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Review Article

Global Academic Libraries Research: A Scientometric Analysis of 100 Most Cited Papers

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ABSTRACT

This scientometric study investigates the thematic distribution and research focus of the top 100 most highly cited papers on academic libraries to identify key subject areas, emerging trends, and influential contributions in this domain. A total of 16,348 records were retrieved from the Scopus database, covering publications from 1964 to 2024. From this corpus, the 100 most-cited documents were selected and subjected to detailed scientometric analysis using Microsoft Excel for data organisation, Biblioshiny for bibliometric indicators and thematic classification, and VOSviewer for network visualisation. The analysis revealed that Library Services is the most dominant research theme, accounting for 18% of the highly cited literature, with a frequent focus on Web 2.0 tools, innovative service models and AI-based applications. User Information Behaviour followed at 16%, reflecting a strong emphasis on user needs and satisfaction. Other prominent categories included the Role of Libraries (11%), Library Staff (10%), Social Media Platforms (8%), and Information Literacy (7%). Emerging technical themes such as Recommender Systems, Library Evaluation, and Research Data Management each accounted for 6–7% of the corpus. In contrast, traditional topics such as Library Infrastructure, Search Techniques, and Collection Development received comparatively limited attention, suggesting a shift in scholarly focus. The findings demonstrate a clear transition toward user-centred, digitally integrated, and strategically adaptive research in academic librarianship. The prominence of these themes in highly cited papers underscores their relevance across institutional contexts and highlights their foundational role in shaping future directions for library and information science research.

Keywords: Academic Libraries, Academic Libraries Research, Scientometrics, Bibliometrics, India.

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INTRODUCTION

Academic libraries play a pivotal role in supporting the core functions of higher education institutions, teaching, learning, and research. By providing access to diverse scholarly resources and services, they address the evolving information needs of students, faculty, and researchers.

However, rapid advancements in Information and Communication Technologies (ICTs) have transformed user expectations and information-seeking behaviours, necessitating the continuous adaptation of library strategies and service delivery. Each technological or societal shift presents new challenges, particularly for libraries that encounter such changes for the first time. To remain relevant, academic libraries must develop innovative and adaptive solutions. The experiences of individual libraries in addressing these challenges offer valuable insights into the broader profession of librarianship. Sharing best practices, case studies, and research findings through scholarly journals, conferences, and professional forums fosters collective learning and sectoral progress. Notably, the academic impact of knowledge sharing is often reflected in citation patterns. Studies that address widely experienced challenges or propose scalable solutions tend to receive more citations, making highly cited literature a valuable indicator of prevailing concerns and priorities in the field. These influential works not only address contemporary issues but also frequently anticipate future directions in academic librarianship. By analysing the top 100 most-cited papers on academic libraries, this study identifies the dominant themes, emerging research areas, and evolving professional practices that have shaped the field. Through a systematic subject-wise examination, it highlights recurring trends, research gaps, and impactful contributions, offering a comprehensive understanding of scholarly discourse in the field of academic librarianship.

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LITERATURE REVIEW

Several bibliometric studies have been conducted in academic libraries. (B & Kappi, 2020; Khaerani & Rahmi, 2024) conducted a bibliometric study of academic library publications indexed in the Scopus database from 2014 to 2023 and identified research themes such as academic libraries, collaboration, digital transformation, and information literacy. (Kappi & Biradar, 2022; Mitha & Omarsaib, 2025) found that the application of emerging technologies, such as data analytics, digital ink, and artificial intelligence, has shaken the blueprint in libraries of higher education institutions, as evidenced by Scopus and Web of Science datasets. (Tripathi & Ansari, 2024) studied the use of mobile technology to modernise traditional operations in academic libraries. (Arwanto & Wigati, 2024) conducted a bibliometric analysis of 75 years of smart library research using the Scopus database and found that English language and journal articles dominated the publications. Common keywords, such as IoT (Internet of Things), RFID, and smart services, reflected the integration of advanced technology with library services. (Hussain & Ahmad, 2024; Kappi *et al.*, 2021) analysed 373 research papers on artificial intelligence in academic libraries and found a sharp increase in publications since 2019, with China being the most productive country. (Wang & Si, 2023) analysed 7523 publications from 1990 to 2022 on digital literacy research. The study identified evolving themes, such as online learning, eHealth literacy, and digital equity. Chandler (2023) analysed trends in Open Educational Resources (OER) and their intersection with library and information science. The findings revealed that research on this topic has significantly increased over the last six years, and the topic is mainly enriched by education, although some contributions are from the LIS field. (B *et al.*, 2025; Ho & Prieto-Gutierrez, 2024) analysed the characteristics of highly cited publications in the field of artificial intelligence from the Science Citation Index Expanded (SCI-EXPANDED). The results show that the USA contributed 1066 articles (45%) of the total 2391 highly cited articles, and the Chinese Academy of Sciences was the top contributor with 63 highly cited articles. (Aslam *et al.*, 2021) studied the growth of literature on digital and online resources of academic libraries from 1981 to 2020. The Science Citation Index (SCI) and Web of Science (Core Collection) were used to extract the relevant datasets. The findings show that articles and electronic books had better reach, English was used as the main language for writing articles, and the United States led in the publication of such documents, while Bar Ilan University (Israel) was the top publishing university. (Baek & Doleck, 2020) analysed 135 articles published in the International Journal of Artificial Intelligence in Education and found that intelligent tutoring systems, students, and learning were the most frequently used terms. Authors from the United States had the largest share of publications, but international collaboration was limited.

METHODOLOGY

The methodology of this study was anchored in a systematic bibliometric approach, utilising the Scopus database to identify highly cited literature on the subject. The search strategy implemented the following query: (TITLE ("Universit" OR "college" OR "academic" OR "higher education" OR "technolog univ*" OR "univ* digital libr*") AND TITLE (librar*)) AND PUBYEAR > 1963 AND PUBYEAR < 2025**, which was specifically designed to capture publications related to libraries within the context of higher-education institutions. This comprehensive search yielded 16,348 documents published between 1964 and 2024. From this corpus, the 100 most highly cited papers were selected to facilitate a focused analysis of influential contributions to this field. Data analysis was performed using Microsoft Excel for data cleaning, preliminary organisation, and descriptive statistics; Biblioshiny, the web interface of the Bibliometrix R-package, to generate bibliometric indicators and thematic structures; and VOSviewer to construct and visualise co-authorship, keyword co-occurrence, and citation networks.

DATA ANALYSIS

Main information of the data

Figure 1 analysis of global academic library publications spanning 1982 to 2023 reveals 100 documents published across 45 distinct sources with an annual growth rate of 1.7%. These publications collectively accumulated 11,006 citations, with an impressive average of 110.1 citations per paper. The average document age is 15 years, suggesting a mature literature body. The publication portfolio predominantly consists of articles (83%), supplemented by reviews (15%) and conference papers (2%). Regarding authorship patterns, 219 authors contributed to these works, with 23 documents being single authored. The collaboration index indicates an average of 2.49 co-authors per document, whereas international collaborations represent 12% of the total publications. Content analysis identified 278 Keywords Plus and 184 Author's Keywords, demonstrating diverse research focuses in the field. The institutional landscape is broad, with 141 institutions contributing to this literature. Research funding was evident in 21% of the publications, supported by 19 funding agencies. The documents collectively referenced 4,023 works, indicating substantial scholarly engagement with prior literature.

Analysis of Global Academic Library Publications (1982-2023)

Table 1 and Figure 2 presents a comprehensive analysis of global academic library publications from 1982 to 2023. Over these 42 years, 100 publications have garnered 11,006 citations, yielding an impressive CPP of 110.06. The publication output demonstrated a gradual increase over the decades, with minimal activity in the 1980s and the early 1990s (only two publications from 1982-1993), followed by moderate growth (17 publications)

during 1994-2003. The most productive decade was 2004-2013, with 48 publications accruing 5,389 citations (CPP: 112.27), while the most recent decade (2014-2023) saw a slight decline to 33 publications with 3,529 citations (CPP: 106.94). The years 2009 and 2010 were particularly productive, with eight and nine publications, respectively, being published. Notable peaks in citation impact occurred in 1996 (CPP = 162.00), 2003 (CPP = 157.00), 2005 (CPP = 144.00), and 2018 (CPP = 140.50). The data reveal fluctuations in both publication output and citation impact, with certain years (2009, 2010, 2013, and 2014) showing both high productivity and substantial citation counts, while other productive periods demonstrated varying degrees of citation influences.

Document Types of Publications

In terms of document types, articles were the predominant format (TP=83, 83%), generating 9,198 citations (83.6%) with a CPP of 110.82, which was slightly above the overall average of 110.06. Review papers, constituting 15% of publications, accumulated 1,617 citations (14.7%) with a marginally lower CPP of 107.80, while conference papers, representing just 2% of the output, garnered 191 citations with the lowest CPP of 95.50, which is 13.2% below the overall average. The similar citation impact between articles and reviews (difference of only 3.02 CPP) indicates a comparable scholarly influence despite their different representations. Conference papers, though limited in number,

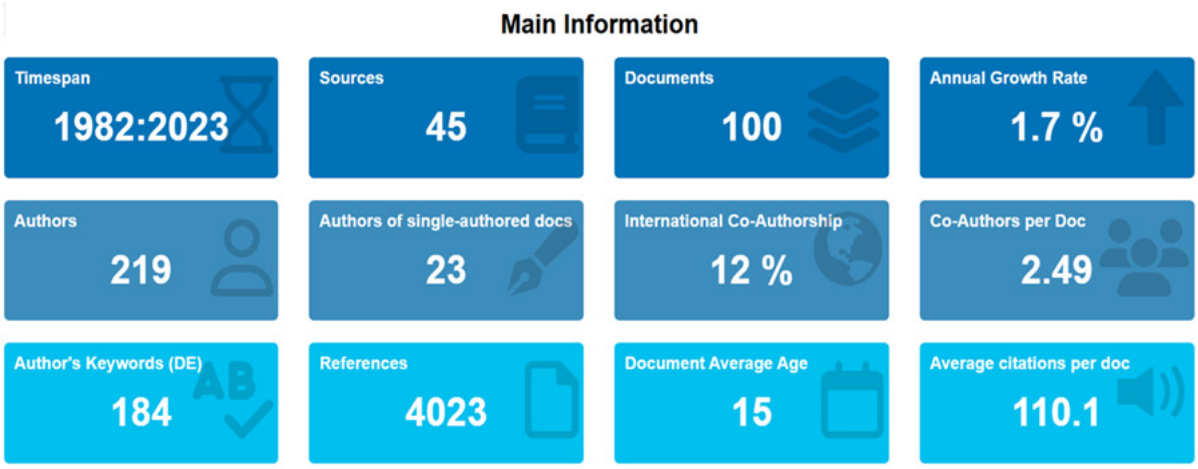

Figure 1: Main information of the data.

Table 1: Year-wise performance for Global Academic Library publications.

Year	TP	TC	CPP	Year	TP	TC	CPP
1982	1	111	111.00	2012	5	454	90.80
1990	1	76	76.00	2013	8	899	112.38
1995	2	170	85.00	2014	8	894	111.75
1996	2	324	162.00	2015	5	484	96.80
1998	1	91	91.00	2016	1	130	130.00
2000	4	409	102.25	2017	4	419	104.75
2001	6	661	110.17	2018	2	281	140.50
2002	1	89	89.00	2019	3	368	122.67
2003	1	157	157.00	2020	5	443	88.60
2004	2	223	111.50	2021	2	216	108.00
2005	3	432	144.00	2022	1	143	143.00
2006	1	92	92.00	2023	2	151	75.50
2007	3	390	130.00	1982-1993	2	187	93.50
2008	5	556	111.20	1994-2003	17	1901	111.82
2009	8	956	119.50	2004-2013	48	5389	112.27
2010	9	988	109.78	2014-2023	33	3529	106.94
2011	4	399	99.75	1982-2023	100	11006	110.06

TP= Total Publications; TC= Total Citations; CPP= Citation per Paper.

still demonstrate meaningful citation traction at 86.8% of the overall average CPP value (Table 2).

Funding Agencies

An examination of funding agencies revealed a diverse landscape of 19 organisations that collectively funded 21 publications, garnering 2,405 citations, with an average CPP of 114.52. The European Regional Development Fund emerged as the most prominent supporter, with two publications and 300 citations, achieving the highest CPP (150.00). Similarly, the National Science Foundation funded 2 publications with 268 citations (CPP: 134.00). The remaining 17 agencies supported a single publication with varying citation impact. Notable performers include the Ministry of Education of the People's Republic of China (173 citations), the University of Hong Kong (139 citations), and the Ministerio de Ciencia y Tecnología (135 citations). The geographic distribution indicates a global funding landscape encompassing European institutions (European Regional Development Fund, European Commission, Higher Education Funding Council for England), North American organisations (National Science Foundation, Huntsman Cancer Institute), Asian entities (Chinese University of Hong Kong, Ministry of Education of China), and others. Citation impact ranged significantly from the highest at 173 citations (Ministry of Education of China) to the lowest at 81 citations (Huntsman Cancer Institute, University of Utah, Utah Science Technology and Research), demonstrating varied levels of scholarly influence across funded research in this field (Table 3).

Contributions and Collaborations among Countries

A total of 20 countries contributed to all 100 publications. The USA dominated with 55 publications (55%), accumulating 6,097 citations (CPP:110.85), and participating in 9 international collaborations. The UK followed with 15 publications (15%), 1,589 citations (CPP: 105.93), and 4 ICPs. Hong Kong contributed 5 publications (CPP: 97.20), while Taiwan, China, Australia, and Spain each contributed 4 publications. Spain achieved the highest citation impact (CPP: 147.75) despite having no ICP, whereas Australia showed strong international engagement (3 ICPs) and citation performance (CPP: 126.00). India and Canada each contributed 3 publications, Nigeria and Pakistan each contributed 2, and the remaining 9 countries each contributed 1 publication. Among single-publication countries, Malaysia achieved the highest citation impact (CPP = 143.00), followed by Macao (CPP = 139.00) and South Korea (CPP = 130.00). International collaboration varied widely across countries, from Spain with 4 publications but no international co-authorship to Macao, Botswana, Finland, and Germany contributing 1 publication each with 100% international collaborative output, and 30% of all papers involving international collaboration (Table 4).

Figure 3 displays the collaboration patterns among countries, revealing 12 distinct clusters with varying degrees of international connectivity. The network visualisation incorporates all 20

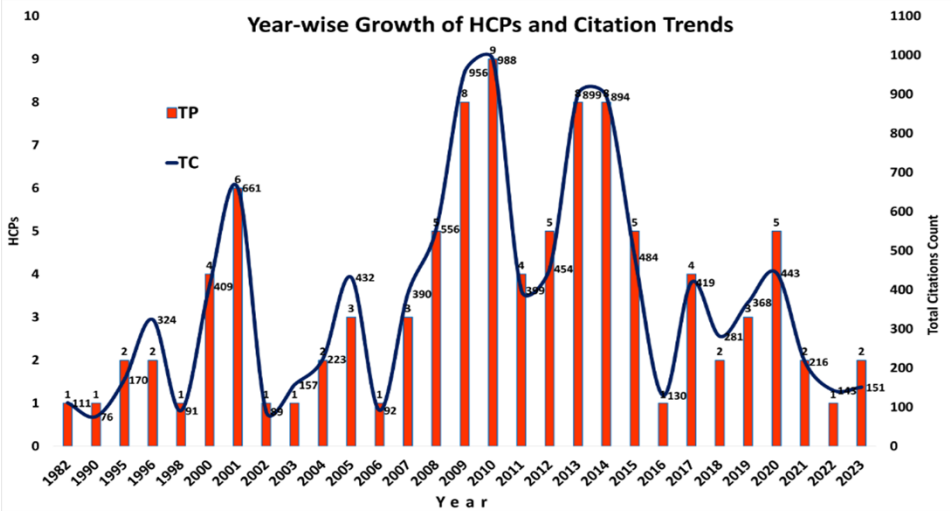

Figure 2: Year-wise growth of highly cited papers and Citation Trends.

Table 2: Publication and Citation count based on document type.

Document Type	TP	TC	CPP
Article	83	9198	110.82
Review	15	1617	107.80
Conference paper	2	191	95.50
Total	100	11006	110.06

contributing countries, which are organised into 12 distinct clusters connected through 13 links with a total link strength of 19. These clusters demonstrate geographical distribution and collaborative relationships, highlighting both established collaborative networks and independent research contributors across regions. Cluster 1 comprises the United Kingdom (15 TP, 4 ICPs), Australia (4 TP, 3 ICPs), and China (4 TP, 2 ICPs), forming a well-connected triad with 6 links and a TLS of 13. The UK serves as a central node with 2 links and a TLS of 6, while Australia demonstrates strong collaborative tendencies with 3 links and a TLS of 5. Cluster 2 comprised Hong Kong (5 TP, 2 ICPs), Taiwan (4 TP, 1 ICP), and Macao (1 publication, 1 ICP), forming an East Asian collaborative network with 4 links and a TLS of 4. Cluster 3 represented the most extensive network, centred around the United States (55 TP, 9 ICPs) with connections to Canada (3 TP, 2 ICPs) and Pakistan (2 TP, 1 ICP), totalling 9 links and a TLS of 15. The US demonstrated the highest connectivity in the entire network, with 7 links and a TLS of 12. Cluster 4 connected Finland and Germany (each with 1 publication and 1 ICP), both of which shared 2 links and a TLS of 2. Cluster 5 links Nigeria (2 publications, 2 ICPs) and Botswana (1 publication, 1 ICP) in an African collaboration with 2 links and a TLS of 2. The remaining seven clusters (6-12) consist of countries with no international collaborations in this dataset: Ethiopia, India, Malaysia, South Africa, South Korea, Spain, and Sweden. This analysis reveals that collaborative research is primarily organised around three major geographic poles: the UK-Australia-China network, the East Asian network, and the Us-centred network, with smaller European and African collaborative clusters and several countries operating independently.

Top 22 Contributing Authors in Global Academic Library Publications

A total of 219 authors contributed to the 100 publications included in this study. Among them, 197 authors contributed a single paper each, 17 authors contributed two papers, two authors contributed three papers, and three authors contributed four. Table 5 highlights the 22 most productive and impactful authors, who collectively account for 52 publications (52% of the total output) and 6,356 citations (57.8% of all citations), yielding a CPP of 122.23. This figure notably exceeds the overall average CPP of 110.06 for all 219 authors. Among these leading contributors, Herrera-Viedma E. (University of Granada, Spain) emerged as a prominent author with four publications, garnering 591 citations and achieving a CPP of 147.75. In addition, three of his publications were externally funded. Similarly, Porcel C. (University of Jaén, Spain) stands out with three publications and achieves the highest CPP rate (152.00). Other prolific contributors include Cox A.M. (University of Sheffield, UK) and Pinfield S. (University of Nottingham, UK), each with four publications, accumulated 499 citations.

In terms of regional distribution, the leading authors were primarily affiliated with institutions in the USA (13 authors), followed by the UK (2 authors), Spain (2 authors), and Hong Kong (2 authors), with additional contributors from Australia, Taiwan, and Canada. These 22 authors were responsible for 12 funded papers (57.14% of all funded papers). Bibliometric indicators further revealed that authors with a higher number of publications tended to achieve elevated h-index and g-index values, with the maximum recorded value of four for both metrics. Interestingly, a perfect alignment was observed between the h-index and g-index for all authors, indicating consistent and well-distributed citation patterns across the publications.

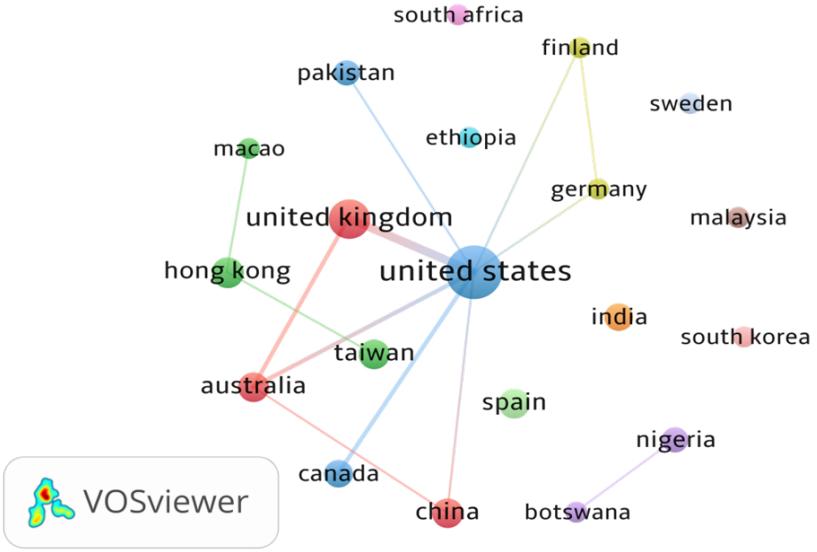

Figure 3: Collaborative Network map of Countries.

Table 3: Publication and Citation count w.r.t Funding agency.

Sl. No.	Funding Agency	TP	TC	CPP
1	European Regional Development Fund	2	300	150.00
2	National Science Foundation	2	268	134.00
3	Ministry of Education of the People's Republic of China	1	173	173.00
4	University of Hong Kong	1	139	139.00
5	Ministerio de Ciencia y Tecnología	1	135	135.00
6	National Institute of General Medical Sciences	1	133	133.00
7	Bridgewater State University	1	116	116.00
8	Department of Science and Technology of Inner Mongolia Autonomous Region	1	113	113.00
9	Natural Science Foundation of Inner Mongolia	1	113	113.00
10	Council of Scientific and Industrial Research	1	112	112.00
11	Jimma University	1	104	104.00
12	European Commission	1	100	100.00
13	University College Dublin	1	94	94.00
14	Chinese University of Hong Kong	1	89	89.00
15	Ministry of Science and Technology, Taiwan	1	89	89.00
16	Higher Education Funding Council for England	1	84	84.00
17	Huntsman Cancer Institute	1	81	81.00
18	University of Utah	1	81	81.00
19	Utah Science Technology and Research	1	81	81.00

Top 22 Authors Collaboration Network

Figure 4 illustrates the collaboration network of the top 22 authors who have published two or more papers, organised into nine distinct clusters. These clusters are connected through 21 collaborative links with a TLS of 44, reflecting the overall intensity of co-authorship among these prolific contributors. Cluster 1 represents a consistent group comprising Connaway L.S., Du Y., Lewis J.S., and Salisbury L., each exhibiting three collaborative links and a TLS of 6, indicating strong mutual collaboration. Cluster 2 forms another substantial network, including Cox A.M. and Pinfield S., each with four publications, three links, and a TLS of 7, alongside Kennan M.A. and Lyon L., both of whom have two publications, three links, and a TLS of 6. This cluster demonstrates a robust pattern of scholarly interactions. Cluster 3 consists of a tightly knit triad of Allard S., Sandusky R.J., and Tenopir C., each contributing two publications and connected by two links with a TLS of 4, reflecting consistent collaborative practices. Similarly, Cluster 4 includes researchers from the University of Minnesota Fransen J., Nackerud S., and Soria K.M., who share identical bibliometric profiles (two publications, two links, and a TLS of 4), suggesting a close institutional collaboration. Cluster 5 links Hong Kong-based scholars Chiu D.K.W. and Lam E.T.H., each with two publications, a single collaborative link, and a TLS of 2. Cluster 6 comprises Choi Y. and Rasmussen E., who also share one link and a TLS of 2, indicative of a specific but limited research partnership. Cluster 7 features Spanish researchers Herrera-Viedma E. (four publications) and Porcel C. (three publications), who shared a single collaborative link with a TLS of 3. Although limited in terms of the number of connections, this partnership is notably productive. In contrast, Clusters 8 and 9 consisted of Liu S.T. and Nitecki D.A., respectively. Each author had two publications but no recorded collaborative links within the examined network, suggesting that their research contributions were conducted independently.

Analysis of Keyword Co-occurrence

Analysis of 100 global academic library publications reveals 278 distinct keywords, with 219 (78.8%) appearing once, 52 occurring 2-5 times, 5 terms appearing 6-10 times, and the highest frequencies for "libraries" (12) and "academic libraries" (21). The 50 most significant keywords form eight thematic clusters with 193 links and 260 TLS (Table 6 and Figure 5). Cluster 1 centers on core library functions, led by "academic libraries" (21 occurrences, 32 links, 55 TLS) and "libraries" (12 occurrences, 22 links, 33 TLS), alongside "information services" (4 occurrences, 12 links, 15 TLS) and "information management" (3 occurrences, 9 links, 13 TLS). Cluster 2 addressed educational contexts with "higher education" (6 occurrences, 18 links, 23 TLS) and "COVID-19" (6 occurrences, 17 links, 21 TLS). Cluster 3 focuses on digital technologies, featuring "digital libraries" (7 occurrences, 18 links, 30 TLS) and "information dissemination" (4 occurrences, 10 links, 18 TLS). Cluster 4 highlights technological advances with "university libraries" (10 occurrences, 15 links, 24 TLS) and

Table 4: **Country wise publications, citation, and collaboration count.**

Sl. No.	Country Name	TP	ICP	TC	CPP	Cluster	Links	TLS
1	USA	55	9	6097	110.85	3	7	12
2	UK	15	4	1589	105.93	1	2	6
3	Hong Kong	5	2	486	97.20	2	2	2
4	Australia	4	3	504	126.00	1	3	5
5	China	4	2	478	119.50	1	2	2
6	Taiwan	4	1	398	99.50	2	1	1
7	Spain	4	0	591	147.75	11	0	0
8	Canada	3	2	323	107.67	3	1	2
9	India	3	0	274	91.33	7	0	0
10	Nigeria	2	2	205	102.50	5	1	1
11	Pakistan	2	1	218	109.00	3	1	1
12	Macao	1	1	139	139.00	2	1	1
13	Botswana	1	1	128	128.00	5	1	1
14	Finland	1	1	87	87.00	4	2	2
15	Germany	1	1	87	87.00	4	2	2
16	Malaysia	1	0	143	143.00	8	0	0
17	South Korea	1	0	130	130.00	10	0	0
18	Sweden	1	0	119	119.00	12	0	0
19	Ethiopia	1	0	104	104.00	6	0	0
20	South Africa	1	0	98	98.00	9	0	0

TP= Total Publications; ICP= International Collaborative Papers; TC= Total Citations; CPP= Citation per Paper; TLS= Total link Strengths.

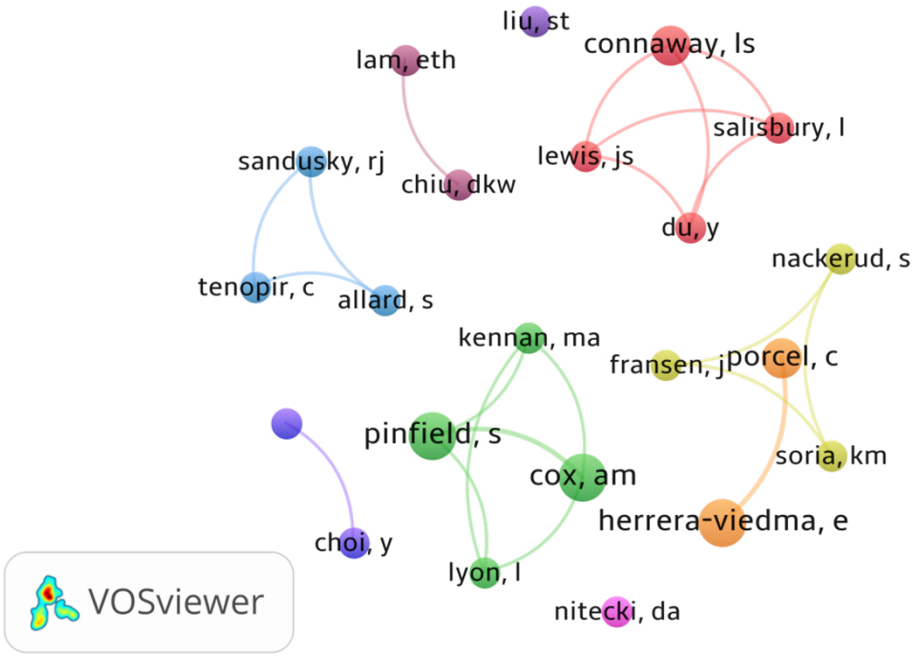

Figure 4: Collaborative network map of top 22 authors.

Table 5: Top 22 most productive and impactful authors in Global Academic Library publications.

Author	Affiliation	TP	TC	CPP	FP	h_index	g_index
Cox AM	University of Sheffield, UK	4	498	124.50	0	4	4
Herrera-Viedma E	University of Granada, Spain	4	591	147.75	3	4	4
Pinfield S	University of Nottingham, UK	4	499	124.75	0	4	4
Connaway LS	OCLC Research, USA	3	315	105.00	0	3	3
Porcel C	University of Jaen, Spain	3	456	152.00	2	3	3
Allard S	University of Tennessee, USA	2	268	134.00	2	2	2
Chiu DKW	University of Hong Kong, Hong Kong	2	169	84.50	0	2	2
Choi Y	Catholic University of America, USA	2	248	124.00	0	2	2
Du Y	University of North Texas, USA	2	184	92.00	0	2	2
Fransen J	University of Minnesota, USA	2	276	138.00	0	2	2
Kennan MA	Charles Sturt University, Australia	2	247	123.50	0	2	2
Lam ETH	Hong Kong Polytechnic University, Hong Kong	2	169	84.50	0	2	2
Lewis JS	East Carolina University, USA	2	184	92.00	0	2	2
Liu S-T	Vanung University, Taiwan	2	192	96.00	1	2	2
Lyon L	University of Pittsburgh, USA	2	247	123.50	0	2	2
Nackerud S	University of Minnesota, USA	2	276	138.00	0	2	2
Nitecki DA	University of Maryland, USA	2	293	146.50	0	2	2
Rasmussen E	University of British Columbia, Canada	2	248	124.00	0	2	2
Salisbury L	University of Arkansas, USA	2	184	92.00	0	2	2
Sandusky RJ	University of Illinois at Chicago, USA	2	268	134.00	2	2	2
Soria KM	University of Minnesota, USA	2	276	138.00	0	2	2
Tenopir C	University of Tennessee, USA	2	268	134.00	2	2	2
	Total of 22 Authors	52	6356	122.2308	12		
	Total of 219 Authors	100	11006	110.06	20		

TP= Total Publications; TC= Total Citations; CPP= Citation per Paper; FP= Funded Papers.

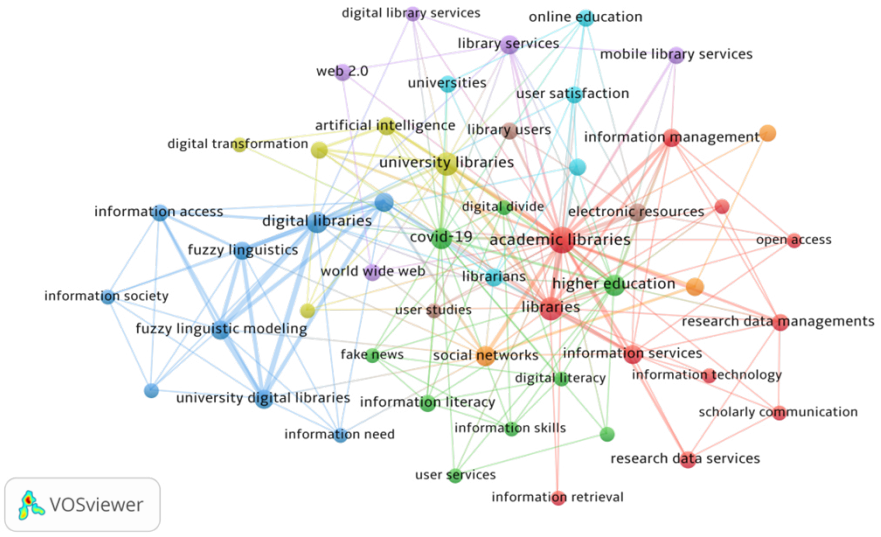

Figure 5: Network map of most common keyword co-occurrence.

Table 6: Top 50 most significant keywords.

Keyword	Occ	Cluster	Links	TLS	Keyword	Occ	Cluster	Links	TLS
Academic Libraries	21	1	32	55	University Libraries	10	4	15	24
Libraries	12	1	22	33	Artificial Intelligence	3	4	8	11
Information Services	4	1	12	15	Machine Learning	2	4	6	9
Information Management	3	1	9	13	Innovation In Libraries	1	4	5	5
Research Data Management	2	1	8	9	Digital Transformation	1	4	2	2
Research Data Services	2	1	4	5	Library Services	4	5	10	11
Information Processing	1	1	5	5	Mobile Library Services	2	5	4	5
Open Access	1	1	5	5	World Wide Web	2	5	4	4
Scholarly Communication	1	1	4	4	Web 2.0	2	5	3	3
Information Retrieval	1	1	2	2	Digital Library Services	1	5	5	5
Information Technology	1	1	2	2	Librarians	3	6	11	12
Higher Education	6	2	18	23	User Satisfaction	2	6	7	7
COVID-19	6	2	17	21	Information Systems	2	6	6	7
Information Literacy	2	2	7	7	Online Education	2	6	6	6
Digital Divide	1	2	6	6	Universities	2	6	4	4
Digital Literacy	1	2	6	6	Social Networks	5	7	11	15
Fake News	1	2	6	6	Facebook	3	7	3	5
Information Skills	1	2	6	6	Social media	2	7	2	2
Remote Library Support	1	2	4	4	Electronic Resources	3	8	9	11
User Services	1	2	4	4	Library Users	2	8	3	4
Digital Libraries	7	3	18	30	User Studies	1	8	3	3
Information Dissemination	4	3	10	18					
Fuzzy Linguistic Modeling	4	3	9	20					
University Digital Libraries	4	3	9	20					
Fuzzy Linguistics	3	3	9	17					
Information Access	2	3	7	11					
Information Media	1	3	6	6					
Information Need	1	3	6	6					
Information Society	1	3	6	6					

"artificial intelligence" (3 occurrences, 8 links, 11 TLS). Cluster 5 covers service delivery through "library services" (4 occurrences, 10 links, 11 TLS). The remaining clusters examined human aspects with "librarians" (3 occurrences, 11 links, 12 TLS), social media dimensions with "social networks" (5 occurrences, 11 links, 15 TLS), and resource usage through "electronic resources" (3 occurrences, 9 links, 11 TLS). The interconnectedness across clusters shows the multidisciplinary nature of the field, spanning traditional library functions, technological advancements, educational contexts, and social media integration, revealing both established research areas and emerging topics that respond to technological and societal changes.

Subject Analysis of Publications

Table 7 presents the top 100 cited papers on academic libraries and reveals a clear shift in scholarly focus toward technology-driven innovation, user-centric approaches, and strategic institutional roles. Library services stand out as the most dominant theme, comprising 18% of the papers, with subtopics such as Web 2.0 applications (5 papers), innovative services (4), and AI-based services (3), reflecting the sector's rapid adoption of emerging technologies and evolving service models, such as virtual reality and web-based delivery. Close behind is user information behaviour, represented in 16 papers, emphasising the growing research interest in understanding user needs (13 papers) and satisfaction (3 papers), thereby reinforcing the centrality of user experience in academic libraries. The role of libraries is examined in 11 papers, addressing not only strategic

Table 7: Subject-wise distribution of papers.

Sl. No.	Subject	TP
1.	**Library Services**	
	Library 2.0 services	1
	Web 2.0 applications	5
	Web based library services	1
	Virtual reality applications	1
	Innovative library services	4
	Reference and information services	3
	AI based library services	3
2.	**User information behavior**	
	User needs and information behavior	13
	User satisfaction	3
3.	**Role of libraries**	
	Role of academic library	4
	Library trends	3
	Strategic plans	1
	Future of university libraries	2
	Racism and social justice in academic libraries	1
4.	**Library Staff**	
	Staff competencies	7
	Staff motivation and organizational commitment	1
	Staffing patterns	1
	Staff anxiety	1
5.	**Social networking platforms**	
	Social media- networking platforms and applications	8
6.	**Literacy- models and standards**	
	Information literacy instructions	3
	Visual literacy standards	1
	Digital literacy	3
7.	**Library Evaluation**	
	Library evaluation	2
	Website evaluation	2
	Service quality measurement	2
8.	**Recommender systems**	
	Recommender systems	4
	Fuzzy linguistics	3
9.	RDM	
	Research data services and management	6
10.	**Library Building and Environment**	
	Social and learning space	1
	Library interiors	1
	Air pollution	1
11.	**Information Search Techniques**	
	Internet search engine	1
	Information retrieval systems	1
	Discovery tool evaluation	1
	Video content verification technique	1
12.	**Library collection**	
	Open access publishing	1
	Library collection development	1
13.	Miscellaneous	2

planning and institutional trends but also broader sociocultural issues, including social justice and racism, highlighting libraries' expanding social responsibility. Library staff topics, encompassing 10 papers, focused primarily on staff competencies (7 papers), with additional attention to motivation, anxiety, and staffing patterns, underscoring the profession's interest in workforce development and well-being. Emerging platforms and digital tools were also prominent. Social media and networking platforms were explored in 8 papers, signifying their increasing utility in library engagement and outreach. Information literacy, including visual and digital variants, appeared in 7 papers, aligning with the library's instructional mission in the digital era. Similarly, recommender systems (7 papers), library evaluation (6 papers), and Research Data Management (RDM) (6 papers) reflect growing scholarly engagement with analytics, service assessment, and data stewardship. Less emphasised but still relevant are themes such as information search techniques (4 papers) and library buildings and environments (3 papers), indicating a relative decline in attention to physical infrastructure. Library collections, once a foundational concern, appeared in only 2 papers, reflecting a possible shift in priorities toward access over ownership.

DISCUSSION

Analysis of the top 100 highly cited publications on academic libraries highlights a clear transition from traditional operations to technology-driven, user-centred, and strategic themes. Library service innovations led the scholarly focus, representing 18% of the publications, particularly through Web 2.0, AI-based, and virtual reality services, demonstrating the field's adaptation to digital transformation. User information behaviour follows closely with 16 papers, emphasising user needs and satisfaction as central to service design and research topics. The institutional role of libraries, explored in 11 papers, reflects the growing attention to strategic planning and social responsibility, including equity and justice. Staff-related themes appeared in 10 papers, primarily addressing professional competencies and workplace issues, highlighting the importance of workforce development. Technology applications, such as social media, recommender systems, and information literacy, were each featured in 7 to 8

papers, indicating an increased focus on personalisation, digital engagement, and instructional support. Similarly, research data management and library evaluation (6 papers each) reflect an emerging interest in data stewardship and service quality. In contrast, traditional topics such as library buildings, collections, and search techniques appear less frequently, indicating a shift away from infrastructure toward innovation. Outliers, such as papers on drug delivery systems and chemical biology, suggest occasional interdisciplinary overlap rather than a core focus.

CONCLUSION

This bibliometric study provides a comprehensive overview of the top 100 highly cited publications on global academic libraries from 1982 to 2023, illustrating the evolution and growth of research in this field over the past four decades. The findings indicate a steady increase in publication activity since the early 2000s, with the decade from 2004 to 2013 being the most productive and impactful period. During this period, a noticeable shift toward user-centred approaches, digital services, and technology integration in academic libraries was observed in the literature. In terms of document types, journal articles were the most prevalent and cited, followed by review articles. This highlights the academic value of both original research and synthesised insight. While only a limited number of papers received external funding, those that did tended to attract more citations, suggesting a positive correlation between financial support and visibility. Geographically, the United States led in terms of the number of publications and total citations. However, countries such as Spain, Australia, and Malaysia achieved a higher citation impact per publication despite a lower output, indicating their high-quality contributions. Although strong international collaboration was observed among English-speaking and East Asian countries, a significant number of countries operated in isolation, indicating untapped opportunities for broader partnerships. Authorship analysis revealed that a small group of prolific scholars contributed substantially to the high-impact literature. The authors frequently address emerging topics such as artificial intelligence, recommender systems, and user engagement. Co-authorship networks showed that while some researchers worked within collaborative clusters, others achieved significant impact through independent efforts. Keyword and subject analyses identified dominant research themes, such as innovative library services, user information behaviour, digital technologies, and staff development. The inclusion of topics such as artificial intelligence, COVID-19, and social media reflects the field's responsiveness to global challenges and technological progress. This study underscores the growing emphasis on digital transformation, user-centred service design, and technological innovation in academic libraries. These findings offer valuable insights for researchers, practitioners, and policymakers, providing a foundation for shaping future research directions, fostering collaboration, and guiding policy development in academic librarianship.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

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