



Artificial Intelligence in Supply Chain Management: A Bibliometric Analysis of Emerging Trends and Applications

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ABSTRACT

The present study recommends a bibliometric analysis of the literature on AI applications in supply chain management from the year 1998 to opening 2025 based on the data obtained from the Web of Science. It detects 302 articles, showing tremendous increase in research and considerable contributions from the USA, China, England, Germany, and India with good international collaboration. The field has been propelled forward by several leading journals, such as the European Journal of Operational Research and the International Journal of Logistics Management. Technical and operational considerations have been studied broadly, but there is a need of studies that focus on how to effectively brand and market AI solutions, implying that there is a need for consumer studies. There are data limitations (trusting on one data base and language bias). Marketing frameworks and consumer behaviour analyses should be included in future research. It feeds a stepping stone reference for stakeholders' intent in progress in innovation and resiliency of their supply chains with AI.

Keywords: Artificial Intelligence, Supply Chain Management, Bibliometric Analysis, Automation, Optimization, Strategic Marketing

JEL Classifications: O33, M11, L86 & O32

1. INTRODUCTION

Artificial intelligence (AI) is a field of research and innovation that is of paramount importance because of the aggregate complexity of global supply chain and the inefficient nature of its operation. Human-centric factors such as requirement volatility, resource limitations and geopolitical uncertainties have made effective logistics and inventory management, production planning, and distribution network management more difficult. The challenges can take the form of critical problems such as supply-demand imbalance, rising costs, delivery delays, damage to reputation and spread of operational bottlenecks in organized systems (Swaminathan et al., 1998; Babich and Hilary, 2019). Digital transformation is a major focus, supported by concepts such as Industry 4.0, with a clear focus on developing the resilience, transparency, and sustainability of the supply chain on a worldwide scale (Zouari et al., 2021; Modgil et al., 2022a).

With the traditional supply chain models being significant drivers of inefficiency and ecological damage, it is constraint that new, state-of-the-art, AI-driven solutions are implemented. This change is fuelled by the need to serve the needs of a rapidly expanding global population and the claim for rapid, reliable and environmentally friendly delivery. Consequently, the European Union and major international corporations have implemented plans to decrease operational costs, improve decision-making and become carbon pale by 2050 (Piramuthu, 2005; De et al., 2019).

Technological advancement and global policy measures are compelling AI-powered innovations that provide strong instruments to develop resilient, long-term and sustainable supply chains. Such improvements are essential to decrease the operational and economic disadvantages of the legacy models of supply chains. Their effectiveness has been significantly improved by recent advances in machine learning, predictive analytics, the

internet of things (IoT) and blockchain (Carbonneau et al., 2008; Bertsimas and Kallus, 2020; Dubey et al., 2018).

AI in supply chain has grown in significance, leading to a stream in research publications. This evolution calls for an in-depth bibliometric analysis to systematically assess and interpret the evolving research landscape. Bibliometric methods offer a systematic methodology to measure research output, monitor citation patterns and assess qualitative aspects of research.

This paper objects to do an exhaustive bibliometric review of literature on AI in SCM from 2000 to 2023. The number of publications, citations and the contributions of diverse countries and institutions are analysed to graph a comprehensive understanding of the evolution of AI research in supply chains. The research questions that will supervise the investigation are:

- RQ1: How many publications regarding AI in the SCM have been published between 2000 and 2023 and what is the total volume of such publications?
- RQ2: During this time, which countries have tackled and contributed significantly to AI research in the field of supply chain management?
- RQ3: What are some emerging trends that can be seen in the research on AI and supply chain, both now and in the future?
- RQ4: What are the most cited journals of AI in the supply chain and what are their characteristics?

This study aims to give a comprehensive summary of the current research landscape in the field of AI in supply chain management in periods of top authors, top countries, top citations, top journals and trends in this research field. This report will serve as a citation for researchers, policymakers and industry stakeholders to use in future research and policy making on AI enabled supply chains.

2. ANALYSIS METHOD

Bibliometrics offers a systematic method for determining publications over time in different fields and aspects, as noted by AlQudah et al. (2024) and Samara et al. (2024). This study used the Web of Science core collection, a comprehensive bibliographic database, to store information on AI applications in supply chain management (SCM) from 1998 to early 2025. The use of mathematical and statistical methods on empirical data provided awareness into the growth rate of publications, citation metrics, leading authors, and the most influential countries in this field (Abu Anzeh et al., 2024).

The study has developed scientific charts with the use of the analytical tool of Web of Science, visualization of similarities (VOS) viewer software. The illustrations of the outlines and interconnections in the literature on AI in SCM are beyond to the analysis. As reported by Al Karabsheh et al. (2024) and Masa'deh et al. (2024), bibliographic data visualization tools like bibliographic coupling and co-citation analysis proposed by VOS viewer are easy to use and shed light on the interaction between the studies in this field.

The data sources are bibliometric indicators incorporating the citations benchmark, the average number of citations per article

and the number of citations per year. These metrics are critical for anyone interested in supply chain management research to grasp the impact of AI in recent years. A preliminary search on Web of Science core collection resulted in 1,648 articles that contained the keywords "artificial intelligence in stock chain management" and variants thereof. After directing filters to recover the quality and relevance of the data, focused analysis of 302 articles was performed. The collection features English-language journal articles, conference papers, reviews and book chapters, and the collection considers in the global discourse on the use of AI in SCM.

This methodological scheme discovers how AI research has evolved and diversified around supply chain management (SCM) (AlGhasawneh et al., 2025; Abu Orabi et al., 2024; Qabajeh et al., 2024). It also has a qualitative assessment. The methods set each other and overcome the natural constraints of each method to give a comprehensive perspective of the development of the research field, naming some main milestones and directions. These findings are necessary for informing the future research and policy direction in AI use in supply chain management.

3. DATA COLLECTION

A bibliographic database, such as the Web of Science core collection, was used for this research to collect the information relevant to the research about AI in supply chain management. The Web of Science core collection included more than 1,800 peer reviewed journals from various disciplines including social sciences, physical sciences, health sciences and biological sciences, thereby requiring a powerful resource (AlQudah et al., 2024; Samara et al., 2024). A systematic search of this database was executed in March 2025, using the terms "artificial intelligence in supply chain management" and relevant keywords in the title, abstract, and/or keywords. This study entered publications covering the period from 1998 to early 2025. An initial search yielded 1648 entries of which 732 relevant documents were handpicked for an in-depth bibliometric review. The selection process included the publication source, subject focus, geographic origin, institutional affiliations, document type, and authorship (Abu Anzeh et al., 2024; Almnadheh et al., 2025).

After the selection of the articles, they were assessed and ranked using bibliometric indicators such as the total number of publications, the number of citations, the total number of citations, and the h-index, with the aim of consistency with the key theme of the research on artificial intelligence in the supply chain. A more precise and relevant data set of 302 papers was established after further filtering. Most of the collection is in English, with an inclusive range of journal articles, conference proceedings, reviews and book chapters awarding the global discussion on this topic (AlGhasawneh et al., 2025; Abu Orabi et al., 2024).

The in-depth analysis of the publication and citation trends of AI SCP refines the study's findings, facilitating both quantitative measurement of the extent and scale of AI research in SCP and a qualitative evaluation of its influence (Samara et al., 2024;

Al Karabsheh et al., 2024). The two-fold approach provides an entire picture of the field's development, with a reorganized list of important research and future directions.

4. RESULTS

4.1. Subsection

A total of 302 documents involved to artificial intelligence (AI) in supply chain management were identified from the Web of Science core collection database from 1998 to early 2025. These documents were categorized into three types: Journal articles, conference papers and book chapters. Journal articles accounted for mainly articles (278, 92%) of the data, followed by conference papers (18.6%) and book chapters (6.2%).

These articles were analysed over the years, and it was found that there was a general rise in the number of publications, with the highest number in 2024. The maximum number of papers published in 1 year in the findings period was 81, and the total number of citations was 1,704. Notably, 2022 was a year of citation impact with 1,020 citations in 54 articles. The results indicate that the research on AI in supply chain management is indeed earning momentum and significance, as evidenced by the raise in both the number of articles and their visibility. Overall, the trends are also reflected in a graphic representation shown in Figure 1, where the number of publications and citations over time indicates an upward trend.

The fine-grained analysis of the language patterns in AI and supply chain administration research shows that there is much linguistic variation, and research is achieved in multiple languages. In this multilingual context, however, English develops the language of academic discourse, if not the primary language, then the language, of other countries where it is not the native language, such as China, France, Germany, etc. This ubiquity shows the status of English in the field as a world language and thus helps to assist intercultural communication and promote cooperative interaction. English's extensive use has been a key enabler in the sharing of knowledge across the globe and in the progress of AI in supply chain management.

4.2. Global Contributions to AI in Supply Chain Management: A Citation Analysis

This citation analysis relies on the whole data set of the Web of Science core collection to give a detailed picture of the global science research on supply chain management from an artificial intelligence (AI) perspective. According to the largely number of journal articles in this discipline, Table 1 lists the top 20 nations. The data is divided up in a way that makes it easy to identify publications that were created in one country, those that were the product of international partnerships, and those in which the first and corresponding authors were from the same country.

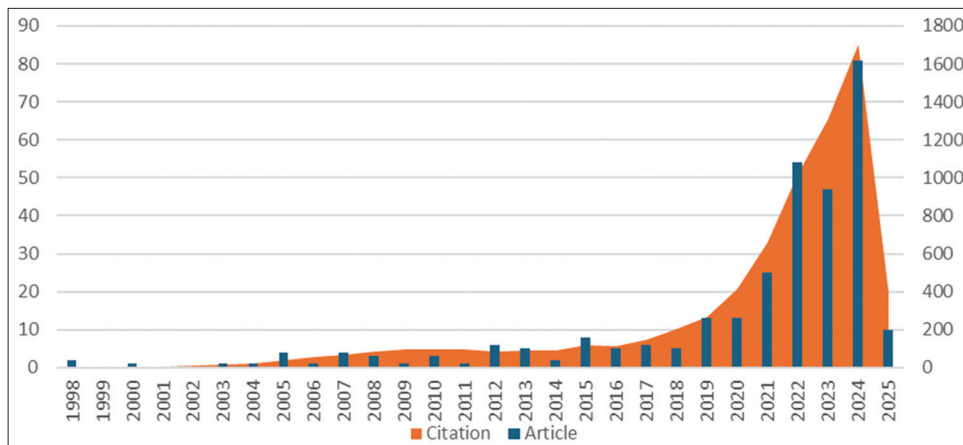
These contributions are graphically shown in Figure 2, which also names the top five nations for artificial intelligence (AI) in supply chain management articles:

- 76 publications from the US
- 57 publications have been published by the People's Republic of China
- Twenty-seven books published in England (UK)
- German: Twenty-six written works
- 39 publications from India.

To better understand the extent to which nations collaborate and have common research interests in the application of artificial intelligence (AI) to supply chain management, Figure 3 displays the distribution of countries and their levels of connectivity. Using the VOS viewer tool, we can show how different countries are connected; closer together on the map, the more robust and important the research collaboration between the two countries. The following observations may be made about citations, which are an important indicator of the influence and effect of research:

- U.S.: It consolidates its position as a global leader in AI-driven supply chain management research with 3,165 citations, leading the pack
- England: It shows significant scholarly contributions to the field with 634 citations
- Germany: Highlights Germany as a technical innovation centre, third with 496 citations

Figure 1: Citation metrics and publication volumes from 1998 during early 2025



Source: Developed by the authors

- That China had 973 citations indicates that the country is developing more influential, and that they've invested heavily in AI.

Table 1: The 20 most productive countries between 1998 and the beginning of 2025

Country	Documents	Citations	Total link strength
United States	76	3,165	48
England	27	634	35
Germany	26	496	12
China	57	973	46
India	39	1,146	31
Canada	9	486	11
Australia	12	444	17
France	20	614	28
Netherlands	12	443	11
Turkey	8	191	7
Belgium	13	181	12
Spain	10	153	2
Switzerland	5	97	8
Brazil	6	56	3
Malaysia	6	106	5
Iran	9	154	5
Italy	9	137	3
South Korea	5	22	2
Sweden	5	63	3

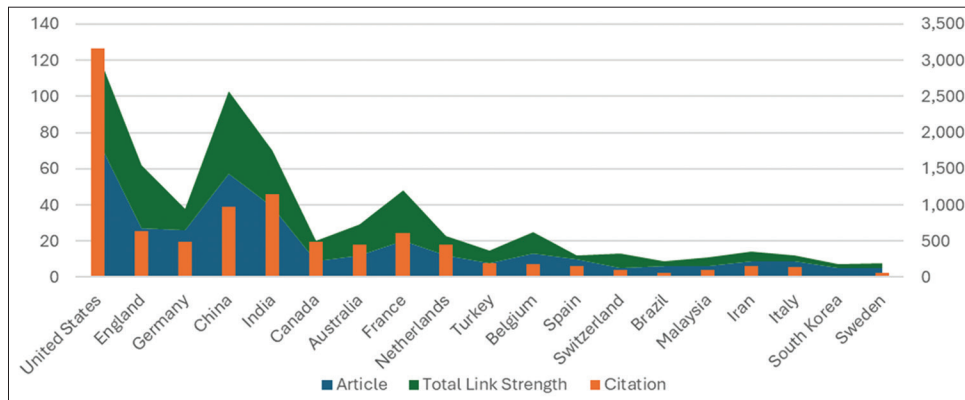
Source: Developed by the authors

With 1,146 citations, India has become an industry leader in artificial intelligence (AI) supply chain optimization. The following is shown by the link strength measurements, which show how strong the research networks are:

- A connection strength of 48 indicates that there is substantial international collaboration involving the United States
- A connection score of 35 indicates that there are substantial relationships in AI research in England
- Among the world's most active research networks, China has a connection strength of 46
- German collaborations are modest yet effective, with a connection strength of 12
- India has a growing network of research alliances, as indicated by a connection strength of 31.

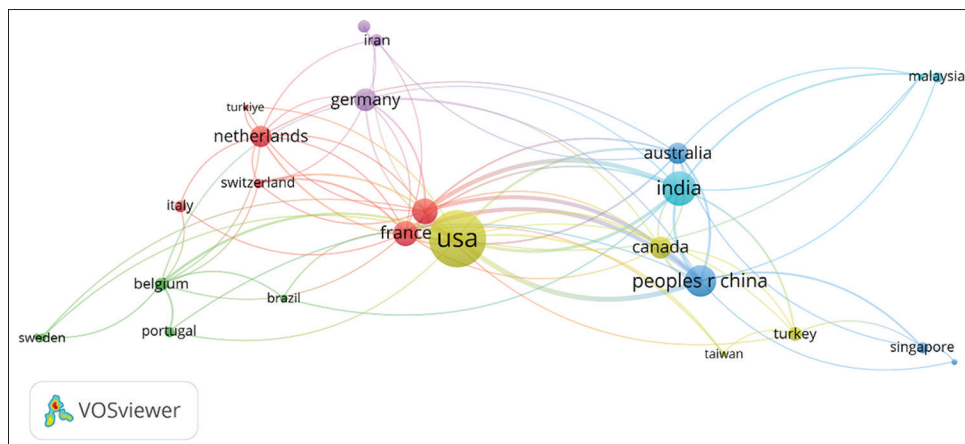
In addition, the analysis finds the top journals by citation count, which helps to identify the most prominent platforms for supply chain management AI research (Figure 4). It is worth mentioning that all but one of the top-ranked journals are classed as Q1 by Scima-goJR, which indicates that they have significant power and influence in the scientific world. These journals have higher-than-average citation rates, as seen by their informant normalized impact per paper (SNIP) ratings, which often surpass one.

Figure 2: Publications and citations of top 20 countries/nations



Source: Developed by the authors

Figure 3: Co-authorship networks visualized by country



This last sample is comprised of 302 articles that materialized between 1998 and early 2025 from the Web of Science (WoS) core collection. This dataset objects to give a comprehensive picture of the contributions of the most important institutions and journals to the development of AI applications in supply chain management. The University of Hong Kong has the highest number of articles with 9, pursued by the University of California System with 8 articles. KU Leuven (7 articles), the Indian Institute of Management (IIM System) (7 articles) and EMLYON Business School (6 articles) are the other major contributors. Some other notable mentions are the University of California Berkeley with 5+ articles and instituto federal do acre (IFAC) and Purdue University with 6+ articles each.

The European Journal of Operational Research is an outstanding publication, enduring had 41 publications and a total of 1,537 citations. This journal stands out not only for its frequency of publication but also for its impressive citations per publication (CPP) score of 37.49, reflecting the journal's important influence on the field of influential research on artificial intelligence (AI) applications in supply chain management. Corresponding to Journal Citation Reports (JCR), this journal falls in the Q1 band which is general of journals with high impact and authority in their academic fields.

The most important journals in 1998-early 2025 as to citing number of articles are discovered in Table 2. This collection feeds useful information on some of the most important platforms for the dissemination of ground-breaking AI research in supply chain management. Some main journals are International Journal of

Logistics Management, European Journal of Operational Research and M&SOM - manufacturing and service operations management, which plays a crucial role in the key academic debates in the area.

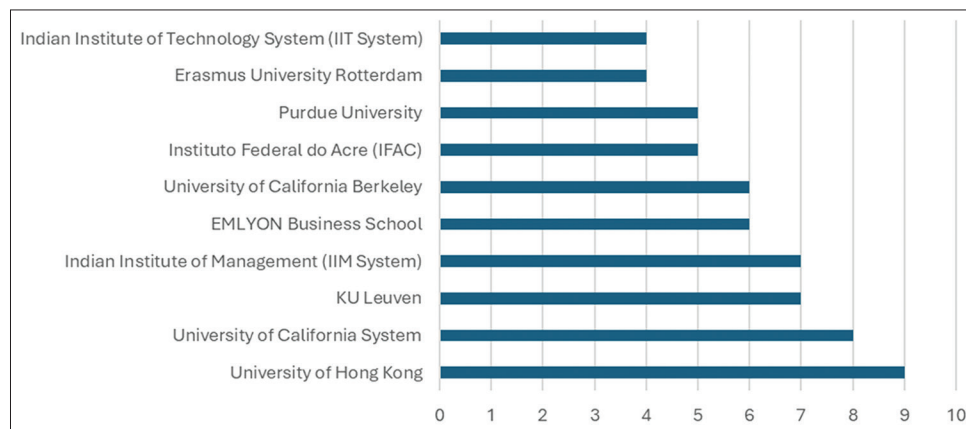
In addition, the study also classifies papers giving to their citation frequency in the publications, which indicates the growth of publications and important advances in the research field. For example, in 2022, the International Journal of Logistics Management (IJLM) published the article artificial intelligence for supply chain resilience: Learning from COVID-19 with a total of 213 citations as presented in Table 3. Its normalized TC score of 8.81 and total citation (TC) rate of 53.25/year indicate the huge influence and ongoing use of this work in the continuing discussions of AI-supported solutions and supply chain resilience.

The present study is an extensive literature estimate on the topic usage of artificial intelligence (AI) in supply chain management (SCM) based on the information from the Web of Science core collection. The study recommends insights into the most important contributions and fundamental topics in the field by studying highly cited research. This provides a direction of focus for future research and policy enhancements regarding supply chain innovation.

4.3. Keyword Network Analysis in AI-Driven Supply Chain Research

We learned a lot about the relations used in artificial intelligence (AI) and supply chain management (SCM) by educating a machine using the analysis of the maximum frequently occurring

Figure 4: Top ten most productive institutes



Source: Developed by the authors

Table 2: Leading journals based on total citations (1998-2025)

No.	Journals	NP	NC	C	Impact factor (2023)	JCR quartile	H-index
1	European Journal of Operational Research	41	1,537	37.49	5.8	Q1	20
2	International Journal of Logistics Management	15	764	50.93	4.2	Q1	11
3	M&SOM - Manufacturing and Service Operations Management	9	907	100.78	7.6	Q1	7
4	Decision Sciences	7	568	81.14	4.9	Q1	4
5	IEEE Transactions on Engineering Management	9	127	14.11	3.1	Q1	4
6	International Journal of Physical Distribution and Logistics Management	5	433	86.6	3.8	Q1	5
7	Logistics-Basel	18	91	5.06	2.2	Q2	4
8	International Journal of Logistics-Research and Applications	18	269	14.94	3.3	Q1	8
9	International Journal of Management Science	10	163	16.3	4.5	Q1	8
10	Benchmarking - An International Journal	7	238	34	2.9	Q1	5

NP: Number of publications, NC: Number of citations, C: Citations. Source: Developed by the authors

co-occurrence pairs of a group of 302 papers got from the Web of Science core collection. The most common term “supply chain management,” had a length of 6 words and was related to 35 words. This prominence highlights the important role it plays in demonstrating talks and the numerous connections it makes to other AI applications in supply chain management.

Additionally, there were 44 mentions of the word “machine learning,” and 39 mentions of the word in association with other keywords, which is a very important subsection of AI. This emphasizes its importance for dealing with supply chain issues including optimization, automation, and predictive analytics. Another key word that appeared 24 times and was connected 25 times was “Artificial intelligence.” This was an indicator of the extensive reach of the word and the growing interest in AI-driven solutions in research on supply chains.

Other terms with elevated numbers of occurrences and links included: “Forecasting” (occurrence: 16, links: 23), which is an essential part of predictive analytics and demand forecasting. Significantly, “logistics” was mentioned 24 times with 25 linkages, highlighting its importance in the integration of AI technologies to develop operational efficiency. SCM is a basic view in this context. The term “inventory management” was mentioned 13 times, which is showed in the 16 links to the term, highlighting its fundamental importance in optimizing inventory levels and saving costs through AI-based techniques.

Figure 5 shows the results, which show how these phrases are connected and how often they are in academic discussions. By focusing on these terms, the report suggests that researchers, practitioners, and legislators implicated in AI-driven innovations

in the supply chain could obtain a deeper understanding and improve communication. This term not only includes the hottest issues around the newest network, but it also gives direction to further research.

4.4. Co-Authorship Network Analysis in AI-Driven Supply Chain Research

The study on artificial intelligence (AI) in supply chain management showed a complex landscape of collaborations, with 39 countries, using the analysis of the co-authorship of 302 publications retrieved from Web of Science core collection. There are 39 nodes in the network, 6 clusters, 187 linkages and a link strength of 563. As follows, a chart is shown illustrating the distribution of the nodes in the clusters.

The total number of nodes in Cluster 1 is 6, in Cluster 2 is 4, in Cluster 3 is 3, in Cluster 4 is 3 and in Cluster 6 is 2.

This organized and gave decomposition reflects the international character of AI research and the collaborative nature of this research, demonstrating the global scope of AI research and the potential for innovation in SCM.

The countries actively engaged in research on AI-powered supply chains are visually represented in Figure 3, as a representation of the co-authorship networks.

The top 10 countries, ranked by the number of documents created and the impact they have had on the landscape, have a widespread influence on the global conversation of AI in supply chain management. The following are descriptions of these prominent figures:

Figure 5: A diagram illustrating a bibliometric map from keyword co-occurrences among authors

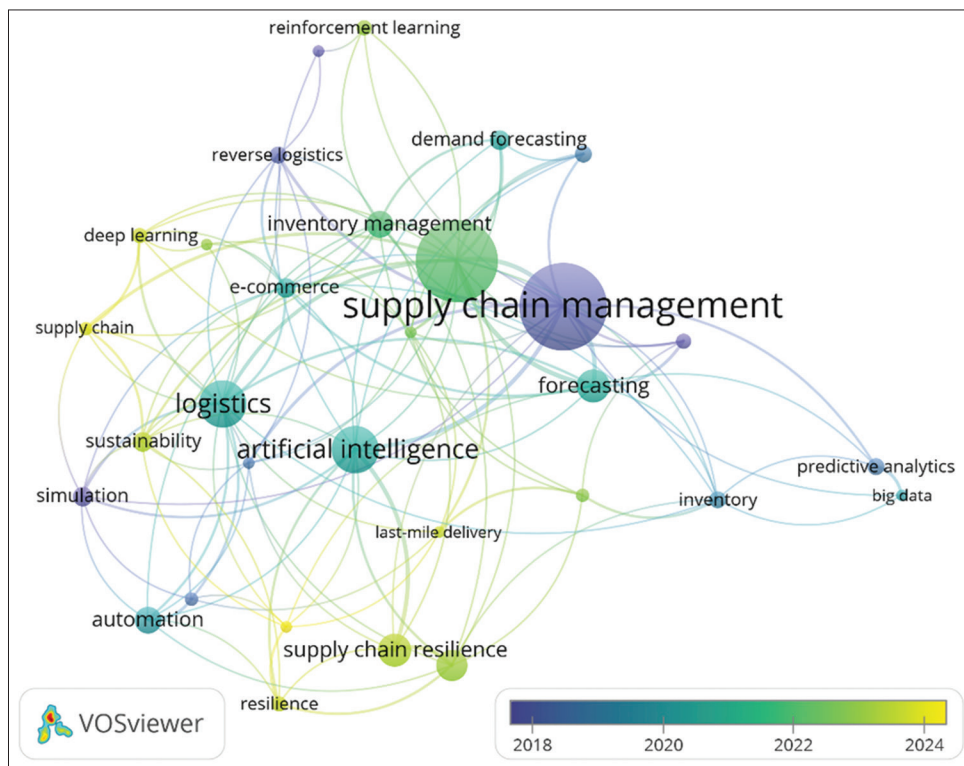


Table 3: Most cited articles from 1998 to the beginning of 2025

Rank	Article	Year	Title	Citations	Average citations	Country
1	Swaminathan et al. (1998): Modeling supply chain dynamics: A multiagent approach	1998	Decision sciences	501	17.89	USA
2	Babich and Hilary (2019): Distributed ledgers and operations	2019	M&SOM - Manufacturing and service operations management	447	74.50	USA, UK
3	Carbonneau et al. (2008): Application of machine learning techniques for supply chain demand forecasting	2008	European Journal of Operational Research	318	17.67	Canada, UK
4	Ferreira et al. (2016): Analytics for an online retailer: Demand forecasting and price optimization	2016	Manufacturing and service operations management	237	23.70	USA
5	Bertsimas and Kallus (2020): From predictive to prescriptive analytics	2020	Management science	275	45.83	USA
6	Modgil et al. (2022): Artificial intelligence for supply chain resilience: Learning from Covid-19	2022	International Journal of Logistics Management	213	53.25	India, UK
7	Zouari et al. (2021): Does digitalizing the supply chain cause to its resilience?	2021	International Journal of Physical Distribution and Logistics Management	180	36.00	France, Canada
8	Dubey et al. (2018): Big data and predictive analytics in humanitarian supply chains	2018	International Journal of Logistics Management	144	18.00	USA, India
9	More and Basu (2013): Challenges of supply chain finance	2013	Business Process Management Journal	138	10.62	India
10	Barros et al. (1998): A two-level network for recycling sand: A case study	1998	European Journal of Operational Research	288	10.29	Netherlands, Portugal

Source: Developed by the authors

- The United States of America, with 76 documents, 3,165 citations, and 48 total links
- China: 46 total links, 57 documents, 973 citations
- India, with a total of 31 links, 1,146 citations, and 39 documents
- France (5,014 citations, 20, documents) with a total link strength of 28
- With 26 documents and 496 citations, Germany has a total link strength of 12
- 35 total links, 27 documents, 634 citations, and England
- Belgium, with a total of twelve links and one hundred and eighty-one citations
- 9. Documents, 486 citations, and 11 total links for Canada
- In Australia, there are 12 documents, 444 citations, and 17 total links
- With 6 documents and 106 citations, Malaysia has a total link strength of 5.

4.5. Global Collaboration and Key Contributors in AI-Driven Supply Chain Research

With so many different groups working together, supply chain management AI research is really global and linked, allowing for a wealth of new ideas and improvements to flow freely from one country to another. Table 4 displays the top 20 writers in the subject of artificial intelligence in supply chain management based on the strength of their co-authorship links and the number of citations they have received:

- Sachin Modgil has four papers with four hundred twelve citations and eighteen total links
- Angappa Gunasekaran has a total link strength of 0 and 3 papers with 224 citations
- Two papers by Bertsimas, Dimitris; total link strength: 3
- Three papers by Singh, Rohit Kumar; twenty-four citations; seventeen links

Table 4: Authors ranked by citation count for top 20 works

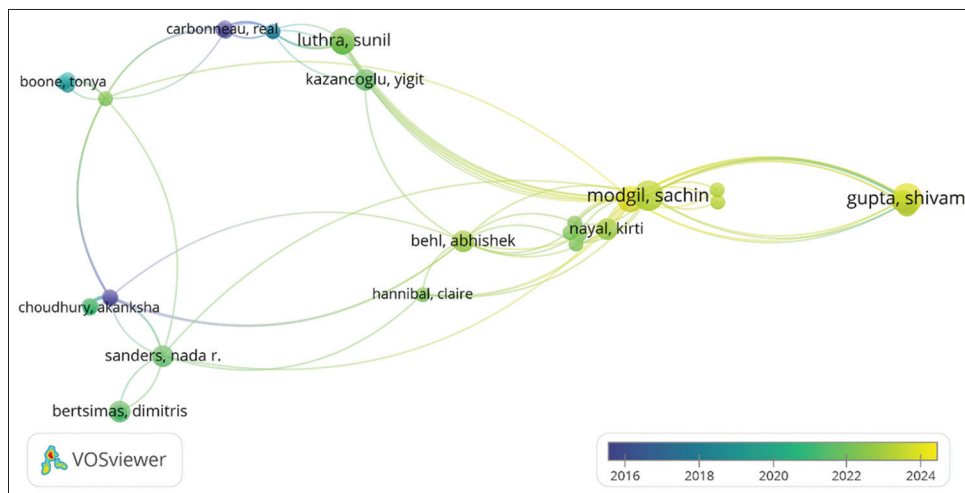
No.	Authors	Paper	Citation	Link strength
1	Modgil, Sachin	4	412	18
3	Bertsimas, Dimitris	2	291	3
4	Singh, Rohit Kumar	3	241	17
2	Gunasekaran, Angappa	3	224	0
19	Gupta, Shivam	4	185	5
5	Luthra, Sunil	3	151	2
7	Laguir, Issam	2	133	5
8	Stekelorum, Rebecca	2	133	5
6	Sanders, Nada R.	2	125	3
18	Bag, Surajit	2	113	2
11	Nayal, Kirti	2	107	5
9	Van Mieghem, Jan A.	2	102	12
10	Zhang, Dennis J.	2	102	12
14	Boute, Robert N.	4	98	21
12	Kazancoglu, Yigit	2	96	4
13	Gijsbrechts, Joren	2	96	16
15	Roy, Debjit	2	78	1
17	Behl, Abhishek	2	77	5
16	Perotti, Sara	2	76	0
20	De Moor, Bram J.	2	40	8

- Sunil Luthra has a total of three papers with 151 citations and two strong links.

Based on their vast collaboration networks and highly cited publications, important contributors including Modgil, S., Gunasekaran, A., and Bertsimas, D. Play a vital role in the diversified and dynamic research environment shown by the data.

Figure 6 shows the authors and their citation impacts graphically, illustrating attention to the most important nodes in the research network. These images highlight the significant interactions that key authors can have in the field of artificial intelligence (AI) in supply chain management.

Figure 6: Visualization of authors and citations in AI-driven supply chain organization



To wrap up, this detailed examination of co-authorship is a best example of how AI works collaboratively in the field of supply chain management. As part of this process, it improves efforts to development the field of artificial intelligence (AI) and its use in the supply chain globally and exemplifies the collaborative efforts of countries and authors in pouring innovation and knowledge sharing in this key domain.

This bibliometric analysis highlights the interdisciplinary and collaborative nature of AI research in the field of supply chain management. From the most important authors and their networks, we discover valuable insights into the emerging applications and trends that are shaping the future of this important field.

5. THE EVOLVING RESEARCH LANDSCAPE OF AI IN SUPPLY CHAIN MANAGEMENT

Due to a global require increasing efficiency, flexibility, and eco-friendliness using state-of-the-art technologies, the investigation of artificial intelligence (AI) within supply chain management has seen significant expansion from 1998 to early 2025. (Swaminathan et al., 1998; Babich and Hilary, 2019). Technology and regulation changes and the rising emphasis on digital transformation (Dubey et al., 2018; Carbonneau et al., 2008) have seen new developments over this time.

The primary focus has been efficiency and automation with the use of AI to boost transportation, demand forecast, and stock management (Modgil et al., 2022b; Bertsimas and Kallus, 2020). The focus of this area of study is to improve decision-making, diminish costs, and reduce impact on the environment (Bag et al., 2023; Gijsbrechts et al., 2022). All these efforts point to the need for the development of active resilience and the confidence of sustainability over time (Zouari et al., 2021; Hofmann and Rutschmann, 2018).

The adoption of artificial intelligence (AI) technologies including machine learning, deep reinforcement learning, neural

networks and so on is also promptly growing (Feizabadi, 2022; Oroojlooyjadid et al., 2022). Over the last few years there has been an ascent in the quality of research work done in these areas with an accent on innovations like self-operating systems, prediction tools, and a quick decision aid (Choudhury et al., 2021; Nayal et al., 2022). These advances are crucial for encouraging the adoption of AI and seamlessly incorporating these solutions into current supply chain configurations, as remarked by Gupta et al. (2021) and Ghasemi et al. (2023).

Another important field of relevance is the provision of supply chain risk management and durability that focuses on leveraging the role of AI in strengthening and mitigating the ineffective areas in the supply chain (Singh and Singh, 2019; Modgil et al., 2022a). Risk management plans (RMPs) are regularly assessed throughout a political crisis or a pandemic (Boone et al., 2019; Handfield et al., 2020). In addition, they explore (Huang et al., 2019; De et al., 2019) the role of modelling and predicting in making active decisions in uncertain situations.

The use of AI near advanced technologies like smart storage, e-commerce, and last-mile logistics is increasingly being seen (Marchet et al., 2015; Zhan et al., 2021). This not only indicates the interdisciplinary aspect of artificial intelligence study for supply chain management (SCM) but also shows its role in the heavier context of operational networks.

Despite the knowing amount of research on AI policies, tools and applications (Ahmadi-Javid and Hoseinpour, 2012; Fairchild, 2005), knowledge about the marketing and adoption of AI solutions in supply chain management remains limited. Though the discussion around the benefits of these technologies or operational advantages is prevalent, few studies have absorbed on the commercial promotion or perception of these advances (Lu et al., 2016; Li et al., 2019). This is a crucial error to avoid as it is vital that the public and stakeholders are on board with the widespread acceptance of AI.

One of the key drawbacks is the lack of user-focused research. According to Wycisk et al. (2008) and Mazhar et al. (2007),

most of the studies about artificial intelligence have addressed its procedural and technical benefits, without believing the effects it has on human perception and interaction. In terms of AI adoption, it is possible to change the mindset of industries that are still lagging by using strategic marketing and communication (Blackburn et al., 2015; Baker and Halim, 2007). If AI solutions aren't marketed effectively, they can fall flat with beings who aren't yet experienced with the value of AI or who fear that they may not be able to implement it.

Similarly, the market and visibility of AI products and services is also ineffective. Although there are many studies on the benefits of the solutions, less is known about the potential distinctiveness of solutions in competitive markets (Emde and Gendreau, 2017; Piramuthu, 2005). Both More and Basu (2013) and Barros et al. (1998) claim that the branding process generates a special interest for the products, which then brings in stakeholders. But, what about positioning AI solutions versus the traditional way of doing things or building a firm brand identity—these are areas that lack research.

Both De Moor et al. (2022) and Ferreira et al. (2016) note that there is a gap in coupling the dots between policy support and marketing of AI acceptance. While the policy influences the development and use of AI, little is known of how policy promotes and brands them, as noted by Nair et al. (2017) and Li et al. (2014). If the government had applied the campaigns promoting the benefits of AI or offered incentives for the use of AI, attitudes could change (Dubey et al., 2018; Boone et al., 2019). Although this, they are an underutilized policy position and selling AI solutions is challenging.

This marketing and branding gap (Gijsbrechts et al., 2022; Bag et al., 2023) needs to be resolved to accelerate the transition towards smarter and more robust supply chains. Choudhury et al. (2021) and Gupta et al. (2021) discuss that the results of behavioural economics, marketing and psychology should be incorporated into future studies of AI supply chains. When stakeholders' perceptions and reactions to AI tools are agreed, better plans can be generated for the use of these technologies in terms of pitching and distribution.

In cooperation, stakeholders and legislators can create marketing strategies that combine the needs of stakeholders and further policy goals (Hofmann and Rutschmann, 2018; Handfield et al., 2020). These can be knowledge campaigns, adoption incentives, or building up positive perceptions of AI brands, as suggested by Modgil et al. (2022a) and Nayal et al. (2022). AI solutions can be part of the solution to help the public accept them and fill these gaps, helping to increase the global direction towards a smarter, greener supply chain.

6. DISCUSSION

The bibliometric analysis of this study gives a solid foundation to understand the enormous terrain of supply chain management research on AI from 1998 to early 2025. Artificial intelligence has become a key area of study and could evidence a gamechanger for addressing the challenges that have long faced global supply

chains and are under increasing stress to optimize their operations as they become more complex. The findings presented in the results section here supply a detailed background about the fundamentals, progress and a driving force of AI in this field. This is evident from the data that the number of papers published in recent years is growing, signalling that AI is a growing field. The increase is particularly strong in the last few years of the research, reflecting the world's understanding of the need for digital transformation and the need for smarter solutions in supply chains. This co-occurrence study reflects the growing nature of the field of artificial intelligence (AI) and more specifically the advancements in automation, efficiency, machine learning and the strength of supply chains.

English is the language of science since it is the most broadly used language for disseminating research from any part of the world. This common ground facilitates even wider sharing and mixing of the new discoveries and ideas that AI will assist, confirming that they can be disseminated to an international community.

The U.S., China, the U.K., Germany and India are very active, bestowing to a breakdown of articles by country. The countries are not only largest producers, but their cooperation links and number of citations also show that they are directly cooperating throughout the world. This demonstrates a dynamic, cross-border research network which increases the scope and quality of research, by combining diverse approaches and competencies.

A citation analysis may be useful to comprehend the influence and magnitude of the work. Highly cited research is valuable and relevant, due to its long impact. Some of the distinguished researchers in the field of artificial intelligence (AI) for supply chains are Modgil et al. (2022a), Bertsimas and Kallus (2020) and Dubey et al. (2018), who have made important contributions to the scholarly literature (Modgil et al., 2022a; Bertsimas and Kallus, 2020; Dubey et al., 2018). Their contributions greatly influence the ways things are done now and in the future.

Thorough analysis of most cited publications and journals lend credence to the quality and weightage of the research. The International Journal of Logistics Management and the European Journal of Operational Research are publications that have extreme CiteScores as they are used for disseminating groundbreaking research. According to Swaminathan et al. (1998) and Babich and Hilary (2019), these journals play a crucial role in controlling policy and technology related to AI-powered supply chain management. This extensive bibliometric study provides a detailed understanding of the wide-ranging artificial intelligence (AI) in supply chain research, its historical evolution, changing focus, and its prominent actors.

While there are many papers screening the themes of AI in SCMs, the study shows that the promotion and adoption of AI-driven solutions have yet to be addressed in a significant way. A surprising dearth of research on the packaging and pitching of AI solutions compares with the abundance of work delving into AI's technical, operational, and policy aspects. This is a general difference, especially considering the public and stakeholders'

perception and acceptance of AI in supply chain management. Improper branding and marketing techniques can accelerate public participation and acceptance, subsequent in better and stronger supply chains (Bag et al., 2023). A “consumer-first” approach to AI adoption is necessary, according to countless studies (Wycisk et al., 2008; Mazhar et al., 2007), which focus on stakeholders’ desires and behaviors.

Moreover, customer behaviour, market penetration, and supply chain visibility are all connected with the relevance of branding in AI solutions. With the growing number of possible choices, the effectiveness and sustainability of these solutions might vary proper to stakeholders’ perceptions and understanding of them (Gijsbrechts et al., 2022).

The discovery of this new annulled represents an intriguing opportunity to explore further, which should not only focus on the practical and technical advantages of AI but also the impact it will have on strategic marketing and the relationships it will substitute with different stakeholders. These studies can shed light on the most successful way to market AI driven supply chain solutions to drive adoption and continue the industry’s steady progress.

AI supply chain studies can incorporate perceptions from smart branding, marketing, and stakeholder behaviour, which can help policymakers. The development and the effective marketing of AI-based solutions should be facilitated by rules to support acceptance and promote the use of AI technologies in daily life.

7. CONCLUSION

This bibliometric research examines the use of artificial intelligence (AI) in supply chain management (SCM) over the period of 1998-2025 and recommends a comprehensive overview of the years’ history and current situation of the field. The study methodically analysed many publications in the Web of Science main Collection database. It discovered important trends in publication growth, citation trends, geographical contributions, and main research issues about AI-enhanced supply chain studies. With the challenges of global supply chains rising rapidly and the need to improve inefficient practices, the sector is growing rapidly. This is apparent from the following insights.

Artificial intelligence in supply chain management publications: Explosion in research output: 7.1 essential study findings: It was originated that during the research period there was a noticeable increase in publications that focus on artificial intelligence in supply chain management. The revival is associated with the worldwide trend to amazed inefficiencies and utilize the most modern techniques, and with the growing academic and practical focus on intelligent systems.

For the dissemination of research results, useful cross-cultural communication and the diffusion of new ideas, English continues to be the de facto language of choice: A Global Standard. The dominance, however, can make it more challenging for non-English speaking academics to be recognized more broadly.

When analysing the regional split, it was found that countries such as the United States, China, England, Germany and India emerged as very substantial international collaborations. Group collaboration can result in cross-pollination of knowledge, enhancing research and fostering cross-border communication.

Some academics and publications, or folks, are more prominent than others as key players in the area. Leading journals like the International Journal of Logistics Management and the European Journal of Operational Research have large influence on future research and orientations to policies and practices because of their coverage of innovative findings.

While the research searches AI’s impact on SCM in detail, there is still a lack of research focus on promoting and branding AI systems. These technologies are vital to their widespread adoption, and the public and stakeholders’ perception of them is of extreme importance. This can be resolved by the following actions:

Integrate Marketing Strategies with Customer Behaviour Insights: Future research should participate marketing strategies with customer behaviour insights. Understanding stakeholders’ attitudes and preferences towards AI technologies can impression persuading branding efforts, and exploring viewpoints can improve the marketability of the technology.

The legislative environment should encourage the evolution of the commercial involvement of artificial intelligence and accelerate its development. It is possible to accelerate the integration of AI into normal operations via targeted initiatives that progress awareness and acceptance. Rewards may be a factor, too.

One of the requirement topics of discussion is acting together across differences - how marketers, behavioural experts and AI professionals can work together. Concluded this collaborative effort, it is possible to achieve holistic results that extend beyond just technical data to include market trends and financing, which would help in acquiring a deeper understanding of the adoption of AI.

The findings of this study will need extra proof that AI will have value in SCM and can provide the basis for additional research and policy development. The study has found the achievements and pointed to areas for improvements, accenting on the note players and swift improvements. Such gaps can be bridged to increase the theoretical and practical discussions on the promotion of AI on the international level:

The detailed study of trends and key publications grants us to analyse the different aspects of the integration of AI and optimisation methods, as well as their impact on the socio-economic sphere. The most important factor to this process of turning academic success into social good, is hitting research into practice with social implications.

The results of this study may suggest how researchers should focus funding on AI research and application to the supply chain to help inform policy decision makers. The trends and gaps identified by

leaders can encourage interdisciplinary and international action for sustainable development and be used to grow programmes reflecting the balance between technological developments and market needs.

Industry participants: Companies can find potential areas of investments and modify their strategies with the availability of the new opportunities. Collaboration between academics and government officials guarantees that policies and procedures are up to date.

7.1. Future Obstacles and Opportunities

Despite its limitations, bibliometric analysis of the topic of artificial intelligence (AI) in supply chain management offers some insight and impacts the results and future directions of research in the area.

7.1.1. Difficulties

7.1.1.1. Limitations of database

Although as broad as it can be it does not include all the relevant literature currently available, only the Web of Science core collection. While it may be sufficient to scraping this section from the web, it is important to check sources like Scopus or Google Scholar, as untracked conferences or publications may have valuable awareness.

7.1.1.2. Language bias

If outputs in the language other than English are not joined to, then the danger is that outputs in English will not be attended to. More might be discovered if we broaden to works in multiple languages.

7.1.1.3. The focus on quantity at the cost of quality

Sometimes, quantitative data such as publications or citations are used, which might overlook the depth and meaning of qualitative data such as theoretical impact or practical implications. Qualitative layers can be inserted to the picture of the field to enhance it.

7.1.2. The future

7.1.2.1. Expand your perspective

To increase diversity and inclusiveness, future research should use data from a range of databases and non-English studies. A better data set could be created by combining Web of Science with Scopus and Google Scholar.

Consumer research, economics and marketing - and the technical and operational elements of AI - must be combined to make up the difference between branding and marketing. This may address issues based on perception, as well as practical issues, to make rollouts easier.

To take it one step further, it could be useful to combine bibliometric data with qualitative analysis like content analysis or case studies. This will enable us to better understand the deployment and reception of AI in a more holistic way, uncovering context and implications.

The need for attention to policy and practice - There is a long overdue need for focused studies in areas where there is not an

extensive body of research, especially on acceptance techniques and policy. It is important to scope the actions of policies and market instruments in a range of scenarios to properly design solutions.

Understanding consumer perceptions, views and market strategies that could affect the use of AI requires research. Information on behaviour and dynamics can be used as a adequate tuning of appealing strategies to stakeholders.

This collaboration, concerning academic researchers, policy makers, entrepreneurs, and industry leaders, can help overcome these obstacles and make the most of these opportunities to drive AI advancements in SCM. With the collaboration of all these stakeholders from academia, policymakers, and entrepreneurs, these obstacles can be seized, and these opportunities can be tapped to foster the development of AI in supply chain management. This is necessary for meeting the needs and providing sustainable solutions in the global context.

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