

Mapping Global Research Trends in E-Commerce: A Bibliometric Analysis of Scopus Publications (2015–2025) Using VOS viewer

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Abstract: This study presents a bibliometric analysis of global E-commerce research to map its evolution, key contributors, and thematic structure. Scopus data from 2015–2025 were analyzed using VOSviewer, examining publication trends, collaboration networks, and keyword co-occurrence. Results indicate a substantial increase in research output between 2019 and 2025, driven by digital transformation and the COVID-19 pandemic. China, the United States, and India lead in contributions, with institutions such as Alibaba Group and Bina Nusantara University playing central roles. Keyword analysis reveals five main clusters: marketing and sales, supply chains, technological innovation, consumer behavior, and social commerce. The findings highlight E-commerce as a mature, multidisciplinary field within the digital economy and emphasize the need for future research on sustainability, ethics, and inclusivity in digital business practices.

Keywords: E-Commerce; Bibliometric Analysis; Scopus; VOSviewer.

1. Introduction

In the era of rapid digital transformation, e-commerce has become a key driver of global economic growth and business innovation. (Stenger, et al., 2014) The integration of digital technologies into trade has reshaped how consumers engage with markets and how firms create, deliver, and capture value. Beyond online retail, e-commerce now encompasses mobile commerce, social commerce, and cross-border trade. (Bleier, et al., 2019)

The widespread adoption of internet connectivity, smartphones, and digital payment systems over the past decade has accelerated e-commerce expansion worldwide, attracting significant attention from scholars, policymakers, and practitioners. (Asrigo & Kaburuan, 2024) Academic research has consequently evolved into a multidisciplinary field, combining marketing, information systems, management, and economics perspectives. (Baranchenko, et al., 2019)

The increasing volume of publications highlights the dynamic nature of e-commerce research and the growing interest in its drivers, challenges, and implications. Bibliometric analysis provides a systematic, quantitative method to map research evolution, identify leading authors and institutions, and explore emerging trends. By analyzing Scopus-indexed

publications from 2015 to 2025, this study aims to offer a comprehensive overview of global research patterns and highlight key areas shaping the future of e-commerce.

1.1. Research Problem

Despite the rapid growth of e-commerce and its rising significance in the global economy, systematic bibliometric mapping of this research remains limited. Existing studies often focus on specific aspects, such as consumer behavior, online marketing, or technology adoption, while comprehensive analyses of the overall e-commerce research landscape are scarce. In particular, the evolution of research themes, author and institutional collaboration networks, and the identification of leading contributors remain underexplored.

This gap highlights the need for a structured bibliometric investigation of e-commerce research, especially between 2015 and 2025, a period marked by significant digital transformation and increased online business activity.

Accordingly, this study seeks to answer the following main research question: What are the main global research trends, key contributors, collaboration networks, and thematic developments in e-commerce research during 2015–2025?

1.2. Research Objectives

This study aims to conduct a comprehensive bibliometric analysis of the scientific literature on e-commerce published between 2015 and 2025. Specifically, the objectives are to:

- Examine the evolution of scientific publications on e-commerce during the study period.
- Identify the most productive and influential authors, institutions, and countries in this research field.
- Analyze collaboration networks at the levels of authors, institutions, and countries.
- Explore the main research themes and emerging trends through keyword co-occurrence analysis.
- Provide insights that can guide future research directions and inform policymakers, practitioners, and scholars interested in e-commerce development.

1.3. Research Significance

This study is significant for both academic and practical audiences. Academically, it provides a structured bibliometric overview of global e-commerce research, highlighting leading contributors, collaboration networks, and thematic trends, thus addressing a gap in the literature. Practically, it identifies key knowledge areas and international collaborations that can inform the development of digital economies and effective e-commerce strategies. By focusing on the 2015–2025 period, marked by rapid digital transformation and technological advances, the study also sheds light on how global digitalization trends have shaped research priorities and directions in the field.

1.4. Research Methodology

This study employs a descriptive–analytical approach through bibliometric analysis to quantitatively examine scientific production on e-commerce. Data were retrieved from the Scopus database for publications between 2015 and 2025, based on predefined search criteria. Descriptive statistics were used to analyze publication trends, while network analysis techniques explored collaboration patterns and thematic structures. VOSviewer software was applied to construct and visualize bibliometric networks, including co-authorship, co-citation, and keyword co-occurrence.

1.5. Research Structure

The study is divided into four main sections:
The first section reviews the theoretical and conceptual literature on e-commerce.
The second section presents the research methodology and the steps undertaken to perform the bibliometric analysis.
The third section focuses on the bibliometric results, including publication trends, collaboration networks, and thematic evolution between 2015 and 2025.
Finally, the fourth section provides a discussion of the findings and concludes with the key insights, implications, and potential directions for future research.

2. The Concept of E-commerce

Electronic commerce (e-commerce) refers to the process of buying, selling, and exchanging products, services, and information through electronic networks, primarily the Internet. (Sinaga, et al., 2024) It encompasses a wide range of digitally mediated business activities involving electronic transactions among different actors such as business-to-business (B2B), business-to-consumer (B2C), consumer-to-consumer (C2C), and consumer-to-business (C2B) models. (Laudon & Traver, 2020)

E-commerce represents more than a technological innovation; it constitutes a strategic business paradigm that redefines value creation, customer interaction, and competition. Through digital platforms, firms can overcome geographical and temporal constraints, reduce transaction costs, and enhance operational efficiency. Advances in information and communication technologies (ICTs), the proliferation of mobile devices, and the emergence of secure online payment systems have accelerated the global diffusion of e-commerce. (Turban, et al., 2018)

Furthermore, e-commerce integrates multiple functional domains marketing, logistics, supply chain management, and customer relationship management into a unified digital environment, thus reshaping traditional market structures and business dynamics. (Chaffey, 2019)

3. Methodology

This study adopts a descriptive–analytical methodology through the conduct of a bibliometric study aimed at quantitatively analyzing the scientific production on e-commerce during the period 2015–2025. The methodological steps can be summarized as follows:

3.1. Data Source

The data were collected from the Scopus database, which is widely recognized for its extensive coverage of peer-reviewed academic literature across various disciplines. Scopus was selected because it provides comprehensive bibliographic information (such as authors, affiliations, keywords, citations, and publication sources) and is fully compatible with bibliometric analysis software, particularly VOSviewer.

3.2. Search Strategy and Selection Criteria

The search was conducted using relevant keywords related to e-commerce and its associated research domains. The following criteria were applied to refine and filter the dataset:

- Time period: 2015–2025
- Document type: Articles, reviews, and conference papers
- Language: All available languages

- Subject areas: Business, Management and Accounting; Economics, Econometrics and Finance.

These parameters ensured that the dataset covered the main academic contributions related to e-commerce from multidisciplinary perspectives.

3.3. Data Cleaning and Preparation

After the initial search, duplicate records and irrelevant documents not directly related to e-commerce were carefully removed. The final dataset consisted of the publications that fully met the inclusion criteria. The data were then exported in CSV format (using the Scopus export option) to ensure compatibility with analytical tools.

Microsoft Excel was used to perform basic data cleaning and generate preliminary descriptive statistics, such as yearly publication counts and citation averages.

3.4. Analytical Techniques and Software

Two main techniques were employed in this study:

- Descriptive analysis: to examine publication trends over time, identify the most active and influential contributors, and analyze citation patterns.
- Network analysis: to explore collaboration structures (among authors, institutions, and countries) and thematic relationships through keyword co-occurrence.

The software VOSviewer was utilized to construct and visualize various bibliometric networks, including co-authorship, co-citation, and keyword co-occurrence maps. Meanwhile, Excel was used to support the descriptive statistical analysis and produce summary tables.

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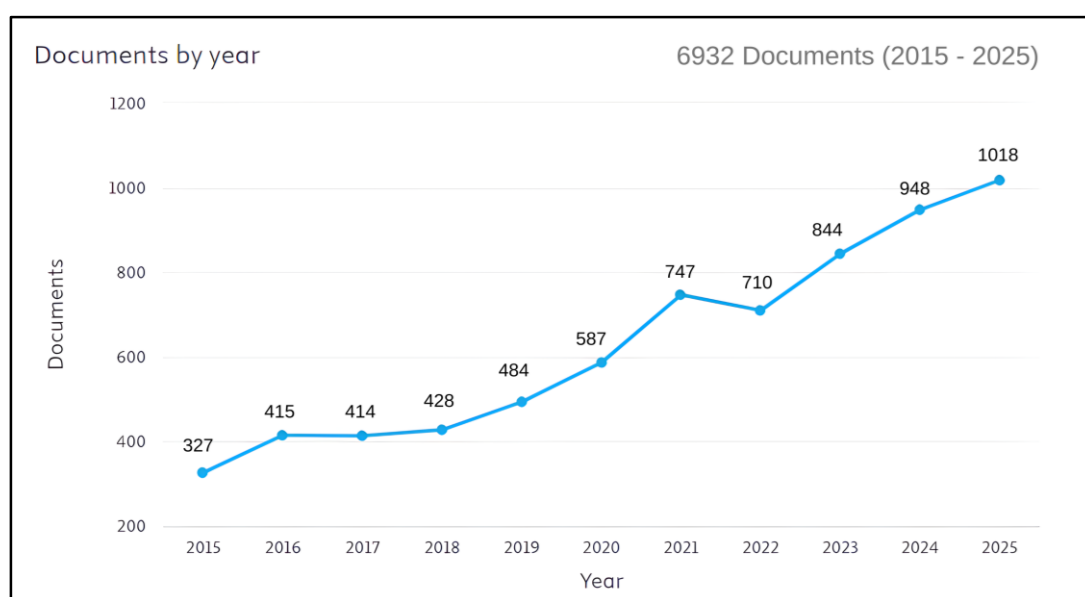
4. Bibliometric Analysis

91

4.1. The Evolution of Scientific Publications on E-commerce

Figure 1 presents the trend in the number of scientific publications addressing the topic of E-commerce during the period 2015–2025:

Fig. 1. The Evolution of Scientific Publications



Source: <https://www-scopus.com.sndl1.arn.dz>

The analysis of publication trends between 2015 and 2025 reveals a steady and significant growth in the volume of scientific research devoted to e-commerce. As shown in the Figur 1, the number of publications increased from 327 documents in 2015 to 1,018 documents in 2025, representing more than a threefold rise over the examined period.

During the initial years (2015–2018), research output remained relatively modest but showed a gradual upward trend, reflecting the progressive academic interest in e-commerce as digital transformation began reshaping traditional business models. A noticeable acceleration occurred between 2019 and 2022, when the number of publications nearly doubled from 494 to 710 documents largely driven by the rapid expansion of digital platforms and the widespread adoption of online shopping during the COVID-19 pandemic, which highlighted the critical role of e-commerce in ensuring business continuity.

The post-pandemic period (2023–2025) witnessed a further surge in publications, reaching its highest level in 2025 (1,018 documents). This indicates that e-commerce has evolved from a specialized topic to a core research area within the broader digital economy and business management fields. The sustained growth reflects ongoing scholarly efforts to explore emerging dimensions such as mobile commerce, social commerce, and artificial intelligence applications in online retailing.

Overall, the upward trajectory of scientific output underscores the strategic importance and multidisciplinary of e-commerce research, encompassing contributions from economics, management, information systems, and computer science.

4.2. The Most Productive and Influential Authors

Table 1 highlights the ten authors who have demonstrated the highest productivity and scientific influence in the field of E-commerce:

Table 1. The 10 Most Productive and Influential Authors

Rank	Author Name	Number of Publications	Number of Citations
1	Cheng, t. c. edwin	20	501
2	Huang, guo quan	16	595
3	Fedorko, r.	15	117
4	Luo, xin (robert)	13	625
5	Mou, jian	12	775
6	Li, li	12	10
7	Lam, cathy h,y.	10	219
8	Li, yang	10	74
9	Niu, baozhuang	9	582
10	Choi, tsan ming	9	444

Source: Prepared by the researchers based on the Scopus and VOSviewer software.

The bibliometric analysis based on the Scopus database revealed a group of authors who demonstrated significant research activity and scientific impact in the field of e-commerce during the period 2015–2025.

Among them, Cheng, T. C. Edwin ranked first in terms of research productivity, with 20 publications and 501 citations, reflecting his continuous and substantial contributions to advancing the academic understanding of e-commerce and digital business models.

He was followed by Huang, Guo Quan, with 16 publications and a total of 595 citations, indicating both high productivity and strong citation impact. Fedorko, R. also showed remarkable research involvement, producing 15 publications and receiving 117 citations, positioning him among the most active contributors in this field.

In terms of influence, Mou, Jian stands out with 12 publications but a notably high 775 citations, making him one of the most impactful scholars in the domain of e-commerce research. Similarly, Luo, Xin (Robert) achieved 625 citations from 13 publications, highlighting his consistent academic influence. In contrast, while Li, Li has an equivalent

number of publications (12), the citation count (10) suggests that the research impact of these works remains limited, potentially due to their recent publication or niche thematic focus.

Other productive contributors include Lam, Cathy H.Y. (10 publications, 219 citations), Li, Yang (10 publications, 74 citations), Niu, Baozhuang (9 publications, 582 citations), and Choi, Tsan Ming (9 publications, 444 citations). The citation disparities among these authors underline the varying degrees of recognition and influence within the global e-commerce research community.

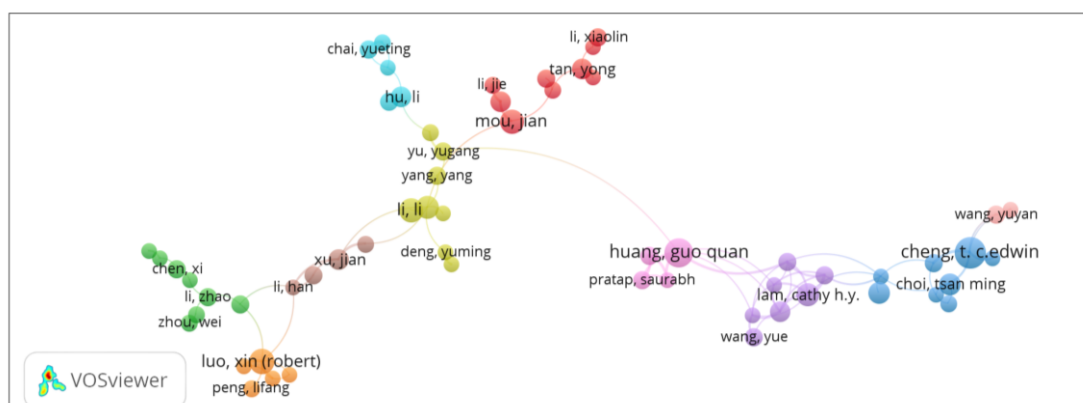
Overall, the results reveal a concentrated yet diverse network of scholars contributing to the development of e-commerce literature. While some authors exhibit high productivity, others distinguish themselves through substantial citation impact, emphasizing the multidimensional nature of academic influence in this rapidly evolving research field.

4.3. Collaborative Network Analysis

4.3.1 Collaboration among Authors

Figure 2 illustrates the scientific collaboration network among authors in the field of E-commerce. A total of 160 authors who contributed at least five publications in this field were identified. The network consists of ten collaborative clusters, each comprising a group of authors connected through co-authorship relationships.

Fig. 2. Authors' Collaboration Network on E-commerce



Source: Developed by the researchers based on VOSviewer analysis.

The co-authorship network map illustrated in Figure (2) reflects the degree of interconnection and scientific interaction among researchers active in the field of E-commerce between 2015 and 2025, based on data extracted from the Scopus database.

The visualization reveals the formation of several distinct research clusters, represented by different colors, indicating the presence of independent research nuclei working on related topics within the same field. It is evident that scientific collaboration in this area exhibits a diversified network structure, with several key researchers directly connected to others, thus enhancing collective knowledge production and citation impact.

Huang, Guo Quan stands out at the center of the pink cluster as one of the most connected authors, showing multiple collaboration links with researchers such as Lam, Cathy H.Y. and Pratap, Saurabh, reflecting his pivotal role in fostering international research cooperation that bridges different research groups.

Similarly, Cheng, T.C. Edwin appears as one of the most collaborative authors within the blue cluster, which also includes Choi, Tsan Ming and Wang, Yuyan. This group demonstrates a strongly cohesive internal collaboration, suggesting the existence of a well-organized research team that consistently contributes to topics related to E-commerce and digital supply chains.

Meanwhile, Luo, Xin (Robert) leads the green cluster, showing moderate collaboration with researchers such as Chen, Xi, Li, Zhao, and Zhou, Wei, indicating a regionally oriented research group.

Mou, Jian occupies a central position within the red cluster, maintaining close collaborative links with Li, Xiaolin and Tan, Yong, which suggests an active research group focusing on specific subtopics in the field of E-commerce.

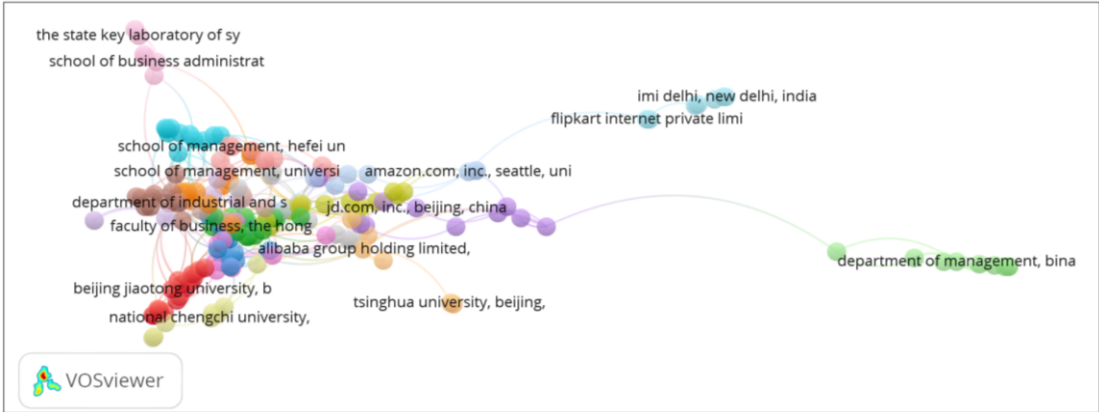
The yellow cluster also highlights interactions among authors such as Li, Li, Yu, Yugang, and Yang, Yang, demonstrating cross-group collaborations and reinforcing the multicentric and dynamic nature of research cooperation in this domain.

Overall, the network map reveals that E-commerce research is characterized by a multi-polar structure, where several key collaboration hubs are led by highly productive and influential authors, as identified in the previous table. These findings confirm that author collaboration plays a fundamental role in enhancing research quality and visibility, paving the way for the next section Co-authorship Network among Research Institutions (Co-authorship – Organizations) to identify the universities and research centers driving this growing scientific collaboration.

4.3.2 Collaboration among Research Institutions

The institutional collaboration analysis using VOSviewer, based on the Scopus database, revealed the presence of 262 research institutions that contributed at least five publications in this field, as illustrated in Figure 3 below:

Fig. 3. Research Institutions’ Collaboration Network on E-commerce



Source: Developed by the researchers based on VOSviewer analysis.

Table 2 highlights the top ten research institutions in terms of productivity and collaboration in the field of E-commerce:

Table 2. Top 10 Research Institutions by Productivity and Collaboration

Rank	Research Institutions Name	Number of Publications	Number of Links	Number of Citations
1	Alibaba group holding limited, hangzhou, china	53	26	875
2	department of management, bina nusantara university, jakarta, indonesia	43	13	194
3	school of management, university of science and technology of china, hefei, china	34	20	1273
4	amazon.com, inc., seattle, united states	32	8	218
5	department of information systems, bina nusantara university, jakarta, indonesia	31	11	119

6	department of industrial and systems engineering, the hong kong polytechnic university, hong kong, hong kong	27	22	625
7	department of logistics and maritime studies, the hong kong polytechnic university, hong kong, hong kong	25	28	653
8	tianjin university, tianjin, china	23	7	658
9	school of economics and management, nanjing university of science and technology, nanjing, china	21	8	317
10	universitas indonesia, depok, indonesia	21	3	209

Source: Prepared by the researchers based on the Scopus and VOSviewer software.

According to the VOSviewer outputs, the bibliometric analysis of institutional collaboration in the field of E-commerce research (2015–2025) reveals a highly interconnected network dominated by a limited number of influential institutions, primarily located in China, Indonesia, Hong Kong, and the United States.

As shown in Table 2 and Figure (3), Alibaba Group Holding Limited (Hangzhou, China) ranks first among research institutions, with 53 publications, 26 total link strengths, and 875 citations. Its central position in the collaboration network confirms its role as a major hub connecting academic and industrial research, reflecting the growing integration between corporate innovation and academic inquiry in E-commerce studies.

The Department of Management at Bina Nusantara University (Indonesia) follows in second place, with 43 publications and 13 links, highlighting Indonesia's emerging contribution to E-commerce research, especially in the Southeast Asian context. Moreover, the Department of Information Systems within the same university also appears among the top ten, with 31 publications and 11 links, indicating a strong internal and inter-departmental collaboration structure.

In third place, the School of Management at the University of Science and Technology of China (Hefei) demonstrates both high productivity (34 publications) and notable collaboration intensity (20 links), accompanied by 1,273 citations, confirming its significant academic impact in this field.

Other highly collaborative institutions include the Department of Industrial and Systems Engineering and the Department of Logistics and Maritime Studies at The Hong Kong Polytechnic University, with 22 and 28 links respectively. These departments form the core of the purple cluster on the network map, reflecting Hong Kong's strong regional and international research partnerships.

Meanwhile, Amazon.com, Inc. (Seattle, United States) and Tianjin University (China) also occupy visible positions in the network, representing key nodes in international academic-industrial collaboration. Amazon's participation (32 publications, 8 links) underscores the increasing contribution of private technology corporations to E-commerce research.

The visualization in Figure (3) reveals the formation of three main clusters:

The red cluster, centered around Alibaba Group Holding Limited and its Chinese partners, highlighting the dominance of Chinese institutions in E-commerce research collaboration.

The purple cluster, representing The Hong Kong Polytechnic University and associated research centers, which display strong intra-regional academic cooperation.

The green cluster, led by the Department of Management at Bina Nusantara University, indicating an active Southeast Asian research hub with emerging international ties.

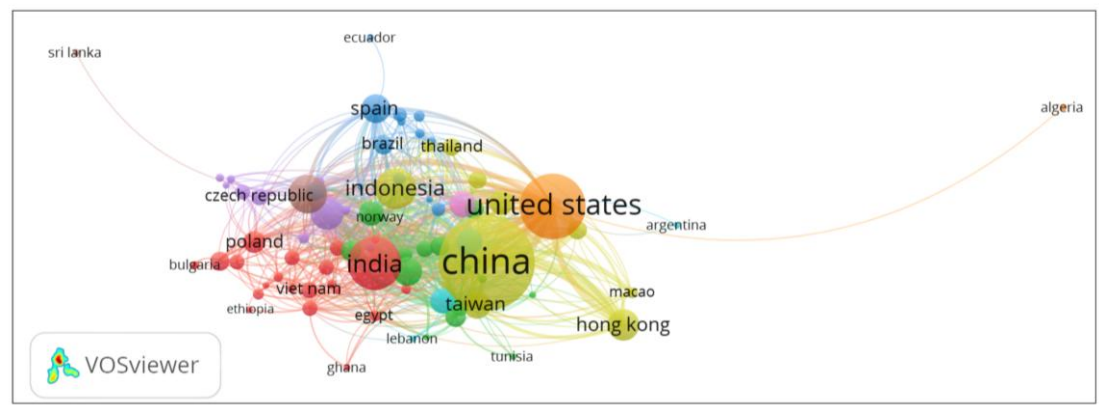
Overall, the results indicate that scientific collaboration in E-commerce research remains concentrated among a few leading institutions with strong research infrastructure and industry linkages. The presence of large corporations such as Alibaba and Amazon within the network demonstrates the strategic convergence between academia and industry in advancing e-commerce research. However, many universities still exhibit weaker levels of

cooperation, reflecting geographical and infrastructural disparities that could be mitigated through enhanced international partnerships in the future.

4.3.3 Collaboration among Countries

The analysis of international collaboration using VOSviewer, based on the Scopus database, revealed the participation of 82 countries, each contributing at least 5 publications in this field, as illustrated in Figure 4 below:

Fig. 4. Countries’ Collaboration Network on E-commerce



Source: Developed by the researchers based on VOSviewer analysis.

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Table 3 presents the ten most productive and collaborative countries in the field of E-commerce:

96

Table 3. Top 10 Countries by Productivity and Collaboration

Rank	Research Institutions Name	Number of Publications	Number of Links	Number of Citations
1	China	1737	811	41081
2	United States	835	592	28092
3	India	552	197	9651
4	Indonesia	321	52	2273
5	United Kingdom	277	314	10772
6	Germany	202	117	5621
7	Hong Kong	186	200	6030
8	Malaysia	163	147	3328
9	Spain	156	91	4682
10	Taiwan	147	98	4324

Source: Prepared by the researchers based on the Scopus and VOSviewer software.

Table 3 and Figure 4 reveal that China, the United States, and India are the most productive countries in the field of e-commerce research during the 2015–2025 period, with 1,737, 835, and 552 publications respectively. However, when analyzing the collaboration network, a more nuanced picture emerges.

China appears as the central hub of the global research network, exhibiting the highest number of connections (811 links) and the greatest volume of citations (41,081), confirming its dominant influence in shaping global research on e-commerce. The United States follows closely with 592 links, highlighting its strong international partnerships and its bridging role between Asian and Western research communities.

India ranks third in productivity but shows a relatively lower level of collaboration (197 links), indicating that most of its research efforts are concentrated within national or regional contexts rather than extensive international networks.

The United Kingdom, despite ranking fifth in publication count, demonstrates one of the most connected networks (314 links), reflecting its strategic participation in multinational research projects. Similarly, Hong Kong and Malaysia also display notable international engagement, acting as important regional nodes connecting Asian and Western clusters.

The collaboration network illustrated in Figure 4 shows several distinct clusters:

The green cluster, which includes China, Taiwan, and Hong Kong, represents strong intra-Asian collaborations.

The red cluster connects India, Indonesia, and Malaysia, suggesting regional cooperation driven by shared technological and economic contexts.

The orange cluster includes the United States, the United Kingdom, and Germany, reflecting transatlantic scientific partnerships.

A smaller blue cluster links Spain and Latin American countries such as Brazil and Argentina.

Interestingly, Algeria appears on the periphery of the map, connected through a single link, which indicates limited but emerging participation in the global e-commerce research network. This suggests opportunities for increased integration through future collaboration with leading research centers.

Overall, the bibliometric evidence points to a clear concentration of research power within Asia and North America, with China and the United States acting as the principal axes of knowledge production and international collaboration in the e-commerce domain.

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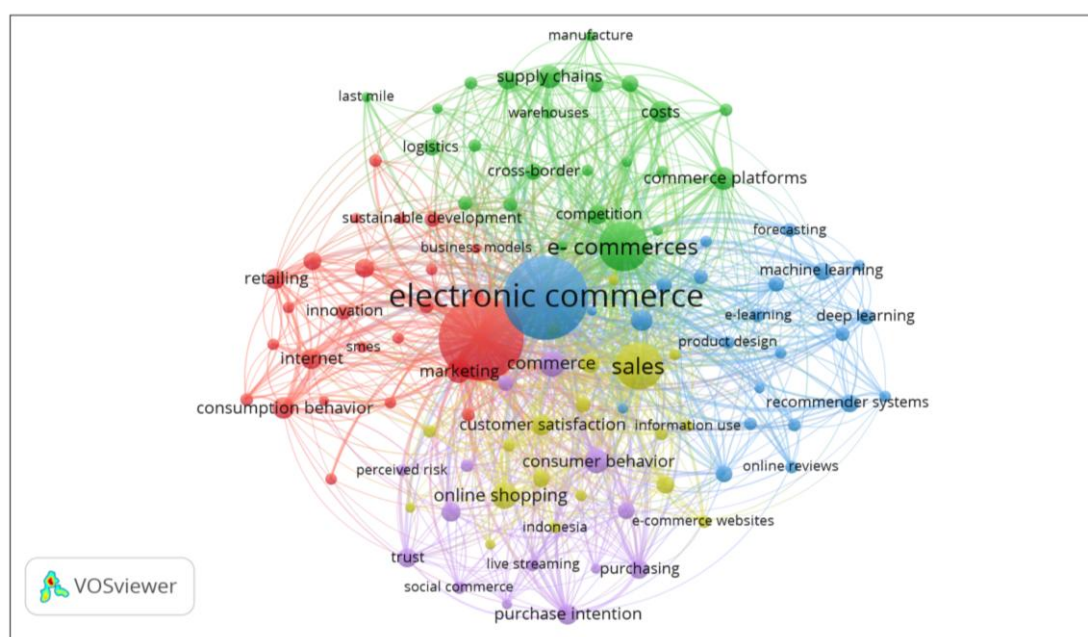
4.4. Keyword Analysis

97

The keyword analysis was conducted using VOSviewer based on the Scopus database, where 105 keywords were identified that appeared at least 50 times in this field.

To ensure the clarity of the keyword network map, a minimum occurrence threshold of 50 was applied. This threshold was chosen to reduce the number of less frequent keywords, which could negatively affect the visibility of clusters within the keyword network, as illustrated in Figure 5:

Fig. 5. Keyword Co-occurrence Network in E-commerce Research



Source: Developed by the researchers based on VOSviewer analysis.

Table 4 highlights the top 10 keywords in terms of frequency and link strength in the field of E-commerce:

Table 4. Top 10 Keywords by Frequency and Link Strength in the Field of E-commerce

Rank	Keyword	Occurrences	Number of Links
1	Electronic commerce	3114	10727
2	E-commerce	3110	5963
3	E-commerces	1101	4535
4	Sales	1012	4789
5	Online shopping	298	1080
6	Commerce	289	1209
7	Consumer behavior	283	1201
8	Marketing	258	952
9	Commerce platforms	252	1221
10	Supply chains	240	1193

Source: Prepared by the researchers based on the Scopus and VOSviewer software.

As shown in Figure 5, the co-occurrence analysis reveals five main clusters, each represented by a different color, reflecting distinct but interconnected thematic areas within E-commerce research.

The red cluster centers on the core keyword “electronic commerce”, which is the most dominant term in the field with 3114 occurrences and 10727 links. This cluster also includes related terms such as marketing, retailing, and consumption behavior, indicating a strong focus on commercial activities, innovation, and market-oriented studies.

The green cluster is characterized by the keyword “e-commerces” (1101 occurrences, 4535 links), along with commerce platforms, supply chains, and logistics. This cluster highlights the operational and infrastructural aspects of E-commerce, particularly the integration of supply chain management and cross-border trade in digital commerce environments.

The blue cluster focuses on the technological and analytical dimensions, encompassing keywords such as machine learning, deep learning, recommender systems, and forecasting. These terms demonstrate the growing role of artificial intelligence and data-driven approaches in enhancing E-commerce systems and personalization.

The yellow cluster revolves around the keyword “sales” (1012 occurrences, 4789 links), in association with consumer behavior, online shopping, and customer satisfaction. This cluster represents research themes linked to consumer experience, purchasing decisions, and the factors that drive sales performance in E-commerce contexts.

The purple cluster emphasizes trust, social commerce, purchase intention, and live streaming, reflecting the behavioral and psychological aspects of online shopping and consumer trust in digital environments.

Overall, the analysis shows that “electronic commerce” and “E-commerce” occupy central positions within the keyword network, demonstrating their key role in connecting diverse research themes from marketing and consumer behavior to supply chain management and technological innovation.

5. Discussion of Results

5.1. Evolution and Research Trends

The temporal evolution of publications in the field of E-commerce reveals a remarkable expansion over the past decade, particularly between 2018 and 2022, when the number of studies experienced exponential growth. This surge coincides with the global acceleration of

digital transformation and the widespread adoption of online platforms, particularly during the COVID-19 pandemic, which reshaped consumer behavior, supply chain models, and business strategies.

After 2022, a relative stabilization is observed, which may indicate the field's transition from an exploratory phase to a more mature stage characterized by theoretical consolidation and specialization. This pattern suggests that E-commerce research evolves in response to socio-economic shifts and technological disruptions, reflecting its dynamic and adaptive nature. The continuing interest in E-commerce also mirrors its increasing relevance as a core component of the global digital economy.

5.2. *Scientific Productivity and Influence*

The analysis of authorship and institutional productivity demonstrates that research in E-commerce is both broadly distributed and unevenly concentrated. A large number of authors have contributed only one or two papers, indicating a diverse and decentralized research community. However, a smaller group of prolific and highly cited authors has significantly shaped the direction of the field.

At the institutional level, universities from China, the United States, and India exhibit the highest research output, confirming their leading roles in digital economy scholarship. The dominance of Asian institutions, particularly Chinese universities, reflects both strong governmental support for digital innovation and the region's rapid E-commerce market expansion.

In contrast, the relatively lower productivity from African and Middle Eastern institutions underscores persistent regional disparities in digital research infrastructure and funding. These findings highlight the need for broader participation and more equitable research collaboration to ensure global inclusivity in E-commerce knowledge production.

5.3. *Collaborative Structures*

The co-authorship analysis revealed a complex yet fragmented collaboration network. While several large clusters of international collaboration were identified, many authors still operate within isolated national or institutional boundaries.

The largest and most interconnected collaborations were found among scholars from China, the United States, the United Kingdom, and India, indicating their centrality in global E-commerce research. European collaboration networks particularly those involving Germany, Spain, and Italy also play a key bridging role, linking different thematic and regional clusters.

However, the overall network density remains moderate, suggesting limited inter-regional exchange. Strengthening cross-continental partnerships, especially with emerging economies in Africa and the Middle East, could significantly enhance research integration and foster more diverse theoretical perspectives. At the institutional level, universities such as Tsinghua University, University of Cambridge, and Indian Institute of Technology act as influential hubs facilitating multi-institutional research projects.

5.4. *Thematic Structure through Keywords*

The keyword co-occurrence analysis generated a five-cluster structure, revealing the intellectual and thematic organization of E-commerce research.

The red cluster is centered on “Electronic commerce”, representing the conceptual and historical core of the field. It encompasses research focusing on online business models, digital transactions, and the evolution of E-commerce ecosystems.

The green cluster revolves around “E-commerces” and includes related topics such as commerce platforms, supply chains, and logistics. This cluster highlights the infrastructural

and operational dimension of E-commerce, emphasizing integration, efficiency, and global connectivity.

The blue cluster reflects the technological innovation dimension, encompassing terms like machine learning, data mining, and recommender systems. This area illustrates the growing intersection between E-commerce and artificial intelligence, focusing on automation, personalization, and predictive analytics.

The yellow cluster, centered on “sales” and “consumer behavior”, emphasizes the psychological and behavioral aspects of online shopping. It explores how consumer attitudes, trust, and satisfaction influence purchasing intentions and digital sales performance.

Finally, the purple cluster focuses on trust, social commerce, and purchase intention, representing emerging behavioral and social themes that redefine customer interaction in digital environments.

Overall, these clusters reveal a highly interdisciplinary field, integrating perspectives from marketing, information systems, management science, and consumer psychology. The dominance of “electronic commerce” and “E-commerce” as central nodes demonstrates the conceptual coherence of the field despite its thematic diversity.

5.5. Research Gaps and Future Directions

The bibliometric evidence identifies several promising directions for future E-commerce research.

First, the fragmented nature of co-authorship networks suggests a need to enhance international and cross-institutional collaboration, particularly between developed and developing regions. This would promote knowledge diffusion and capacity building.

Second, while technological innovation (e.g., AI, blockchain, and big data) is a dominant theme, there remains a gap in understanding ethical, regulatory, and sustainability challenges associated with E-commerce expansion. Future studies could explore responsible innovation frameworks and digital consumer protection policies.

Third, the limited representation of research from Africa, Latin America, and the Middle East points to a geographic research imbalance that should be addressed through inclusive funding programs and international partnerships.

Finally, emerging areas such as social commerce, live streaming, and sustainable E-commerce warrant greater scholarly attention, as they reflect evolving consumer cultures and environmental priorities in the digital economy.

In summary, the discussion of results indicates that E-commerce research is a rapidly expanding, interdisciplinary, and globally significant field. While it has achieved considerable conceptual maturity, continued progress will depend on strengthening global collaboration, addressing ethical concerns, and aligning digital innovation with sustainability goals.

6. Conclusion

This study provided a bibliometric overview of global research on E-commerce between 2015 and 2025. The findings demonstrate that E-commerce has evolved into a mature, multidisciplinary field driven by technological innovation and changing consumer behaviors. The growing academic attention reflects its strategic role in digital economies and business transformation.

The analysis also revealed that scientific production is geographically concentrated, with China, the United States, and India acting as global leaders. However, limited participation from developing regions highlights the need for more inclusive research collaboration.

From a thematic perspective, five interconnected clusters were identified, confirming the diversity of E-commerce research from operational and technological frameworks to behavioral and social dynamics.

Overall, the study contributes to a clearer understanding of how E-commerce research has developed, where it currently stands, and where it is heading. Future studies should focus on

integrating sustainability, ethics, and digital inclusivity into the next phase of E-commerce scholarship to ensure balanced and responsible growth.

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