



Landscape of AI research in Academic Libraries through the lens of Bibliometrics

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ARTICLE INFO	ABSTRACT
Published Online: 22 June 2026	In this article, a detailed bibliometric analysis of the scientific literature relating to applications of artificial intelligence in academic libraries during the period from 2015 to 2025 is discussed. Using the Scopus database, the research considers a sample of 474 peer-reviewed sources using the VOSviewer software and Microsoft Excel for analysis of publications, keywords' co-occurrence, citations, and author collaboration. The results show that there was an enormous increase in publication output after 2019, with the highest value reached in 2025, largely owing to the necessity of delivering remote library services amid the spread of the COVID-19 virus. Through network analysis of keywords, four distinct themes emerge: artificial intelligence applications in libraries, intelligent information systems, machine learning techniques, and user-centric services. Moreover, citation analysis reveals several important pioneers in the field, such as Cox, while authorship network analysis points to the existence of an extensively cooperative academic community.
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1. INTRODUCTION

Artificial Intelligence (AI) is one of the most important technologies in the modern world. It refers to computer systems that can perform tasks that normally require human intelligence. These tasks include learning from data, understanding language, recognizing images, solving problems, and making decisions. Today, AI is used globally in many fields such as healthcare, education, business, banking, agriculture, transportation, and libraries. Researchers from India have written many journal articles discussing the global growth and impact of AI, its benefits, and its challenges.

In the field of libraries and information centers, AI is changing how information is organized and delivered. Globally, libraries use AI for automated cataloguing, digital reference services, and recommendation systems. AI chatbots help users find books and research articles quickly. Artificial Intelligence improves information retrieval systems and enhances user satisfaction. AI tools also support digital preservation and data management in research institutions. Artificial intelligence-guided e-resources and smart libraries have been found to significantly improve students' learning and cognitive capacities. RFID and the internet wouldn't be able to support learning (5).

Academic libraries are embracing expert systems and artificial intelligence tools. Expert systems are a type of technology within artificial intelligence (AI) that are

designed to think and make decisions like human. In academic libraries, expert systems support reference services, subject classification decisions, and user guidance. The incorporation of intelligent systems in libraries particularly robotics, artificial intelligence, and expert systems support management and decision-making by simulating the expertise of librarians, while AI integration further enhances information systems (8). These systems influence natural language processing and knowledge bases to interpret user questions and generate context-relevant recommendations, thereby extending professional expertise through technology. Closely related to expert systems is the integration of smart systems in library operations. Smart systems incorporate technologies such as the Internet of Things (IoT), Radio Frequency Identification (RFID), mobile computing, and intelligent analytics to create responsive library environments. RFID, for instance, is being implemented in academic libraries to automate circulation, enable self-checkout, and enhance inventory management. Users can borrow and return items independently at self-service kiosks, reducing wait times and freeing staff to deliver specialized research support.

Despite its many advantages, AI also has some challenges and ethical concerns such as data privacy, job displacement, bias in algorithms, and lack of transparency. Many countries are developing AI policies to protect user data and ensure fairness in decision-making systems.

A bibliometric study is a type of research that uses numbers and statistics to study scientific publications such as journal articles, books, conference papers, and reports. In simple language, it is a way to count and measure research work. Rather than reading each article one by one, a bibliometric study looks at a large group of publications and finds patterns, trends, and important facts about them. These studies are very useful because they help researchers, librarians, and policymakers understand how research is growing over time, which authors are most productive, how often papers are cited (used as references), and which topics are becoming popular. In India, bibliometric studies have become popular in many research fields including library science, education, medicine, science, and social science. Bibliometric methods are useful to understand research trends, research productivity, author collaboration, topic coverage, and impact of publications.

2. OBJECTIVES OF THE STUDY

The primary objective of this study is to analyze the research trends and patterns of Artificial Intelligence (AI) use in academic libraries through a bibliometric approach. The specific objectives are as follows:

1. To examine the growth and trends of scholarly publications on AI in academic libraries from 2015-2025.
2. To analyze the thematic focus and research areas of AI applications in academic libraries.
3. To assess collaboration patterns among authors, institutions, and regions in AI-related library research.
4. To evaluate the types of AI technologies and tools being explored or implemented in academic libraries.

3. SCOPE OF THE STUDY

Artificial Intelligence (AI) is becoming an important technology in many fields, including academic libraries. A bibliometric study helps to analyze research publications to understand trends, patterns, and the growth of a particular topic. The scope of AI use in academic libraries, when studied through bibliometric methods, provides valuable insights into how research on this subject has developed over time.

The study mainly focuses on analyzing scholarly publications related to AI applications in academic libraries. These publications may include journal articles, conference papers, books, and review papers. By examining the number of publications, authors, countries, institutions, and citation patterns, researchers can identify the growth and impact of AI-related research in the library and information science field.

Another important scope of this study is to identify the major areas where AI is being used in academic libraries. These areas include automated cataloguing, intelligent search systems, chatbots for user assistance, recommendation systems for books and articles, plagiarism detection, and

digital library management. AI also helps in improving information retrieval, organizing large collections of data, and providing personalized services to library users.

The bibliometric analysis can also highlight the most influential authors, leading journals, and highly cited research papers in this field. It helps researchers understand which countries and institutions are actively contributing to AI research in libraries. This information can guide future research collaborations and academic development.

Furthermore, the study can reveal research gaps and emerging trends in the use of AI in academic libraries. By identifying these gaps, scholars and librarians can explore new opportunities for implementing AI technologies to improve library services.

Overall, the bibliometric study of AI use in academic libraries helps in understanding the development, impact, and future direction of research in this growing and important area.

4. RESEARCH METHODOLOGY

This study adopts a bibliometric research approach to analyze scholarly publications related to the use of Artificial Intelligence (AI) in academic libraries. Bibliometric analysis is a quantitative method used to examine patterns in academic literature, such as publication growth, authorship, collaboration, and research trends. This approach helps to understand the development and impact of research in a specific field over a defined period.

4.1 Data Sources

The data for this study was collected from the Scopus database. Scopus is one of the largest and most reliable abstract and citation databases of peer-reviewed literature, covering journals, conference proceedings, and books from various academic disciplines. It provides comprehensive bibliographic information that is suitable for bibliometric analysis.

4.2 Search Strategy

A comprehensive search was conducted in Scopus using specific keywords related to artificial intelligence and academic libraries. The search terms include “Artificial Intelligence”, AI in academic libraries”, Machine learning in academic libraries”, AI application in academic libraries” and other related keywords. These keywords were used in different combinations to obtain a comprehensive set of relevant publications. The initial search using the selected keywords provided a total of 798 documents. To ensure the relevance and quality of the dataset, several filtering criteria were applied systematically. First, the publication year was limited to the period from 2015 to 2025, which reduced the results to 636 documents which excluded 162 irrelevant documents. Subsequently, the subject areas were narrowed down to Computer Science and Social Sciences, resulting in 634

documents. Further screening was performed by limiting the document types to articles and conference papers, which narrowed the dataset to 512 publications. Only documents published in the English language were considered, giving 474 records. These 474 documents constituted the final dataset used for the bibliometric analysis.

4.3 Data Extraction

After retrieving the relevant publications from Scopus, the bibliographic data has been exported in CSV format. The collected data was analyzed using Microsoft Excel and VOSviewer. These tools were used for organising and data cleaning and network visualizations to generate co-authorship networks, keyword co-occurrence, citation networks to identify relationships among authors, institutions, and research topics.

5. REVIEW OF LITERATURE

AI plays an important role in catalyzing a drastic paradigm change occurring in global academic libraries, shifting conventional service practices towards a new model where intelligent and automatic systems are created to achieve maximum efficiency and effectiveness in performance. The general framework for these changes is offered by some works (11), (12) which discuss how modern AI components impact human behaviors and interactions, how traditional libraries differ from their intelligent counterparts, and how routine processes can be successfully automatized through simulating human cognitive functions such as reasoning and problem solving. This fast-paced development creates a need to transform professional skill sets; the ways to do it are

defined by Cox (7), who specifies eleven possible strategies for adopting AI in institutions, with a prediction of a new hybrid professional landscape that will combine conventional library knowledge and skills with technological knowledge. The particular sub-technologies serve an important but very distinct purpose in each of the administrative activities involved; the use of expert systems, natural language processing, indexing technologies, image processing, artificial neural network technologies, and robotics leads to enhanced discovery, acquisition, cataloguing, and technical processes (3), (4), (6). The implementation of these technologies is increasingly necessary for meeting the requirements of library users due to the increasing complexity and diversity of the information environment of today (2). On the user services front, according to (9), emerging technologies such as virtual reality and virtual reference systems help in revitalizing information literacy programs, whereas AI chatbots and virtual assistants ensure round-the-clock research support while maximizing accessibility and using data analytics for collection management. Nevertheless, despite the observable improvements in the levels of users' satisfaction as well as in the workflow process, the actual use of such systems on a global scale is still rather scarce. Some authors emphasize the presence of numerous challenges in the implementation process, including exorbitant expenses related to installation, lack of technical skills, infrastructural problems, moral or privacy issues, and job insecurity concerns among professionals (1), (10). Therefore, all the scholarly sources available confirm that the proper incorporation of AI into academic information spaces depends entirely on institutional funding and proper staff training.

6. DATA ANALYSIS AND INTERPRETATION

6.1 Summary of the dataset

Table 1: Summary of dataset

Sl. No.	Data	Numbers
1	Total number of articles	474
2	Coverage years	2015-2025
3	Total number of authors	1000
4	Citations	6134
5	Average citations	6.13

The bibliometric dataset consists of 474 articles published between 2015 and 2025, representing ten years of continuous research activity in the field. These publications were produced by 1,000 authors, indicating broad scholarly participation and a collaborative research environment. The publications have collectively received 6,134 citations, demonstrating that the research outputs have gained considerable recognition within the academic community. The average citation rate of 6.13, calculated using the total number of authors,

indicates that each contributing author has received, on average, slightly more than six citations. This reflects a moderate level of research impact and visibility. The citation performance suggests that the published studies have contributed meaningfully to the advancement of knowledge and have been utilized by subsequent researchers in related fields. The dataset highlights a productive and collaborative research landscape characterized by steady publication output, active author participation, and measurable scholarly influence.

6.2 Publications trends

Fig 1 shows the publication trend from 2015 to 2025 clearly illustrates the growing adoption and application of Artificial Intelligence (AI) in academic libraries. During the early years (2015–2018), AI research remained limited, with only 5 publications in 2015, 4 in 2016, 6 in 2017, and 7 in 2018. At this stage, AI applications in libraries mainly focused on basic automation, digital cataloguing, metadata organization, and improving information retrieval systems. Libraries were beginning to explore technologies such as machine learning and automated indexing, but practical implementation was still at an experimental level. A noticeable shift occurred from 2019 onward, when publications increased to 19. This rise reflects growing awareness of AI’s potential in enhancing library services. During this period, academic libraries increasingly adopted AI-powered search engines, recommendation systems, and chatbots to improve user support and access to digital resources. In 2020 and 2021, with 24 and 28 publications

respectively, AI research expanded further due to the rapid digital transformation caused by the COVID-19 pandemic. Libraries relied more on AI tools for remote access services, virtual reference assistance, and digital learning support. The trend continued upward in 2022 with 34 publications and accelerated significantly in 2023 with 47 publications. This period saw wider use of advanced AI applications such as natural language processing, predictive analytics, plagiarism detection, and intelligent data management systems. The sharp rise in 2024, with 110 publications, and in 2025, with 190 publications, demonstrates that AI has become a major research focus in library and information science. Recent studies emphasize generative AI, personalized learning systems, research assistance tools, and AI-driven decision-making in academic libraries. Overall, the increasing publication trend indicates that AI is transforming academic libraries from traditional information centers into intelligent, technology-driven knowledge hubs.

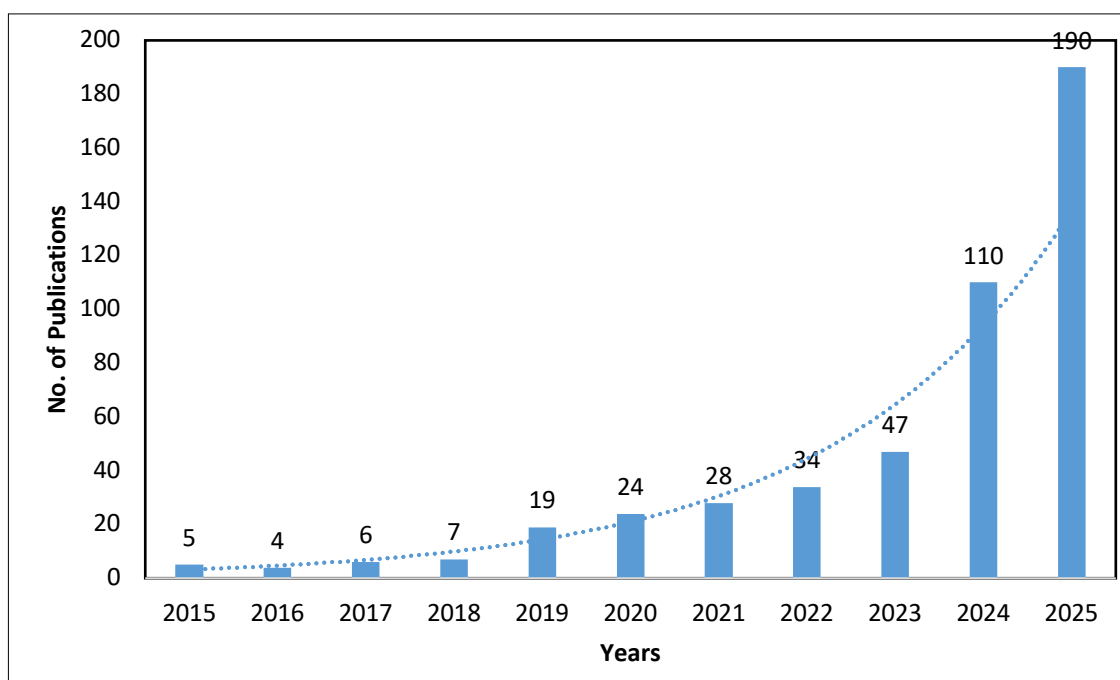


Fig 1: Publications trends on AI in Academic Libraries (2015–2025)

6.3 Keyword co-occurrence

Fig 2 presents a keyword co-occurrence network visualization generated using VOSviewer to examine the research trends and relationships among frequently used keywords in the field of artificial intelligence in academic libraries. In this visualization, each node represents a keyword, and the size of the node reflects the frequency of occurrence of that keyword in the selected literature. The connecting lines between nodes indicate the

relationship and co-occurrence strength between keywords, where thicker lines represent stronger relationships. A minimum keyword occurrence threshold of 10 was applied, and out of 2,549 identified keywords, 54 keywords met the threshold and were included in the final analysis. The visualization produced four clusters, each representing a major research theme within the field. The keyword “artificial intelligence” appears as the largest and most central node in the network,

showing that it is the most influential and frequently connected concept in the study area. It has strong relationships with important keywords such as “academic libraries,” “machine learning,” “deep learning,” “ChatGPT,” “information retrieval,” and “information systems.” This indicates that artificial intelligence research in libraries is broad, interconnected, and rapidly developing. The green cluster mainly focuses on artificial intelligence applications in academic libraries and user-centered services. Important keywords in this cluster include “academic libraries,” “ChatGPT,” “generative AI,” “chatbot,” “information literacy,” “robotics,” and “reference services.” This cluster highlights how libraries are adopting AI technologies to improve user support, teaching, information access, and digital services. The strong links between “artificial intelligence” and “academic libraries” indicate that AI technologies are becoming an important part of modern academic library operations. The close connection with terms such as “ChatGPT” and “generative AI” also shows the growing interest in conversational AI and automated support systems in libraries. The dense links within this cluster suggest strong research activity and close thematic relationships among these topics. The red cluster represents research related to libraries, information retrieval, and intelligent information systems. Key keywords in this cluster include “libraries,” “university libraries,” “deep learning,” “recommender systems,” “search engines,” “semantics,” and “information management.” This cluster focuses on how AI and machine learning technologies are used to improve information

organization, search systems, and digital library services. The keyword “libraries” acts as a major node with strong connections to “information retrieval” and “deep learning,” indicating that intelligent technologies are increasingly used to enhance information access and user experience. Strong link strength within this cluster reflects the close integration of AI methods with library and information science research. The blue cluster mainly includes technological and computational concepts such as “machine learning,” “natural language processing,” “big data,” and “human.” This cluster highlights the technical side of AI research and its application in library environments. “Machine learning” appears as the dominant keyword in this cluster and has strong links with both “artificial intelligence” and “natural language processing.” These strong relationships indicate that machine learning plays a major role in supporting intelligent systems, automation, and data analysis in libraries. The cluster also reflects increasing attention to data-driven services and human interaction with AI technologies. Overall, the network visualization shows that research on artificial intelligence in academic libraries is highly interconnected and multidisciplinary. Strong link strengths among clusters indicate that studies on AI, machine learning, chatbots, deep learning, and information systems are closely related and often discussed together. The visualization also demonstrates the growing importance of intelligent technologies in improving library services, information access, and user engagement in academic environments.

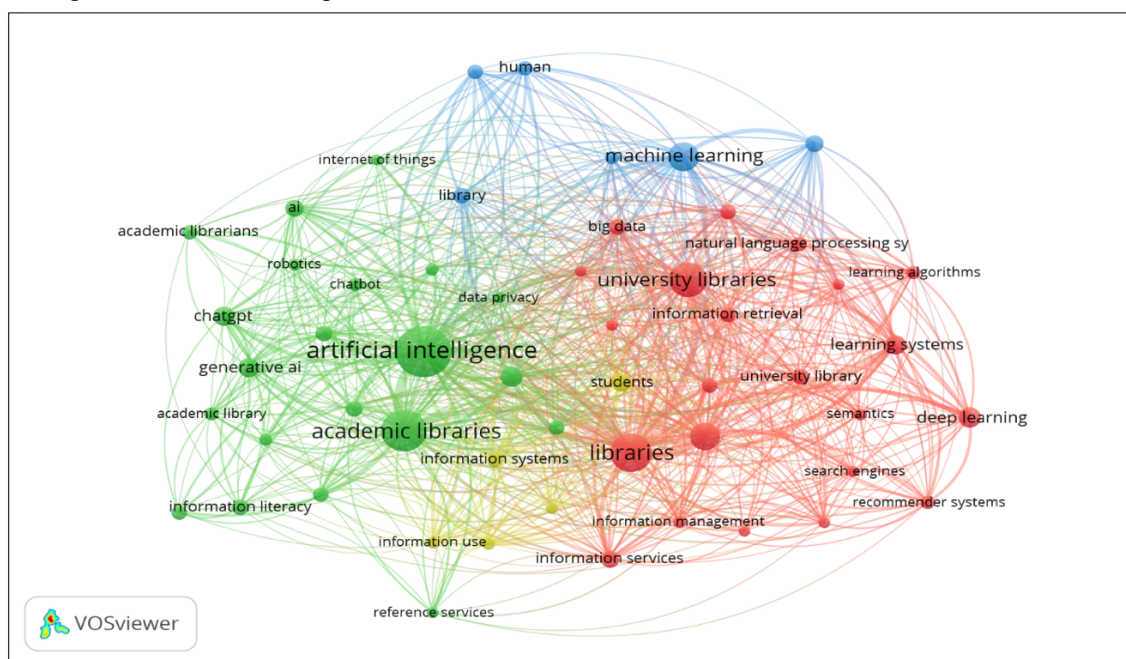


Fig2: Keyword co-occurrence analysis

6.4 Citation analysis

The table presents the ten most cited publications in the dataset, highlighting the studies that have had the greatest influence on subsequent research. Citation count is an important indicator of the academic impact and visibility of a publication. The higher the number of citations, the greater the recognition received from the scholarly community. Among the listed publications, Cox (2019a) ranks first with 264 citations, making it the most influential study in the dataset. It is closely followed by Okunlaya (2022) with 260 citations. The small difference between these two publications indicates that both have made significant contributions to the field and are widely referenced by other researchers. The third most cited publication is Andrews (2021), which has received 183 citations. This is followed by Zhou (2020) with 152 citations. These studies have also attracted substantial academic attention, demonstrating their importance in advancing knowledge within the research area. Several publications authored by Cox appear in the top ten list, including Cox (2023a) with 134 citations, Cox (2019b) with 114 citations, and

Cox (2023b) with 113 citations. The presence of four publications by the same author among the most cited works suggests that Cox has played a leading role in shaping research developments in this field. The consistent citation performance of these studies reflects their relevance and continued use by other scholars. Other highly cited publications include Lund (2020) with 123 citations, Cao (2018) with 121 citations, and Hervieux (2021) with 112 citations. Although these studies have fewer citations compared to the top-ranked papers, they still demonstrate considerable scholarly influence and recognition. So overall, the citation distribution shows that a small group of publications has contributed significantly to the development of the field. The high citation counts indicate that these studies have provided valuable insights, theoretical foundations, and practical implications that continue to guide future research. The findings also reveal the prominence of certain authors, particularly Cox, whose multiple highly cited works have had a substantial impact on the academic literature.

Table 2: List of ten most cited authors

Sl. No	Authors	Number of Citations
1	Cox (2019a)	264
2	Okunlaya (2022)	260
3	Andrews (2021)	183
4	Zhou (2020)	152
5	Cox (2023a)	134
6	Lund (2020)	123
7	Cao (2018)	121
8	Cox (2019b)	114
9	Cox (2023b)	113
10	Hervieux (2021)	112

6.5 Co-authorship network

Fig 3 presents co-authorship network visualization generated using VOSviewer showing collaboration relationships among authors. Each node represents an author, and each connecting line represents a co-authorship or collaborative relationship between two authors. The proximity of nodes and the number of links indicate the strength and frequency of collaboration. The network contains six authors: kalbande, dattatraya, suradkar, priya, subaveerapandiyan, a., chavan, subhash, verma, manoj kumar and yuvaraj, Mayank. The diagram forms a densely connected collaboration network, indicating that most authors have worked together directly or indirectly. Almost every author is linked with multiple others, suggesting a strong

collaborative research environment. Among the authors, suradkar, priya and chavan, subhash occupy relatively central positions in the network. Their locations and multiple connecting links indicate that they act as important connectors or bridging researchers within the collaboration group. It shows that suradkar, priya collaborates with: kalbande, dattatraya, subaveerapandiyan, a., chavan, subhash, verma, manoj kumar, yuvaraj, Mayank. The curved lines indicate direct collaborative ties. Some authors show stronger integration within the group: kalbande, dattatraya has multiple collaborations with: suradkar, priya, yuvaraj, mayank, chavan, subhash, verma, manoj kumar and subaveerapandiyan, a. collaborates with: suradkar, priya, chavan, subhash, yuvaraj, Mayank, verma,

manoj kumar. This indicates that these researchers participate actively in shared publications or projects. Although all authors are connected, some nodes are positioned slightly farther from the center: verma, manoj kumar appears more peripheral geographically in the map but still maintains several links. This suggests involvement in collaboration, though possibly with fewer publications or weaker link strength compared to central authors. On the other hand, yuvaraj, mayank acts as another connecting node between upper and lower parts of the network. The overall density of the network is high because: there are many interconnections, no isolated author exists and most authors are connected through multiple pathways. This indicates: active teamwork, interdisciplinary cooperation, and possibly participation in a common research domain or institution. The co-authorship visualization demonstrates a well-integrated

scholarly collaboration network. The absence of isolated clusters suggests that the authors are part of a unified research community. Central contributors such as suradkar, priya and chavan, subhash likely play significant roles in coordinating research activities and maintaining collaborative ties among the team members. The network also reflects: strong academic cooperation, shared publication activity, and effective knowledge exchange among researchers. Such a structure is generally associated with: higher research productivity, broader dissemination of knowledge, and increased interdisciplinary interaction. The diagram reveals a closely connected co-authorship network with strong collaborative intensity among all six authors. The visualization suggests that the research group functions cohesively, with certain authors acting as key hubs that strengthen connectivity and collaboration across the network.

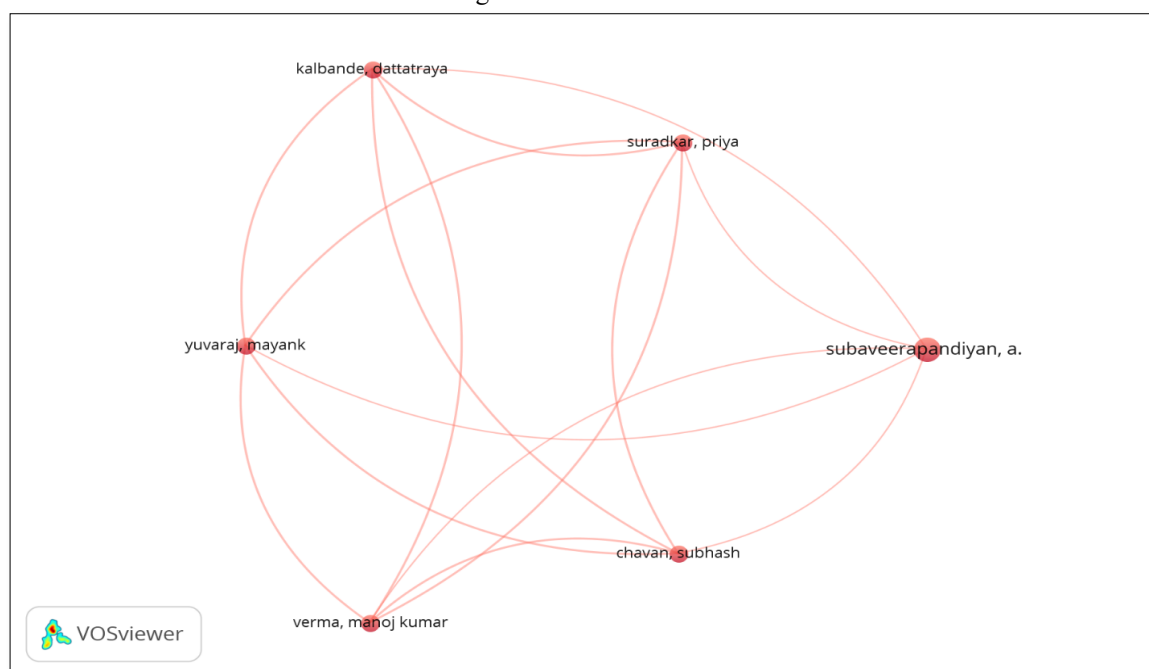


Fig 3: Co-authorship network

6.6 Co-citation network

Fig 4 presents network visualization of a bibliographic or co-citation relationship among publications related to artificial intelligence, chatbots, ChatGPT, and intelligent library systems generated using VOSviewer. The chosen analysis type is co-citation, unit analysis is cited reference and the counting method is full counting. 30 of the 13322 cited references met the criteria when the minimum number of citations was set to one. The citations were displayed in 3 clusters. In this map, each node represents a document or publication, while the connecting lines show the relationship and link strength between them. Larger nodes indicate

more influential or frequently connected publications, and thicker lines represent stronger relationships or higher co-occurrence between studies. Different colors represent different thematic clusters. The visualization shows a highly connected research field where studies on artificial intelligence, chatbots, machine learning, and library services are closely linked with one another. The network is divided mainly into three major clusters: the red cluster, the green cluster, and the blue cluster, each representing a different research focus within the broader field of AI and library science. The red cluster is the largest and most densely connected group in the network. This cluster focuses

mainly on artificial intelligence applications in libraries, intelligent library systems, robotics, and digital transformation. Important publications in this cluster include works such as Rutter, Bhatti, Newell, and Massis. The strong and dense links within this cluster indicate that these studies are frequently cited together and share similar research themes. This cluster highlights how libraries are adopting AI technologies to improve services, automate tasks, and support digital learning environments. The strong link strength between publications suggests that this area is well developed and highly influential in current research. The green cluster mainly focuses on chatbots, ChatGPT, and AI-supported user interaction in libraries and educational settings. Key studies in this cluster include Chen, Wang, Yadav, and Gomroki. The strong internal connections in this cluster show that research on conversational AI and chatbot technologies has become an important topic in library and information science. Many of these studies examine how chatbots can improve communication, user support, information retrieval, and learning experiences. The green cluster also has strong links with the red cluster, indicating that

chatbot research is closely connected with broader AI and intelligent library studies. The blue cluster represents research related to perceptions, adoption, implementation, and practical use of artificial intelligence technologies. Important works include Cox, Ward, Abdullahi, and Jha. This cluster appears to focus on how AI technologies are accepted and implemented in academic and library environments. The link strength within this cluster is moderate to strong, showing active scholarly discussion about the opportunities, challenges, and perceptions of AI adoption. The blue cluster also serves as a bridge between the green and red clusters because it connects technical AI studies with practical library applications. The figure shows a highly interconnected and interdisciplinary research area. Strong link strengths between clusters indicate that studies on artificial intelligence, chatbots, intelligent libraries, and AI adoption are closely related and often cited together. The network shows that AI technologies are becoming increasingly important in library science, education, and information management research.

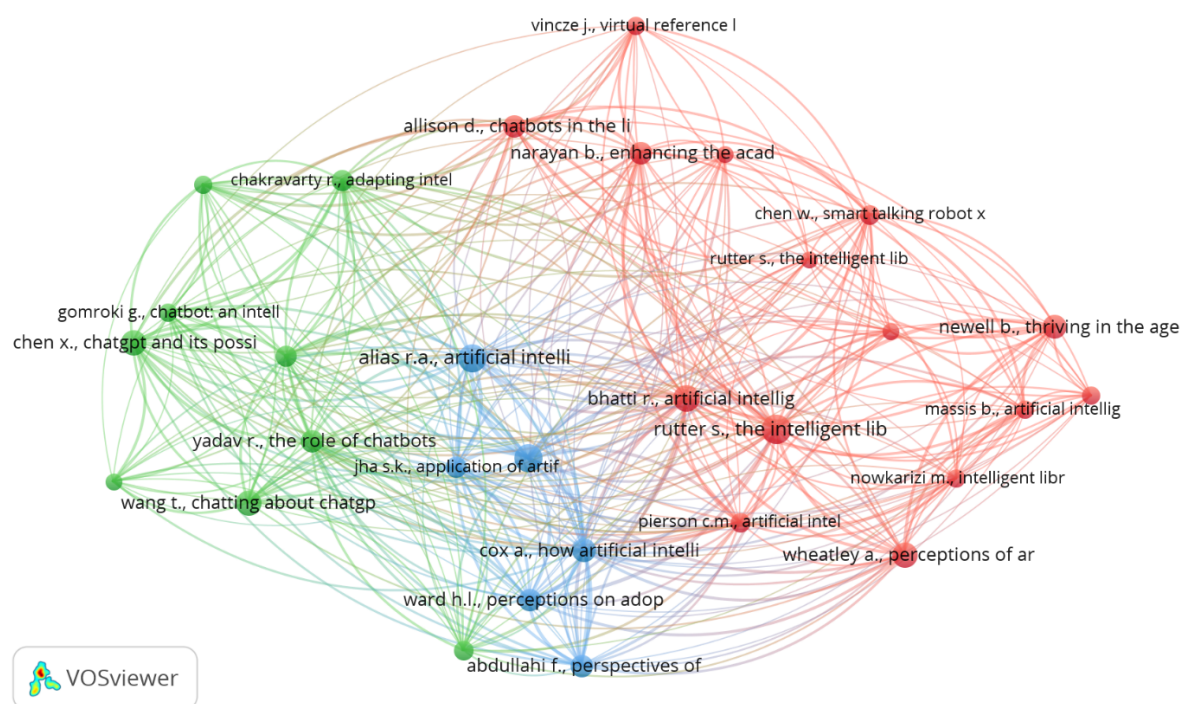


Figure 4: Co-citation analysis

7. LIMITATIONS

1. Only articles published between 2015 and 2025 were included in this study.
2. The study included conference papers and articles to ensure the quality and reliability of the sources.
3. Computer Science and Social Science are the subjects included for the study to maintain consistency in the type of subjects analyzed.
4. This study is limited to the use of artificial intelligence in academic libraries, and does not

consider its application in other types of libraries such as public or special libraries.

8. FINDINGS

The bibliometric analysis shows that research on Artificial Intelligence (AI) in academic libraries has increased rapidly from 2015 to 2025. The number of publications was very low in the beginning, but it grew significantly after 2019. This growth became much higher during and after the COVID-19 period because libraries started using more digital and AI-based services. The keyword co-occurrence analysis revealed that “Artificial Intelligence” is the most important and frequently used keyword in this research field. Other major keywords connected with AI are “academic libraries,” “machine learning,” “deep learning,” “ChatGPT,” and “information retrieval”. These keywords show that researchers are mainly focusing on intelligent systems, expert systems, automation, chatbot services, and digital information management in libraries. The study identified four major research themes. These themes include AI applications in academic libraries, intelligent information systems, machine learning technologies, and user-centered library services. The findings indicate that AI technologies are being widely used to improve information retrieval, reference services, digital learning, and user engagement. The citation and co-citation analyses show that the research field is highly interconnected and collaborative. Authors such as Cox, Huang, Jha, and Michalak are among the most influential contributors in this area. The co-authorship network also shows strong collaboration among researchers, indicating active teamwork and interdisciplinary research. The co-citation analysis demonstrates that studies on AI, chatbots, ChatGPT, intelligent library systems, and machine learning are closely related and frequently cited together. This suggests that AI research in academic libraries is becoming multidisciplinary and continues to expand into new technological areas. The findings show that academic libraries are increasingly adopting and using AI technologies to improve services, support users, automate tasks, and enhance digital learning environments.

9. CONCLUSION

The study concludes that Artificial Intelligence (AI) has become an important and fast-growing area of research in academic libraries. The bibliometric analysis clearly shows that the number of research publications related to AI in academic libraries has increased significantly between 2015 and 2025. This growth indicates that researchers and academic institutions are showing greater interest in using and adopting AI technologies to improve library services and information management systems. The findings reveal that technologies such as machine learning, AI-based learning, chatbots, natural language processing, and content creation using AI are increasingly being used in academic libraries.

These technologies help libraries improve information retrieval, automate routine tasks, provide virtual assistance, and support users more effectively. AI tools are also helping libraries enhance digital learning services, recommendation systems, and user engagement. The study further shows that research in this field is highly interconnected and collaborative. Researchers from library science, computer science, and information technology are working together to develop intelligent systems and innovative library services. The strong relationships among keywords, authors, and cited publications demonstrate that AI research in academic libraries is multidisciplinary and continuously evolving. Overall, the study highlights that AI is transforming traditional academic libraries into smart and technology-driven knowledge centers. AI technologies are improving the quality, efficiency, and accessibility of library services. The study also suggests that future research should focus on important issues such as ethical use of AI, data privacy, user awareness, and the long-term impact of AI technologies in academic libraries.

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