Strategic: Journal of Management Sciences

journal homepage:
http://jurnal.stiesultanagung.ac.id/index.php/strategic

E-ISSN 2798-0049

Trend on E-Commerce Researches: A Portrait Using VOSviewer

Joko Hadi Purnomo[1], Niswatin Nurul Hidayati[2], Rizka Dibi Arryanti Saputri[3], Siti Riska Novianti[4]

[1]Institut Agama Islam Al Fatimah Bojonegoro
Institut Teknologi dan Bisnis Tuban
e-mail:joko.hpurnomo@gmail.com[1],
niswatinnh@gmail.com[2], rizkadibi10@gmail.com[3],
noviantirizka40@gmail.com[4]

Penulis Korespondensi. Niswatin Nurul Hidayati
e-mail : niswatinnh@gmail.com

A R T I K E L I N F O

Artikel History:
Menerima 03 Agustus 2023
Revisi 13 Agustus 2023
Diterima 14 Agustus 2023
Tersedia Online 21 Agustus 2023

Kata kunci :
E-commerce, Bibliographic analysis, VOSviewer

A B S T R A K

Objektif. Fenomena e-commerce telah berdampak besar pada berbagai industri, termasuk ritel, logistik, dan pemasaran. Ini telah mengubah ritel bata-dan-mortir tradisional, yang mengarah pada munculnya pasar online dan pertumbuhan merek direct-to-consumer (D2C). E-commerce juga telah mengganggu manajemen rantai pasokan, mendorong kebutuhan pemenuhan pesanan yang efisien dan solusi pengiriman jarak jauh. Tujuan dari penelitian ini adalah untuk melihat peta penelitian e-commerce secara global.
Metode Riset. Penelitian ini menggunakan analisis bibliografi dengan VOSviewer. Sumber data yang digunakan adalah database Scopus yang diperoleh dari laman https://www.sciencedirect.com/.
Hasil. Berdasarkan analisis visualisasi VOSviewer, terlihat bahwa penelitian tentang e-commerce secara global didominasi dalam kaitannya dengan digitalisasi, kecerdasan buatan, dan Covid-19. Kajian kepustakaan ini memberikan implikasi bagi peneliti untuk melihat research gap.
Kesimpulan. Berdasarkan penjelasan sebelumnya, dapat disimpulkan bahwa setelah disortir dengan memilih publikasi yang bersifat open access, diperoleh hasil sebanyak 13.687. Kemudian, hasilnya disortir lagi dengan memilih bidang usaha, manajemen, dan akuntansi, serta ekonomi, ekonometrika, dan keuangan.

E-ISSN 2798-0049 ©2023 Strategic: Journal of Management Sciences. All rights reserved

A R T I C L E I N F O

Artikel History:
Recived 03 August 2023
Revision 13 August 2023
Accepted 14 August 2023
Avalilable Online 21 August 2023

Keywords :
E-commerce, Bibliographic analysis, VOSviewer

A B S T R A C T

Objective. The e-commerce phenomenon has had a profound impact on various industries, including retail, logistics, and marketing. It has transformed traditional brick-and-mortar retail, leading to the rise of online marketplaces and the growth of direct-to-consumer (D2C) brands. E-commerce has also disrupted supply chain management, driving the need for efficient order fulfillment and last-mile delivery solutions. The objective of this research was to look at the global e-commerce research map.
Research Methods. This research used bibliographic analysis with VOSviewer. The data source used was the Scopus database obtained from the https://www.sciencedirect.com/ page.
Results. Based on the VOSviewer visualization analysis, it could be seen that research on e-commerce globally was dominated in relation to digitalization, artificial intelligence, and Covid-19. This bibliographic study provided implications for researchers to see research gaps.
Conclusion. Based on the previous explanation, it can be concluded that after sorting by selecting publications that are open access, there are 13,687 results. Then, the results are sorted again by selecting the fields of business, management, and accounting, as well as economics, econometrics, and finance.

© 2023 Strategic: Journal of Management Sciences. All rights reserved.

1. PENDAHULUAN

E-commerce, short for electronic commerce, is the phenomenon of conducting commercial transactions over the internet. It involves buying and selling goods, services, and information electronically, and it has revolutionized the way businesses operate and consumers shop. E-commerce encompasses various models, including business-to-consumer (B2C), business-to-business (B2B), consumer-to-consumer (C2C), and more recently, mobile commerce (m-commerce) and social commerce. The rise of e-commerce can be attributed to several factors, including the widespread adoption of the internet and mobile technologies, improvements in online security and payment systems, and the convenience it offers to both buyers and sellers. With e-commerce, consumers can shop from the comfort of their homes, access a wide range of products, and compare prices across different platforms. For businesses, e-commerce opens up new markets, reduces overhead costs, and allows for personalized marketing and customer engagement (Kim & Peterson, 2017) (Kharisma et al., 2022) (Turban et al., 2017)

The e-commerce phenomenon has had a profound impact on various industries, including retail, logistics, and marketing. It has transformed traditional brick-and-mortar retail, leading to the rise of online marketplaces and the growth of direct-to-consumer (D2C) brands. E-commerce has also disrupted supply chain management, driving the need for efficient order fulfillment and last-mile delivery solutions. In marketing, e-commerce platforms utilize data analytics and personalized recommendations to enhance the customer experience and boost sales (Turban et al., 2017) (Kharisma et al., 2022)

E-commerce, the electronic buying and selling of goods and services over the internet, has revolutionized the global business landscape. The continuous growth of digital technologies and the internet's ubiquity have transformed the way consumers shop and businesses operate. This evolution has led to a surge in e-commerce research conducted by scholars worldwide. As the field of e-commerce continues to gain prominence, it becomes essential to examine the current trends in e-commerce research to identify the key areas of focus, emerging topics, and the most influential authors and publications. A bibliographic analysis of e-commerce research on a global scale promises to shed light on the direction of this dynamic and rapidly evolving field.

The rise of e-commerce has paved the way for new research avenues across various disciplines, including marketing, economics, information technology, consumer behavior, and logistics. Scholars and researchers have been actively investigating e-commerce's impact on traditional commerce, the role of technology in enhancing user experience, and the implications of changing consumer preferences. Furthermore, with the increasing reliance on artificial intelligence, big data, and blockchain technologies in e-commerce, a bibliographic analysis can help identify how these emerging areas have shaped the

research landscape.

Understanding the global trends in e-commerce research is crucial for businesses, policymakers, and academics alike. By analyzing the distribution of research articles across different regions and countries, this bibliographic analysis can highlight regional disparities in e-commerce research emphasis. Additionally, examining the temporal trends in e-commerce research can reveal the evolving priorities and areas of interest over time. These insights can aid stakeholders in identifying potential collaborations, research gaps, and areas for further investigation.

Moreover, a bibliographic analysis can shed light on the most influential authors and institutions in the field of e-commerce research. Recognizing the scholars and research institutions with the most significant contributions can help in promoting collaboration and knowledge exchange within the global e-commerce research community. Furthermore, this analysis can also highlight cross-disciplinary collaborations, as e-commerce research often spans multiple fields, fostering a multidisciplinary approach to understanding the complexities of this digital domain. As e-commerce continues to be a catalyst for economic growth and innovation, this bibliographic analysis can also identify emerging research topics that may shape the future of the industry. Whether it be investigating the adoption of new payment systems, exploring the implications of augmented reality on online shopping, or assessing the environmental impact of e-commerce logistics, understanding the emerging trends in e-commerce research is essential for businesses and policymakers seeking to stay ahead in this rapidly evolving landscape.

Bibliographic analysis using VOSviewer is a powerful method to visually explore and analyze the structure of scientific literature based on bibliographic data. VOSviewer helps researchers create bibliometric visualizations and maps. It allows users to analyze citation networks, co-authorship patterns, and co-citation relationships among scientific publications. The process of conducting a bibliographic analysis using VOSviewer typically involves Data Collection: The first step is to collect bibliographic data, such as titles, abstracts, authors, keywords, and references, from a relevant database or source. Common sources include academic databases like Web of Science, Scopus, PubMed, Google Scholar, or even specialized databases focusing on a particular field of research. Data Preparation: After obtaining the bibliographic data, it needs to be formatted and organized into a suitable file format. VOSviewer supports several file formats, such as BibTeX, RIS, or plain text files, making it easy to import the data into the software. Importing Data into VOSviewer: Once the data is prepared, it can be imported into VOSviewer. The software will automatically analyze the data and create visualizations based on various bibliometric measures. Network Visualization: VOSviewer generates network visualizations that represent the relationships between publications.

The most common type of visualization is a co-authorship network, where authors are represented as nodes, and links connect authors who have collaborated on publications together. Other types of visualizations include co-citation networks and keyword co-occurrence networks. Clustering and Analysis: VOSviewer allows users to apply clustering algorithms to group related publications based on their citation or co-occurrence patterns. Clustering helps identify research themes or subfields within the literature. Data Analysis: The software provides various bibliometric indicators, including citation counts, co-citation strengths, and keyword occurrences, to analyze the influence and impact of publications and authors. Visual Interpretation: Researchers can visually interpret the generated maps to identify important authors, influential publications, research trends, and key thematic areas in the field. The size and color of the nodes in the visualizations represent the significance and impact of the items being analyzed. By using VOSviewer, researchers can gain valuable insights into the structure and development of scientific literature, identify research trends, and make informed decisions for further exploration and collaboration. It was as previously conducted by some researchers, including (La Paz et al., 2015) (Xie, 2021) (Fernando López-Aguirre et al., 2022) (ZHAVORONOK & ALFIMOVA, 2021) (Nagpal et al., 2021) (Pan et al., 2021) (Viswanathan & Telukdarie, 2022) (Mucowska, 2021)

In conclusion, a comprehensive bibliographic analysis of e-commerce research globally is a valuable endeavor that can provide insights into the key trends and developments in this dynamic field. By examining the distribution of research articles across regions and time, identifying influential authors and institutions, and uncovering emerging research topics, this analysis can contribute to a deeper understanding of e-commerce's current state and its potential future directions. This research background sets the stage for a rigorous examination of the vast and diverse body of e-commerce literature, offering

valuable knowledge for stakeholders and researchers aiming to navigate the intricate landscape of global e-commerce.

2. STUDI LITERATUR

There were some previous researches which had conducted the similar research. For example, (ZHAVORONOK & ALFIMOVA, 2021). This paper provides a bibliographic analysis of scientific papers in the field of e-commerce. The study uses bibliographic and comparative analysis to understand the state of research in this area and its potential for further study. The research methodology includes the use of general and special scientific methods, such as analysis, measurement, comparison, generalization, and clustering. The information base of the research is the analytical information of the Scopus database on the number of scientific publications, within which the issues of the e-commerce development were studied. The paper concludes that e-commerce is a rapidly evolving field with a high level of research relevance, and that understanding the state of research in this area is an integral part of substantiating new theoretical and applied provisions for the e-commerce development.

Then, research conducted by (Nagpal et al., 2021). The paper is a bibliographic analysis conducted by Radhakrishnan Viswanathan and Arnesh Telukdarie from the University of Johannesburg, South Africa. The analysis focuses on the role of 4IR technologies in waste management practices. The authors use VOSviewer software to conduct citation analysis, co-authorship analysis, and keyword analysis. The paper provides insights into the current state of research on 4IR technologies in waste management, including the challenges faced in implementing these technologies and potential solutions. Overall, the paper contributes to the broader conversation on sustainable waste management practices.

Another research carried out by (Pan et al., 2021). This paper explores the relationship between e-commerce and digital transformation, highlighting the potential for improved productivity and profitability in various industries. It analyzes research trends, popular publications, author keywords, and organizations to identify current academic hot spots. The paper also presents tables ranking the number of papers published and the average number of citations per year, and identifies the top-ranked papers.

Then, (Mucowska, 2021) conducted research, in which it was literature review that analyzed the current research trends and available solutions for making urban last-mile deliveries more sustainable in the e-commerce market. The review identifies the negative externalities associated with the growth of e-commerce and urban freight transport, such as increased traffic congestion, emissions, and noise pollution. It also highlights the potential benefits of using ICT and smart solutions to improve the efficiency of e-commerce last-mile deliveries in congested urban areas, decrease the number of road accidents, and increase safety in the streets. The review identifies key research areas and trends in the field of environmentally sustainable solutions for urban last-mile deliveries and provides opportunities for further research. The review uses a variety of research methodologies, including case studies, statistics and modeling, questionnaires and surveys, experimental or pilot studies, literature reviews, simulations, and empirical analysis.

3. METODE RISET

This research was conducted by using VOSviewer software. The process of conducting a bibliographic analysis using VOSviewer involved Data Collection: The first step is to collect bibliographic data, such as titles, abstracts, authors, keywords, and references, from a relevant database or source. The source used in this bibliometric research was Scopus. Data Preparation: After obtaining the bibliographic data, it needs to be formatted and organized into a suitable file format. VOSviewer supports several file formats, such as BibTeX, RIS, or plain text files, making it easy to import the data into the software. Importing Data into VOSviewer: Once the data is prepared, it can be imported into VOSviewer. The software will automatically analyze the data and create visualizations based on various bibliometric measures.

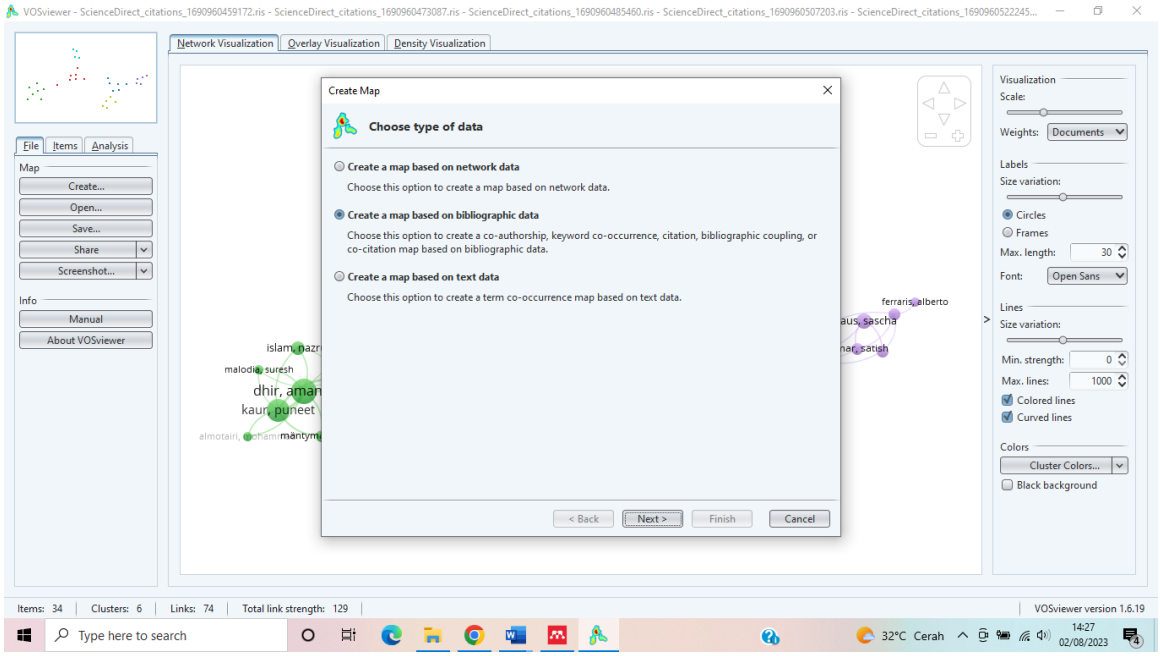

Figure 1. Step 1 of Using VOSviewer

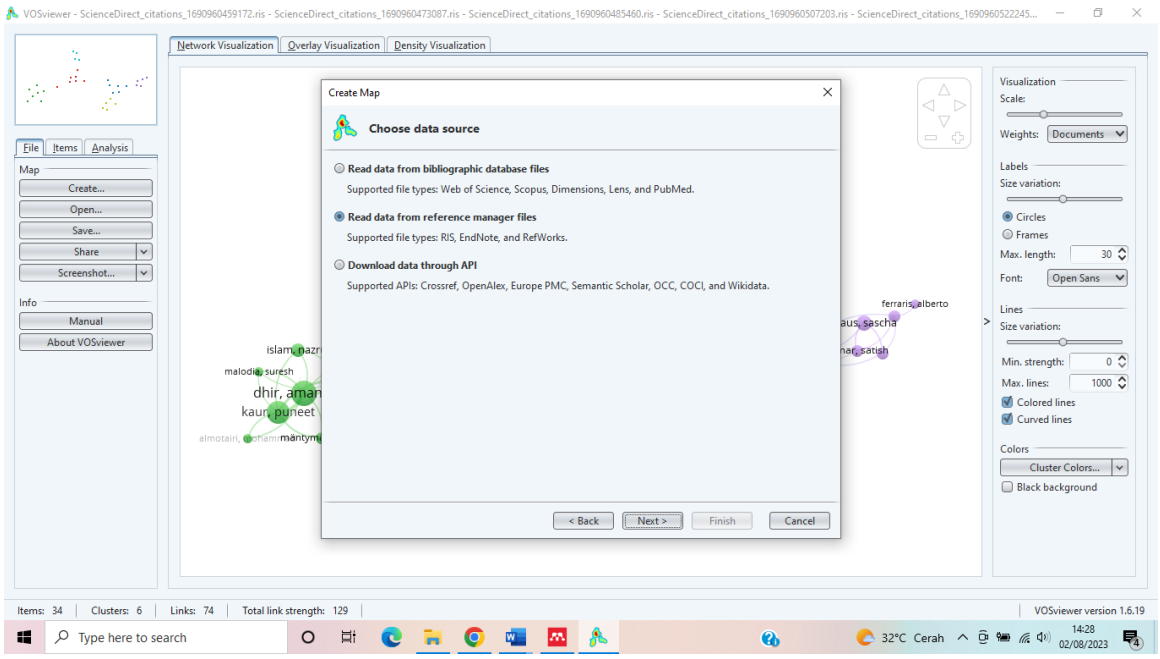

Figure 2. Step 2 of Using VOSviewer

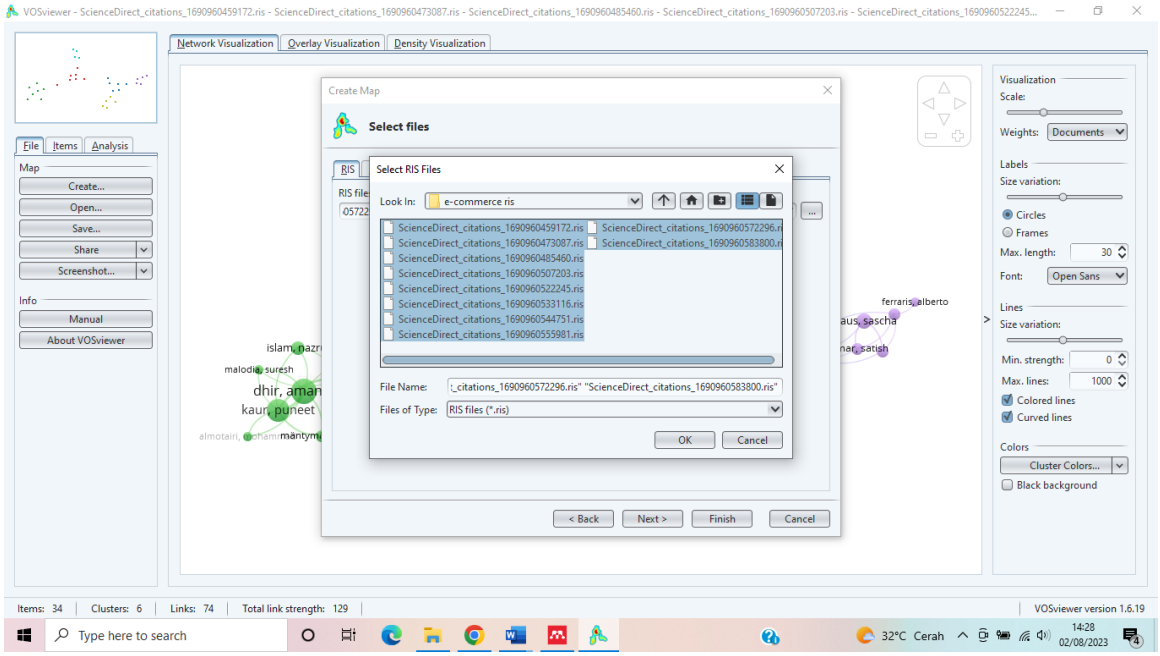

Figure 3. Step 3 of Using VOSviewer

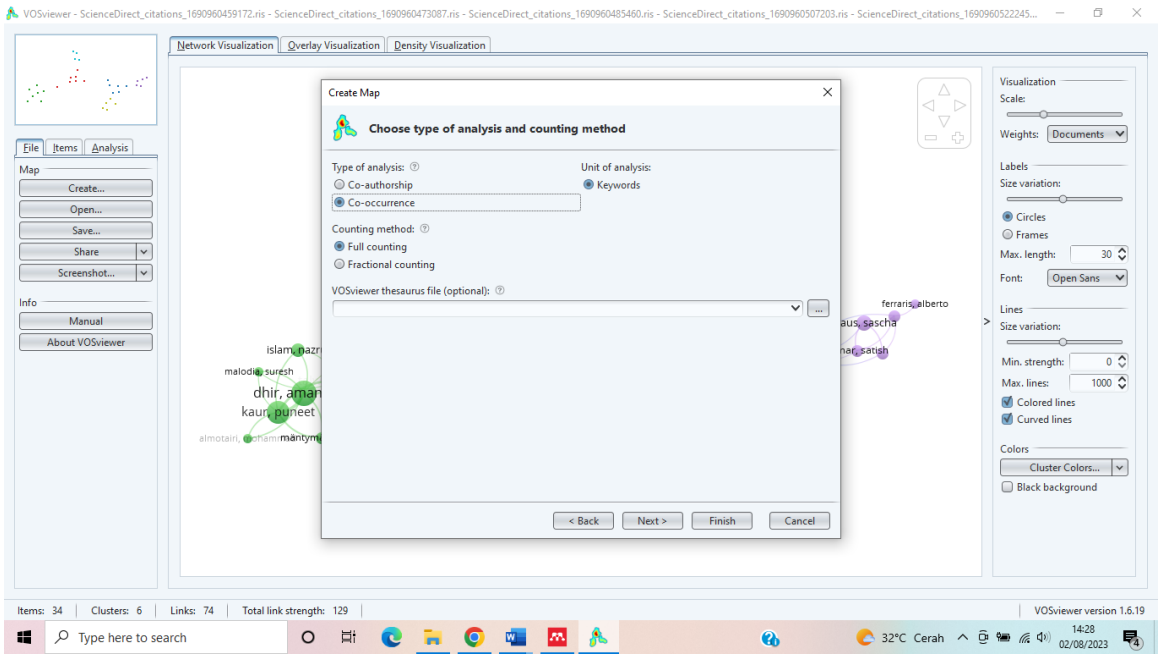

Figure 4. Step 4 of Using VOSviewer

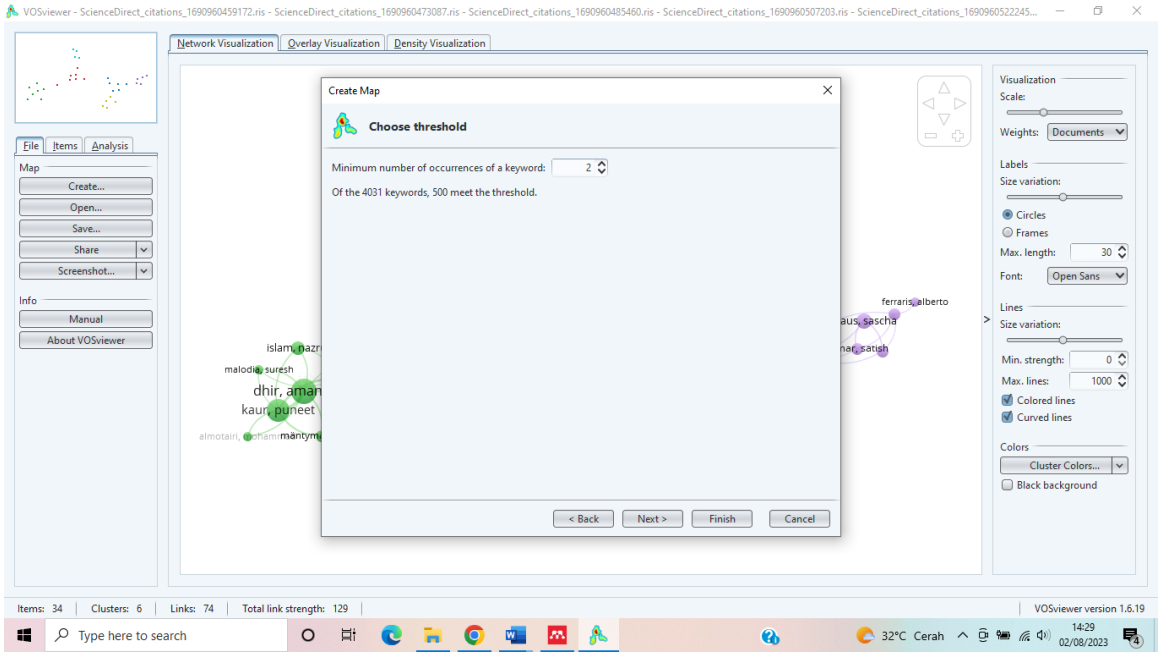

Figure 5. Step 5 of Using VOSviewer

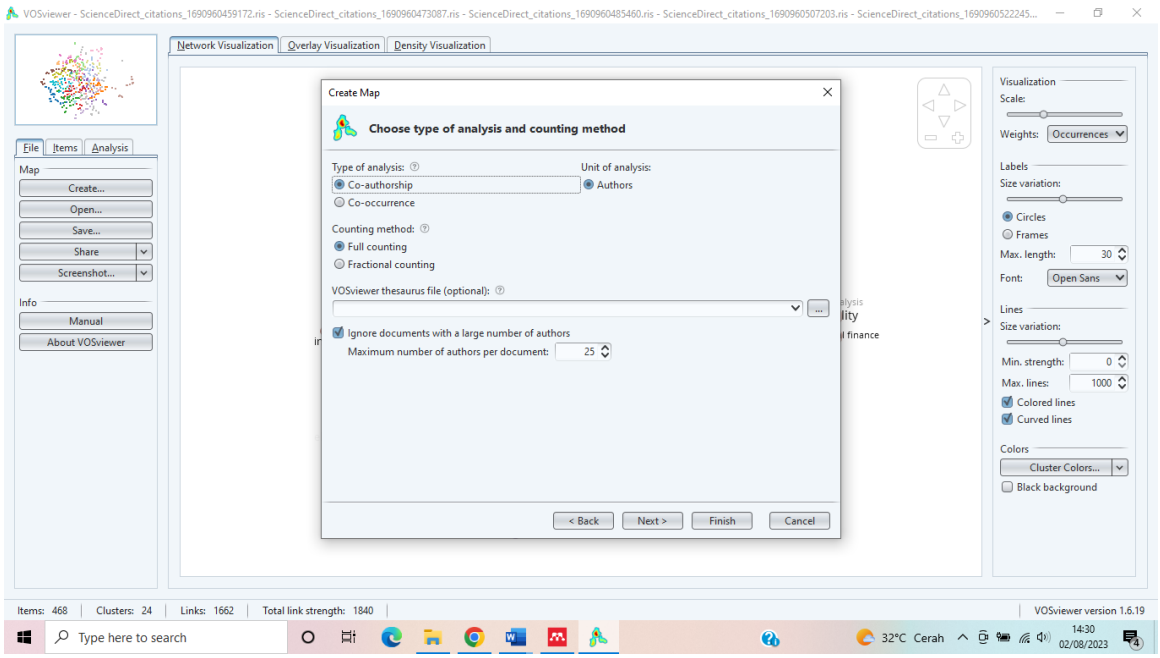

Figure 6. Step 6 of Using VOSviewer

Network Visualization: VOSviewer generates network visualizations that represent the relationships between publications. The most common type of visualization is a co-authorship network, where authors are represented as nodes, and links connect authors who have collaborated on publications together. Other types of visualizations include co-citation networks and keyword co-occurrence networks. Clustering and Analysis: VOSviewer allows users to apply clustering algorithms to group related publications based on their citation or co-occurrence patterns. Clustering helps identify research themes or subfields within the literature. Data Analysis: The software provides various bibliometric indicators, including citation counts, co-citation strengths, and keyword occurrences, to analyze the influence and impact of publications and authors. Visual Interpretation: Researchers can visually interpret the generated maps to identify important authors, influential publications, research trends, and key thematic areas in the field. The size and color of the nodes in the visualizations represent the significance and impact of the items being analyzed. By using VOSviewer, researchers can gain valuable insights into the structure and

development of scientific literature, identify research trends, and make informed decisions for further exploration and collaboration.

4. HASIL DAN PEMBAHASAN

In the Scopus database accessed via https://www.sciencedirect.com/, it was found that there were 123,105 results for the keyword "e-commerce", where these findings came from publications in 2000-2024. The results come from Review articles (3,419), Research articles (82,615), Encyclopedia (1,038), Book chapters (13,822), Conference abstracts (1,584), Book reviews (1,587), Case reports (44), Conference info (524) , Correspondence (433), Data articles (46), Discussion (2,884), Editorials (1,207), Errata (53), Examinations (11), Mini reviews (430), News (1,773), Patent reports (165), Practice guidelines (36), Product reviews (333), Short communications (2,917), Software publications (17), Video articles (1), Other (8,166).

Then, the publication falls into several subject areas, including Computer Science (23,261), Social Sciences (23,079), Business, Management and Accounting (21,668), Engineering (15,410), Economics, Econometrics and Finance (12,454), Decision Sciences (11,635), Environmental Science (11,069), Medicine and Dentistry (10,428), Agricultural and Biological Sciences (10,048), dan Energy (6,492) yang dipublikasikan pada media sebagai berikut Journal of the Franklin Institute (1,705), Procedia Computer Science (1,503), The Lancet (1,399), Decision Support Systems (1,345), Journal of Business Research (1,276), Expert Systems with Applications (1,241), Procedia - Social and Behavioral Sciences (1,224), Computer Law & Security Review (1,220), Electronic Commerce Research and Applications (1,108), Journal of Cleaner Production (1,096), Information & Management (1,058), Technological Forecasting and Social Change (1,044), Computers & Security (966), Journal of Retailing and Consumer Services (870), Computers in Human Behavior (772), European Journal of Operational Research (768), International Journal of Information Management (751), World Development (713), Energy Policy (644), Business Horizons (603), Telecommunications Policy (588), International Journal of Production Economics (577), Computers & Industrial Engineering (561), Network Security (553), Government Information Quarterly (541). However, these results are a combination of both open access and non-open access publications. After sorting by selecting publications that are open access, there are 13,687 results. Then, the results are sorted again by selecting the fields of business, management, and accounting, as well as economics, econometrics, and finance. So the results found were 2,186 articles.

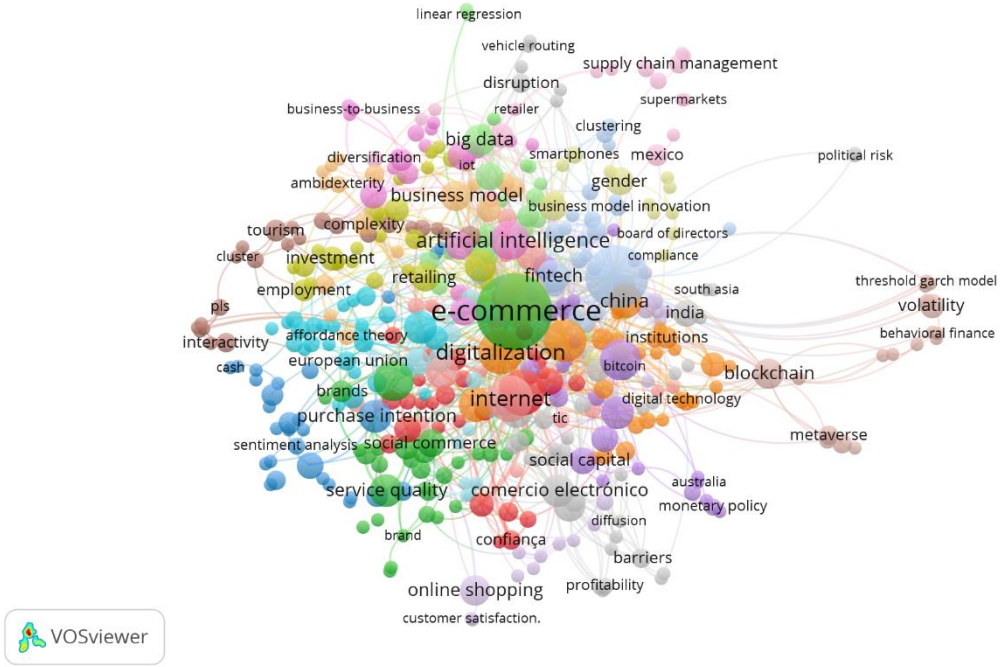

Figure 7. Network Visualization of e-commerce term

5.

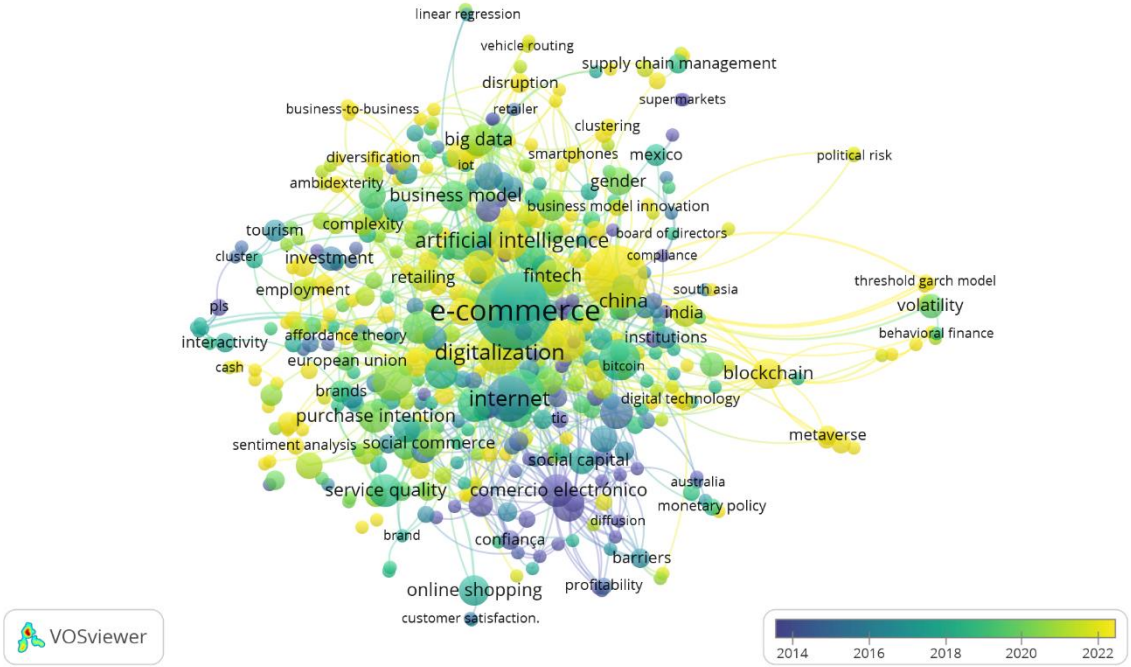

Figure 8. Overlay Visualization of e-commerce term

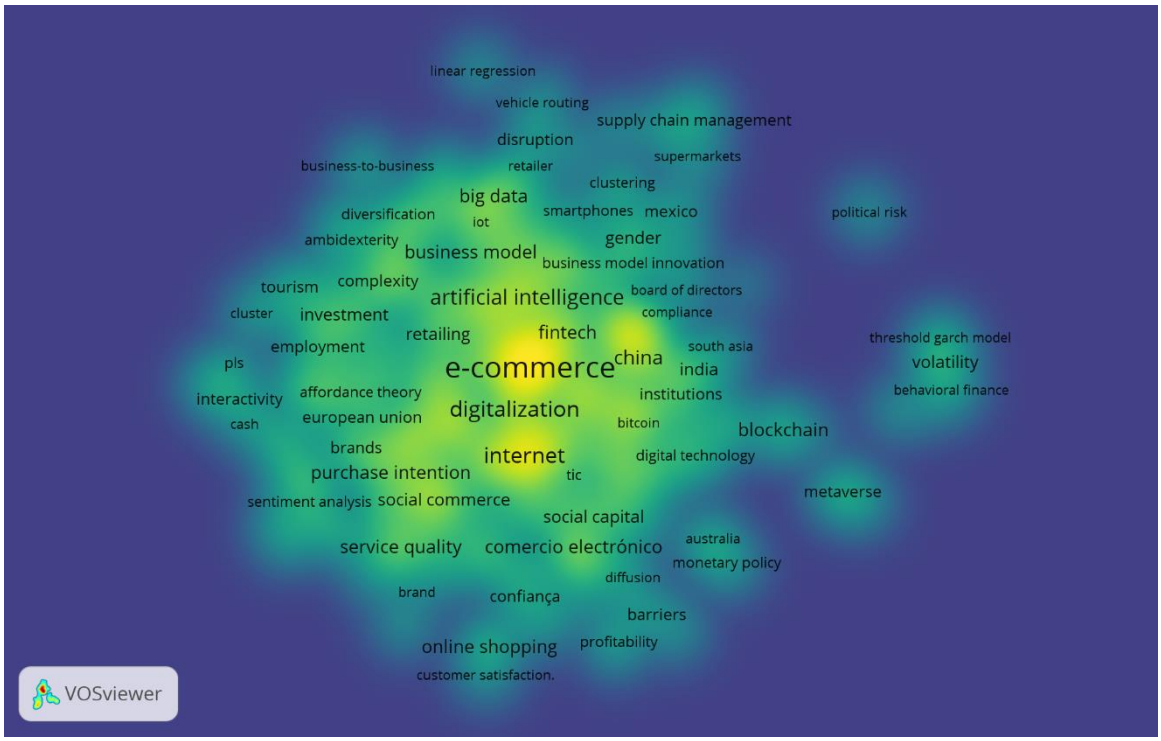

Figure 9. Density Visualization of e-commerce term

Then, the distribution of writers or researchers can be portrayed in the picture is as follows:

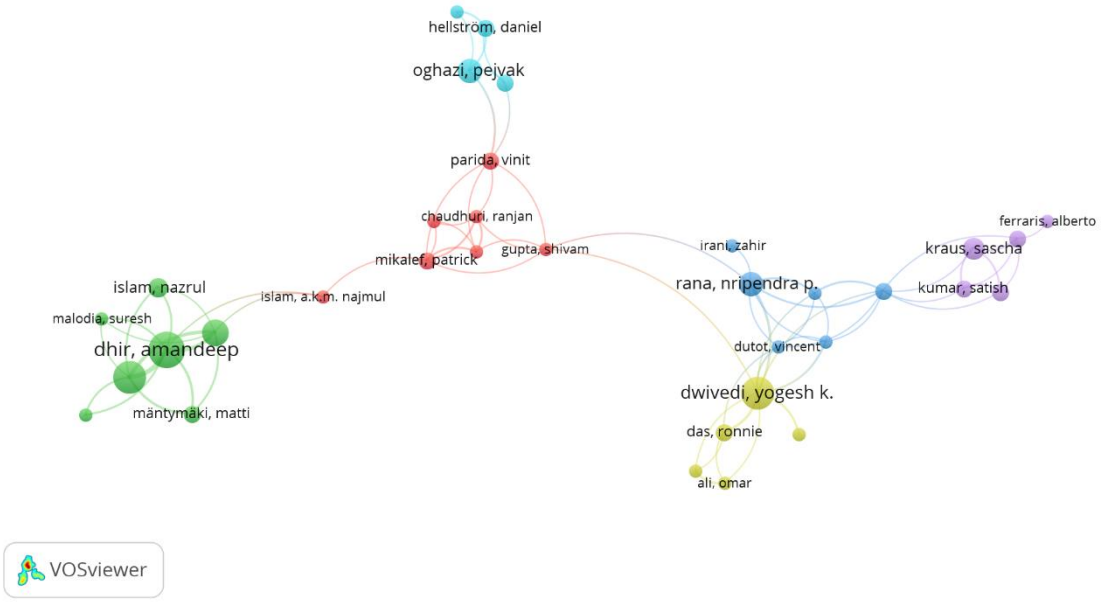

Figure 10. Network Visualization of e-commerce researchers

Based on the visualization above, it appears that the dominance of research related to e-commerce is related to other terms, namely digitalization, Covid-19 and artificial intelligence. The following is a more specific description:

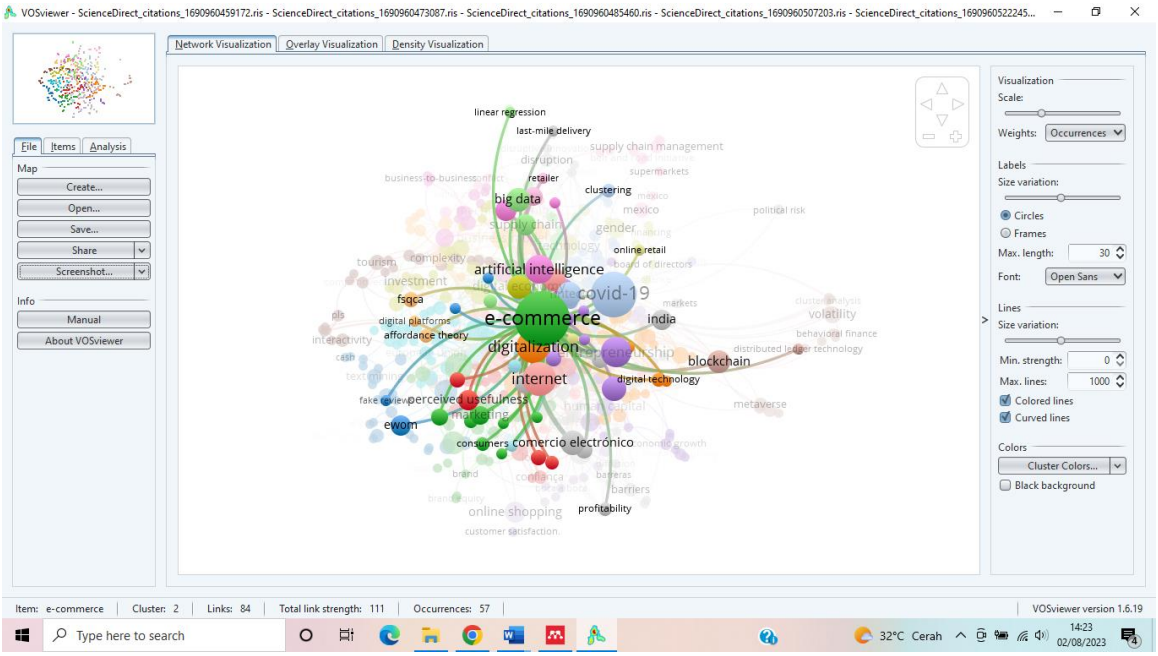

Figure 11. Overlay Visualization of e-commerce term

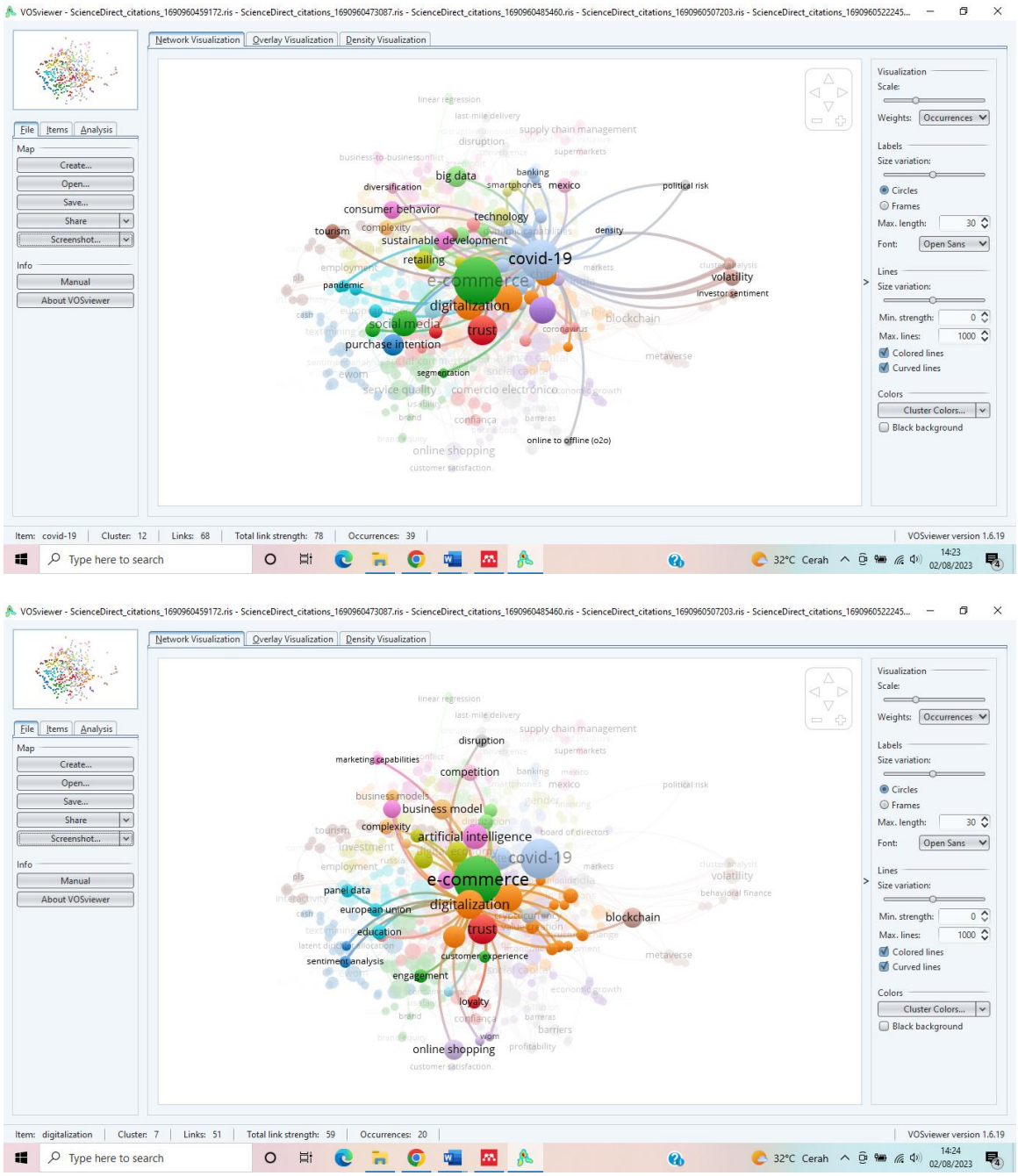

Figure 12. Overlay Visualization of e-commerce term

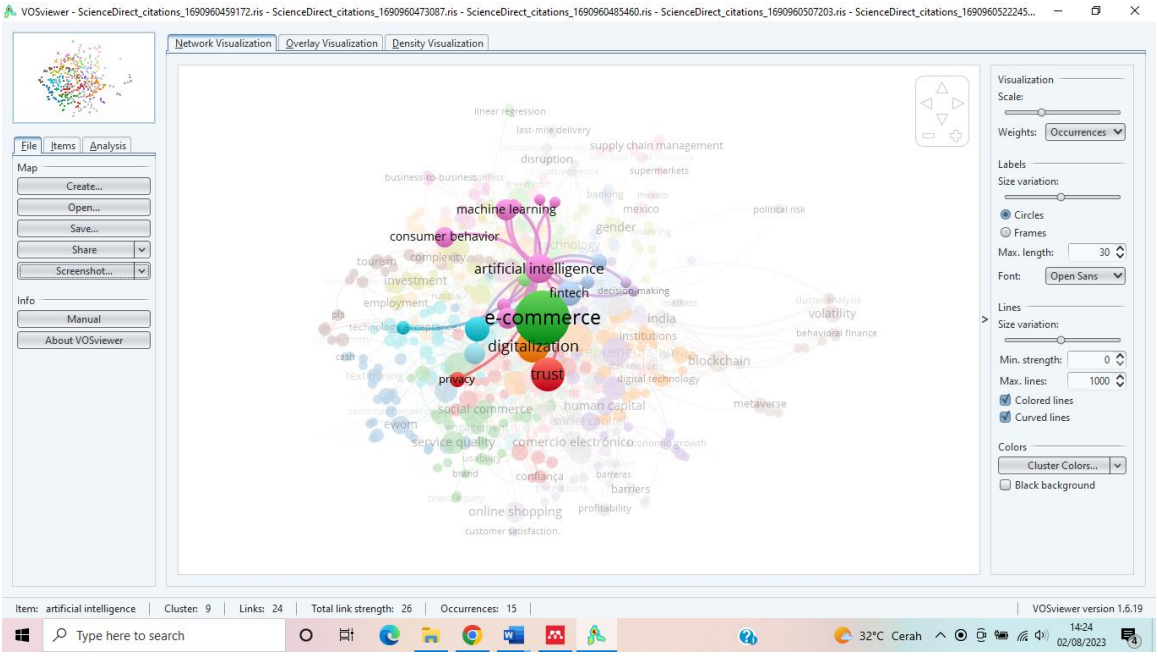

Figure 13. Overlay Visualization of e-commerce term

The correlation between e-commerce and artificial intelligence (AI) is significant and continues to grow stronger as technology advances. AI is playing a transformative role in the e-commerce industry, revolutionizing the way businesses operate, and enhancing the overall shopping experience for customers. Here are some key aspects of their correlation: Personalization: AI enables e-commerce platforms to offer personalized shopping experiences to individual customers. By analyzing vast amounts of data, AI algorithms can understand customer preferences, behavior, and purchase history, allowing e-commerce websites to recommend products and services tailored to each user's interests and needs. Product Recommendations: AI-powered recommendation systems are widely used in e-commerce to suggest relevant products to customers. These recommendations are based on various factors such as past purchases, browsing history, and customer demographics. By offering personalized product suggestions, e-commerce platforms can increase customer engagement and conversion rates. Chatbots and Customer Support: AI-powered chatbots are being used by e-commerce businesses to provide instant and efficient customer support. Chatbots can handle customer inquiries, assist with product searches, and address common issues, improving the overall customer experience and reducing the workload on customer support teams. Fraud Detection and Security: AI algorithms can analyze patterns and detect anomalies in real-time, helping e-commerce companies identify and prevent fraudulent activities, such as credit card fraud and account hacking. AI-based security systems add an extra layer of protection, ensuring a safer shopping environment for customers. Inventory Management and Supply Chain Optimization: AI can be utilized to optimize inventory management and supply chain operations in e-commerce. By analyzing historical data, market trends, and demand patterns, AI algorithms can predict inventory needs, streamline logistics, and reduce costs for retailers. Price Optimization: AI can analyze pricing data and market dynamics to help e-commerce businesses optimize their pricing strategies. Dynamic pricing algorithms can adjust product prices in real-time based on factors like demand, competitor pricing, and customer behavior, maximizing revenue and competitiveness. Image Recognition and Visual Search: AI-powered image recognition technology enables e-commerce platforms to implement visual search functionality. Customers can take a picture of a product they like or upload an image, and the AI system will find similar or related items from the e-

commerce catalog, facilitating product discovery. Overall, the integration of AI in e-commerce is reshaping the industry, making it more efficient, customer-centric, and data-driven. As AI technologies continue to advance, we can expect even more innovative applications in e-commerce, further enhancing the shopping experience and driving business growth.

The COVID-19 pandemic has had a profound impact on the e-commerce industry, leading to a significant correlation between the two. Several factors have contributed to this correlation: Shift in Consumer Behavior: During the pandemic, lockdowns, and social distancing measures forced people to stay at home, limiting their ability to visit physical stores. As a result, there was a massive shift in consumer behavior towards online shopping. E-commerce platforms became the primary avenue for people to purchase goods and services, leading to a surge in e-commerce sales. Increased Demand for Essentials and Contactless Shopping: With concerns about virus transmission, consumers preferred to buy essential items, groceries, and other daily necessities online. E-commerce provided a convenient and safer way to shop without the need to physically visit stores, reducing the risk of exposure to the virus. Growth of Online Marketplaces: E-commerce marketplaces, such as Amazon, Alibaba, and others, experienced tremendous growth during the pandemic. These platforms acted as one-stop shops for consumers, offering a wide range of products from various sellers and facilitating quick and efficient deliveries. Digital Transformation of Businesses: To adapt to the new reality, many traditional brick-and-mortar retailers and businesses had to embrace e-commerce rapidly. This led to a significant increase in the number of businesses launching online stores and implementing digital sales strategies. Demand for Health and Safety Products: The pandemic created a surge in demand for health and safety-related products, such as masks, sanitizers, and medical supplies. E-commerce platforms played a critical role in ensuring the availability and distribution of these items to consumers worldwide. Contactless Payment Solutions: E-commerce facilitated the adoption of contactless payment methods, reducing the need for physical cash transactions. This not only provided a safer payment option for customers but also expedited the checkout process, enhancing the overall shopping experience. Logistics and Delivery Challenges: The surge in e-commerce demand also presented challenges for logistics and delivery networks. Couriers and shipping companies faced increased pressure to meet delivery demands while adhering to safety protocols, such as contactless deliveries. Accelerated Technological Innovations: The pandemic accelerated technological innovations in the e-commerce industry. For example, AI-powered chatbots and virtual assistants were deployed to handle customer inquiries, and advanced analytics tools helped businesses understand consumer behavior better. Impact on Small Businesses: The pandemic disproportionately affected small businesses, but e-commerce provided them with an opportunity to reach a wider audience and maintain their operations during lockdowns.

Overall, COVID-19 acted as a catalyst for the growth and transformation of the e-commerce industry. While it presented challenges, it also highlighted the importance of digital commerce in ensuring the continuity of businesses and meeting the changing needs of consumers during unprecedented times. Previously, research by (La Paz et al., 2015). This research article analyzes the corpus of knowledge in the field of e-commerce by examining the frequency of appearance of various topics in a specialized journal on e-commerce. The study identifies the bright, light, and blind/blank spots in the field, highlighting areas where more research is needed. The analysis shows that topics related to electronics-networks mediums, architecture structure, process, dependable information, sellers-Business entities, and manage products/services have been frequently researched, while legal concerns, privacy, security, and mobile connectivity are blind/blank spots. The study concludes that more knowledge generation is needed to better understand the impacts of online and mobile information availability in customer's processing of a narrowly targeted marketing campaign.

Then, research by (Xie, 2021), in which this research article discusses the theoretical research and commercial applications of big data in business management. It proposes a business

management development model based on big data to increase efficiency by nearly 30%. The article uses bibliographic analysis, benchmark analysis, graphical analysis, and case analysis to classify and divide different types of big data and propose different big data solutions. The article concludes that big data has high commercial value and transformative power in the business management model, leading to the reconstruction of the company's form.

6. KESIMPULAN

Based on the previous explanation, it can be concluded that after sorting by selecting publications that are open access, there are 13,687 results. Then, the results are sorted again by selecting the fields of business, management, and accounting, as well as economics, econometrics, and finance. So found 2,186 results. Based on the VOSviewer visualization analysis, it could be seen that research on e-commerce globally was dominated in relation to digitalization, artificial intelligence, and Covid-19. This bibliographic study provided implications for researchers to see research gaps. This article had some limitations, for example, the article did not include the non-open access articles. Besides, the as the bibliographic research, the authors did not mention the most relevance articles related to the theme. This can be the gap used by the future researchers related to the similar theme.

DAFTAR PUSTAKA

Fernando López-Aguirre, J. I., Luis López-Salazar, J. I., & Marcelo Almeida-López III, D. (2022). Digital business ecosystem: Bibliographic analysis in globalization. *FIPCAEC*, *32*(3), 193–205. https://doi.org/10.23857/fipcaec.v7i1

Kharisma, H. P., Melodia Adiprasetya, K., Djohan, S. F., & Gunadi, W. (2022). Factors Influencing Online Video Advertising That Have an Impact on Brand Awareness, Brand Image, and Purchase Intention. *Budapest International Research and Critics Institute-Journal (BIRCI-Journal)*. https://doi.org/10.33258/birci.v5i2.4705

Kim, Y., & Peterson, R. A. (2017). A Meta-analysis of Online Trust Relationships in E-commerce. *Journal of Interactive Marketing*, *38*, 44–54. https://doi.org/10.1016/j.intmar.2017.01.001

La Paz, A. I., Ramaprasad, A., Syn, T., & Vasquez, J. (2015). Editorial: An ontology of E-commerce - Mapping a relevant corpus of knowledge. In *Journal of Theoretical and Applied Electronic Commerce Research* (Vol. 10, Issue 2, pp. I–IX). Universidad de Talca. https://doi.org/10.4067/S0718-18762015000200001

Mucowska, M. (2021). Trends of environmentally sustainable solutions of urban last-mile deliveries on the e-commerce market—a literature review. In *Sustainability (Switzerland)* (Vol. 13, Issue 11). MDPI AG. https://doi.org/10.3390/su13115894

Nagpal, G., Chanda, U., & Seth, H. (2021). The First Half-Century of Decision Modelling for Substitutable Products: A Literature Review and Bibliographic Analysis. *Operations And Supply Chain Management*, *14*(3), 261–276.

Pan, C. L., Yu, Y., Zhou, W., Zheng, W., Ou, C., & Xu, H. (2021). Research on Digitizing and E-commerce in the Era of the Digital Economy. *Proceedings - 2nd International Conference on E-Commerce and Internet Technology, ECIT 2021*, 189–192. https://doi.org/10.1109/ECIT52743.2021.00050

Turban, E., King, D., Lee, J. K., Liang, T.-P., & Turban, D. C. (2017). A Meta-analysis of Online Trust Relationships in E-commerce. *Journal of Interactive Marketing*, *38*. http://www.springer.com/series/10099

Viswanathan, R., & Telukdarie, A. (2022). The role of 4IR technologies in waste management practices-a bibliographic analysis. *Procedia Computer Science*, *200*, 247–256. https://doi.org/10.1016/j.procs.2022.01.223

Xie, Z. (2021). Development Model of Business Management Based on Big Data. *E3S Web of Conferences*, *275*. https://doi.org/10.1051/e3sconf/202127501041

ZHAVORONOK, A., & ALFIMOVA, A. (2021). E-Commerce: A Bibliographic Analysis. *European Journal Of Accounting, Finance & BusinesS*.