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ANALYSIS OF TRENDS IN LAST-MILE DISTRIBUTION MODELS THROUGH VIRTUAL PLATFORMS FOR E-COMMERCE COMPANIES. A SYSTEMATIC LITERATURE REVIEW.

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ABSTRACT
Taking as a reference the logistical activities carried out within the retail sector, essential variables are identified when addressing efficient last-mile distribution models. Therefore, this article aims to conduct a systematic literature review on three key concepts: last mile, virtual platforms, and dropshipping. Based on the development of these central topics in retail companies, a methodology was established to search for and analyze the trends of the mentioned distribution models. In the first section, a preliminary literature review is developed to establish additional criteria that must be considered to complete the variables under study. In the second section, the methodology is determined through guiding questions, and based on these, a search equation is built in the Scopus database. Finally, the guiding questions are answered, showing scientometric indicators through the Vos Viewer software. The most prominent result consists of the identification of topics for future research lines and trends of the observed variables.

Keywords: Last mile, dropshipping, E-commerce, Shipment triangulation, Wholesaler, Retailer, Software.

INTRODUCTION

Industry 4.0 is conceived as the integration between the physical and digital worlds, developing capabilities that drive flexibility, productivity, and sustainability, with a cross-cutting impact across all sectors and organizations (Turkyilmaz et al., 2021). In this context, small and medium-sized enterprises (SMEs), even those with limited resources, have begun to incorporate innovations in methods and technologies. An example of this can be observed in Estonia, where collaboration with academia has facilitated knowledge transfer and the strengthening of SMEs' technological capabilities (Rajalo & Vadi, 2021). Likewise, the use of information technologies contributes to increasing organizational value and performance by enabling broader, deeper, and more rigorous management of business information (Jonas & Björn, 2013).

In developing countries, such as Vietnam, the modernization of supply channels has encouraged merchants to focus their efforts on developing high-quality products (Thanh et al., 2019). Similarly, the rise of the internet transformed the structure of supply chains (Cui et al., 2009). An example is the study by Escobar, Marín, and Lince (2020), who proposed a multi-objective mathematical model to redesign supply chains for mass consumer products, aimed at maximizing net value and reducing financial risks.

In the retail sector, competitiveness largely depends on the ability to adapt to modern marketing formats (Serrano Domínguez, 2007). The rapid evolution of e-commerce has driven structural transformations in the business–consumer relationship through faster delivery services, pick-up and drop-off points, multi-level distribution networks, and diversified last-mile transport modes (Janjevic et al., 2021). Experiences in Australia reinforce this trend, highlighting the relevance of the logistics sector in service innovation in response to changing consumer behavior and the adoption of new technologies (Melkonyan et al., 2020).

The growth of e-commerce, together with the ease of creating online stores, has created multiple opportunities for entrepreneurs. According to Ahmad and Hasni (2021), users consider this modality the most convenient for shopping, as it reduces time and costs. However, although many SMEs achieve sales from home-based environments, most maintain physical premises to complement their digital channels (Reuschke & Mason, 2020). The competitiveness of these companies is based both on the quality of their electronic platforms (Winiarski & Marcinkowski, 2020) and on their ability to leverage existing physical networks, which constitutes a sustainable competitive advantage, especially in the retail of non-perishable products (Mkansi & Luntala Nsakanda, 2021).

The increase in e-commerce has also generated greater pressure on urban logistics, demanding technological solutions that optimize route planning and scheduling in order to improve last-mile delivery efficiency (Serkan Özarık et al., 2021). This scenario raises the need to review alternatives that, in addition to improving operational efficiency, help mitigate the environmental impacts of urban distribution (Coley et al., 2009; Stelwagen et al., 2021).

Consequently, this article is structured into three sections: first, a systematic literature review is developed; second, the search equation applied in the Scopus database is presented; and finally, bibliometric indicators are analyzed using the open-source software Vos Viewer, which allows for a discussion of the current state of the topic, its trends, collaborations, and its impact in academic and business contexts.

LITERATURE REVIEW

According to data from European E-Commerce, the proportion of consumers making online purchases in the European Union, Western Europe, and Scandinavian countries reaches nearly 80% of the global total, with Switzerland showing the highest participation, as more than 88% of its population shops online (2019). Mostarac et al., (2020) demonstrate that the number of digital consumers continues to rise and estimate that by 2024 this figure will double. This growth was reflected in the increase in sales and revenues during the 2018–2020 period, as well as in the projections for 2020–2024, where a greater volume of home delivery orders for products, food, and personal care items was evident, particularly during the pandemic. At the same time, the market strengthened its competitiveness by implementing new online advertising strategies that allowed it to capture consumer attention and maintain its positioning.

The combination of dropshipping and the internet—considered a low-cost electronic medium—significantly reduced transaction costs by facilitating integration between retailers and wholesalers (Chen & Zhang, 2008). The rise of e-commerce has driven the implementation of this method, which is now integrated into omnichannel systems (Peinkofer et al., 2019). Cases such as Uber, Lyft, and Airbnb show how underutilized assets can be connected with users willing to pay for them, thereby transferring the principles of the sharing economy to the field of last-mile distribution (Boysen et al., 2022). In this model, retailers focus on attracting customers while wholesalers ensure product availability and delivery to the final consumer (Zeng et al., 2019).

Due to the randomness of online demand, digital merchants must implement strategies that guarantee consumer satisfaction. In many cases, dropshipping is combined with backup sourcing to reduce logistical costs and mitigate supply risks. Both strategies are complementary in e-commerce, although in other contexts they could be substitutes (Zeng et al., 2020).

Consumer preferences vary depending on the offer and the purchasing channel. In Belgium, for example, collection at physical pick-up points is preferred over home delivery, even when the purchase is made online (Buldeo et al., 2019). However, the adoption of dropshipping does not always guarantee efficiency. In some cases, it has been implemented without a prior evaluation of organizational readiness, which can negatively affect supply chain performance (Li et al., 2020). Moreover, in companies that sell seasonal products, there is a risk of inventory accumulation once the sales cycle ends (Sodero et al., 2021).

To properly apply dropshipping, it is necessary to identify the available sales channel. Some retailers operate physical outlets, others online, and some both. The analysis of benefits must consider the predominant channel. Shi et al., (2020) highlight three situations in which adoption of the model is favorable:

- When the cost of direct shipping to the consumer is lower than shipping to the physical point of sale.
- When the retailer gains an advantage in negotiation due to information asymmetry between parties.
- Depending on the level of participation and loyalty achieved with digital consumers.

Nevertheless, its implementation involves risks. If the retailer places orders with the wholesaler based on projected demand, there is a risk of excess inventory due to inconsistencies in digital demand (Changkyu, 2019). If, on the other hand, the retailer orders only after receiving consumer requests, delays in delivery may occur, which undermine customer trust. Still, studies indicate that cooperation between wholesalers and retailers under this model can increase sales share in digital channels, although this does not necessarily translate into higher commission margins (Fang & Han, 2019).

Retailers that adopt dropshipping usually record the lowest logistics costs in the market (Huang & Zheng, 2019). Consequently, logistics service providers seek to adapt to these dynamics in omnichannel environments (Buldeo et al., 2019). Food retailers tend to maintain internal logistics, while non-food retailers opt for outsourcing (Buldeo et al., 2019).

In some countries governed by Shari'ah law, dropshipping is not permitted, as it is considered that one can only sell what one actually possesses. In this regard, the use of intermediaries is interpreted as a violation of the rule and also generates information asymmetry among retailers, sellers, and customers (Busari et al., 2020).

The relationship between dropshipping and the last mile centers on home delivery, which is a key element for customer loyalty. Aspects such as the quality of the delivered product and the experience provided by delivery personnel are decisive for achieving consumer satisfaction (Vakulenko et al., 2019). A growing alternative is the "Click & Collect" model, which allows consumers to buy online and pick up the product at physical locations. Gielens et al., (2021) identify three variants: pick-up at existing stores, pick-up at points adjacent to stores, and pick-up at independent locations, each with differentiated costs for consumers.

Omnichannel platform management also involves the last mile, as the mechanisms integrating these processes directly affect platform performance (Lim & Srai, 2018). Proper integration of all network components is essential to ensure operational fluidity and a satisfactory customer experience.

Finally, the last mile is considered the most demanding and critical phase in the consumer relationship. It is also the one with the greatest impact on loyalty, since service perception depends on it. The use of quality resources at this stage is essential, as it can strengthen or weaken the link between the customer and the digital retailer, with direct financial implications for the company (Bopageet al., 2019).

METHODOLOGY

With the purpose of gathering as much information as possible on distribution models focused on last-mile delivery and/or shipment triangulation (dropshipping) through virtual platforms in SMEs, the process began with the identification of keywords derived from a preliminary literature review. From this exercise, three guiding questions were formulated to guide the selection of variables analyzed in the development of the study (see Table 1).

Table 1. Initial variables analyzed in the preliminary literature review

Keywords in Spanish	**Keywords in English**	**Guiding Questions**
Última milla	Last Mile	Q1: What is the chronology of scientific publications that support last-mile distribution models supported by digital platforms?, Q2: Which are the main countries where the use of digital platforms in distribution companies is most evident, and how does the interaction between countries, authors, and institutions occur?, Q3: What is the trend of emerging topics and the interaction determined by work clusters?
Comercio electrónico	E-commerce	
Triangulación de envíos	Dropshipping	
Mayorista	Wholesale	
Minorista	Retailer	
Plataforma digital	Software	
Pymes	SMEs	

Source: Own elaboration based on reviewed information.

Subsequently, the final search equation was defined (see Table 2) in order to filter information in the Scopus and Science Direct databases. The analysis was conducted on a total of 311 documents published between 1993 and 2021, of which 160 were journal articles, 103 conference papers, 34 conference reviews, 8 book chapters, 4 reviews, and 2 books (see Figure 1). The bibliometric indicators considered were:

- Q1: Publication dynamics and type of documents.
- Q2: Authors, countries, and institutions.
- Q3: Trending topics, thematic intensity through density maps, and classification of topics by clusters.

Table 2. Final search equation

Ecuación de búsqueda
((TITLE-ABS-KEY ("Last mile") OR TITLE-ABS-KEY ("Drop-shipping") AND TITLE-ABS-KEY (wholesaler) OR TITLE-ABS-KEY (retailer))) OR ((TITLE-ABS-KEY (business) AND TITLE-ABS-KEY (e-commerce) AND TITLE-ABS-KEY (logistic) AND TITLE-ABS-KEY (software))) OR ((TITLE-ABS-KEY (smes) OR TITLE-ABS-KEY (e-commerce) AND TITLE-ABS-KEY (logistic) AND TITLE-ABS-KEY (software))) AND (LIMIT-TO (SUBJAREA , "COMP") OR LIMIT-TO (SUBJAREA , "ENGI") OR LIMIT-TO (SUBJAREA , "BUSI") OR LIMIT-TO (SUBJAREA , "DECI") OR LIMIT-TO (SUBJAREA , "SOCI") OR LIMIT-TO (SUBJAREA , "ECON") OR LIMIT-TO (SUBJAREA , "ENVI")) AND (EXCLUDE (PUBYEAR , 2022))

Source: Own elaboration based on reviewed information.

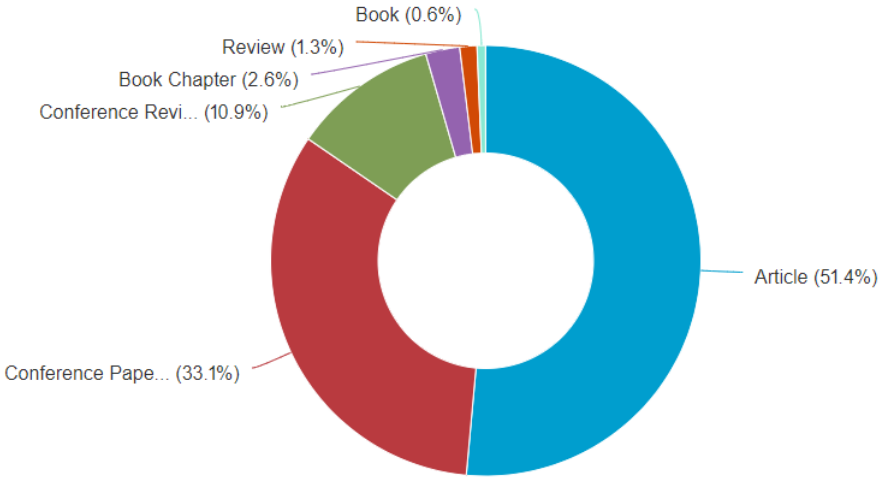

Figure 1. Documents by type of publication
Source: Own elaboration based on Scopus data

This article corresponds to a systematic literature review based on articles published in the Scopus and Science Direct databases. The approach is quantitative, by analyzing bibliometric variables, and qualitative, by examining the bibliographic production using the open-source software Vos Viewer, which facilitates the identification of emerging topics and the relationships among authors, countries, and institutions.

ANALYSIS OF RESULTS / DISCUSSION

R1: Based on the evidence observed in the systematic literature review, the topics related to distribution models focused on last-mile delivery and/or shipment triangulation (dropshipping) through virtual platforms for SMEs have gained popularity since 2005 (see Figure 2). That year marked the first growth peak, with a body of literature consisting of five (5) research articles, four (4) conference papers, two (2) conference review papers, and one (1) review paper. At this point in time, the highlighted studies aimed explicitly at developing the main roles for inventory control in SME supply chains (Lee & Chu, 2005), as well as the application of analytical studies on speculation and inventory location postponement in companies distributing retail books (Bailey & Rabinovich, 2005). Furthermore, the use of the last mile as an e-commerce business model was

addressed by Madlberger & Sester (2005), who, through an empirical study, indicated that product category has a strong impact on Austrian customers' expectations due to the volumetric use of the retail channel in digital platforms.

The trend that followed in subsequent years among researchers is particularly notable in 2014 (see Figure 2), when a total of 20 documents were published: 8 conference reviews, 6 research articles, 5 conference papers, and 1 book. The country with the highest number of publications in that year was China, contributing 4 specialized studies on business models for the Fashion and Textile (FTs) supply chain under the e-commerce environment (X. Wang et al., 2014), the design and implementation of an operational simulation platform for e-commerce teaching (Y. Y. Zhu, 2014), the application of MATLAB simulation technology in evolutionary game analysis (Q. Zhu & Liu, 2014), and a context-based collaboration framework for e-commerce PaaS platforms (Z. Xiao et al., 2014).

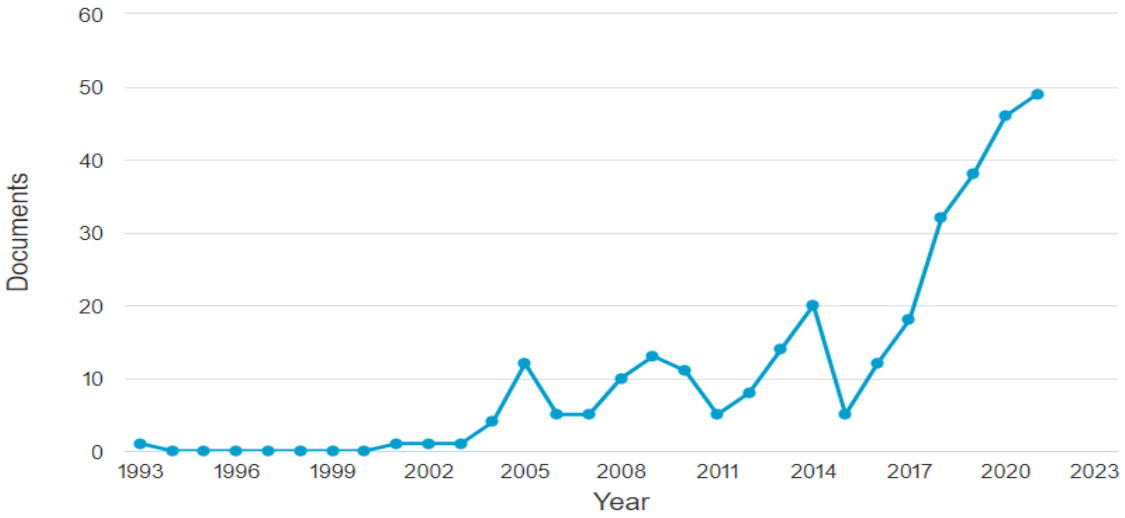

Figure 2 – Publication Dynamics.
Source: Own elaboration based on Scopus data.

Concluding the growth trend, the year 2021 stands out as a particularly significant period. Despite being an atypical time due to the SARS-CoV-2 pandemic, academic production on topics related to digital platforms supporting last-mile delivery management gained greater strength, resulting in a total of 49 documents (see Figure 2). Of these, 37 were research articles, two (2) were conference papers, five (5) were conference reviews, and one (1) was a book chapter.
The themes with the greatest interaction during 2021 include studies on the role of physical store networks in fulfilling electronic orders for mass-consumption products in order to improve competitive and sustainable advantage in operations (Mkansi & Nsakanda, 2021); real-time production logistics based on the Internet of Things, sustainable industrial value creation, and big data analysis driven by artificial intelligence in cyber-physical smart manufacturing systems (Nica et al., 2021); freight distribution with electric vehicles: a case study in Sicily addressing RES, infrastructure, and vehicle routing (Napoli et al., 2021); and collaboration in the last mile, with evidence from mass-consumption product deliveries (Aktas et al., 2021).

In this year, and considering the total number of documents, the country with the highest number of publications was China, with 80 documents, followed by Italy with 46, the USA with 42, and the United Kingdom with 21 (R2) (see Figure 3).

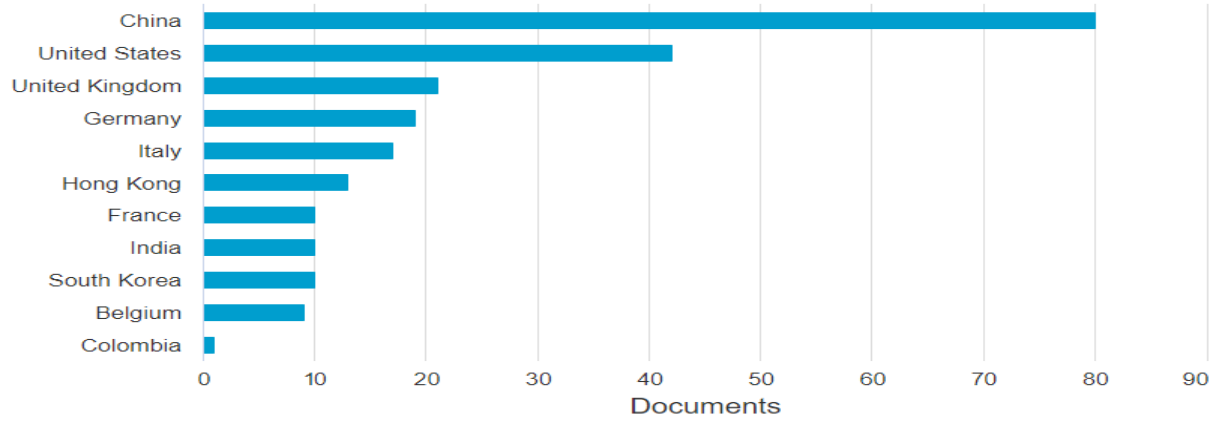

Figure 3 – Main publishing countries.
Source: Own elaboration based on Scopus data.

A key aspect in the analysis of the results of the systematic literature review is the variable of collaboration between countries. Figure 4 highlights that countries with the highest number of publications, such as China, lead academic production on the topic, evidencing their central role in the development and dissemination of knowledge in this area (Barenji et al., 2019; J. Chen et al., 2011; Y. Chen et al., 2018; He et al., 2021; Huang et al., 2021; Jain & Sundström, 2021; Li & Xiao, 2021; Qiu et al., 2021; Quirion-Blais & Chen, 2021; Shi et al., 2020; Singh et al., 2018; Song et al., 2009, 2013; Sun & Gu, 2021; Tang et al., 2021; Y. Wang & Coe, 2021; Y. Xiao et al., 2009; Yang et al., 2017; Zhou et al., 2020; Zu & Liu, 2021), the United Kingdom (Aktas et al., 2021; Al-Nawayseh et al., 2013; Allen et al., 2018; Boumediene & Peter, 2008; Edwards et al., 2010; Fancello et al., 2017; Greasley & Assi, 2012; Hood et al., 2020; Huang et al., 2021; Lim et al., 2016; Lim & Srai, 2018; Lim & Winkenbach, 2019; Nguyen et al., 2019; Paddeu et al., 2018; Piotrowicz & Cuthbertson, 2018; Ramdani et al., 2009; Singh et al., 2018; Sodhi & Tang, 2014; Song et al., 2009, 2013; Wollenburg et al., 2018), and the United States (Barenji et al., 2019; Barker & Brau, 2020; Davis et al., 2020; Huang et al., 2021; Janjevic et al., 2021; Koçiu et al., 2021; Lim & Winkenbach, 2019; Nica et al., 2021; Peinkofer et al., 2019; Perera et al., 2020; Qiu et al., 2021; Rautela et al., 2021; Risher et al., 2020; Sodero et al., 2021; Sousa et al., 2020; Swanson, 2019; Tokar et al., 2020; Zhou et al., 2020).
Moreover, these countries show the highest level of scientific interaction worldwide in the reviewed topic. This has led to the formation of five large collaborative clusters, characterized by intense interaction among researchers and institutions, strengthening the generation and dissemination of knowledge, along with six smaller clusters with low interaction involving only two or three contributions. An example of large clusters can be seen among countries such as Germany, Greece, Lithuania, Luxembourg, Poland, and Ukraine. On the other hand, China collaborates with countries such as Canada, Hong Kong, Italy, Thailand, France, and South Korea.

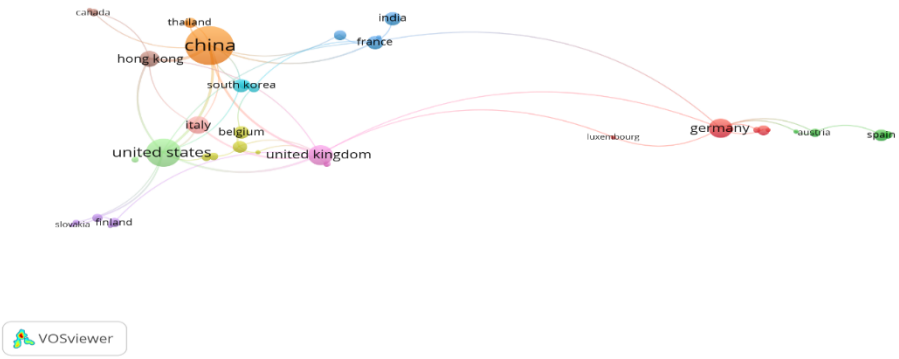

Figura 4 - Colaboración entre países.
Fuente: Elaboración propia con base a datos Scopus

Con base a la colaboración entre países, se ha realizado un análisis directo de Colombia y su intervención en los temas expuestos con los países de Reino Unido y Jordania, donde se evidencia un único documento (ver Figura 5) el cual establece: La predicción de la adopción de sistemas empresariales por parte de las PYME de los autores (Ramdani et al., 2009), donde el propósito del documento es desarrollar un modelo que pueda usarse para predecir qué pequeñas y medianas empresas (Pymes) tienen más probabilidades de convertirse en adoptantes de sistemas empresariales (ERP, CRM, SCM y e-procurement).

Figure 5 – Analysis of Colombia's academic collaboration.
Source: Own elaboration based on Scopus data
All the academic production developed holds significant importance in bibliometric models. For this reason, it is essential to highlight the most relevant authors (see Figure 6) in the topics addressed. The two leading authors have co-authored seven documents, and among the top ten, the last seven share authorship in the studies conducted.
It is noteworthy that the largest number of publications comes from the authors Cathy Macharis in collaboration with Sara Verlinde, who have worked extensively on topics related to sustainable last-mile transport possibilities in an omnichannel environment (Buldeo Rai, Verlinde, &

Macharis, 2019), simulation of fragmented deliveries for nano-warehouses by leveraging additional transport capacity (Kin, Ambra, et al., 2018), and modeling distribution structures through fragmented last-mile transport (Kin, Spoor, et al., 2018). Likewise, they have contributed to service recommendations for the outsourcing of omnichannel logistics in retail companies (Buldeo Rai, Verlinde, Macharis, et al., 2019).

In addition, these researchers have carried out attitudinal studies of stores in their purchasing preferences from distributors with defined omnichannel systems (Buldeo Rai et al., 2021), as well as the adaptation of these suppliers (distributors) to the demands of stores or nano-stores according to the omnichannel model (Rai et al., 2018).

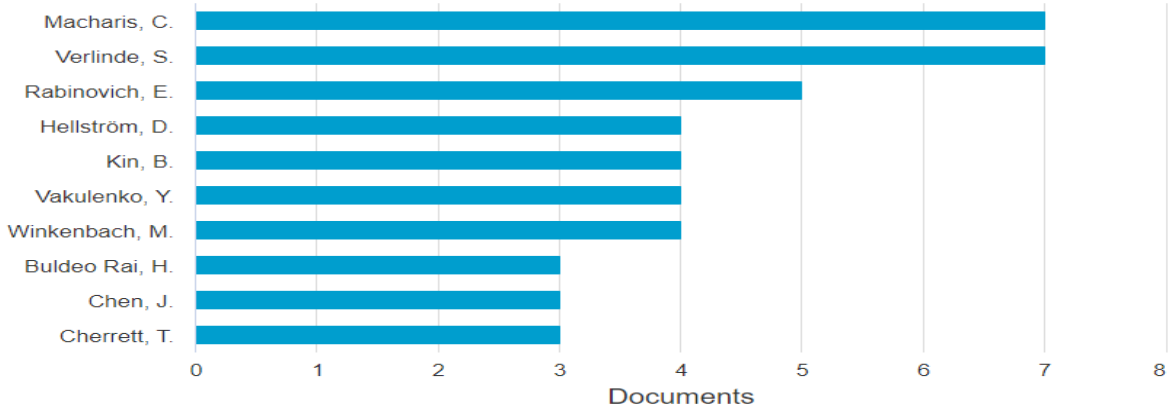

Figure 6 – Main authors.

Source: Own elaboration based on Scopus data.

Regarding the leading institutions (see Figure 7), the Vrije Universiteit Brussel stands out with 8 published documents and 109 citations, resulting in an average of 13.62 citations per document. The Hong Kong Polytechnic University has 7 published articles with 125 citations, yielding an average of 17.85 citations per article. Similarly, Beijing Jiaotong University has produced 6 documents with 87 citations, averaging 14.5 citations per publication.

On the other hand, the three most cited institutions are the University of Arizona, with 5 documents and 138 citations (27.1 citations per article); the Chinese University of Hong Kong, with 4 documents and 147 citations (36.75 citations per article); and finally, the Catholic University of Eichstätt-Ingolstadt in Germany, with 4 documents and an impressive 263 citations, giving it a remarkable average of 65.75 citations per publication.

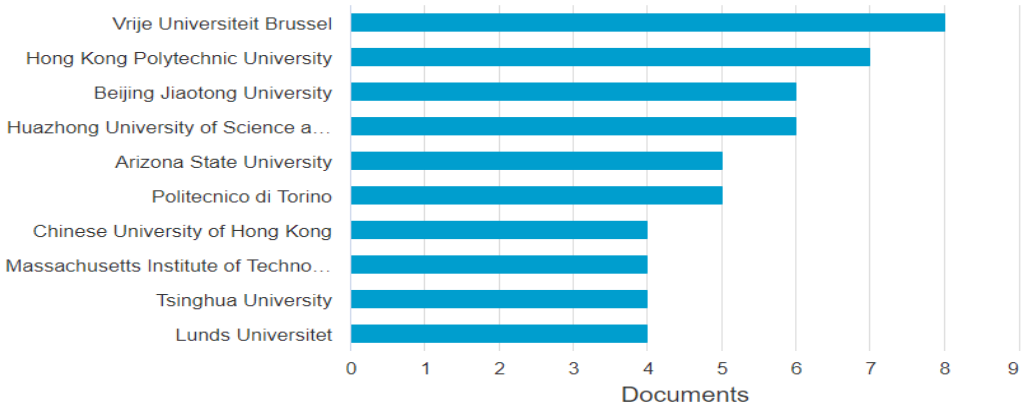

Figure 7 – Leading institutions worldwide.

Source: Own elaboration based on Scopus data.

According to the keyword density analysis (see Figure 8), the most representative and growing topics in the study of e-commerce, last-mile delivery, and dropshipping in the retail sector are related to the development of supply chain management for both retailers and wholesalers distributing to stores; the integration of inventory control processes combined with artificial intelligence to improve costing systems in the custody and distribution of mass-consumption products; and the use of virtual platforms that support the diversification of last-mile channels, providing an omnichannel approach to enhance customer service and care in the retail sector. Finally, there is a marked interest in the environmental effects of retailing, particularly in determining the ecological footprint generated by the distribution process to stores.

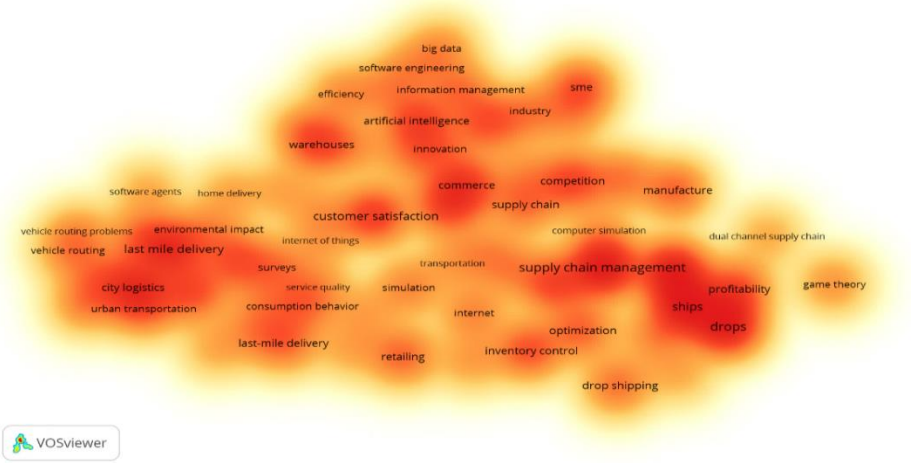

Figure 8 – Density of publications by specific topics.

Source: Own elaboration based on Scopus data.

In Figures 9 and 10, the neural network and cluster analysis of trending topics worldwide are presented. These trends may outline future research lines for scholars interested in conducting focused studies on e-commerce, last-mile delivery, and dropshipping in the retail sector. The key themes identified can be divided into five (5) fundamental axes:

- *Big Data and Artificial Intelligence for the Retail Sector: Subtopics and trends are defined by variables focused on e-commerce, process optimization, and the development of specialized software for companies distributing mass-consumption products.*
- *Application of Omnichannel Models to Diversify Last-Mile Delivery: Trends are shaped by distribution processes and the multiple ways to reach customers and/or consumers efficiently and responsibly.*
- *Smart Cities for Efficient Deliveries: Researchers show increasing interest in the interaction between the competitive environment of retail logistics in smart cities, which allow for improved deliveries through routing systems that account for all possible efficiency variables.*
- *Industry 4.0 and Simulation of Distribution Processes: There is a clear rise in trends within this axis, as many innovations developed by companies distributing products to stores seek to maximize efficiency, sustainability, and long-term viability.*
- *Inventory Control and Decision-Making: Subtopics and trends relate to the management and custody of inventories, which represent a fundamental axis in the decision-making process for the commercialization and sale of products.*

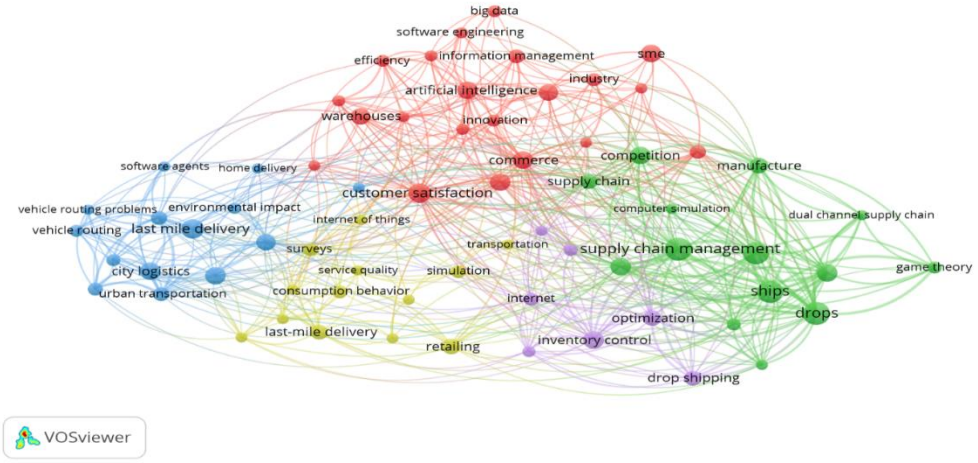

Figure 9 – Nodal analysis of main topics.
Source: Own elaboration based on Scopus data.

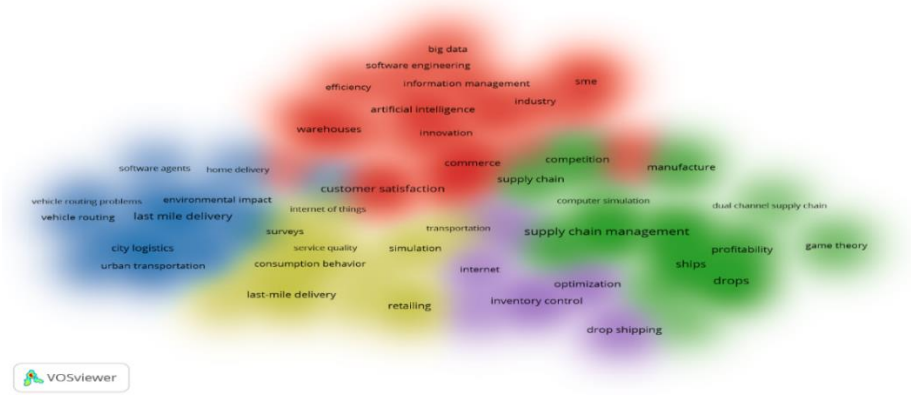

Figure 10 – Cluster of specific topics.
Source: Own elaboration based on Scopus data.

CONCLUSIONS

The analysis carried out made it possible to identify that last-mile distribution models and dropshipping, supported by digital platforms, have consolidated as strategic pillars for companies in the retail sector, particularly for SMEs. The systematic literature review demonstrated that academic production on these topics has grown steadily since 2005, reaching a peak in 2021, reflecting not only scholarly interest but also strong market pressure to develop more efficient, sustainable, and consumer-centered solutions. This evidence confirms the centrality of digital transformation in redefining retail supply chains and emphasizes the need for new approaches that balance cost efficiency, consumer satisfaction, and environmental responsibility.

First, it is concluded that the last mile constitutes the most critical phase in the company–customer relationship, as it largely defines both the perceived quality of service and consumer loyalty. This stage acts as a decisive point where consumer expectations are either fulfilled or frustrated. Omnichannel strategies and digital platforms have become essential in enabling the integration of inventories, the optimization of delivery routes, and the diversification of mechanisms of

distribution. Emerging practices such as "Click & Collect" and hybrid delivery systems illustrate a growing trend toward balancing cost structures with consumer experience. These findings reveal that retailers, particularly SMEs, must design flexible distribution systems capable of responding to fluctuating consumer demand while maintaining high levels of service quality. In practice, this means investing in data-driven route planning, predictive analytics, and consumer feedback systems, which together strengthen the resilience of last-mile operations.

Second, dropshipping is highlighted as a complementary model that significantly reduces operating costs and facilitates integration between wholesalers and retailers. Its main advantage lies in lowering the need for inventory storage and capital-intensive logistics, thereby enabling SMEs to compete in markets traditionally dominated by larger corporations. Nonetheless, dropshipping carries inherent risks related to excess inventory, delivery delays, and misaligned supply–demand cycles, particularly when organizational readiness and digital infrastructure are insufficient. These limitations underscore the importance of strategic alliances between suppliers and retailers, as well as the adoption of advanced information systems to ensure transparency and reliability in supply chain flows. Policymakers and business associations could play a role in offering guidelines, certifications, or training programs to mitigate these risks and strengthen dropshipping practices in emerging economies.

Third, the bibliometric evidence highlights the role of leading countries in scientific production, such as China, the United States, and the United Kingdom, which not only concentrate the largest number of publications but also foster international networks of academic collaboration. These networks have given rise to research clusters that project new lines of study in big data, artificial intelligence, smart cities, and Industry 4.0 applied to logistics. The creation of these clusters signals a shift toward multidisciplinary approaches, where logistics converges with digital technologies, sustainability studies, and consumer behavior research. Importantly, countries in Latin America, including Colombia, still exhibit low levels of participation in these networks, revealing a gap in knowledge transfer and scientific collaboration that could hinder their ability to adopt cutting-edge distribution models. Strengthening regional academic networks and promoting international partnerships could help bridge this gap and enhance the competitiveness of SMEs in these regions.

Fourth, the findings of this study highlight the need to integrate sustainability considerations into retail distribution models. The growth of e-commerce has intensified urban congestion, increased carbon emissions, and placed additional pressure on city infrastructures. Last-mile delivery and dropshipping, when poorly managed, can exacerbate these problems. Therefore, future developments should focus on the design of green logistics systems that incorporate electric vehicles, route optimization algorithms, and collaborative distribution platforms that reduce redundancies in transportation. Moreover, integrating sustainability metrics into performance evaluations would allow SMEs to align competitiveness with environmental responsibility, creating a triple impact: economic efficiency, consumer satisfaction, and ecological stewardship.

Fifth, future research directions must address the role of digitalization in enhancing decision-making and control mechanisms across supply chains. Technologies such as blockchain for traceability, artificial intelligence for predictive demand forecasting, and Internet of Things (IoT) for real-time monitoring of inventory and transportation are emerging as essential tools for SMEs seeking to scale operations while maintaining transparency and reliability. Beyond their operational benefits, these technologies also strengthen consumer trust by ensuring accurate delivery times, higher product availability, and ethical sourcing practices. The integration of such tools will likely define the next stage of competitiveness in the retail sector, especially for SMEs attempting to internationalize or expand into digital marketplaces.

Finally, this study contributes to both academic and managerial perspectives. For academia, the consolidation of these findings underscores the value of systematic literature reviews as a method to map emerging trends and provide theoretical clarity in rapidly evolving fields such as retail logistics. For practitioners, the insights highlight actionable strategies—such as investing in omnichannel delivery systems, adopting dropshipping selectively, and embracing digital technologies—that can significantly improve competitiveness. Moreover, policymakers may find in this study relevant evidence to design regulations and incentives that promote sustainable and inclusive retail ecosystems. Ultimately, the integration of digital platforms, sustainability practices, and cooperative business models represents not only an opportunity for SMEs to survive but also to thrive in a globalized, uncertain, and highly competitive business environment.

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