The Evolution of Artificial Intelligence in E- Commerce: A Bibliometric Analysis of Research Trends (2005-2026)

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ABSTRACT

This study aims to identify the evolution of research in the domain of Artificial Intelligence and e-Commerce by examining 148 articles in the Scopus database published from 2005 to 2026. This bibliometric analysis was conducted using VOSviewer software to visualize the trends that emerged. The findings led to the identification of four themes, with most researchers favouring the examination of artificial intelligence and digital transformation across various sectors, virtual entities and social commerce, the e-commerce ecosystem, and the personalization and analytics associated with artificial intelligence. The volume of publications is growing each year, along with the variance in recognized keywords. Future research should integrate various databases, encompass conference proceedings within the realm of computer science, and broaden the spectrum of keywords employed to improve data collection, thereby producing more vibrant trends in the research field.

Keywords: Artificial Intelligence, Electronic Commerce, Bibliometric Analysis, Consumer Behavior

INTRODUCTION

In digital commerce research, Artificial Intelligence (AI) has catalysed a fundamental shift in the way customers identify, evaluate, and purchase products. The advancement of artificial intelligence technology uses machine learning, allowing the technology to learn and process new things and skills, perform complex operations, complete certain tasks without human intervention, and make predictions by analyzing a large amount of data (Zhong, 2022).

Electronic Commerce, or e-Commerce, is a technology that supports businesses to perform online transactions and is believed to enhance customer experiences and customer satisfaction (Mimani et al., 2024). Social commerce (s-commerce) is a form of e-commerce. S-commerce can be defined as any business endeavours related to consumer behaviours in which transactions occur via social media platforms and are supported by advanced technologies (Leong et al., 2024). Moreover, unlike conventional e-commerce, s-commerce enables users to affect one another through reviews, ratings, suggestions, information exchange, and social relationships. This interaction can foster trust, influence purchase decisions, promote engagement, increase loyalty among existing customers, and thus could increase recurring purchases (Leong et al., 2024).

Several studies incorporating AI in e-Commerce found that AI is a powerful tool in the business sector, especially in e-Commerce. AI can assist businesses in developing an e-Commerce store by helping them manage inventory and perform analytics and product recommendations to customers (Mimani et al., 2024). According to Bansal & Bansal (2023), AI can positively impact online buying through inventory management, personal recommendations based on past browsing behavior, order history, and customer preferences, product customization, improved search functionality, visual search, chatbot assistance, voice commerce, and fraud detection. Moreover, AI could also strengthen customer loyalty, such as customer retention, engagement, and satisfaction (Beyari, 2025).

Contemporary AI research has shifted toward Generative AI (Gen AI). According to Xie, (2026), Gen AI modifies the standard human-computer interaction of digital voice assistants by facilitating more intelligent interactions, personalized mechanisms, and refined natural language understanding. This could affect the consumer decision-making process and improve consumer shopping experiences. Examples of digital voice assistants based on Gen AI are Taobao Wenwen (Alibaba's Taobao), AI Lazzie (Lazada), ShopBot (eBay Inc.), and Jingyang (JD.com) (Xie, 2026).

Drawing from the general overview regarding artificial intelligence in e-commerce, this study seeks to give a bibliometric analysis that scrutinises the research trends in this domain. The scope of this study mainly focuses on mapping the structural, geographical, and thematic evolution of the field. Therefore, the main objective of this paper is to examine the growth and trends of research in the area of study.

METHODOLOGY

The study performed a bibliometric analysis that summarizes a large amount of bibliometric data to present emerging trends in a research topic (Donthu et al., 2021), in this case, artificial intelligence in e-commerce.

The bibliometric data were obtained from the Scopus database, as it is a reliable source. The researchers used the search terms, namely "artificial intelligence", "AI", "electronic commerce", "e-commerce", and "consumer behavior", through title, abstract, and keywords search. These search terms resulted in 609 documents, which is sufficient, as the volume of data is considered large enough to perform bibliometric analysis (Donthu et al., 2021). However, to make it more focused on the research topic, the researchers then restricted the search results to several criteria, which are limited to journals and conference proceedings, English, subject areas limited to (i) social sciences, and (ii) business, management and accounting, and years ranging from 2005 to 2026, which resulted in 148 documents.

The researchers employed performance analysis and science mapping techniques to conduct the bibliometric analysis. According to Donthu et al., (2021) performance analysis examines performance and contribution, while science mapping examines relationships among research constituents. The bibliometric data were then analyzed and visualized using VOSviewer software. VOSviewer is a software tool that can assist researchers in creating maps based on network data and visualizing and exploring maps (van Eck & Waltman, 2013).

RESULTS AND DISCUSSION

Year of Publications

Table 1 illustrates the publication statistics for the years 2005 to 2026, which demonstrates gradual growth. The total number of publications increased significantly from 13 in 2024 to 60 in 2025. However, the number of publications experienced a slight decrease in 2026 due to the data collection, which took place in September. There were no publications highlighted between 2006 and 2009.

Table 1: Year of Publications

Year	Total Publications	Percentage (%)
2005	1	0.68
2010	1	0.68
2011	3	2.03
2018	1	0.68
2019	1	0.68
2020	2	1.35

2021	3	2.03
2022	6	4.05
2023	7	4.73
2024	13	8.78
2025	60	40.54
2026	50	33.78
Total	**148**	**100.00**

Most Productive Publications

The research findings revealed that a total of 148 documents were examined, resulting from the restriction to the English language, and derived from journals and conference proceedings. Table 2 depicts the most productive sources.

The Journal of Theoretical and Applied Electronic Commerce Research is the leading source where the majority of the articles published from 2024 to 2026, followed by the Journal of Retailing and Customer Services, where the publications generating from 2021 to 2026.

Table 2: **Most Productive Publications**

Source Title	**Total Publications**
Journal of Theoretical and Applied Electronic Commerce Research	10
Journal of Retailing and Consumer Services	7
Iceme 2025 Proceedings of the 2025 16th International Conference on E Business Management and Economics	6
Springer Proceedings in Business and Economics	6
International Conference on Intelligent and Innovative Practices in Engineering and Management Iipem 2025	4
Sustainability Switzerland	4
2011 2nd International Conference on Artificial Intelligence Management Science and Electronic Commerce Aimsec 2011 Proceedings	3
Electronic Commerce Research and Applications	3
Information Systems Research	3
International Journal of Accounting and Economics Studies	3

Analysis on Highly Cited Articles

Table 3: Highly cited articles

No.	Authors	Title	Year	Cites
1	Sima V.,Gheorghe I.G.,Subic J.,Nancu D.	Influences of the industry 4.0 on the human capital development and consumer behavior: A systematic review	2020	581
2	Manser Payne E.H.,Dahl A.J.,Peltier J.	Digital servitization value co-creation framework for AI services: a research agenda for digital transformation in financial service ecosystems	2021	242
3	Silva E.S.,Bonetti F.	Digital humans in fashion: Will consumers interact?	2021	165
4	Marjerison R.K.,Zhang Y.,Zheng H.	AI in E-Commerce: Application of the Use and Gratification Model to The Acceptance of Chatbots	2022	81
5	Tan C.-H.,Teo H.-H.,Benbasat I.	Assessing screening and evaluation decision support systems: A resource-matching approach	2010	63
6	Wang Q.,Ji X.,Zhao N.	Embracing the power of AI in retail platform operations: Considering the showrooming effect and consumer returns	2024	62
7	Simchi-Levi D.,Wu M.X.	Powering retailers' digitization through analytics and automation	2018	55
8	Madanchian M.	Generative AI for Consumer Behavior Prediction: Techniques and Applications	2024	49
9	Gkikas D.C.,Theodoridis P.K.	Artificial Intelligence (AI) Impact on Digital Marketing Research	2019	48
10	Leong L.-Y.,Hew T.S.,Ooi K.-B.,Hajli N.,Tan G.W.-H.	Revisiting the social commerce paradigm: the social commerce (SC) framework and a research agenda	2024	47
11	Ding L.,Antonucci G.,Venditti M.	Unveiling user responses to AI-powered personalised recommendations: a qualitative study of consumer engagement dynamics on Douyin	2025	43
12	Zarco C.,Giraldez-Cru J.,Cordon O.,Liebana-Cabanillas F.	A comprehensive view of biometric payment in retailing: A complete study from user to expert	2024	34

13	Zhu Y.,Shi H.,Bin Azam Hashmi H.,Wu Q.	Bridging artificial intelligence-based services and online impulse buying in E-retailing context	2023	32
14	Wang S.,Qiang J.,Yao K.	How does artificial intelligence digital human live streaming increase TikTok consumer repeat purchase? Interaction between vividness, telepresence, credibility and trust	2025	30
15	Jin C.,Yang L.,Hosanagar K.	To Brush or Not to Brush: Product Rankings, Consumer Search, and Fake Orders	2023	30
16	Turki H.	AI-powered personalization in e-commerce: Governance, consumer behavior, and exploratory insights from big data analytics	2025	28
17	Pu L.,Radics R.,Umar M.,Jeremiah F.,Quan Z.	The potential of AI tools in shaping digital consumers' behavior: investigating e-commerce engagement of Chinese Generation Z	2025	25
18	Dias T.,Goncalves R.,Lopes da Costa R.,Pereira L.,Dias A.	The Impact Of Artificial Intelligence On Consumer Behaviour And Changes In Business Activity Due To Pandemic Effects	2023	25
19	Adwan A.A.,Aladwan R.	Use of artificial intelligence system to predict consumers' behaviors	2022	25
20	Bernovskis A.,Sceulovs D.,Stibe A.	Society 5.0: Shaping the future of e-commerce	2024	24

Table 3 presents the twenty most highly cited articles in Scopus. The articles in the aforementioned table were referenced to develop four themes. The themes are (i) Artificial intelligence and digital transformation across industries, (ii) Virtual entities and social commerce, (iii) E-commerce ecosystems, and (iv) Artificial intelligence personalization and analytics.

The most highly cited article is within the scope of the first theme, "artificial intelligence and digital transformation", which is a systematic review paper that discusses the impacts of the Fourth Industrial Revolution, such as e-commerce and artificial intelligence, on human capital and consumer behaviors (Nancu et al., 2020). Furthermore, the second highly cited article also came from the first theme that describes how artificial intelligence is transforming modern financial services (Payne et al., 2026). Several articles that fall under the second theme, "virtual entities and social commerce", highlighted the willingness of the customers to interact with digital humans (Silva & Bonetti, 2021), the customers' attitude towards the use of artificial intelligence in the form of Chatbots (Marjerison et al., 2022), development of a social commerce framework based on the evolution of social commerce (Leong et al., 2024), and the application of artificial intelligence digital human live streaming to encourage repeat purchase intention of customers (Wang et al., 2025). Most of the research under the third theme "e-commerce ecosystems" describes the deployment of biometric payment technology in the retail industry (Zarco et al., 2026). The fourth theme, "artificial intelligence personalization and analytics" identified articles that mentioned how generative AI can substantially improve consumer behavior prediction (Madanchian, 2024), the impact of AI personalization on consumer behavior within the e-commerce environment (Turki, 2025), and how AI can increase online purchase intention (Adwan & Aladwan, 2022).

Analysis of Keywords

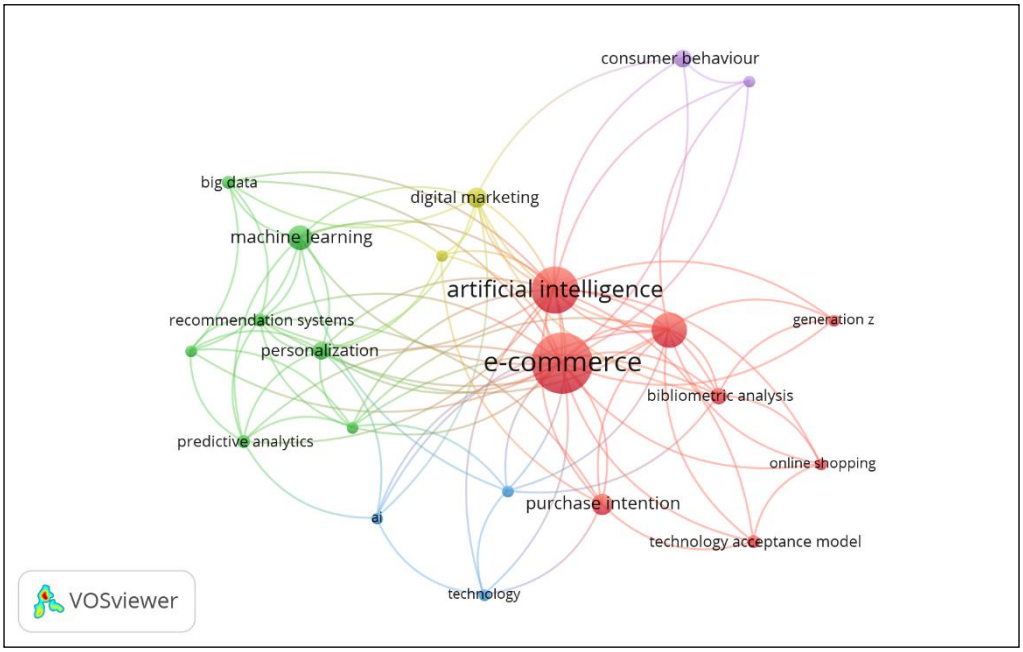

Figure 1 : Network Visualization of Co-Occurrence Analysis of Author Keywords

Figure 1 depicts a network visualization of the co-occurrence analysis of author keywords, and five clusters are identified. Cluster 1 (red) embodies the theme of the adoption of AI-driven e-commerce and Generation Z's shopping behavior. The keywords are e-commerce, artificial intelligence, consumer behavior, purchase intention, bibliometric analysis, Generation Z, online shopping, and technology acceptance model. Cluster 2 (green) explores the theme of big data analytics, machine learning, and recommendation systems, and consists of keywords such as big data, customer engagement, generative AI, machine learning, personalization, predictive analysis, and recommendation systems. Cluster 3 (yellow) comprises AI, chatbots, and technology as keywords, and the theme represented is chatbots and virtual assistants. The keywords of Cluster 4 (blue) are consumer engagement and digital marketing, which reveals the theme of strategic digital marketing and customer engagement. Finally, Cluster 5 (purple) signifies live streaming e-commerce, and the keywords are consumer behavior and live streaming.

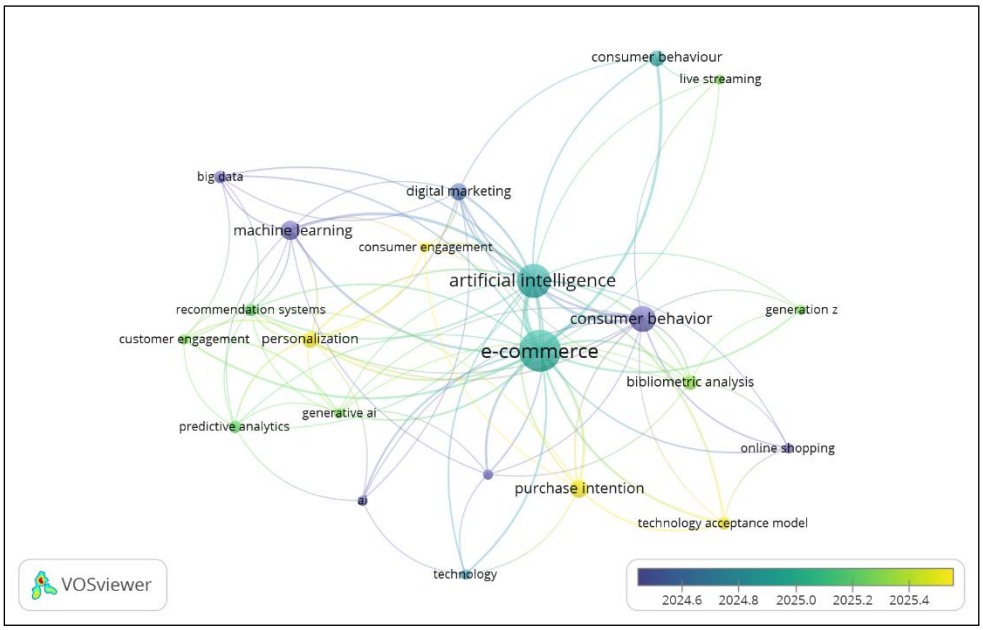

Figure. 2: Overlay visualization map of the author keywords

The strongest connections occurred among e-commerce, artificial intelligence, consumer behavior, machine learning, personalization, digital marketing, and purchase intention. Based on Figure 2, the most used keyword is e-commerce, with 56 occurrences and the highest total link strength (89). The current trend of research combines the area of e-commerce with purchase intention, personalization, consumer engagement, and the technology acceptance model.

Analysis on Countries

Table 4: Top 10 Countries that contributed to the publications

Country	Total Publications
China	32
India	22
United States	15
Vietnam	12
Indonesia	10
Malaysia	7
United Kingdom	7
Saudi Arabia	6
Canada	5
Jordan	5

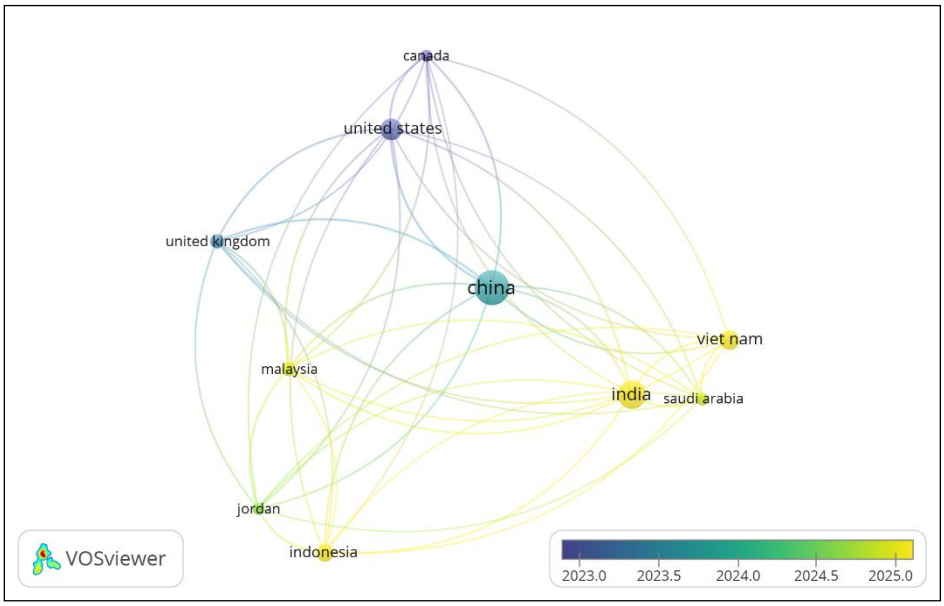

Figure 3 : Overlay Representation of Bibliographic Coupling

Table 3 portrays countries that contributed the most publications in the research area. Meanwhile, Figure 3 depicts the overlay representation of bibliographic coupling, with countries as the unit of analysis. The threshold for a country was a minimum of five documents. A total of 53 countries were included, but only 10 countries met the threshold. The colour gradient reflects early-to-current contributors: blue reflects countries that started researching AI and e-commerce, while green and yellow represent the countries that recently

initiated research on the topic. China is the main contributor, with 32 documents and an average publication year of 2023. Canada (average publication year = 2022) and the United States (average publication year = 2023) were among the first countries to commence research. Countries that have recently researched the topic are India, Vietnam, and Indonesia, where the average publication year is 2025. Meanwhile, the average publication year for Malaysia, Saudi Arabia, and Jordan is 2024.

CONCLUSION

This study analyzed 148 articles on artificial intelligence in e-commerce from 2005 to 2026, focusing on the evolution of the research area. Based on the findings, four themes were developed, whereas the majority of the researchers prefer to study the area of artificial intelligence and digital transformation across industries, virtual entities and social commerce, the e-commerce ecosystem, and artificial intelligence personalization and analytics. The current research trajectory integrates artificial intelligence technology and e-commerce with consumer behavior, where purchase intention, personalization, and consumer engagement are the main focus.

The study acknowledges limitations, including theoretical and methodological gaps that need to be addressed. The analysis should consider incorporating theoretical frameworks or models underlying the included studies. The current study focused on the Scopus database, with 148 articles reviewed, limited to English publications, and subject areas covered only in the fields of social sciences and business, management, and accounting. Future research ought to employ multiple databases, include conference proceedings in computer science, and expand the range of keywords to enhance data collection and yield more dynamic trends within the research domain.

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