

Publications pattern of Artificial Intelligence research papers in the context of Library and Information Science

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ABSTRACT: *Introduction- Artificial Intelligence (AI) is one of the emerging trends in the world. It impacts on a wide range of disciplines, including medicine, surgery, automotive, aviation, business, industry, education, and all allied fields. Technology developments are enhancing library technical services and user services. Integrating AI into Library and Information Science (LIS) has revolutionised how libraries manage information and serve patrons. These studies can provide insights into the development and impact of AI research within LIS, revealing a dynamic and rapidly evolving landscape. It is also observed that very few quantitative studies have been made on AI in the LIS context. Earlier studies have used various prestigious databases as the sources. However, there does not seem to be any study using the Web of Science (WoS) database as the source of study, which also ensures wide coverage of publications. With this background, the present study has been undertaken to explore publication frequency, collaborating countries and publishers, prominent journals, geographical distribution, and emerging themes and research areas in the dynamic field of AI with applications in LIS.*

Objectives- *This bibliometric study aims to quantify and analyse the research output on AI in the LIS context over 10 years based on data retrieved from the Web of Science database. It comprehensively overviews the field's growth, key contributors, and primary research themes. 3. Methodology The data for the period 2014-2023 were extracted from the WoS database using the basic search strategy as [artificial intelligence (All Fields) OR expert systems (All Fields) OR neural network (All Fields) OR Intelligent retrieval (All Fields)] after that refined by article type and web of science categories, i.e. Information Science Library Science. In total, 2510 records were retrieved during the period of the papers. 4. Findings Publication frequency shows a clear trend of continuous growth in several papers. Highly cited papers and total citations with authors and source journals provide the top 20 highly cited papers of authors. Maximum citations with different authors pertain to the broader subject topics: Multidisciplinary perspectives on emerging challenges, opportunities, and agendas for research, practice, policy, and big data. It also indicates top-cited journals where publications of highly cited authors appear. These journals are the International Journal of Information Management, Journal of the American Medical Informatics Association, Scientometrics, and Government Information Quarterly. Regarding the Country's collaboration-wise study, it is found that the United States and China are leading contributors, followed by European countries. Asia, China, India, and South Korea are emerging as major players, reflecting their growing investments in AI and technology-driven library services. Dominant*

areas for research pertain to Computer Science, Business Economics, Health Care, Medical Informatics, and Communication. It is noted that the findings of the present study on top contributions do not reveal the usage of AI at the micro level in terms of traditional and routine library services. However, its applications in the broader scope of information science, viz., are seen and concentrated in broad areas focusing on medical/health services (medical informatics), business and industries, etc. An increasing trend of collaborative research is also prevalent in this field.

Conclusion- The growth of AI publications can be attributed to the growing recognition of its potential to revolutionise information and library services and various tasks and activities in almost all sectors. AI is transforming Libraries and Information centres by automating routine tasks, improving information retrieval, enhancing accessibility, and enabling predictive analytics and personalised recommendations. However, adopting AI also requires careful consideration of ethical implications and challenges. The ongoing research and development work in this field can further revolutionise library services and operations in the future. It can be concluded that more focus on micro-level studies in the LIS area and collaboration is required. This can be done with the active participation and support of LIS professionals in feedback, quantitative studies, and IT professionals involved in AI.

Keywords: Publications pattern of Artificial Intelligence research papers in the context of Library and Information Science

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1. Introduction

Artificial Intelligence (AI) is one of the emerging trends in the world. It impacts on a wide range of disciplines, including medicine, surgery, automotive, aviation, business, industry, education, and all allied fields. Technological developments enhance library technical and user services (Haider and Wessels, 2016; Arlitsch and Newell, 2017). AI also enters libraries through robotics, chatbot, Natural Language Processing, Big Data, and Text Data Mining. AI impacts both library technical services and library user services. In technical services, it supports the management of library collection metadata, users' data, and resource usage through tools such as Big Data and Text Data Mining. Library user services and information retrieval have seen the gradual introduction of tools such as chatbots, robotics, pattern recognition and natural language processing. The effective use of information and communication technology (ICT) tools helps modernise library services and make them unique within the institution. Integrating AI into Library and Information Science (LIS) has revolutionised how libraries manage information and serve patrons. AI applications range from enhancing information retrieval systems to automating routine tasks, improving user services, and supporting digital preservation efforts. It has been reported by Sunarti et al. (2021) that AI is rapidly dominating the health service system. It is observed that very few quantitative studies have been made on AI in the LIS context. Earlier studies have used various prestigious databases as the sources. However, only one study on AI applications in libraries by Adakawa, Balachandran, and Harinarayan (2023) was traced who used the Web of Science as the source database. These studies can provide insights into the development and impact of AI research within LIS, revealing a dynamic and rapidly evolving landscape. With this background, the present study has been undertaken to explore publication frequency, collaborating countries and publishers, prominent journals, geographical distribution, and emerging themes and research areas in the dynamic field of AI with applications in LIS.

2. Review of Literature

A few studies have been made on the bibliometric analysis of AI in the context of library and information science with a broader scope. For example, Vasistha, Dhingra and Vasishta(2024), in their paper entitled 'Application of Artificial Intelligence in Libraries: A Bibliometric Analysis and Visualisation of Research Activities', analyze the current state of research on the application of AI in libraries by examining document types, publication years, keywords, countries, and research methods. The study extracted and processed data from the SCOPUS database up to 2022 using advanced bibliometric and network analysis tools. The findings highlight that most research on AI in libraries has been conducted in the last three years due to the fourth industrial revolution. The study identifies a need for further research in digital humanities, machine learning, robotics, data mining, and big data in academic libraries. In another paper by Bircan, Alkim, and Salah (2022), the use of Big Data and computational approaches in social sciences have been reported using bibliometric analysis. The analysis used articles indexed between 2015 and 2020 in the Social Sciences Citation Index. The findings reveal that these practices are spreading across various disciplines within social sciences. It also reports that AI and Big Data publications are more oriented towards computational studies. In a similar study, Wijewickrema (2023) examines the progress of research in the

interrelated domains of library and information science (LIS) and information systems (IS). Using bibliometric methods, the study analysed publications from 2010 to 2019 retrieved from the Scopus database. The findings indicate a lack of consistent association between the number of documents authored and the number of citations received. The study also highlights the increasing trend of collaborative research and identifies the major research areas within the combined LIS and IS domains. Nuraeni and Zalsahra (2023) studied quantitative measurement and evaluation of scientific literature on artificial intelligence. Relevant keywords used in the analysis were “artificial intelligence”, “machine teaching”, and “deep training”. They observed that “This method allows researchers to identify major developments and focus in artificial intelligence research, provide insight into the authors’ contributions, and understand the direction of this science. Singh and Vohra (2018) highlight the effectiveness of AI-driven search engines in academic libraries when applying AI in information retrieval. Alemu et al. (2012) discuss the potential of AI to streamline processes and enhance efficiency in routine tasks like Classification, cataloguing, and Indexing. AI-powered virtual assistants and chatbots are increasingly deployed in libraries to assist users with common queries, guide them through library resources, and provide recommendations. Research by Kowalski et al. (2020) demonstrates the growing adoption of these technologies in academic libraries and their positive impact on user satisfaction. Libraries can utilise AI for predictive analytics to anticipate user needs and optimise resource allocation. For example, predictive models can analyse borrowing patterns to manage collections better and predict future trends. Tyckoson (2017) illustrates how AI-driven analytics can support library strategic decision-making. Similar to recommendation systems used by commercial platforms, libraries are leveraging AI to offer personalized content recommendations to users. This enhances the user experience by suggesting relevant books, articles, and other resources based on individual preferences and history. The research by Bhattacharjee and Ghosh (2019) explores the implementation of these systems in digital libraries. The use of digital preservation studies by Bailey (2016) highlights the crucial role of AI in ensuring the longevity and accessibility of historical collections. Despite the benefits, the integration of AI in libraries poses challenges such as data privacy, algorithmic bias, and the need for significant investment in technology and training. Articles by Garibay and Vinopal (2018) discuss these issues and suggest strategies for addressing them, including developing ethical guidelines and continuously monitoring AI systems.

3. Objectives

This bibliometric study aims to quantify and analyse the research output on AI in the LIS context over the past 10 years, using data retrieved from the Web of Science database (WoS), Clarivate Analytics Company. It will offer a comprehensive overview of the field’s growth, key contributors, and major research themes.

4. Methodology

The data for the period 2014-2023 were collected on 19th July 2024 through this basic search [artificial intelligence (All Fields) OR expert systems (All Fields) OR neural network (All Fields) OR Intelligent retrieval (All Fields)] thereafter refined by article type and web of science categories, i.e. Information Science Library Science. In total, 2510 records were retrieved during the period of the papers. The data were saved in text files for analysis and finding purposes and then imported into Microsoft Excel. The collected data were evaluated and analysed. Citation counts from the published papers and available in the database have been used as qualitative measures.

5. Data Analysis and Findings

Number of papers and citations

Table 1 shows a clear trend of continuous growth in the number of papers from 2014 onwards. Regarding the number of citations received, almost the same trend is visible except in the years 2022 and 2023, where a decline in numbers of the same is noticed. For a total of 2510 papers, the citations received were 52837, i.e. 21.05 average citations per paper. Regarding the maximum number, the same is noticed during 2020 with 12032 counts, though the average number of citations per item is 32.78, which is less than those appearing during 2017 (33.5) and 2019 (39.4). What is remarkable here for the year 2023, the average figure is only 4.8. This may be attributed to the incomplete period of the year 2024, which has yet to record more citations.

The frequency of AI-related publications in LIS has risen substantially over the past decade. This increase can be attributed to the growing recognition of AI’s potential to revolutionise information and library services and various tasks and activities in almost all sectors. The number of publications peaked in 2020 and may continue to grow as more libraries and information centres adopt AI technologies. It may be noted that a similar trend of a growing number of publications from a global perspective was also reported by Adakawa, Balachandran, and Harinarayan (2023)

Authorship patterns and their distribution

The authorship pattern depicted in Table 2 above reflects that there is the dominance of three authors collaboration with 23.47 %, followed by four authors (20.7%), two authors (17.9%), a single author (9.8%), and less than 7 % for more than four

Table 1. Year-wise number of papers and citations received

Publication Years	Total no. of papers	Total sum of the citations received	Citation/Article (Average citation per item)
2014	78	1874	24.02
2015	97	2468	25.44
2016	93	2247	24.16
2017	116	3895	33.57
2018	125	3943	31.54
2019	191	7544	39.49
2020	367	12032	32.78
2021	436	11277	25.86
2022	482	5044	10.46
2023	525	2513	4.78
Total	2510	52837	21.05

Table 2. Authorship pattern and their distribution (2014-2023)

Year	One	Two	Three	Four	Five	Six	Seven	Eight	Nine	Ten	Ten>	Total	%
2014	9	15	22	17	9	2	1	1	1		1	78	3.10
2015	18	18	29	15	5	5	3	2			2	97	3.86
2016	9	14	34	13	8	6	5				4	93	3.70
2017	16	23	27	27	9	5	2	2		2	3	116	4.62
2018	13	26	32	21	13	7	2	3	1	2	5	125	4.98
2019	19	39	43	43	17	15	3	3	2	4	3	191	7.60
2020	33	73	73	80	46	26	15	6	6	3	6	367	14.62
2021	31	67	109	88	66	41	7	4	7	2	14	436	17.37
2022	46	83	116	102	63	20	18	10	5	7	12	482	19.20
2023	52	91	104	114	76	33	12	7	15	2	19	525	20.91
Total	246	449	589	520	312	160	68	38	37	22	69	2510	100
%	9.80	17.88	23.47	20.71	12.43	6.37	2.70	1.51	1.47	0.87	2.75	100	

authors. It is remarkable to note that more than ten authors have a 2.75% share, while ten authors have the least share with 0.9%.

A general trend, particularly in the S&T field, is that multiple authorship is more prevalent while there are very few contributions from single authors. For example, Bid and Mandal (2023) reported this type of pattern in a bibliometric study of Physics research output. In this AI field (Table 2), it is noticed that for single authorship, there is an increasing trend from the year 2020 (31 to 52). It may, however, be noted that its total share is only 9.8 compared to two, three and four authorship patterns with 17.9%, 23.47%, and 20.7%, which are on the upper side.

It is interesting to observe that there are three numbers of titles where the single paper contributions are by more than 50 authors. The title “So what if ChatGPT wrote it? Multidisciplinary perspectives on opportunities, challenges and implications of generative conversational AI for research, practice and policy” has been contributed by 73 authors published in the International Journal of Information Management during the year 2023.

Citation distribution

Table 3. Citation distribution of papers (2014-2023)

Times Cited	No. of papers	% of 2510
Zero Citation	239	9.52
1	206	8.20
2	172	6.85
3	164	6.53
4	140	5.57
5	89	3.54
6—10	408	16.25
11—50	857	34.14
51-100	153	6.09
101-150	39	1.55
151-200	20	0.79
201-250	6	0.23
251-300	6	0.23
>300	11	0.43
Total	2510	100

Citation distribution of the authors

Table 3 shows that out of a total of 2510 papers, only 11 are cited more than 300 times. On the other hand, for 239 papers, there were no citations at all. It was also observed that the maximum number of papers with 857 counts was cited between 11 and 50 times. Out of the total of 2510 papers, 1418 papers included citation counts of less than 10 times while out of the remaining 1092 articles covered, citations had a range between 11 to more than 300 times. In general, there are fewer papers that are cited more than 100 times. Citation analysis within bibliometric studies indicates the most cited authors, papers, and journals, providing insights into the impact and dissemination of AI research. Highly cited works often serve as the basis and foundation for further research with necessary guidance.

Highly cited papers and authors

Table 4. Top 20 highly cited papers and total citations with authors and source journals

Title	Authors	Source Title	Publication Year	Volume	Issue	Total Citations
Artificial Intelligence (AI): Multidisciplinary perspectives on emerging challenges, opportunities, and agenda for research, practice and policy	Dwivedi, Yogesh K.; Hughes, Laurie; Ismagilova, Elvira; Aarts, Gert; Coombs, Crispin; Crick, Tom et al.	International Journal of Information Management	2021	57		888
Artificial intelligence for decision making in the era of Big Data - evolution, challenges and research agenda	Duan, Yanqing; Edwards, John S.; Dwivedi, Yogesh K.	International Journal of Information Management	2019	48		805
So what if ChatGPT wrote it? Multidisciplinary perspectives on opportunities, challenges and implications of generative conversational AI for research, practice and policy	Dwivedi, Yogesh K.; Kshetri, Nir; Hughes, Laurie; Slade, Emma Louise; Jeyaraj, Anand; Kar, Arpan Kumar et al.	International Journal of Information Management	2023	71		619
Metaverse beyond the hype: Multidisciplinary perspectives on emerging challenges, opportunities, and agenda for research, practice and policy	Dwivedi, Yogesh K.; Hughes, Laurie; Baabdullah, Abdullah M.; Ribeiro-Navarrete, Samuel; Giannakis, Mihalis et al.	International Journal of Information Management	2022	66		573
Setting the future of digital and social media marketing research: Perspectives and research propositions	Dwivedi, Yogesh K.; Ismagilova, Elvira; Hughes, D. Laurie; Carlson, Jamie; Filieri, Raffaele; et al.	International Journal of Information Management	2021	59		555
Using recurrent neural network models for early detection of heart failure onset	Choi, Edward; Schuetz, Andy; Stewart, Walter F.; Sun, Jimeng	Journal of the American Medical Informatics Association	2017	24	2	464
Impact of COVID-19 pandemic on information management research and practice: Transforming education, work and life	Dwivedi, Yogesh K.; Hughes, D. Laurie; Coombs, Crispin; Constantiou, Ioanna; Duan, Yanqing; et al.	International Journal of Information Management	2020	55		445
Consumers acceptance of artificially intelligent (AI) device use in service delivery	Gursoy, Dogan; Chi, Oscar Hengxuan; Lu, Lu; Nunkoo, Robin	International Journal of Information Management	2019	49		427
Time to seize the digital evolution: Adoption of blockchain in operations and supply chain management among Malaysian SMEs	Wong, Lai-Wan; Leong, Lai-Ying; Hew, Jun-Jie; Tan, Garry Wei-Han; Ooi, Keng-Boon	International Journal of Information Management	2020	52		349
Artificial intelligence video interviewing for employment: perspectives from applicants, companies, developers and academicians	Kim, Jin-Young; Heo, WanGyu	Information Technology & People	2022	35	3	319
Connecting circular economy and industry 4.0	Rajput, Shubhangini; Singh, Surya Prakash	International Journal of Information Management	2019	49		302
A SEM-neural network approach for predicting antecedents of m-commerce acceptance	Liebana-Cabanillas, Francisco; Marinkovic, Veljko; Kalinic, Zoran	International Journal of Information Management	2017	37	2	298

Mapping the challenges of Artificial Intelligence in the public sector: Evidence from public healthcare	Sun, Tara Qian; Medaglia, Rony	Government Information Quarterly	2019	36	2	284
Visualising the intellectual structure and evolution of innovation systems research: a bibliometric analysis	Liu, Zhigao; Yin, Yimei; Liu, Weidong; Dunford, Michael	Scientometrics	2015	103	1	281
Artificial intelligence capability: Conceptualization, measurement calibration, and empirical study on its impact on organizational creativity and firm performance	Mikalef, Patrick; Gupta, Manjul	Information & Management	2021	58	3	275
Examining the role of trust and quality dimensions in the actual usage of mobile banking services: An empirical investigation	Sharma, Sujeet Kumar; Sharma, Manisha	International Journal of Information Management	2019	44		274
A Survey on Blockchain for Information Systems Management and Security	Berdik, David; Otoum, Safa; Schmidt, Nikolas; Porter, Dylan; Jararweh, Yaser	Information Processing & Management	2021	58	1	263
Artificial intelligence for sustainability: Challenges, opportunities, and a research agenda	Nishant, Rohit; Kennedy, Mike; Corbett, Jacqueline	International Journal of Information Management	2020	53		246
Predicting mobile wallet resistance: A two-staged structural equation modeling-artificial neural network approach	Leong, Lai-Ying; Hew, Teck-Soon; Ooi, Keng-Boon; Wei (Jun), June	International Journal of Information Management	2020	51		224
Climate change and COP26: Are digital technologies and information management part of the problem or the solution? An editorial reflection and call to action	Dwivedi, Yogesh K.; Hughes, Laurie; Kar, Arpan Kumar; Baabdullah, Abdullah M.; Grover, Purva; et al.	International Journal of Information Management	2022	63		219

Table 4, displaying a number of total citations along with the author's names and source publications, indicates that papers were covered in very few journals. The papers that received the maximum number of citations were published in the International Journal of Information Management. Other remaining journals are Scientometrics, Journal of the American Medical Informatics Association, Information Processing & Management, Information Technology & People, and Government Information Quarterly.

Table 4 provides the top 20 highly cited papers of authors. Maximum citations with 888 counts, including 573 with different authors, pertain to the broader subject topic: Multidisciplinary perspectives on emerging challenges, opportunities, and agenda for research, practice and policy. On the topic related to Big Data, there were 805 citations. Further, ChatGPT received 619 citations, Social Media Marketing (555), Neural network models for Medical applications (464), Impact of Covid 19 on Information Management (445), Consumer acceptance in services delivery (427), Blockchain Technology in SMEs (349), Educational technologies (319), Circular Economy and Industry (302), Neural network approach (298), Public health care (284), Innovation system research bibliometric study (281), Organizational Creativity and Performance (275), Mobile Banking Services (274), Blockchain Technology for Information systems (263), Sustainability challenges (246), Neural network approach for mobile wallet resistance (224), and Digital technologies applications in Information management on Climatic change (219).

Table 4 also indicates top-cited journals where publications of highly cited authors also appear. These journals are the International Journal of Information Management, Journal of the American Medical Informatics Association, Scientometrics, and Government Information Quarterly. Besides this, a few other journals like the Journal of the Association for Information Science and Technology (JASIST), Library Hi Tech, The Journal of Academic Librarianship and Information Processing & Management are also covered, which have not appeared in top cited authors' publications. **It is also noted that these journals publish high-quality research papers that contribute significantly to the body of knowledge in this field.**

Language-wise distribution

Table 5. Language-wise distribution

Sl. No	Languages	Record Count	% of 2,510
1	English	2468	98.32
2	Spanish	20	0.79
3	Hungarian	11	0.43
4	Portuguese	8	0.31
5	German	2	0.08
6	Estonian	1	0.04
7	Japanese	1	0.04

As expected, the maximum number of papers contributed was in English, while only one paper each was written in Japanese and Estonian.

As was the previous trend for almost all types of bibliometric studies in S&T areas, English remains the favourite language for communication. This study also records about 98% share of the English language as a medium of communication, followed by a few European countries minor share (Table 5). It may be noted that though language-wise Chinese origin authors' papers are not reflected here, their contributions and collaboration can be seen in other tables.

Publishers wise distribution

Table 6. Top 20 Publishers wise distribution

Publisher	Record Count	% of 2,510
Elsevier	743	29.60
Emerald Group Publishing	348	13.86
Oxford Univ Press	300	11.95
Springer Nature	259	10.31
Taylor & Francis	200	7.96
Sage	158	6.29
IGI Global	111	4.422
Wiley	99	3.94
Informa	49	1.95
Ediciones Profesionales Informacion SL-Epi	45	1.79
Soc Inform Manage-Mis Res Cent	33	1.31
Infonia	28	1.11
Assoc Information Systems	20	0.79
Nomos Verlagsgesellschaft MbH & Co Kg	15	0.59
Univ Sheffield Dept Information Studies	11	0.43
Assoc Computing Machinery	9	0.35
Medical Library Assoc	9	0.35
Indiana Univ, Oper& Decision Technol Dept	8	0.31
Amer Library Assoc	6	0.23
Pontificia Universidade Catolica Campinas	6	0.23

If we take the share of the top 20 Publishers (Table 6), its distribution records the maximum share (80%) with more than 6% of total contributions from renowned ones like Elsevier, Emerald, Oxford, Spring Nature, Taylor and Francis, and Sage. It is also noted that the publisher, the American Library Association, published 6 papers during the period under study.

Collaborating countries

Table 7. Collaborating countries

Sl. No.	Countries/Regions	Record Count	% of 2,510
1	USA	717	28.56
2	Peoples R China	710	28.28
3	England	179	7.13
4	India	154	6.13
5	Spain	149	5.93
6	Australia	145	5.77
7	Germany	133	5.29
8	South Korea	126	5.02
9	Canada	91	3.62
10	Netherlands	73	2.90
11	Taiwan	72	2.86
12	France	69	2.74
13	Iran	63	2.51
14	Saudi Arabia	60	2.39
15	Italy	58	2.31
16	Pakistan	57	2.27
17	Malaysia	53	2.11
18	Singapore	48	1.91
19	Brazil	44	1.75
20	Switzerland	42	1.67

Table 7 reveals that more than 50% of combined contributions are received from the USA and China, with 28.5% and 28.2%, respectively. This is followed by England, India, Spain, Australia, Germany and South Korea with more than 5% each. These comprise combined contributions of 33%. The remaining about 10% of papers are shared by 12 countries, including Some Asian and European countries. A similar pattern with maximum research output including countries like the USA, China, England, Germany, Spain and India was also observed in a previous study (Adakawa, Balachandran, and Harinarayan, 2023)

It also indicated that AI research in the context of Information science is geographically diverse, with significant contributions from various regions. The United States and China are leading contributors, with numerous universities and research institutions actively publishing in this area. The countries like the U K, Germany, and the Netherlands have research communities focusing on AI and LIS in Europe. Asia, China, India, and South Korea are emerging as major players, reflecting their growing investments in AI and technology-driven library services. Besides this, Australian researchers are also contributing significantly.

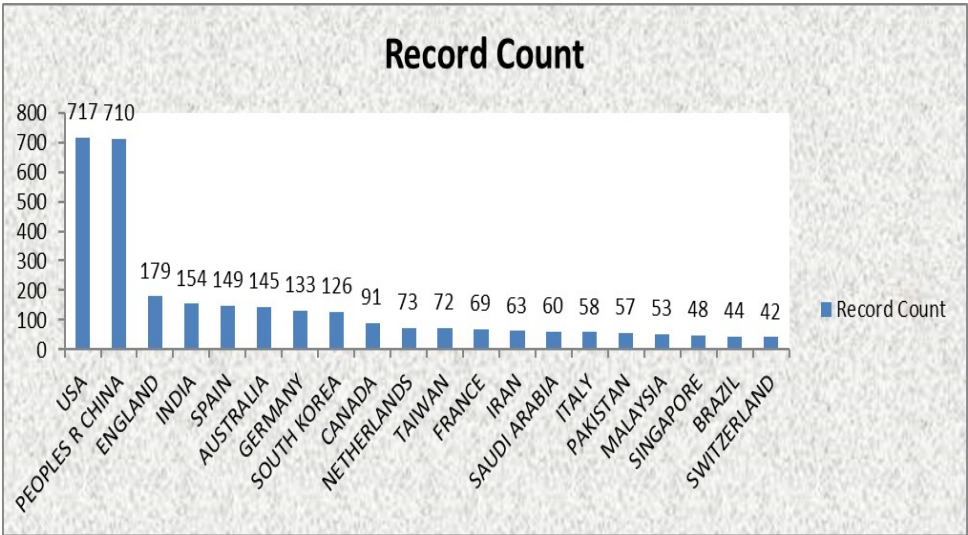


Figure 1. Collaborating Countries

Research Areas

Table 8. Research Areas in the Context of Library and Information Science

SI. No.	Research Areas	Record Count	% of 2,510
1	Computer Science	1553	61.87
2	Business Economics	397	15.81
3	Health Care Sciences Services	279	11.11
4	Medical Informatics	279	11.11
5	Social Sciences Other Topics	105	4.18
6	Geography	100	3.98
7	Physical Geography	100	3.98
8	Communication	98	3.90
9	Philosophy	75	2.98
10	Telecommunications	27	1.07
11	Education Educational Research	9	0.35
12	Development Studies	7	0.27
13	Biomedical Social Sciences	5	0.19
14	Public Environmental Occupational Health	5	0.19
15	Arts Humanities Other Topics	3	0.12
16	Government Law	3	0.12
17	Science Technology Other Topics	1	0.04

As is expected, the maximum and remarkable number of contributions (61.8%) of AI is in the Computer science field. It is followed by Business economics, Industries, Telecommunications, Education, Social Sciences, and Philosophy (covering ethical aspects of AI).

If Table 3 depicts topics with the top 20 papers that received maximum citations and compares them with Research Areas shown in Table 8 at a macro level, there is a similar pattern. For example, the dominant areas of research pertain to computer science, business economics, health care, medical informatics, and communication. It is also noted here that some of the research areas appear in more than one paper, so a mismatch between the total number of contributions (2510) and research area counts of publications (2946) is bound to occur. A few specific studies on the application of AI on Traditional and routine tasks and services of libraries and information centres as reported by Patel and Singh (2020) reveal that several areas for study have emerged in the AI-LIS research domain, e.g. Information Retrieval: Enhancements in search algorithms and user query understanding; Automation: Automated cataloguing, indexing, and classification systems.; User Services: AI-driven virtual assistants and chatbots for improved user interaction; Predictive Analytics: Forecasting user needs and optimising resource management and Accessibility. It may be recalled that Information Science is a multidisciplinary field that focuses on studying information and its role in society. The scope of Information Science encompasses a wide range of topics and areas on a macro level, which includes Information Retrieval and Management, Knowledge Organization: Human-Computer Interaction (HCI) Data Science and Analytics, Digital Libraries and Archives Information Ethics and Policy Information Behavior, Social and Cultural Aspects of Information Machine learning and Education and Training.

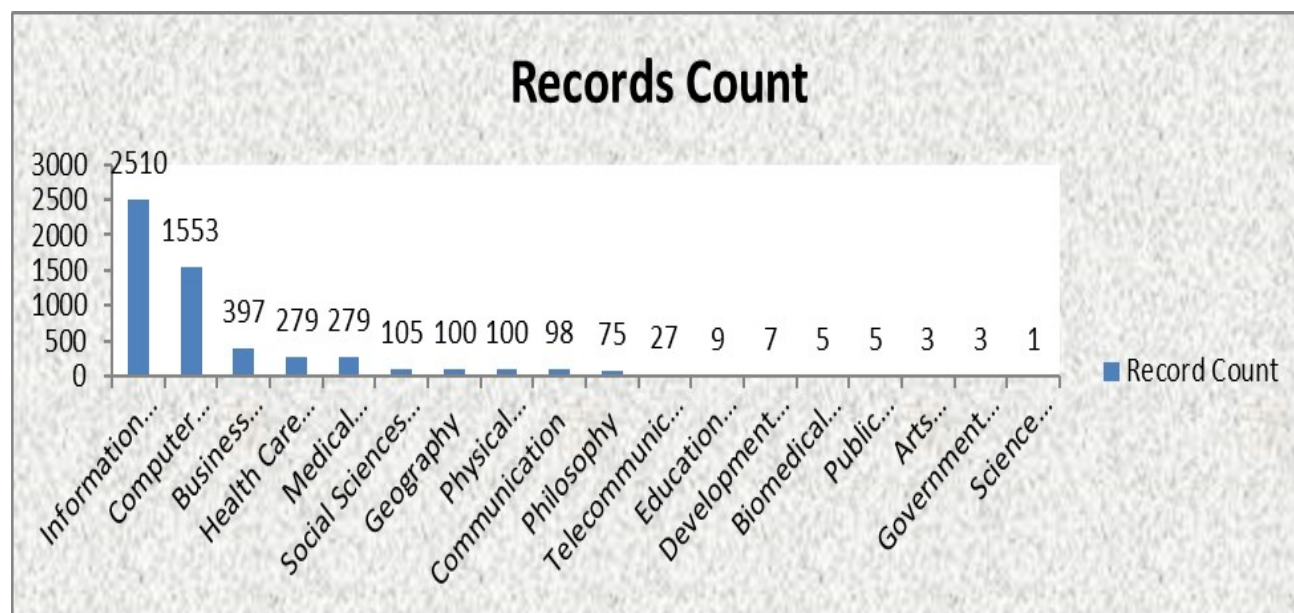


Figure 2. Research areas

Top Affiliations

The authors' top affiliations (Table 9) pertain to the USA, China, India, and a few European institutions. In India, IIMs have 30 contributions, 1.19% of the total, while IITs have 1.11%, 28 contributions.

In a previous study by Adakawa, Balachandran, and Harinarayan (2023), it was reported that the most prolific and productive institutions are the University of California system, the University of London, and CNRS, out of which the first two are also observed in the present study.

6. Discussion

The present study explores various aspects of this trend, including publication frequency, types of research, prominent journals, geographical distribution, and emerging themes and research areas in the dynamic field of AI applied to a specific context of its applications in Information and Libraries. Information Science constantly evolves as technology advances and new information challenges emerge. It plays a crucial role in managing the large amounts of information generated in the digital age and supports various sectors, including business, education, healthcare, and government.

Table 9. Top affiliations

Sl. No	Affiliation	Record Count	% of 2,510
1	Wuhan University	90	3.58
2	University of Texas System	62	2.47
3	Harvard University	61	2.43
4	Chinese Academy of Sciences	60	2.39
5	State University System of Florida	42	1.67
6	Harvard Medical School	39	1.55
7	University of California System	38	1.51
8	University of London	38	1.51
9	Pennsylvania Commonwealth System of Higher Education Pcshe	32	1.27
10	University System of Georgia	32	1.27
11	King Abdulaziz University	31	1.23
12	Brigham Women's Hospital	30	1.19
13	Indian Institute of Management IIM	30	1.19
14	University of Granada	30	1.19
15	Sungkyunkwan University Skku	29	1.15
16	Indian Institute of Technology System IIT	28	1.11
17	Tsinghua University	28	1.11
18	Stanford University	27	1.07
19	University of Chinese Academy of Sciences Cas	27	1.07
20	Central China Normal University	26	1.03
21	Indiana University System	26	1.03
22	University of Texas Health Science Center Houston	25	0.99
23	University System of Ohio	25	0.99
24	Huazhong University of Science Technology	24	0.95
25	University of Technology Sydney	24	0.95

It is observed that there is a lot of scattering in the distribution of papers in various research areas, which are shown in the Library Information Science category. The publication pattern of AI papers in this context reflects the increasing intersection of technology and traditional library practices. Further, AI papers typically encompass several types of research viz. Theoretical research investigates conceptual frameworks and models for integrating AI into LIS; empirical studies highlight case studies and real-world implementations of AI in libraries; and technological development indicates developing and testing new AI tools and applications for libraries. A trend of papers on reviewing and bibliometric studies is also indicated, providing comprehensive overviews of existing AI technologies and their applications in LIS. It is worth mentioning the works by Singh and Vohra (2018), Alemu et al. (2012), and Tyckoson (2017) have discussed practical implementations of AI in libraries, theoretical frameworks, and case studies showcasing the benefits and challenges of AI integration.

It is observed that the findings of the present study on top contributions do not explicitly reveal the usage of AI at the micro level in terms of traditional and routine library services. However, its applications in the broader scope of Information science are seen. These are, however, concentrated in broad areas focusing on Medical/Health services (Medical Informatics) and other areas as mentioned in 'Research Areas' within the Analysis and Findings section. There is also an increasing trend of collaboration. Collaborative research is prevalent in this field, often involving partnerships between academic institutions,

libraries, and technology companies.

7. Conclusion

The growth of AI publications can be attributed to the growing recognition of its potential to revolutionise information and library services and various tasks and activities in almost all sectors. AI is transforming Libraries and Information centres by automating routine tasks, improving information retrieval, enhancing accessibility, and enabling predictive analytics and personalised recommendations. However, adopting AI also requires careful consideration of ethical implications and challenges. The ongoing research and development work in this field can further revolutionise library services and operations in the future. It can be concluded that more focus on micro-level studies in the LIS area and collaboration is required. This can be done with the active participation and support of LIS professionals in terms of feedback and quantitative studies, with IT professionals involved in the AI area.

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