, shedding light on motivations and challenges associated with funded research in LIS. Fifthly, analyzing funding policies and strategies implemented by funding agencies and institutions can provide insights into the effectiveness of different funding mechanisms, guiding future funding strategies and decision-making processes. Lastly, exploring interdisciplinary collaborations and funding patterns can reveal the synergies and potential benefits of interdisciplinary research in LIS, advancing the field and fostering innovation.

Conclusion

This study investigated the scholarly impact of funded and non-funded research in the field of LIS. The study found that funded research in LIS has a higher scholarly impact compared to non-funded research. Funded articles consistently received higher citation counts, indicating the importance of financial support in enhancing the visibility and recognition of research in the field. The average citation ratio in LIS has increased over the past two decades, indicating a growing impact of research in the field. The study also revealed that funded OA articles had a higher scholarly impact compared to funded closed-access articles, emphasizing the significance of OA publishing for maximizing the reach and influence of funded research in LIS. The United States emerged as the leading funding country, aligning with previous studies in various research areas, highlighting the substantial investment made by the United States in research and knowledge generation. Variations in citation counts and mean citation scores were observed across different research areas, with "Bibliometrics" standing out as the area with the highest number of funded articles and citations received. However, the study has limitations, including a small sample size and a focus on specific journals. Future research should consider expanding the sample size, incorporating additional variables, and analyzing a wider range of journals to gain a more comprehensive understanding of funding research in LIS.

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Tables

Table 1. Journal-wise distribution of funded and non-funded articles

S. No.	Journal	Funded-articles	Non-funded articles	Total	Funding ratio
1	Scientometrics	34	290	324	10.49
2	Journal of the Association for Information Science and Technology	41	175	216	18.98
3	Journal of Informetrics	31	49	80	38.75
4	Online Information Review	2	54	56	3.7
5	Journal of Information Science	17	38	55	30.9
6	Information Development	4	122	126	4.19
7	The Journal of Academic Librarianship	14	76	90	18.42
8	Journal of Documentation	0	60	60	0
9	Learned Publishing	2	28	30	7.14
10	Journal of Librarianship and Information Science	2	25	27	7.4
	Total	**147**	**917**	**1064**	**13.81**

Table 2. Prominent funding agencies

S. No.	Funding agency	Prominent research areas	No. of articles
1	National Natural Science Foundation of China	Bibliometrics (n=16); Collaborative Filtering (n=3); Customer Satisfaction (n=2)	30
2	Japan Society for the Promotion of Science	Bibliometrics (n=6); Academic Entrepreneurship (n=1); Intellectual and Property (n=1)	8
3	Ministry of Science, ICT and Future Planning	Bibliometrics (n=2); Knowledge Management (2); Crowdsourcing (n=1)	8
4	National Science Foundation	Bibliometrics (n=2); Privacy (n=1); Semantic Web (n=1)	7
5	Seventh Framework Programme	Bibliometrics (n=6)	6
6	Coordenação de Aperfeiçoamento de Pessoal de Nível Superior	Complex Networks (n=1); Bibliometrics (n=1); Plagiarism (n=1)	5
7	Engineering and Physical Sciences Research Council	Augmented Reality (n=1); Information Literacy (n=1); Internet Addiction (n=1); Bibliometrics (n=1)	4
8	Horizon 2020 Framework Programme	Information Literacy (n=2); Bibliometrics (n=2)	4
9	Institute of Museum and Library Services	Information Literacy (n=2); Semantic Web (n=1); Big Data (n=1)	4
10	Others	Information Literacy (n=33); Bibliometrics (n=15); Natural Language Processing (n=7)	71

Table 3. Journal-wise distribution of citations to funded and non-funded articles

S.No	Journal	No. of citations to funded articles	No. of citations to non-funded articles	Total Citations	Mean	
					Funded	Non-funded
1	Scientometrics	691	7114	7805	20.32	24.53
2	Journal of the Association for Information Science and Technology	1279	4806	6085	31.19	27.46
3	Journal of Informetrics	953	1390	2343	30.74	28.36
4	Online Information Review	20	1090	1110	10.00	20.18
5	Journal of Information Science	343	754	1097	20.17	19.84
6	Information Development	43	1653	1696	10.75	13.54
7	The Journal of Academic Librarianship	245	854	1099	17.5	11.23
8	Journal of Documentation		620	620	0	10.33
9	Learned Publishing	9	313	322	4.5	11.17
10	Journal of Librarianship and Information Science	28	192	220	14	7.68
	Total	**3611**	**18786**	**22397**	**24.56**	**20.49**

Table 4. Publication and citation count of different article groups

Types of articles	No. of articles	%	Total citation counts	Mean of total citation counts	SE Mean
Funded	147	13.82	3611	24.56	2.89
Non Funded	917	86.18	18786	20.49	2.22
Total	**1064**		**22397**	**21.05**	**1.95**
Funded-Open Access	63	42.17	2128	32.39	6.25
Funded- Closed Access	84	57.82	1483	18.69	1.74
Total	**147**		**3611**	**24.56**	**2.89**
Non-Funded- Open Access	292	31.84	7527	25.78	4.37
Non-Funded- Closed Access	625	68.16%	11527	18.01	2.53
Total	**917**		**18786**	**20.49**	**2.22**

Table 5. Mann-Whitney Test and CI: funded vs. non-funded articles

```
Article groups      N     Median
Funded Articles   147   16.000
Non-Funded        917   11.000


Point estimate for ETA1-ETA2 is 4.000
95.0 Percent CI for ETA1-ETA2 is (1.999,6.001)
W = 91572.5
Test of ETA1 = ETA2 vs. ETA1 not = ETA2 is significant at 0.0001
The test is significant at 0.0001 (adjusted for ties)
```

Table 6. Mann-Whitney Test and CI: funded-open access vs. funded-close access articles

```
Article groups         N    Median
Funded-Open Access    63    21.00
Funded-Close Access   84    12.50


Point estimate for ETA1-ETA2 is 5.00
95.0 Percent CI for ETA1-ETA2 is (1.00,10.00)
W = 5270.5
Test of ETA1 = ETA2 vs. ETA1 not = ETA2 is significant at 0.0173
The test is significant at 0.0173 (adjusted for ties)
```

Table 7. Year-wise distribution of citations to funded and non-funded research

Year	Citation counts		Total citations	Mean	
	Funded	**Non-funded**		**Funded**	**Non-funded**
2016	197	1041	1238	1.34	1.13
2017	493	2435	2928	3.35	2.66
2018	635	3196	3831	4.32	3.49
2019	701	3811	4512	4.77	4.15
2020	741	4035	4776	5.04	4.40
2021	844	4268	5112	5.74	4.65
Total	**3611**	**18,786**	**22,397**	**24.56**	**20.49**

Table 8. Distribution of funded articles and citations by research areas

S. No.	Research areas	No. of articles	Citation Counts	Mean	Highly cited article (No. of citations)
1	Bibliometrics	68	1676	24.64	Constructing bibliometric networks: A comparison between full and fractional counting (n=322)
2	Information Literacy	21	392	18.66	Is exploratory search different? A comparison of information search behavior for exploratory and lookup tasks (n=62)
3	Natural Language Processing	8	263	32.87	Arabic tweets sentiment analysis - A hybrid scheme (n=84)
4	Collaborative Filtering	4	50	12.5	Profiling users with tag networks in diffusion-based personalized recommendation (n=19)
5	Complex Networks	4	125	31.25	Using network science and text analytics to produce surveys in a scientific topic (n=76)
6	Knowledge Management	3	45	15.00	Patent citation indicators: One size fits all? (n=23)
7	Privacy	3	70	23.33	The effect of personalization provider characteristics on privacy attitudes and behaviors: An Elaboration Likelihood Model approach (n=33)
8	Semantic Web	3	40	13.33	A semantic-based approach for querying linked data using natural language (n=20)
9	Internet Addiction	2	26	13.00	Classifying Twitter favorites: Like, bookmark, or Thanks? (n=26)
10	Customer Satisfaction	2	70	35.00	Herd behavior in consumers' adoption of online reviews (n=56)
11	Others research areas	29	520	17.93	Measuring efficiency of university-industry Ph.D. projects using best worst method (83)

Table 9. Ten highly cited funded articles

S. No.	Article title	Author(s)	Journal	Volume (Issue)	Citation counts
1	Constructing bibliometric networks: A comparison between full and fractional counting	Perianes-Rodriguez A., Waltman L., van Eck N.J.	Journal of Informetrics	12(4)	265
2	Comparing keywords plus of WOS and author keywords: A case study of patient adherence research	Zhang J., Yu Q., Zheng F., Long C., Lu Z., Duan Z.	Journal of Informetrics	10(4)	121
3	Tweets as impact indicators: Examining the implications of automated “bot” accounts on Twitter	Haustein S., Bowman T.D., Holmberg K., Tsou A., Sugimoto C.R., Larivière V.	Journal of the Association for Information Science and Technology	67(4)	121
4	Diversity of references as an indicator of the interdisciplinarity of journals: Taking similarity between subject fields into account	Zhang L., Rousseau R., Glänzel W.	Journal of the Association for Information Science and Technology	67(1)	96
5	Measuring efficiency of university-industry Ph.D. projects using best worst method	Salimi N., Rezaei J.	Journal of Information Science	44(1)	80
6	Gender differences in research performance and its impact on careers: a longitudinal case study	van den Besselaar P., Sandström U.	Journal of the Association for Information Science and Technology	67 (5)	75
7	Arabic tweets sentiment analysis - A hybrid scheme	Aldayel H.K., Azmi A.M.	Scientometrics	123(1)	73
8	Software in the scientific literature: Problems with seeing, finding, and using software mentioned in the biology literature	Howison J., Bullard J.	Scientometrics	116(1)	72
9	Using network science and text analytics to produce surveys in a scientific topic	Silva F.N., Amancio D.R., Bardosova M., Costa L.D.F., Oliveira O.N., Jr.	Journal of Information Science	44(4)	71
10	A relational altmetric? Network centrality on ResearchGate as an indicator of scientific impact	Hoffmann C.P., Lutz C., Meckel M.	Journal of Information Science	42(6)	63

Table 10. Ten highly cited non-funded articles

S. No.	Article title	Author (s)	Journal	Volume (Issue)	Citation counts
1	The sharing economy: Why people participate in collaborative consumption	Hamari J., Sjöklint M., Ukkonen A.	Journal of the Association for Information Science and Technology	67(9)	1380
2	The journal coverage of Web of Science and Scopus: a comparative analysis	Mongeon P., Paul-Hus A.	Scientometrics	106(1)	916
3	Google Scholar, Scopus and the Web of Science: a longitudinal and cross-disciplinary comparison	Harzing A.-W., Alakangas S.	Scientometrics	106(2)	505
4	Factors affecting number of citations: a comprehensive review of the literature	Tahamtan I., Safipour Afshar A., Ahamdzadeh K.	Scientometrics	107(3)	246
5	A review of emerging trends in global PPP research: analysis and visualization	Song J., Zhang H., Dong W.	Scientometrics	107(3)	147
6	Grand challenges in altmetrics: heterogeneity, data quality and dependencies	Haustein S.	Scientometrics	108 (1)	132
7	Academic research in innovation: a country analysis	Merigó J.M., Cancino C.A., Coronado F., Urbano D.	Scientometrics	108(2)	123
8	Large-scale analysis of the accuracy of the journal classification systems of Web of Science and Scopus	Wang Q., Waltman L.	Journal of Informetrics	10(2)	118
9	An investigation of users' continuance intention towards mobile banking in China	Yuan S., Liu Y., Yao R., Liu J.	Information Development	32(1)	117
10	The influence of learning value on learning management system use: An extension of UTAUT2	Ain N., Kaur K., Waheed M.	Information Development	32(5)	86

Table 11. Distribution of funded articles by author affiliation type

S. No.	Department/School/ College	No. of articles
1	LIS	32
2	Computer Science	26
3	Economics and Management	10
4	Science & Technology	8
5	Public Administration	8
6	Business	5
7	Education	3
8	Medical	3
9	Others	52

Table 12. Distribution of funded articles by the country (based on the weighted value of contributions)

		Shared value of contributions by authorship											
Rank	Country Name	Full	1/2	1/3	1/4	1/5	1/6	1/7	1/8	1/9	1/10	Total count	Weighted Value
1	United States	15	6	3	13	4	8	1				50	24.52
2	China	13	6	7	6	9	9	3			9	62	24.46
3	UK	12	1	2	3	2	1			8		29	14.48
4	South Korea	10		1	1							12	10.58
5	Japan	7		4	1	1						13	8.78
6	Brazil	5	1	2		4						12	6.96
7	Netherlands	3	1	6								10	5.5
8	Belgium	2	3	3		1					1	10	4.8
9	Taiwan	4			3							7	4.75
10	Finland	3				4	1					8	3.96
11	Spain	2	1	3		2				1		9	3.9
12	Switzer land	1	1	3	5							10	3.75
13	Germany	1		2	2	1						6	2.36
14	Italy	2		1								3	2.33
15	Singapore	1	2									3	2
16	Australia	1	1					3	1			6	1.92
17	Hong Kong		1		2	4						7	1.8
18	India	1			3				7			11	1.75
19	Sweden	1	1			1						3	1.7
20	France	1		1	1							3	1.58
21	Hungary	1		1								2	1.33
22	Saudi Arabia	1				1						2	1.2
23	Croatia	1										1	1
24	Denmark	1										1	1
25	Malaysia	1										1	1
26	Portugal		2									2	1

27	Portugal		2									2	1
28	Romania	1										1	1
29	Turkey	1										1	1
30	Russian Federation				3	1						4	0.95
31	Canada			1			3					4	0.83
32	Slovenia			2								2	0.66
33	Ireland			1		1						2	0.53
34	Jordan		1									1	0.5
35	Guam				1	1						2	0.45
36	Chile				1		1					2	0.41
37	Ukraine				1							1	0.25
38	Mexico					1						1	0.2
39	Norway					1						1	0.2
40	Sri Lanka					1						1	0.2
41	Pakistan						1					1	0.16
	A total of 41 countries contributed.	**92**	**30**	**43**	**49**	**38**	**24**	**7**	**8**	**9**	**10**	**310**	**147**

Appendix I. Top ten journals in the LIS subject category collected from three metrics (Google Scholar, Scimago Journal Ranking, JCR)

High-ranked LIS journals based on Google Scholar Metrics			
Rank	***Name of journals***	***h5-index***	***h5-median***
1	Scientometrics	67	92
2.	Journal of the Association for Information Science and Technology	50	70
3.	Journal of Informetrics	46	68
4.	Journal of Information Science	37	49
5.	Online Information Review	35	49
6.	The Journal of Academic Librarianship	35	47
7.	Journal of the Medical Library Association	32	62
8.	Journal of Documentation	32	46
9.	College & Research Libraries	31	48
10.	Journal of Librarianship and Information Science	30	42
	***High-ranked LIS journals based on* Scimago Journal Ranking**		
Rank	***Name of journals***	**SJR**	**h-index**
1	International Journal of Information Management	4.906	152
2	Information Systems Research	3.257	177
3	European Journal of Information Systems	2.481	119
4	International Journal of Information Management Data Insights	2.479	20
5	Scientific data	2.410	101
6	Big Data and Society	2.389	57
7	Government Information Quarterly	2.321	123
8	Information Processing and Management	2.106	114
9	Information and Organization	1.997	70
10	IEEE Transactions on Information Theory	1.870	285
High-ranked LIS journals based on JCR			
Rank	***Name of journals***	**JIF**	**JCI**
1	International Journal of Information Management	18.958	5.51
2	Journal of Strategic Information Systems	14.682	2.61
3	Information & Management	10.328	2.50
4	Telematics and Informatics	9.140	2.36
5	European Journal of Information Systems	9.011	2.00
6	Journal of Knowledge Management	8.689	2.33
7	Mis Quarterly	8.513	1.82
8	Government Information Quarterly	8.490	2.39
9	Journal of The American Medical Informatics Association	7.942	1.83
10	Information Systems Journal	7.767	2.35