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A Bibliometric Review of Artificial Intelligence Technologies in IT Sector: An Overview of Research Trends

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ABSTRACT

Background: The rapid development of artificial intelligence (AI) has had profound implications throughout the field of information technology, resulting in various applications and research directions. A deep understanding of the existing literature is vital to figure out the major themes and direct future research in this dynamic area.

Objective: The purpose of this article is to systematically review and summarize the academic literature on artificial intelligence and information technology, and to reveal the over-arching research themes and potential directions of future research.

Method: We retrieved data from the Scopus database. Bibliometric tools, including Biblioshiny and VOSviewer, were applied to produce performance analysis, thematic mapping, and network visualization.

Results: Five main research themes were identified: (1) Cloud Computing and Cybersecurity, (2) Information Management and the Internet of Things, (3) Artificial Intelligence as an Integral Cross-Discipline Hub, (4) Machine Learning and Deep Learning Applications, and (5) Educational Technology and E-Learning. This study also demonstrates the developing trends and knowledge gaps in each theme for directions of future research.

Conclusions: The review summarizes the intellectual structure of the literature on artificial intelligence and information technology. Researchers can use this work as a reference for additional research on the subject of artificial intelligence.

Keywords: *Information Technology, Artificial Intelligence, Bibliometric Analysis, Content Analysis, PRISMA.*

Introduction

The use of artificial intelligence in the digital economy has become more widespread and important. The growing digitalization and communication innovations which result in instant access, continual connectivity and a variety of work-related challenges.[1] Artificial intelligence (AI) is an interdisciplinary field of research that has recently become especially relevant in society, economy, and the public sector due to its numerous new potentials. Artificial intelligence (AI) has become a major global phenomenon that is expected to continue in the future. AI is initiated by physicist John McCarthy,[2] artificial intelligence was formally introduced at the 1956 Dartmouth Conference [3].

The development of intelligent computer systems is the focus of the computing science subfield known as artificial intelligence (AI). Comparable to human behavioral intelligence is this intelligent

system. The digital economy has become more significant and well-known as a result of AI's immense potential. Furthermore, it is predicted that the global income from AI-based software will increase from $9.5 billion in 2019 to a potentially staggering $118.6 billion by 2025, which would be an incredible growth projection of more than 1,100%.[1] AI is changing many aspects of businesses and sectors, boosting productivity, creativity, and expansion.[4] AI indicates the beginning of a completely new stage in the industrial revolution. AI's explosive growth is a global revolution that is expected to keep going definitely.

Due to adoption and restructuring delays, seven out of ten businesses stated that AI tools had a significant commercial impact on the agility and performance of the business. As a result, organizations need to invest in IT resources to make the most of their AI tools.[5] Since companies and IT specialists are in a good position to comprehend the advantages and difficulties of utilizing AI products, the IT industry can have a big influence on their acceptance. To increase confidence and buy-in, they can also offer direction and promote cooperation. Many nations in the region are investing in research and development to improve their capacities in fields including big data (BD), CC, AI, and IoT. Automation and analytics technologies driven by AI can assist businesses reduce labor costs and streamline processes.[6]

A thorough synthesis of the current literature is important given the abundance of research initiatives on the integration of AI and IT. As a result, this study uses both text analysis and bibliometric analysis to look into the various AI technologies used in the IT sector. The application of AI in the IT sector is a quickly developing discipline with steady growth and a bright future, according to earlier bibliometric research on the subject. The majority of research emphasis has been directed toward the use of artificial intelligence in the recruiting and selection processes, with less attention paid to other areas with substantial application potential.[7]

Further, several bibliometric research focused on the application of AI in a range of human resource management tasks. [8,9,10] Focusing primarily on workforce development and employee training, the research on artificial intelligence in HR development is assessed by[11] using bibliometric analysis. The importance of AI for enhancing human resource resilience and reducing technology shocks in the macro environment was examined by.[12]

Furthermore, several AI technologies, such as machine learning [13,14] cloud computing [15] and interaction between robot and human [16] have been the focus of bibliometric study. In order to address the absence of studies on the synthesis of literature based on the use of AI methods (machine learning, chatbots, virtual reality, augmented reality, analytics, natural language processing [NLP], cloud computing, etc.) in IT sector, the current study evaluates the content already available in the niche that is different from previous studies. Therefore, this evaluation adopts a more thorough approach to the IT industry than previous studies, combining the intellectual contributions within this topic through text analysis and bibliometrics. In addition to outlining potential research subjects and future trends for further research, this study builds on the results of the keyword co-occurrence analysis. Through this study, the following research questions are addressed:

- RQ1: What is the current publishing trend on AI in IT sector?
- RQ2: In the field of Adoption of Artificial Intelligence Applications in the IT sector, who are the leading researchers, countries, organizations and publications?
- RQ3: What are the main themes, approaches and theories and pertinent sources for publications?

Thus, a number of original additions are made by the current review study. First, to the best of the authors' knowledge, no review study in the subject of artificial intelligence and information technology has ever used bibliometric analysis to evaluate the field's advancement and offer solutions to the previously specified research inquiries. Finally, the authors offered suggestions for additional study.

Literature Review

- **Artificial intelligence and IT Sector**

The intersection of Artificial Intelligence (AI) and Information Technology (IT) has become one of the most dynamic fields of contemporary research. AI technologies including machine learning, deep learning, natural language processing, and generative models—are increasingly embedded in IT systems ranging from cloud computing to cybersecurity and digital healthcare.

Artificial intelligence is the foundation of many ideas in computer science and technology. These ideas include robotics, computer vision, machine learning, deep learning, natural language processing, and recommender systems.[17,18] Because they use computer programs, these concepts are extensively applicable in the fields of science and technology. Since the majority of artificial intelligence systems do not rely on human aid, they are efficient. Artificial intelligence is the source of the notion of machine learning, which is based on information and trend that the system uses to make decisions.[19] An additional concept that comes from artificial intelligence is robotics, which is the creator for intelligent machines that capable of performing human tasks.[20,21] Since technology is no longer a tool but rather affects every aspect of our lives and impacts our ability to be more productive, AI is being applied quickly in a variety of fields.[22] IT is essential to an organization's performance since it affects value generation, competitive advantage, and outperforming rivals.[23,24]

- **Theories related to artificial intelligence and IT Sector**

Previous research papers have analyzed the integration of AI with the IT sector using a variety of theories. To study how individual users accept AI-based technologies, intelligent products or systems (e.g. chatbots, recommendation systems, generative AI). Researchers often extend TAM by adding constructs like subjective norm etc. (Ibrahim et al., 2025). Unified Theory of Acceptance and Use of Technology (UTAUT / UTAUT2) Used to explain adoption at individual/ organizational level – especially when multiple constructs are needed to capture social and organizational pressures, not only usability.[25]

Research Methodology

According to[26] bibliometric analysis has been widely employed to provide thorough maps of the knowledge structure within a certain subject of literature. Nevertheless, bibliometric analysis was employed to provide a precise and comprehensive analysis of the existing literature, considering the novelty of the field of study examined in this paper. The preliminary stages of the research were based on a thorough literature assessment on the applications of AI technology in the IT industry. Because of its comprehensive approach, which includes search strategies, criteria for inclusion and removal, and the process of eligibility, the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) was selected to enable all researchers to assess information from scientific literature database. Figure 1 provides an explanation of the PRISMA approach.

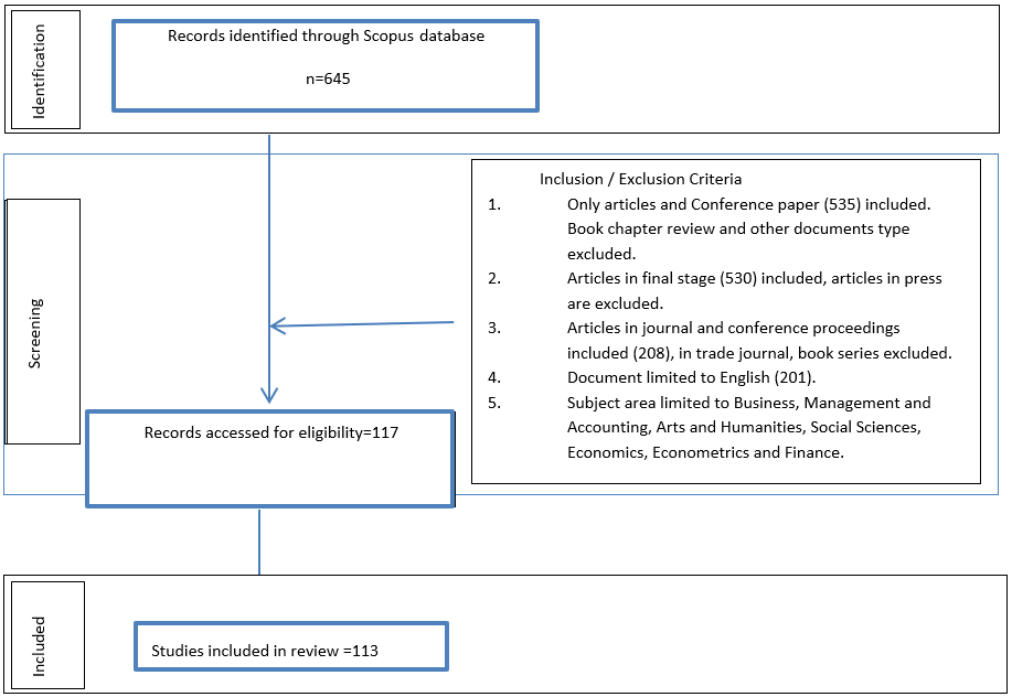

Figure 1: PRISMA Flow Diagram Showing Article Selection Process

A comprehensive search was conducted in the Scopus database to investigate new study areas in this field. The writers assessed the research publications they had obtained in order to create a comprehensive inventory of emerging technologies. Due to its extensive collection of top-notch research articles and easy access to recent publications, Scopus was chosen.[27] More than 240 disciplines were covered by Scopus. Over 3 million articles were uploaded to the Scopus database each year. Because the Content Selection and Advisory Board independently screens the data from over 7000 publications, researchers, students, and librarians feel secure using that database. About 82 million documents, 1.7 billion cited references, 234 thousand books, 17 million author profiles, and more than 80,000 institutional profiles are all included in Scopus. TITLE ABS KEY ("IT sector" OR "information technology industry" OR "ICT sector") AND ("artificial intelligence" OR "machine learning" OR "cloud computing" OR "data mining" OR "virtual reality" OR "augmented reality" OR "natural language processing") (Scopus database). Taking this into account, the first search on Scopus produced 645 papers. Then from time period 2000 -2025, 640 papers identified. A filtering process based on a certain standard was then employed during the screening phase, as seen in Figure 1. In this study, only English-language articles that were approaching publication were included. Furthermore, as seen in Figure 1, publications published in journals from particular subject areas were considered. In the end, 113 papers were taken into account for analysis.

By analyzing data from significant academic databases, bibliometric analysis is a quantitative method for comprehending the organization of research within a discipline. It includes creating visual maps that illustrate the connections between texts, authors, journals, and keywords. By finding patterns and similarities in the literature, such as keyword co-occurrence networks that highlight commonly explored themes, tools like VOSviewer assist in the creation of these scientific maps. This procedure is further aided by descriptive analysis, which provides a thorough picture of the research environment by summarizing publishing trends using graphs and charts.

Analysis and Findings

Both scientific mapping analysis and descriptive analysis are used in the study. Unlike descriptive analysis, which provides a description of the included articles and creates graphs using Excel, scientific mapping generates an output that visually represents the network of texts, authors, journals and keywords.

Descriptive Analysis

Descriptive analyses in the current study include looking at publications according to their place of origin, evaluating the number of papers published annually, identifying the most productive author, journal, and most cited publication.

- **Main Information about Data**

Table1 displays the dataset's descriptive statistics shed light on how the field's scholarly output has changed and been organized over the last 20 years (2008–2025). An annual growth rate of 16.79% was achieved with the publication of 113 documents from 61 sources. In line with the larger trend of exponential knowledge growth in science, this constant upward trajectory demonstrates growing research interest.[28]

Table 1: Main information about data

Description	Result
Time Span	**2008-2025**
Sources (Journals, Books, etc)	61
Documents	113
Annual Growth Rate %	16.79
Document Average Age	4.11
Average citations per doc	33.23
References	1071
Keywords Plus (ID)	737
Author's Keywords (DE)	461
Authors	517
Co-Authors per Doc	8.07
article	61
Conference paper	52

Source: Biblioshiny.

With an average document age of 4.11 years, the body of literature is relatively new, yet it has had time to gain scholarly influence. According to [29,30] the average number of citations per document is 33.23, indicating a modest influence that is comparable to other interdisciplinary domains. According to[31] the dataset also includes 1071 references, which illustrates the cumulative nature of knowledge production and the interdependence of investigations.

There is significant theme diversity, according to the keyword statistics. Particularly, 461 author-defined keywords and 737 Keywords Plus keywords were found, indicating the existence of both specialized study niches and wide topical coverage. As information technology meets artificial intelligence, decision-making, and management applications, this diversity highlights the field's interdisciplinary nature.[32]

The dataset included contributions from 517 authors, with an average of 8.07 co-authors per article. This high level of cooperation is indicative of the globalization of research and the growing significance of team-based science in solving challenging managerial and technological problems.[33]

Lastly, the fact that 113 records are categorized as articles and conference papers highlights the formal dissemination channels. Additionally, the field's integration into mainstream academic communication structures is highlighted by the frequency of journal articles.[34]

Overall, the statistics point to a vibrant and continuously growing field of study distinguished by multidisciplinary reach, collaborative authorship, and significant scholarly influence.

- **Trends in Publications**

Figure 2 Visually represents a notable and consistent upward trajectory in the field's research output is indicated by the annual scientific production trend from 2008 to 2025. Between 2008 and 2016, the number of publications was relatively low, ranging from 0 to 8 documents per year. This era might be seen of as the formative phase, when the groundwork for information technology and artificial intelligence applications research was being laid. The production of articles started to increase gradually in 2019 and reached the 25 publications milestone by 2024.

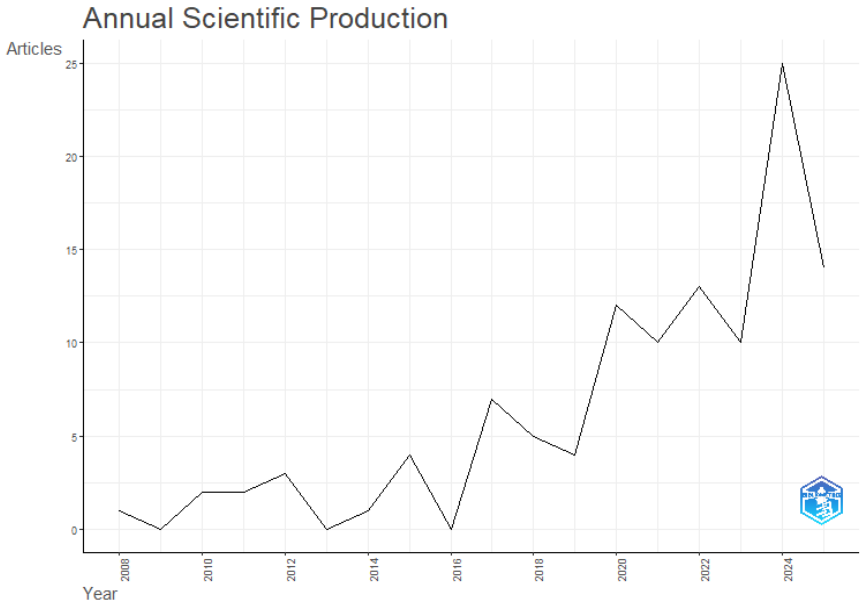

Figure 2: Publication trend year wise

Source: Biblioshiny.

Overall the field has a long-term increasing tendency, moving from a low level of scientific activity to a high level of productivity. The computed result of 16.79% is consistent with the robust yearly growth rate. Although there are some obvious swings in the early years, after 2018 the trend stabilizes and enters a prominent growth phase. Furthermore, the notable increase over the past five years

suggests that the subject has become increasingly important in academia and has drawn a lot of attention from researchers worldwide. As is frequently the case with bibliometric assessments, the 2025 fall is not necessarily a sign of less scholarly attention but rather of the current year's incomplete data.[35] Bibliometric studies in other technology-driven fields have shown similar growth and fluctuation patterns, with publication surges coinciding with the introduction of new technologies and global issues.[36,37]

- **Leading Journal**

Table2 displays only a small number of journals exhibit significant productivity in terms of document contribution, according to the analysis of source impact. This is because the majority of outlets have published two articles apiece, indicating a highly dispersed publication pattern among sources.

Table 2. Leading Journal

Rank	Organization	Documents	Rank	Organization	Citations
1	Asia pacific journal of Information systems	2	1	International journal of information management	2703
2	Economic computation and economic cybernetics studies and research	2	2	Character(0)	102
3	Journal of open innovation technology market and complexity	2	3	Journal of Organizational and End User Computing	88
4	Journal of science and technology policy management	2	4	International journal on emerging technology	79
5	Management decision	2	5	Computer applications in engineering educations	64
6	Problems and perspectives in management	2	6	Information system	59
7	Proceedings of the european conference on e learning ecel	2	7	Economic Computation and Economic Cybernetics Studies and Research	45
8	Springer proceedings in business and economics	2	8	IEEE Transactions on Engineering Management	30
9	Sustainability switzerland	2	9	Ethics and information technology	30
10	Ai and society	1	10	Character	29

Source: Biblioshiny.

The distribution of citation impact, however, is more concentrated, with the International Journal of Information Management appearing as the most influential source with 2,703 citations, greatly surpassing all other sources. Journals like Economic Computation and Economic Cybernetics Studies and Research and the Journal of Organizational and End User Computing, which got 102 and 88 citations, respectively, imply a powerful but relatively moderate influence.

With citations ranging from 30 to 64, a number of additional publications, such as Computer Applications in Engineering Education, Ethics and Information Technology, and IEEE Transactions on Engineering Management, also exhibit significant scholarly impact. Overall, citation patterns show that a few high-impact sources are crucial in forming the field's intellectual framework, even when articles are dispersed over many journals.

- **Author Keyword Analysis**

Figure 3: Word Cloud

Source: Biblioshiny

The research field's major themes are highlighted by the keyword analysis. The most common terms—cloud computing, artificial intelligence, machine learning, and information technology industry—show that new digital technologies and their uses are a major force in the field. A heavy emphasis on sophisticated computational techniques and intelligent systems is suggested by the addition of closely related ideas like information management, deep learning, the internet of things, and learning systems to these central themes. Terms like e-learning, cyber security, computer crime, data privacy and digital storage are examples of the expanding scholarly interest in the larger technology ecosystem, which includes data management, security and digital education. A multidisciplinary research environment that links technical advancement with organizational transformation is also indicated by keywords associated with innovation, industry 4.0, automation, and virtual reality. All things considered, the term "cloud" indicates that the literature focuses on AI-driven technologies, cloud-based infrastructures, and machine learning applications while also addressing new digital issues and their implications for the sector.

- **Leading University**

Table 3: Leading University

Rank	University	Country	Documents
1	The Bucharest Academy of Economic Studies	Romania	2
2	University of Bahrain	Bahrain	2
3	The University of Sheffield	United Kingdom	2
4	Vellore Institute of Technology	India	2
5	Florida International University	United States	2
6	Chongqing Technology and Business University	China	2
7	University of Bristol	United Kingdom	2
8	University College London	United Kingdom	2
9	Carnegie Mellon University	United States	2
10	University of Belgrade	Serbia	2

Source: Biblioshiny.

According to the institutional study, this field's research output is dispersed equally over a wide range of international universities. Each of the top ten contributing institutions—including Florida International University (USA), Carnegie Mellon University (USA), the University of Bahrain, the University of Sheffield (UK), Vellore Institute of Technology (India), and The Bucharest Academy of Economic Studies (Romania)—contributed two documents. This equitable distribution implies that contributions come from a broad geographic range that includes Europe, Asia, the Middle East, and North America, rather than a single university controlling the research landscape. Leading universities like University College London, the University of Bristol, and Carnegie Mellon University show participation from globally renowned research centers, while universities from developing nations like Serbia, Bahrain, and India demonstrate the increasing interest in this field of study worldwide. Overall, a decentralized, globally diversified research environment is reflected in the institutional output pattern, with some universities generating modest but significant academic activity.

- **Most cited publication**

Table 4: Most Cited Publication

Rank	Author	Title	Year	Source	Citations	Results
1	Dwivedi, Y.K.; Kshetri, N.; Hughes, L.; Slade	"So what if ChatGPT wrote it?" Multidisciplinary perspectives on opportunities, challenges and implications of generative conversational AI for research, practice and policy	2023	International Journal of Information Management	2712	ChatGPT offers strong productivity benefits but also raises ethical and policy challenges, especially in education where guidelines are still unclear. Regulators currently lack legal tools to address misuse, highlighting the need for new laws and international cooperation to govern such global technologies.

2	Bhardwaj, G.; Singh, S.V.; Kumar, V.	An empirical study of artificial intelligence and its impact on human resource functions	2020	International Conference on Computation, Automation and Knowledge Management	230	AI makes HR work quicker and more reliable, especially in hiring where it reduces screening time and improves job-fit. It also supports better learning participation and helps HR decisions become more objective. Some concerns about bias and data use remain, so strong oversight is still needed.
3	Alali, F.A.; Yeh, C.-L.	Cloud computing: Overview and risk analysis	2012	Journal of Information Systems	186	The study shows that cloud computing improves scalability and reduces costs, but it also brings risks such as data breaches, service outages, and vendor dependency. Strong encryption, access control, and continuous monitoring are essential to manage vulnerabilities and ensure reliable cloud use.
4	Haldorai, A.; Murugan, S.; Ramu, A.	Evolution, challenges, and application of intelligent ICT education: An overview	2021	Computer Applications in Engineering Education	116	ICT drives economic growth in developing nations by creating opportunities for youth and helping reduce poverty and crime. AI expands developers' skills and accelerates progress in software development, architecture, and quality assurance. Automation boosts application performance and supports stronger organizational outcomes. Deep learning can reshape education, and upcoming ICT professionals should build on existing research to address gaps related to unemployment.
5	Namasudra, S.; Roy, P.	Popularity based access control model for cloud computing	2018	Journal of Organizational and End User Computing	105	The study shows that a popularity-based access control model strengthens cloud security and speeds up authorization. High-popularity resources are accessed more efficiently, while low-popularity ones receive stricter checks, reducing unauthorized access and system load. The model updates dynamically and improves scalability compared with traditional methods.

Source: Biblioshiny

The citation analysis identifies a number of highly significant works that have influenced the field's intellectual environment. With 2,712 citations, the most cited work, written by [38], explores the complex ramifications of generative AI tools like ChatGPT. This paper highlights the ethical concerns and productivity benefits of adopting AI, pointing out in particular the gaps in legal frameworks and the pressing need for global governance systems. With 230 citations, Bhardwaj, Singh, and Kumar's (2020) paper is the second most cited. It offers empirical proof of artificial intelligence's revolutionary impact on human resource operations. Although issues with bias and data governance still exist, their findings show how AI improves efficiency, objectivity, and learning inside HR procedures. Similar to this, Alali and Yeh's (2012) study on cloud computing, which has been mentioned 186 times, provides basic insights into the benefits of the technology in terms of scalability and cost reduction while simultaneously warning against

security flaws such data breaches and service interruptions. With 116 citations, Haldorai, Murugan, and Ramu (2021) emphasize the many organizational and societal advantages of ICT and AI, highlighting their contribution to better educational systems, skill development, and economic growth. Lastly,

Namasudra and Roy's (2018) paper, which has been mentioned 105 times, offers a dynamic access control paradigm for cloud environments that shows better security, scalability, and efficiency than conventional techniques. The field's strong emphasis on AI, cloud computing, ICT development, and their effects on organizations and society is reflected collectively in these highly referenced works, which also highlight the necessity of strong regulatory and security frameworks as technology adoption picks up speed.

- **Most Prolific Authors**

Table 5: Most Prolific Authors

Rank	Author	Documents	Author	Citations
1	Lok, K.L.	2	Dwivedi, Y.K.	2703
2	Mircea, M.	2	Bhardwaj, G.	102
3	Nanayakkara, V.	2	Namasudra, S.	88
4	Opoku, A.	2	Gourisaria	79
5	So, A.	2	Haldorai, A.	64
6	Stoica, M.	2	Alali, F.A.	59
7	Vasumathi, A.	2	Mircea , M.	45
8	Abbasi, S.	1	Durowoju, O.	30
9	Abdrazakova, G.A.	1	Loi, M.	30
10	Adeeba, S.	1	Ratten, V.	29

Source: Biblioshiny

There is a noticeable difference between the most active contributors and the most significant academics in the subject, according to the author productivity and citation effect analysis. A number of authors, such as Lok K.L., Mircea M., Nanayakkara V., Opoku A., and So A., each provided two documents, demonstrating regular participation and sustained academic output. However, a small number of well-known scholars have a disproportionately large citation influence. With 2,703 citations—far more than any other author—Dwivedi Y.K. stands out as the most influential, demonstrating the remarkable influence of his work on information management and generative AI. Strong influence is also shown by Bhardwaj G. (102 citations), Namasudra S. (88 citations), and Gourisaria (79 citations), indicating that their study is well-received by academics. Other authors with moderate but significant citation counts—between 45 and 64—include Haldorai A., Alali F.A., and Mircea M. Conversely, a number of authors who have only published once, such as Durowoju O., Loi M., and Ratten V., have less citations, suggesting a narrower audience. Citation patterns reveal a small number of very prominent scholars whose work significantly influences the field's intellectual progress, despite the fact that research productivity is generally distributed rather evenly among several authors.

- **Top Contributing Countries**

Table 6: Top Contributing Countries

Rank	Country	Developed/Developing	Documents
1	India	Developing	37
2	China	Developing	9
3	United Kingdom	Developed	9
4	United States	Developed	9
5	Poland	Developed	5
6	Russian Federation	Developing	5
7	South Korea	Developed	5
8	Australia	Developed	4
9	Hong Kong	Developed	4
10	South Africa	Developing	4

Source: Biblioshiny

The distribution of research production by country reveals a significant concentration of publications in both developed and developing countries, with India emerging as the most productive contributor with 37 documents—much more than any other nation. With nine documents apiece, the United

States, China, and the United Kingdom follow, demonstrating balanced participation from significant international research centers in both economic sectors. A number of affluent nations, including as South Korea, Hong Kong, Australia, and Poland, contribute four to five documents, indicating consistent but limited involvement in the subject. With five and four documents, respectively, the Russian Federation and South Africa also exhibit significant productivity among emerging countries. Overall, the data show that developing nations, particularly India, constantly contribute to academic creation whereas developed nations—specially India play a significant and growing role in shaping the research landscape.

Scientific mapping and content analysis

- **Analysis of Keyword Cluster**

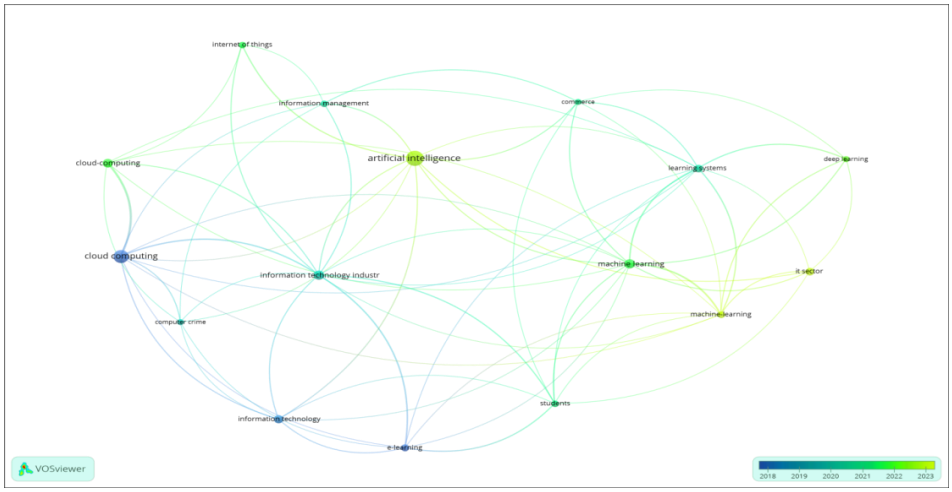

Figure 4: Overlay visualization of co-occurrence of keywords

Source: Authors' own work using VOSviewer

"Blue Cluster" Keywords like "cloud computing," "information technology," "computer crime," and "e-learning" that are tinted in deep blue tones make up this cluster. These, which date back to 2018–2019, are the dataset's oldest and most fundamental study issues. The blue hue denotes that early research was primarily concerned with comprehending cybersecurity threats, IT infrastructure, and the emergence of cloud-based systems. The close connections between "cloud computing," "information technology," and "computer crime" demonstrate that early studies focused on system integration, security, and technical issues related to digital transformation. The technological basis for further AI-driven research was established by this cluster.

Green Cluster" Themes that received a lot of attention between 2019 and 2021 are shown by the green-colored nodes, which include "information management," "internet of things," "commerce," and "learning systems." The shift from simple IT systems to more data-driven digital ecosystems is exemplified by this cluster. The relationships between IoT, information management, and commerce indicate that more research should be done on integrating smart technology for digital business models and organizational efficiency. This cluster's location between the blue and yellow nodes indicates that it acted as a bridge, assisting the field's transition from basic ICT subjects to cutting-edge AI-based research.

"Green and Yellow Cluster" The big "artificial intelligence" node, which is shown in vivid yellow-green, is located in the middle of the map. Due to their strong co-occurrence, keywords including "machine learning," "learning systems," "commerce," and portions of the IoT and IT sector are included in this cluster. The coloring depicts the rapid acceleration of AI research between 2020 and 2022, which became the network's main organizing concept. This cluster serves as an example of how artificial intelligence (AI) developed from a theoretical subject to a unifying factor that links almost all other clusters. AI is both a driver and a beneficiary of developments in cloud computing, data analytics, educational systems, and industry applications, as seen by its high connection density.

"Yellow Cluster" The most recent and quickly growing field of study from 2022 to 2023 is represented by the brightest yellow nodes, "machine learning," "deep learning," "it sector," and "students." Their position on the right side of the map denotes a move toward more complex algorithms and useful applications, especially in automation, education, and the IT industry. The research field appears to be shifting toward high-level modeling, neural networks, predictive analytics, and domain-specific implementations due to the popularity of machine learning and deep learning. The yellow hue indicates that these subjects are popular topics right now and will probably influence new developments in the future.

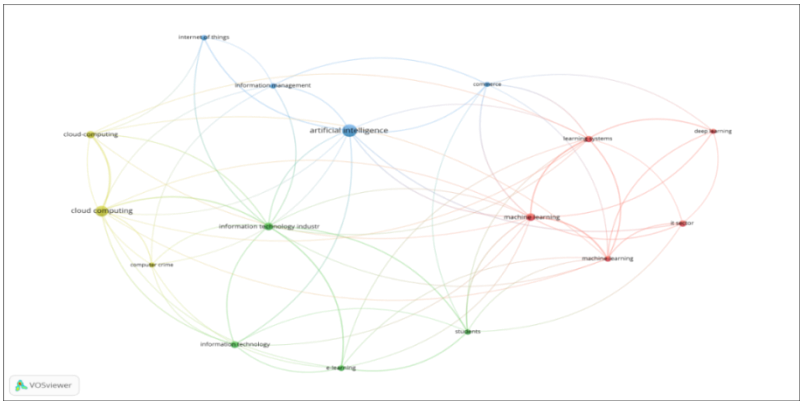

Figure 5: Network Visualization of Co-occurrence of Keywords

Source: Authors' own work using VOSviewer

Each of the four main clusters that make up the visualization's well-connected conceptual network represents a separate but connected theme region within the research domain. These nodes act as links between all other clusters, demonstrating their crucial function in forming the overall knowledge structure. The blue cluster represents the intellectual heart of the topic, where notions center around basic theoretical ideas and foundational constructs. The practical or applied dimensions are represented by the yellow cluster, which emphasizes operational principles and practical methods that convert abstract notions into workable plans. The green cluster, which is situated between theory and application, emphasizes integrative or methodological themes, demonstrating how analytical tools, techniques, or frameworks support both conceptual understanding and real-world application; its intricate connections demonstrate its function as the system's stabilizing backbone. The red cluster on the right creates a specialized, high-focus theme zone that highlights new problems, cutting-edge applications, or domain-specific difficulties that stretch the bounds of current understanding. When taken as a whole, these clusters show a field with significant interdisciplinarity, where cutting-edge developments (red) continuously broaden the discipline's scope and theoretical underpinnings (blue) support applied practice (yellow) through methodological integration (green). By emphasizing the mutual reinforcement of fundamental ideas, practical relevance, methodological rigor, and cutting-edge breakthroughs, this combined structure highlights the research landscape's balanced evolution.

- **Future Research Directions**

Table 7: Suggested Future Research Directions

Theme	Core Keywords	Future Research Agenda
Cloud Computing & Cybersecurity	cloud computing, information technology, computer crime, IT industry	Develop advanced cloud-security frameworks using AI. Explore cloud governance and risk management in SMEs. Study hybrid cloud adoption models in developing countries. Investigate privacy-preserving techniques for multi-cloud environments
IoT & Information Management	internet of things, information management, commerce	Examine IoT–AI integration for real-time decision systems. Explore IoT security issues and regulatory frameworks. Study data governance challenges in large-scale IoT networks. Assess IoT adoption barriers in emerging economies

Artificial Intelligence as Central Cross-cutting Theme	artificial intelligence, learning systems	Investigate ethical AI and responsible AI frameworks. Study AI's impact on workforce transformation and job skills. Develop domain-specific AI solutions (health, governance, education). Advance explainable AI (XAI) for transparency.
Machine Learning & Deep Learning Applications	machine learning, deep learning, learning systems, IT sector	Explore lightweight ML/DL models for resource-constrained environments. Integrate ML with cloud and edge computing. Investigate domain-specific ML applications (finance, manufacturing). Study bias reduction and fairness in ML models.
E-learning & Educational Technology	students, e-learning, information technology	Develop adaptive and personalized learning systems using AI. Study the impact of AI tutors and chatbots on student performance. Evaluate digital learning tools in rural or low-resource areas. Explore data analytics for tracking learning outcomes.

Note: IoT- Internet of Things

Source: Authors' own work

Each of the four main clusters that make up the visualization's well-connected conceptual network represents a separate but connected theme region within the research domain. These nodes act as links between all other clusters, demonstrating their crucial function in forming the overall knowledge structure. The blue cluster represents the intellectual heart of the topic, where notions center around basic theoretical ideas and foundational constructs. The practical or applied dimensions are represented by the yellow cluster, which emphasizes operational principles and practical methods that convert abstract notions into workable plans. The green cluster, which is situated between theory and application, emphasizes integrative or methodological themes, demonstrating how analytical tools, techniques, or frameworks support both conceptual understanding and real-world application; its intricate connections demonstrate its function as the system's stabilizing backbone. The red cluster on the right creates a specialized, high-focus theme zone that highlights new problems, cutting-edge applications, or domain-specific difficulties that stretch the bounds of current understanding. When taken as a whole, these clusters show a field with significant interdisciplinarity, where cutting-edge developments (red) continuously broaden the discipline's scope and theoretical underpinnings (blue) support applied practice (yellow) through methodological integration (green). By emphasizing the mutual reinforcement of fundamental ideas, practical relevance, methodological rigor, and cutting-edge breakthroughs, this combined structure highlights the research landscape's balanced evolution.

Conclusion and Implications

The development of technology in many economic sectors is indicative of a progressive and digitalized economy. This study employs a descriptive bibliometric analysis and content analysis to investigate the most recent developments in research. The steady rise in publications in recent years has shown that the academic community is becoming more interested in exploring the possibilities of AI-assisted decision-making in the IT sector. Based on citations pertaining to the application of various AI technologies in the IT industry, the International Journal of Information Management is a top journal. The paper about Chatgpt by Dwivedi, Y.K., Kshetri, N., Hughes, L., and Slade (2021) has the most citations, with India emerging as the top contributing nation, followed by nations like China and United Kingdom. The University of Bahrain and the University of Sheffield topped the list in terms of citations, while the Bucharest Academy of Economic Studies is the top university in terms of publications. The authors with the highest number of publications and citations were Lok.K.L. and Dwivedi, Y.K. The overlay visualization's results revealed the latest developments in AI technology, including robotics, deep learning, and machine learning in the IT industry. Additionally, the utilization of many technologies in the IT sector, including cloud computing, machine learning, AR/VR, robots, and AI, was emphasized by cluster analysis through network visualization. All things considered, the network depicts a logical and dynamic knowledge structure in which every cluster makes a distinct contribution to the advancement in research domain.

- **Theoretical and Managerial Implications**

This study provides insightful viewpoints for both academic researchers and business people, given the growing trend toward a digitalized economy and the importance of various AI technologies in the IT sector. Furthermore, academics might gain a great deal from this study since it represents market trends for the near future. This study's primary achievement is providing accurate and useful theoretical insights along with an examination of how AI technology can influence the future. This study explores the use of various technologies in the IT sector and the challenges they pose, making it a useful resource for professionals looking to develop efficient plans and procedures for the smooth implementation of these technologies. This suggests that instead of using linear models, future theories should use multidimensional and network-based frameworks, recognizing the crucial role that rigorous analytical techniques play in confirming and expanding conceptual understanding. The necessity for modern theoretical models that take into account the advancement of technology and the growing complexity of the subject is also shown by the appearance of specialized themes. The network shows that methodological proficiency and evidence-based decision-making are critical for successful practice from a managerial standpoint. In order to connect theoretical understanding with real-world application, managers must improve cross-functional cooperation and match their organizational plans with the new trends and technologies shown in the red cluster. The interconnected structure encourages managers to design adaptable, flexible strategies that react to changing market conditions and knowledge by highlighting the significance of ongoing learning, competence growth, and innovation adoption. Overall, the consequences highlight the advantages of a comprehensive, integrated approach that incorporates theory, method, practice, and innovation for both academics and practitioners.

Limitations and Future Recommendations

The study may still have certain limitations even if every safety measure was followed during execution. According to the keywords chosen to search the dataset, the criteria employed for the inclusion/exclusion of articles may result in the absence of particular AI and IT sectors. Furthermore, access to some peer-reviewed publications that are not indexed in Scopus databases may be restricted because the papers were solely sourced from these sources. Thus, additional databases (such WoS and EBSCO) might be included in future studies. Future study may also concentrate on creating nomological networks and using quantitative analysis to test frameworks.

New perspectives on the use of AI in the IT sector may also be obtained by comparing industrialized and emerging nations.

Data Availability Statement

Data Sharing does not apply to this article as no datasets were generated or analyzed in this article.

Declaration of Conflicting Interests

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