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Bibliometric Study and Visualization Analysis of Domestic and International Information Literacy Research in the Era of Artificial Intelligence

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ABSTRACT

This study employs bibliometric and visualization analysis to investigate the landscape of information literacy research in the era of artificial intelligence (AI), comparing trends and characteristics across domestic and international contexts. Utilizing data from the Web of Science and CNKI databases, the analysis reveals a consistent upward trajectory in research output for both domains, with notable peaks reflecting technological advancements and policy initiatives. The research themes demonstrate a shift from early focuses on information retrieval and knowledge organization to more recent explorations of AI literacy, social media, and user engagement. International research highlights interdisciplinary collaboration, particularly between library science, computer science, and education. In contrast, domestic research emphasizes the integration of AI technologies within library automation, information service innovation, and smart library development. Author and institutional collaboration networks reveal a preference for university-based partnerships, with international collaborations extending across diverse disciplinary backgrounds. While both domains exhibit similar trends in collaboration patterns, the absence of certain high-publishing countries from international collaboration networks warrants further investigation. Research hotspots reflect the growing influence of AI on information literacy, with international research exploring fear appeals, social media, and deep learning, while domestic research focuses on deep learning applications, smart libraries, and bibliometrics.

Keywords: Information Literacy, Artificial Intelligence, Bibliometric Analysis, Visualization

BACKGROUND & SIGNIFICANCE

In the era of artificial intelligence, the proficiency of information literacy has emerged as a crucial competence for individuals to navigate the complexities of modern society (Catts & Lau, 2008). It profoundly influences personal learning capabilities, work productivity, and the fundamental capacity of citizens to participate in social and economic activities (Koltay, 2011). The rapid progression and extensive application of artificial intelligence technologies are transforming our daily lives, professional environments (Cetindamar et al., 2022), and educational paradigms (Okello, 2023; Almasri, 2024). These technologies offer a plethora of tools for information processing, data analytics, and decision-making, while concurrently elevating the standards for

information literacy. The varied trajectories and distinct characteristics of information literacy education and practice across different nations and regions present a fertile landscape for comparative scholarly inquiry (Tu, Y. F. et al., 2023). However, the abundance of research outputs challenges the efficacy of traditional literature review methodologies, making it difficult to gain a comprehensive grasp of the current status and emergent trends. Consequently, bibliometric and visualization analysis have become indispensable for objectively and efficiently unveiling research focal points, evolutionary trajectories, and knowledge architectures.

The pertinence of employing bibliometric and visualization analyses in the exploration of domestic and international information literacy research is pronounced. These methodologies lay a foundation for understanding the development, trends, and scholarly impact within the field (Ensslin et al., 2022). Bibliometric analysis employs a quantitative approach to evaluate publication trends, citation frequencies, and collaborative networks, providing a panoramic view of the research environment and its key stakeholders (Sahu & Parabhoi, 2020). Visualization techniques render complex data in an accessible and intuitive format, empowering researchers and policymakers to discern patterns, pinpoint knowledge voids, and devise informed strategies for subsequent research endeavors.

The multifaceted value of this analytical approach is underscored by several key dimensions:

Research Mapping and Landscape Analysis: These analyses facilitate the cartography of the intellectual framework of information literacy research, pinpointing core domains of study, influential authors, and leading journals. This mapping is instrumental in delineating disciplinary boundaries and interdisciplinary linkages.

Trend Analysis: The identification of trends over time via these analyses can uncover the progression of research interests and the emergence of nascent subfields within information literacy, offering invaluable insights for researchers aiming to remain at the vanguard of their discipline (Pace-Donelson, 2023).

Collaboration Patterns: Bibliometric analysis can reveal collaborative networks, spotlighting opportunities for international and inter-institutional partnerships, thereby fostering a more cohesive and collaborative research community (Fu et al., 2022).

Knowledge Gaps and Research Priorities: Visualizing research outcomes can highlight lacunae in the extant literature, directing future research towards underrepresented or burgeoning areas, thereby ensuring a holistic and balanced research agenda (Yan et al., 2022).

Policy Formulation: For policymakers, these analyses provide evidence-based perspectives that can inform educational policy development, research funding strategies, and the design of information literacy initiatives (Zahra et al., 2021).

In synthesis, the utilization of bibliometric and visualization analyses in the examination of information literacy research in the era of AI is critical to the field's progression, offering a structured, data-centric comprehension of its development and influence (Borgohain et al, 2022). It serves as an essential instrument for researchers, academic institutions, and stakeholders to navigate the intricate landscape of contemporary scholarship and to make strategic decisions that will sculpt the future of information literacy research and practice (Bratt, 2018).

Therefore, this study is poised to systematically delineate the contemporary state of domestic and international information literacy research through bibliometric and visualization analyses, identify prevailing research trends, and underscore the pivotal role of university libraries in integrating information literacy into educational systems. The study seeks to provide scientific benchmarks and practical directives for the enhancement of information literacy education, acknowledging the seminal contribution of university libraries in equipping individuals to thrive in the new era. To be Specific, the research questions are as follows:

1. In the era of artificial intelligence, what are the differences in the annual publication trends of information literacy research between domestic and international contexts, and what are the evolutionary trends of their research topics?

2. How do author, institutional, and national collaborative publication patterns manifest in the field of information literacy in the context of artificial intelligence?

3. What are the current research directions and hotspots in the field of information literacy in the context of artificial intelligence?

METHOD & DATA

We have formulated both English and Chinese search expressions for the academic concepts of information literacy and artificial intelligence, incorporating their related terms, synonyms, and contextual adjustments. Using the topic search function in the core journals of Web of Science and CNKI, as of June 20, 2024, we have retrieved a total of 2,208 core English literature data under the subject classification of library and information science and a total of 2,349 Chinese literature data by limiting the results to those indexed in the PKU Core and CSSCI (Chinese Science Citation Index). These data are analyzed with popular scientometric tools such as Citespace, Bibexcel, and Bibliometrix.com.

ANALYSIS & RESULT

1. Analysis of Publication Volume

1.1 Analysis of Annual Publication Volume

The English publication data presented in Figure 1 indicates a generally upward trend in research on information literacy in the age of artificial intelligence from 1990 to the present. Notably, there was a significant surge between 2004 and 2008. This increase can be attributed to the advancements in machine learning algorithms and the enhancements in computational power, which catalyzed a plethora of interdisciplinary studies encompassing information science, cognitive science, and AI (Khan et al., 2024). Additionally, the widespread adoption and development of the internet during this period contributed to the first major peak in publications on AI and information literacy.

Another notable peak occurred from 2018 to 2020. The renewed peak in interdisciplinary research on AI and information literacy from 2018 to 2020 was driven by technological advancements, a deeper understanding of human-AI interaction, the explosion of digital data,

educational innovations, supportive policies, and a collaborative research ecosystem. These factors collectively contributed to the vibrant research landscape during this period.

It is also widely recognized that by the end of 2022, the release of ChatGPT by OpenAI marked the beginning of a new wave of growth in research on artificial intelligence and information literacy (Hirvonen, 2024; Parra Valencia & Massey, 2023).

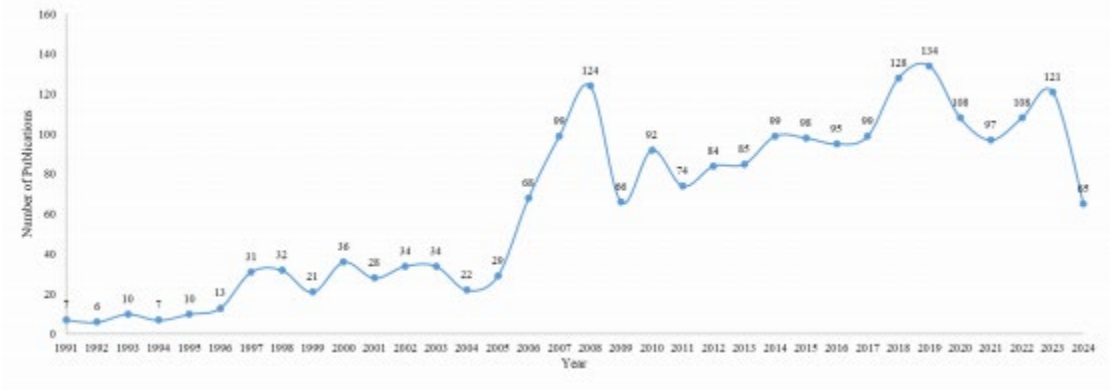

Figure 1: Distribution of annual publication outputs from 1990 to 2024 (WOS)

The escalation in scholarly inquiry focusing on the convergence of information literacy and artificial intelligence within China from 2017 onwards can be ascribed to a constellation of determinants, notably encompassing substantial technological progressions and the institution of strategic policy directives during this epoch. Notably, the initiation of China's inaugural National AI Strategy in 2017, which delineated an ambitious trajectory towards global preeminence in AI by the year 2030, served as a pivotal impetus for the intensification of research endeavors in AI and its multifaceted applications, including its synergy with the domain of information literacy. Concurrently, the seminal advancements in machine learning and deep learning methodologies during the mid-2010s, which underpin the foundational frameworks of AI, have rendered AI more applicable across diverse sectors, such as education and information processing. Furthermore, the exponential growth of big data and the concomitant refinement of analysis instruments have played a pivotal role in the advancement of both AI and information literacy. The Chinese governmental focus on data-driven policy formulation and decision-making processes has effectively expanded the frontiers of scholarly investigation within these interrelated fields.

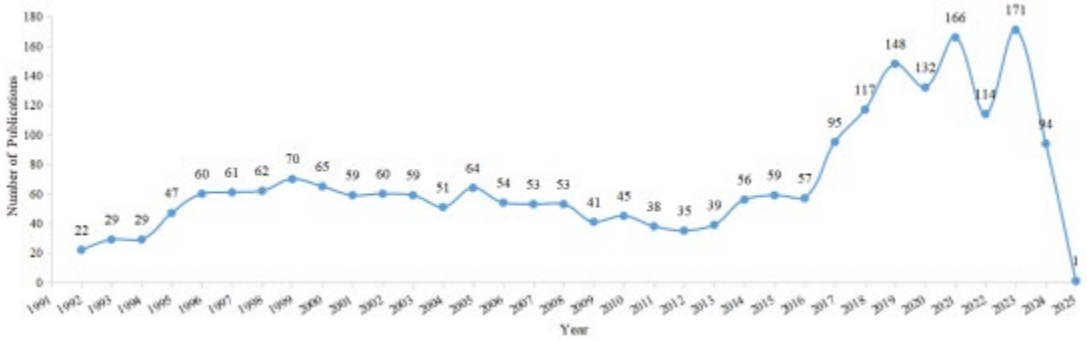

Figure 2: Distribution of annual publication outputs from 1990 to 2024 (CNKI)

1.2 Analysis of Keywords Time Zone Map

With the help of Citespace, it is found that distinct temporal phases have emerged in the realm of artificial intelligence (AI) and information literacy research, characterized by shifts in focus and evolving research trends. Based on the analysis of the international data, from 1991 to 2000, the focal points centered on information retrieval, knowledge design, systems algorithm, and web information. Subsequently, between 2000 and 2010, the emphasis shifted towards information seeking behaviors, knowledge management practices, and text mining methodologies. Moving into the decade spanning from 2010 to 2020, the advent of social media platforms such as Facebook precipitated research into user engagement dynamics, fear appeals in digital environments, and the critical study of digital literacy. Notably, from 2020 to 2024, AI literacy emerged as a prominent area of investigation, underscoring its significance in library and information science discourse.

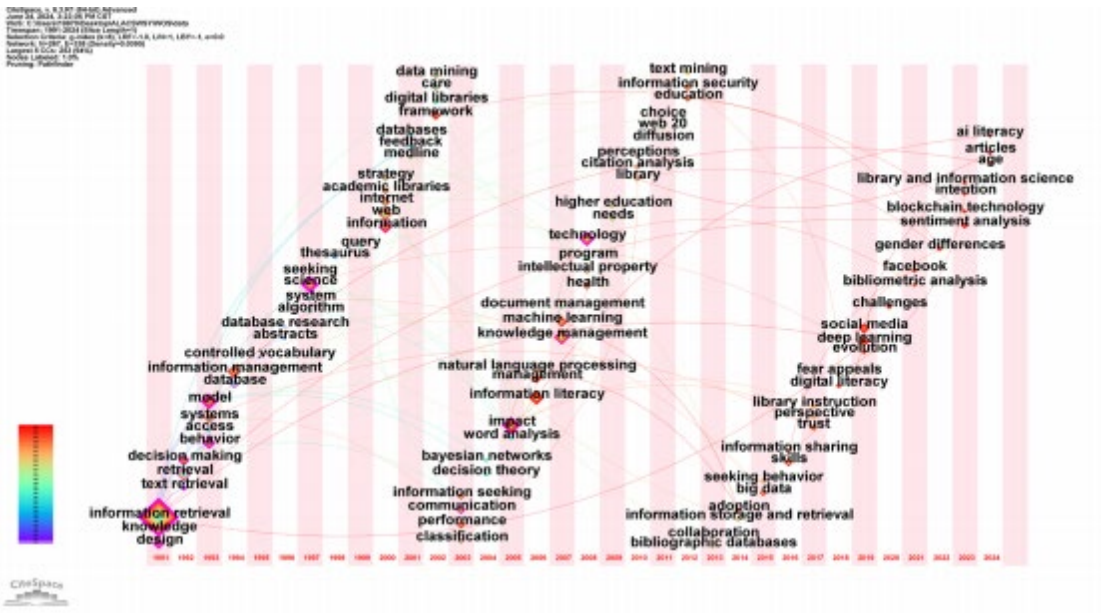

Figure 3: The timezone view of the research between 1990 to 2024（WOS）

Data from China National Knowledge Infrastructure (CNKI) reveals that the prominence of AI and machine learning in Chinese literature predates other research areas. As early as 1995, AI and information retrieval were identified as key research topics, with data mining emerging as a new area of interest in 1999. Between 2001 and 2010, research shifted from network environments to machine learning, knowledge organization, and text mining, further integrating information literacy with AI and progressing towards information measurement. The rise of big data in 2012 sparked a surge of interest in knowledge graph generation and mining, becoming a prominent research area in the 21st century. A wave of research themes emerged between 2017 and 2019, albeit with a relatively lower level of attention compared to previous focal points.

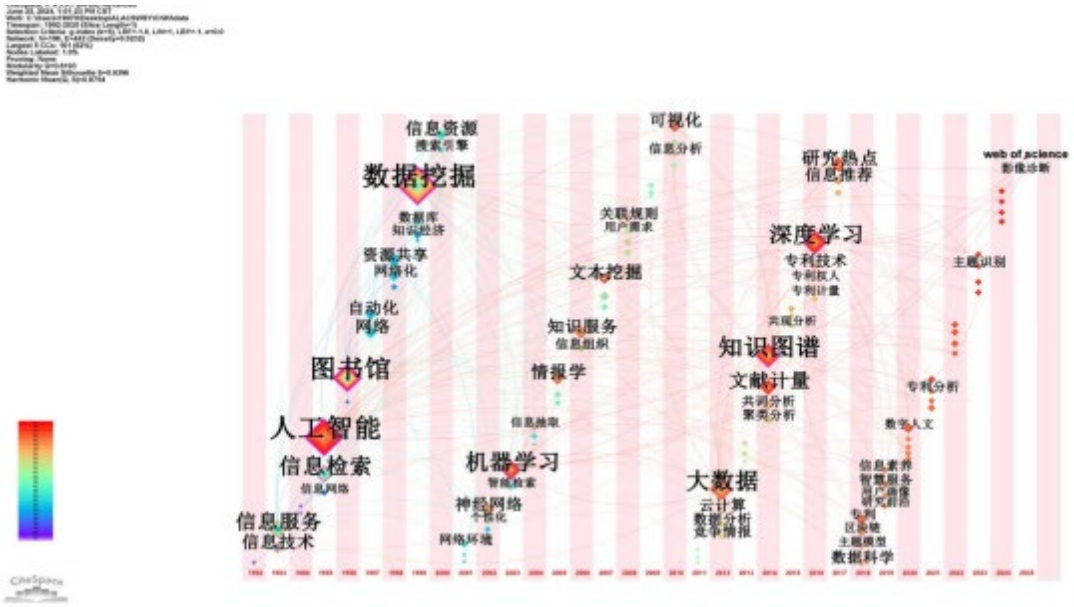

Figure 4: The timezone view of the research between 1990 to 2025 (CNKI)

2. Collaboration Network Analysis

2.1 Author Collaboration Network Analysis

After analysis of author collaboration, we firstly found that Chinese authors exhibit a comparatively consistent pattern of sustained collaboration around shared thematic interests, whereas western authors tend to engage in sporadic collaboration marked by the introduction of diverse conceptual frameworks (Tenório et al., 2023). And with more practical and literature investigation, we found that international data show more collaboration network with diverse disciplinary backgrounds, such as library science, computer science, and education, collaborate, reflecting the interdisciplinary nature of research at the intersection of information literacy and artificial intelligence (Julie, 2020). Key nodes within the network may correspond to leading figures or renowned scholars in the field (Figure 4 and Figure 6). In summary, the author collaboration network provides a multifaceted perspective for understanding the intersection of information literacy and artificial intelligence research, aiding in the revelation of collaborative patterns, distribution of research strength, development trends, knowledge dissemination, and research impact within the field.

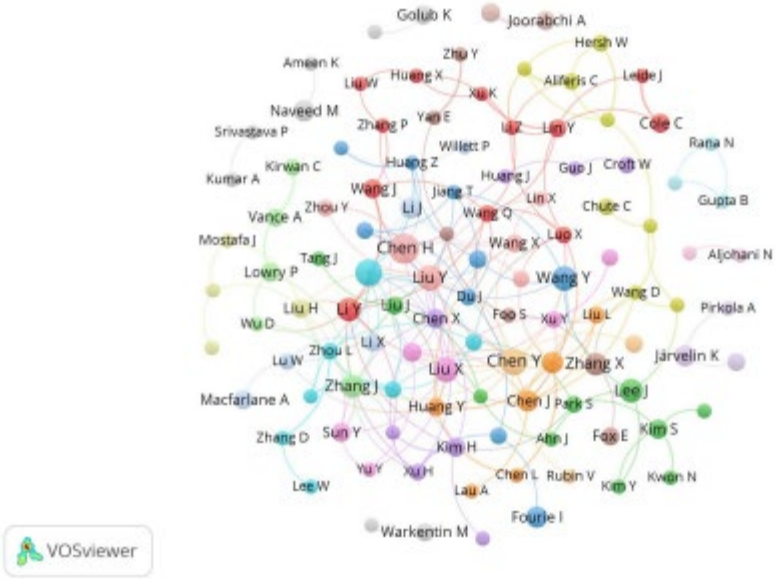

Figure 5: Scholars with three or more collaborative publications (WOS)

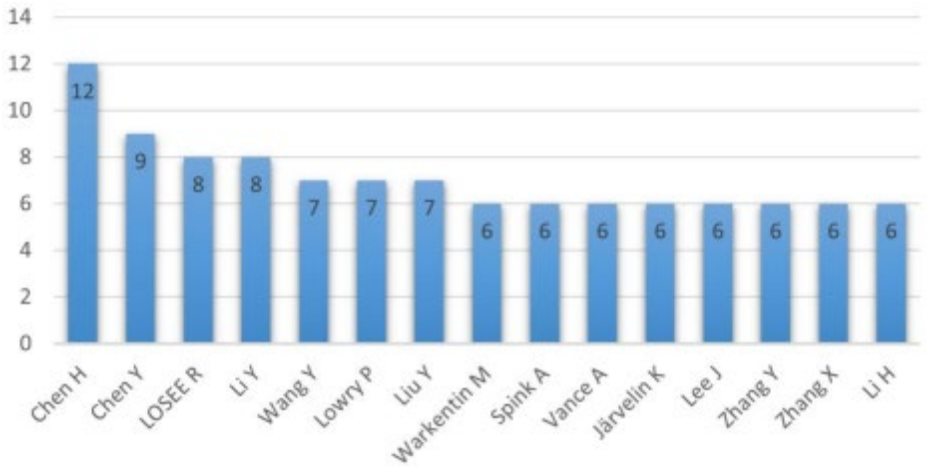

Figure 6: Top 15 scholar by publication volume (WOS)

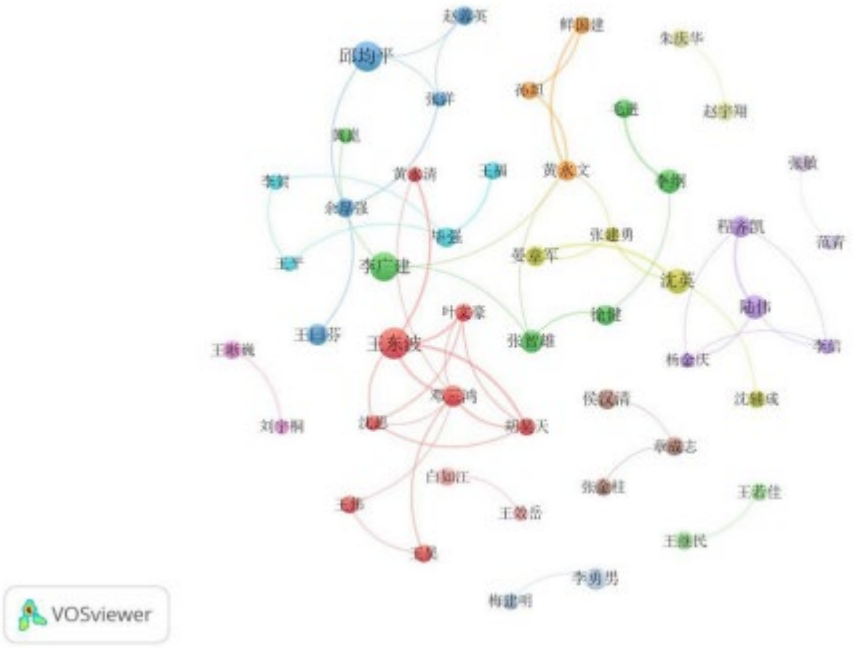

Figure 7: Scholars with three or more collaborative publications (CNKI)

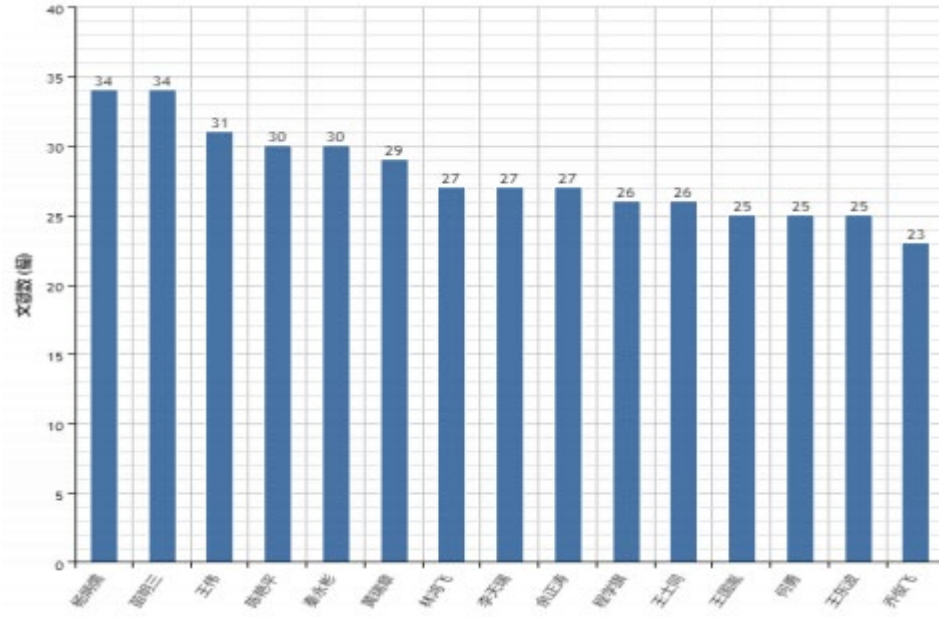

Figure 8: Top 15 scholar's publication volume (CNKI)

2.2 Institutional Collaborative Publication Analysis

In the analysis of institutional collaboration within the bibliometric study, a notable trend emerges both domestically and internationally. The primary form of collaboration is observed within

universities, with inter-university cooperation being the norm. Internationally, the most significant collaborations are identified between University College London and University of London, between Purdue University System and University System of Ohio, and University of Texas System and University System of Ohio (Table 1). Additionally, there is a prominent pattern of collaboration between healthcare institutions and other organizations. For instance, partnerships such as those between the National Institutes of Health (NIH) - USA and the NIH National Library of Medicine (NLM), Harvard Medical School and Harvard University, NIH - USA and the University of Utah, and NIH - USA and the Utah System of Higher Education are evident (Table 2). These collaborations highlight the dominance of American universities in this domain. Domestic data reveal a slightly different pattern. Collaborations between universities and between universities and research institutes are more prevalent in domestic data compared to international data. However, in terms of the quantity of collaborations, the domestic data fall short of the international data. These collaborations in China are primarily concentrated in the field of library and information science, contrasting with the English literature, which also includes a significant number of collaborations in the medical and pharmaceutical fields.

Table 1: Organizations with three or more collaborative publications (WOS)

	Num of Pub	**Organizations**	
1	22	Rutgers University New Brunswick	Rutgers University System
2	21	Indiana University Bloomington	Indiana University System
3	20	University of North Carolina	University of North Carolina Chapel Hill
4	19	Pennsylvania Commonwealth System of Higher Education (PCSHE)	University of Pittsburgh
5	15	University of Washington	University of Washington Seattle
6	14	National Institutes of Health (NIH) - USA	NIH National Library of Medicine (NLM)
7	14	University of Wisconsin Milwaukee	University of Wisconsin System
8	14	University of Michigan	University of Michigan System
9	13	Pennsylvania Commonwealth System of Higher Education (PCSHE)	Pennsylvania State University
10	13	University College London	University of London
11	13	University of Maryland College Park	University System of Maryland

12	12	University of Oklahoma - Norman	University of Oklahoma System
13	12	University of Illinois System	University of Illinois Urbana-Champaign
14	12	University of Utah	Utah System of Higher Education
15	11	State University System of Florida	University of South Florida
16	11	University of North Texas Denton	University of North Texas System
17	10	University of California Los Angeles	University of California System
18	10	State University System of Florida	University of Florida
19	9	Pennsylvania Commonwealth System of Higher Education (PCSHE)	Pennsylvania State University - University Park
20	9	Pennsylvania State University	Pennsylvania State University - University Park
21	8	Harvard Medical School	Harvard University
22	8	University of Texas Austin	University of Texas System
23	4	Purdue University System	University System of Ohio
24	3	National Institutes of Health (NIH) - USA	University of Utah
25	3	National Institutes of Health (NIH) - USA	Utah System of Higher Education
26	3	University of Texas System	University System of Ohio
27	3	State University System of Florida	Virginia Polytechnic Institute & State University
28	3	Brigham Young University	Utah System of Higher Education

Table 2: Organizations with three or more collaborative publications (CNKI)

	Num of Pub	Organizations	
1	20	Wuhan University School of Information Management	Wuhan University Information Resources Research Center
2	12	Jiangsu Provincial Key Laboratory of Data Engineering and Knowledge Service	Nanjing University School of Information Management
3	8	Chinese Academy of Sciences National Science Library	University of Chinese Academy of Sciences (UCAS)
4	8	Wuhan University School of Information Management	Wuhan University Institute of Information Retrieval and Knowledge Mining
5	8	Wuhan University School of Information Management	Wuhan University Center for China Science Evaluation Research
6	7	Jiangsu Provincial Key Laboratory of Data Engineering and Knowledge Service	Nanjing Agricultural University School of Information Management
7	6	Nanjing University School of Information Management	Nanjing Agricultural University School of Information Management
8	6	University of Chinese Academy of Sciences School of Economics and Management Department of Library, Information and Archival Science	Chinese Academy of Sciences Documentation and Information Center
9	6	University of Chinese Academy of Sciences (UCAS)	Chinese Academy of Sciences Documentation and Information Center
10	4	Chinese Academy of Sciences Chengdu Documentation and Information Center	University of Chinese Academy of Sciences, School of Economics and Management, Department of Library, Information and Archival Science
11	4	Central China Normal University School of Information Management	Wuhan University School of Information Management

12	3	Nanjing University School of Information Management	Nanjing University of Science and Technology School of Economics and Management

2.3 National Publication Collaboration Network

In the realm of information literacy research within the artificial intelligence environment, the United States consistently maintains a dominant position, with its publication volume not only consistently ranking first but also exceeding the total output of the second-place nation, China, by more than threefold. Conversely, China has experienced a significant acceleration in its publication growth, reflecting a burgeoning interest and investment in the field. Notably, both China and India have managed to surpass their five-year publication totals from 2016-2020 with their output over just four years from 2021-2024. In contrast, the publication output of the USA, UK, Canada, Spain, and Brazil for the period of 2021-2024 is roughly half of their 2016-2020 totals, with Italy's output less than a quarter, prompting inquiry into whether these early-focused countries have witnessed a waning interest or if other variables are influencing the trend. The absence of technologically advanced nations such as Russia and Japan from the rankings suggests a complex interplay between technological prowess and research productivity in information literacy (Table 3). Regarding collaboration, countries like Canada, Australia, France, the Netherlands, and India demonstrate extensive international partnerships, while surprisingly, high-publishing countries such as China and the UK are notably absent from the collaboration tables, potentially indicating a preference for domestic research efforts or the use of alternative collaboration metrics not represented in the current data (Figure 9).

Table 3: Publication volume of top 30 countries

Num of Pub		Year							
Country		1991-1995	1996-2000	2001-2005	2006-2010	2011-2015	2016-2020	2021-2024	Total
1	USA	8	68	78	141	136	178	90	699
2	Peoples R China	0	1	6	27	41	66	78	219
3	UK	0	11	16	51	48	53	28	207
4	Canada	1	2	6	30	21	31	15	106
5	Spain	0	0	5	24	27	34	15	105
6	Australia	0	3	5	11	12	31	26	88
7	Brazil	0	0	1	15	32	27	11	86
8	Germany	0	9	0	13	17	22	22	83
9	India	0	2	3	13	11	15	28	72

10	Italy	0	1	1	16	12	23	5	58
11	South Korea	0	1	2	6	13	20	6	48
12	Finland	1	2	7	11	7	8	11	47
13	France	0	3	2	13	5	12	8	43
14	Pakistan	0	0	0	1	1	18	20	40
15	Iran	0	0	0	6	8	10	15	39

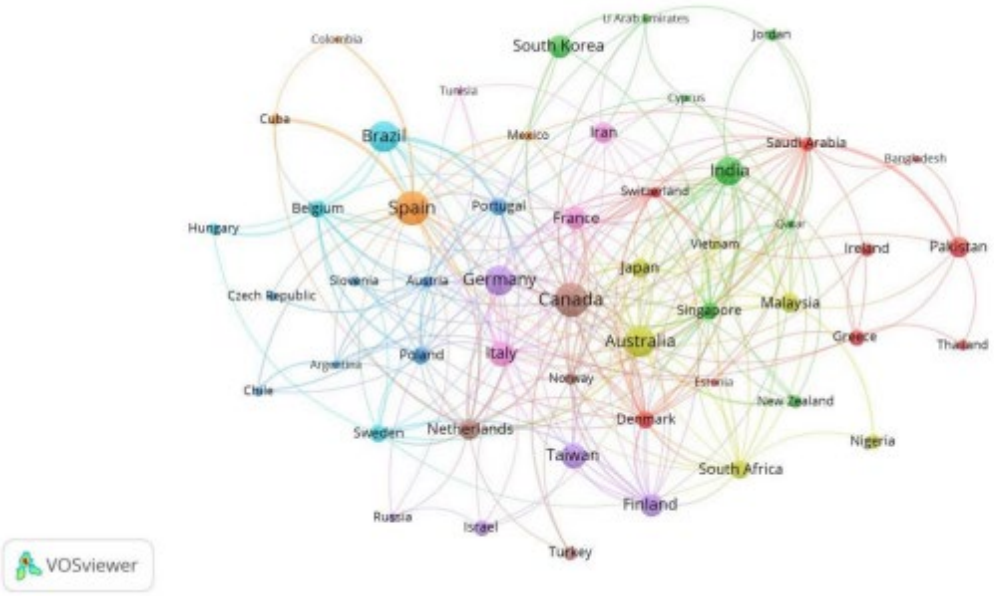

Figure 9: Countries with three or more collaborative publications

3. Analysis of Research Directions and Hotpots

3.1 Research Directions by the International Data

Utilizing Bibexcel to generate a co-occurrence network file of high-frequency keywords, subsequent visualization analysis with Vosviewer revealed a total of seven distinct clusters representing research directions by the international data. These clusters are delineated as follows:

3.1.1 In the realm of information literacy enhanced by AI technologies, leveraging text mining, knowledge management, and ontologies facilitates the effective navigation and utilization of Big Data. The Semantic Web supports educational processes through automated classification and sentiment analysis, optimizing information dissemination via social media platforms. Enhanced collaboration and content analysis are achieved through topic modeling and network analysis, ensuring accurate information sharing. Privacy concerns are addressed through robust database management and information security measures, crucial in e-government and ICT environments.

Human-computer interaction principles guide decision-making processes and document management, promoting efficient information organization and semantic analysis across social networks. Thus, integrating AI with information literacy frameworks empowers users to navigate, evaluate, and utilize information effectively in the digital age.

3.1.2 The intersection of Information Literacy and AI in the context of Internet use, particularly in higher education and university libraries across countries like Pakistan,
India, and Nigeria.

3.1.3 How AI technologies, particularly NLP and deep learning can advance information literacy across diverse domains is concentrated. It investigates AI-driven information retrieval systems in libraries, enhances NLP for text understanding and critical analysis, applies deep learning to extract information from complex datasets like electronic health records, develops AI question answering systems for rapid access to accurate information, utilizes named entity recognition and ontologies for structured information retrieval, examines information literacy's role during global health crises such as COVID-19, and explores innovative AI approaches to enhance information retrieval systems in digital archives and libraries.

3.1.4 Digital libraries have become essential resources for accessing vast amounts of information. This research focuses on improving the efficiency and effectiveness of digital libraries by leveraging advanced machine learning and data mining techniques. The study aims to enhance user experience and information retrieval through innovative query expansion, text classification, and clustering methods. Additionally, the research explores the integration of human-computer interaction principles and user interface design to facilitate better knowledge discovery and information architecture.

3.1.5 Digital and academic libraries play a crucial role in providing access to vast amounts of scholarly information. This research focuses on improving the effectiveness and efficiency of both digital and academic libraries by leveraging advanced machine learning and data mining techniques. The study aims to enhance user experience and information retrieval through innovative query expansion, text classification, and clustering methods. Additionally, the research explores the integration of human-computer interaction principles and user interface design to facilitate better knowledge discovery and information architecture. The research also examines search strategies, database searching, and indexing to ensure high precision and comprehensive literature searching.

3.1.6 Digital libraries are pivotal in the management and dissemination of information in various fields, including Library and Information Science (LIS). This research explores the enhancement of digital libraries by integrating advanced bibliometric and citation analysis techniques, alongside decision-making and business intelligence methodologies. The study aims to improve information management, data retrieval, and competitive intelligence within digital libraries. The research also

focuses on the evaluation of information systems, leveraging tools like Scopus for comprehensive bibliometric and citation analysis.

3.1.7 The focus is on improving the accuracy and efficiency of information searches, addressing ethical considerations, and protecting intellectual property. By integrating cutting-edge technologies and methodologies, the research seeks to advance the field of information science and support more effective research practices.

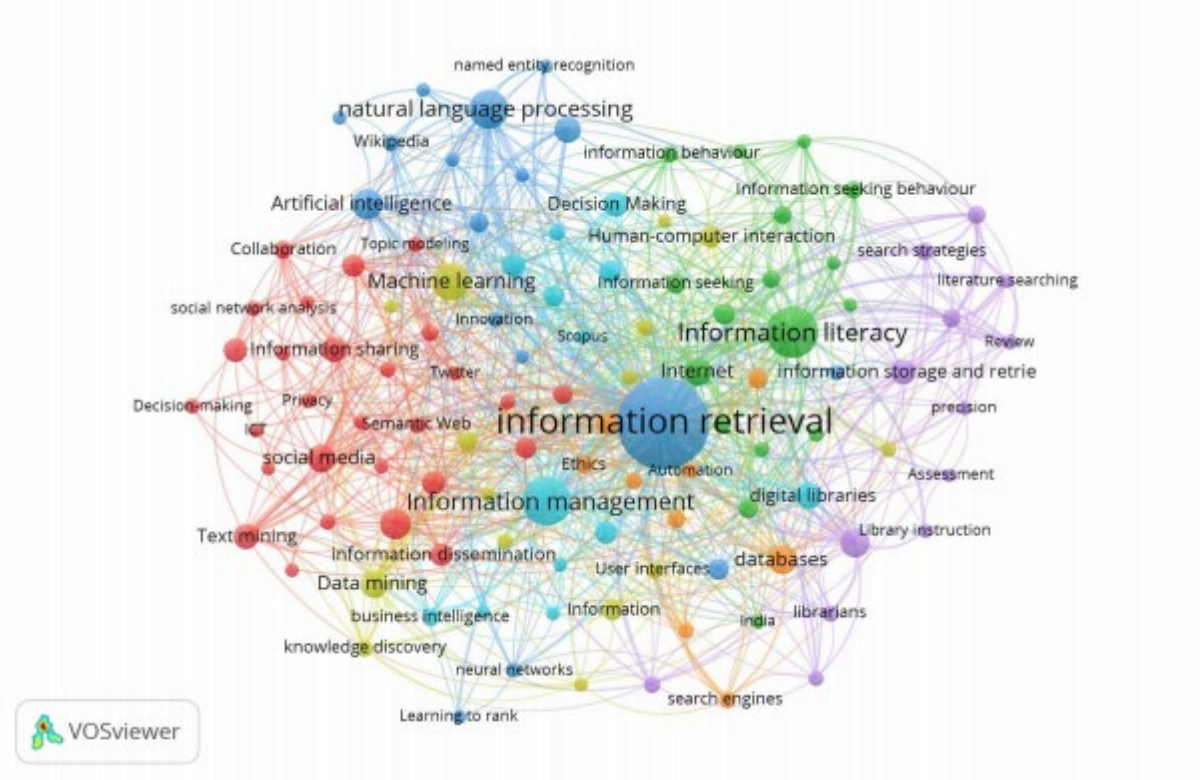

Figure 10: Keyword network visualization (WOS)

3.2 Research Directions by the domestic Data

3.2.1 Library Automation and Information Service Innovation

Research Focus:

Investigate the development and implementation of library automation systems, encompassing hardware, software platforms, and network infrastructure.

Explore innovative models of library information services, including personalized information services, knowledge discovery, and information recommendation systems.

Analyze the construction of library information resources, focusing on digital resource development, database construction, and resource sharing mechanisms.

3.2.2. Information Network Technology and Library Development

Research Focus:

Examine the application of information technology in libraries, including the development of network infrastructure, information systems, and the integration of emerging technologies like cloud computing and big data.

Analyze the trends in library network technology development, exploring the impact of advanced technologies such as artificial intelligence, 5G, and blockchain on library services and operations.

Investigate the utilization and management of networked information resources within library environments.

3.2.3 Knowledge Graphs and Visualization Analysis in Library Science

Research Focus:

Apply bibliometric methods, such as co-word analysis and cluster analysis, to identify research hotspots and track the evolution of themes in library science.

Construct knowledge graphs to visualize the current state and future trends of library science research.

Explore the application of knowledge graphs in information organization and knowledge service provision within libraries.

3.2.4. Artificial Intelligence and Information Retrieval Systems

Research Focus:

Investigate the application of artificial intelligence techniques in various library domains, including intelligent retrieval, information organization, knowledge services, and digital humanities.

Develop information retrieval systems utilizing deep learning and machine learning algorithms to enhance search efficiency and accuracy.

Analyze the impact of artificial intelligence on library service models and service quality.

3.2.5. Artificial Intelligence and Smart Libraries

Research Focus:

Research the development of smart libraries, encompassing aspects such as smart services, smart management, and smart spaces.

Explore the application of artificial intelligence technologies, including ChatGPT and AIGC, in the construction of smart libraries.

Analyze the trends and implications of emerging technologies like 5G, blockchain, and metaverse for smart libraries.

3.2.6. Theoretical and Methodological Approaches in Information Science

Research Focus:

Study the fundamental theories of information science, including information sources, information processing, and information service provision.

Explore the application of information science methods, such as bibliometrics, visualization, and knowledge graphs, in the field of library science.

Analyze the intersections and integrations between library science and other disciplines like computer science and cognitive science.

3.2.7. Big Data and Library Services

Research Focus:

Investigate the application of big data technologies in libraries, including user behavior analysis, information resource analysis, and knowledge service provision.

Explore the construction of library data resources, covering data collection, storage, and analysis processes.

Analyze the changes in library service models and service quality in the era of big data.

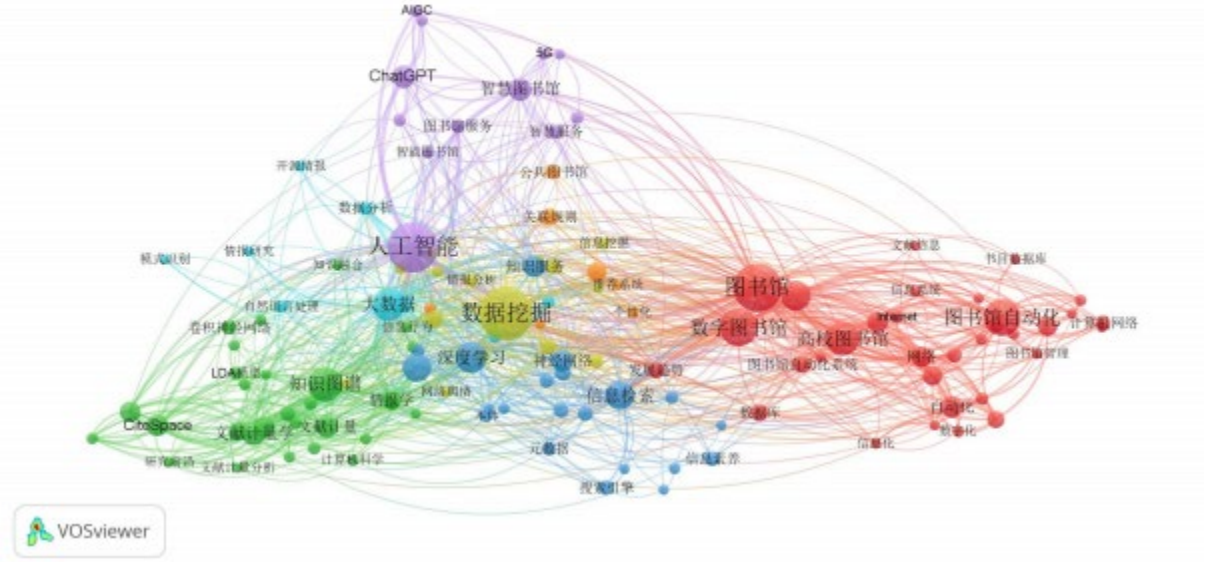

Figure 11: Keyword network visualization (CNKI)

3.3 Research Hotspots

From 1990 to 2024, the international academic community has demonstrated a significant interest in exploring the implications of artificial intelligence (AI) through the lens of "fear appeals." This research direction delves into the societal and ethical concerns surrounding AI, examining the potential risks and challenges associated with its widespread adoption. Additionally, the international research landscape has encompassed a diverse array of topics, including sentiment analysis, social media, deep learning, big data, innovation, evolution, and information technology. These areas reflect the growing interdisciplinary nature of library and information science, as researchers investigate the intersections between technology, society, and human behavior within the context of information environments. Figure 12 provides a comprehensive overview of these research trends, highlighting the evolving nature of scholarly inquiry in response to technological advancements and societal changes.

No.	Keywords	Year	Strength	Begin	End	1991 - 2024
1	fear appeals	2018	3.92	2018	2024	
2	sentiment analysis	2018	3.59	2018	2024	
3	social media	2010	10.76	2019	2024	
4	deep learning	2018	8.92	2019	2024	
5	big data	2015	7.64	2019	2024	
6	innovation	2014	5	2019	2024	
7	evolution	2017	4.63	2019	2024	
8	information technology	2012	4.44	2019	2024	
9	artificial intelligence	1991	8.84	2020	2024	
10	challenges	2020	5.91	2020	2024	
11	media	2020	5.88	2020	2024	
12	skills	2016	5.01	2021	2024	
13	digital literacy	2017	4.69	2021	2024	
14	framework	1997	4.63	2021	2024	
15	facebook	2021	4.63	2021	2024	
16	intention	2021	3.84	2021	2024	
17	word of mouth	2022	4.31	2022	2024	
18	competence	2022	3.77	2022	2024	

Figure 12: The top 50 keywords with strongest citation burst between 1990 and 2024

In contrast, the domestic research landscape has primarily concentrated on the application of deep learning techniques in various library and information science domains (Ma, 2020). This research direction explores the potential of deep learning algorithms for enhancing information retrieval, knowledge organization, and decision-making processes within libraries. Additionally, the domestic research community has shown a strong interest in the development and implementation of smart libraries, which leverage advanced technologies to provide personalized and efficient services to users (Wang, 2023; Yi, 2018). The study of bibliometrics and visualization analysis has also been a prominent research area, as researchers utilize these methods to identify research hotspots, track thematic evolution, and analyze the impact of technological advancements on the field of library and information science. Furthermore, the analysis of patents and research hotspots has provided valuable insights into the innovative trends and technological developments within the domestic library and information science community.

No.	Keywords	Year	Strength	Begin	End	1992 - 2025
1	深度学习	2016	15	2016	2025	
2	智慧图书馆	2017	9.45	2017	2025	
3	人工智能	1995	40.52	2019	2025	
4	文献计量	2014	6.19	2020	2025	
5	文献计量学	2005	10.58	2021	2025	
6	可视化分析	2018	9.88	2021	2025	
7	主题演化	2021	3.22	2021	2025	
8	专利分析	2012	2.52	2021	2025	
9	研究热点	2017	2.65	2022	2025	
10	信息资源管理	2023	5.18	2023	2025	
11	人工智能生成内容	2023	5.18	2023	2025	
12	生成式人工智能	2023	4.6	2023	2025	
13	主题识别	2023	3.45	2023	2025	
14	元宇宙	2023	3.45	2023	2025	
15	人智交互	2023	2.3	2023	2025	
16	专利挖掘	2023	2.3	2023	2025	
17	信息素养教育	2023	2.3	2023	2025	

Figure 13: The 17 keywords with strongest citation burst between 1990 and 2025

SUMMARY

This study employs bibliometric and visualization analysis to investigate the landscape of information literacy research in the era of artificial intelligence (AI), comparing trends and characteristics across domestic and international contexts. Utilizing data from the Web of Science and CNKI databases, the analysis reveals a consistent upward trajectory in research output for both domains, with notable peaks reflecting technological advancements and policy initiatives.

The research themes demonstrate a shift from early focuses on information retrieval and knowledge organization to more recent explorations of AI literacy, social media, and user engagement. International research highlights interdisciplinary collaboration, particularly between library science, computer science, and education. In contrast, domestic research emphasizes the integration of AI technologies within library automation, information service innovation, and smart library development.

Author and institutional collaboration networks reveal a preference for university-based partnerships, with international collaborations extending across diverse disciplinary backgrounds. While both domains exhibit similar trends in collaboration patterns, the absence of certain high-publishing countries from international collaboration networks warrants further investigation.

Research hotspots reflect the growing influence of AI on information literacy, with international research exploring fear appeals, social media, and deep learning, while domestic research focuses on deep learning applications, smart libraries, and bibliometrics.

In conclusion, this study provides a comprehensive overview of the evolving landscape of information literacy research in the era of AI. The findings underscore the need for continued collaboration and exploration of AI's transformative impact on information literacy education and practice.

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