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Impact of Digital Transformation on Logistics: A Systematic and Bibliometric Literature Review

***Wafaa Iazza**
PhD Student, National School of Commerce and Management, El Jadida, Morocco
ORCID: https://orcid.org/0009-0003-9219-9116

*Corresponding author email: wafaaiazza99@gmail.com

Ikhlasse EL Aissami
PhD Researcher, Faculty of Legal, Economic and Social Sciences, Ain Chock, Casablanca
ORCID: https://orcid.org/0009-0004-2701-2340
elaissami@outlook.com

Khawla Aba-Talib
PhD Student, National School of Commerce and Management, El Jadida, Morocco
ORCID: https://orcid.org/0009-0001-9711-2708
aba-talib.khawla@ucd.ac.ma

Sara Saloumi
PhD Student, National School of Commerce and Management, El Jadida, Morocco
ORCID: https://orcid.org/0009-0008-5278-4405
sarasaloumi18@gmail.com

Abdessamad Zouine
Professor, National School of Commerce and Management, El Jadida, Morocco
ORCID: https://orcid.org/0009-0003-9219-9116
zouine.abdessamad@gmail.com

Abstract

Background: Digital transformation in logistics leverages advanced technologies to optimise supply chain efficiency, visibility, and agility. Modern organisations increasingly adopt artificial intelligence, machine learning, automation, and big data analytics to streamline operations, enhance customer experience, and cultivate a highly connected, data-driven ecosystem.

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Objective: This study conducts a comprehensive, systematic, and bibliometric literature review to map the research landscape of digital transformation in logistics, focusing on how the implementation of diverse technological innovations impacts overall supply chain processes.

Methodology: Utilising a rigorous, dual-methodological framework combining systematic review protocols and bibliometric analysis, this study mapped conceptually diverse interpretations of digital transformation, identified recurring structural patterns, and tracked shifting research trends. The initial database search results were systematically filtered according to predefined inclusion criteria, resulting in a robust analytical sample of 1,874 English-language peer-reviewed articles published up to 2025.

Results: The findings reveal significant qualitative and quantitative growth trends within the field. The annual research output on digital logistics increased steadily between 2015 and 2025, experiencing a sharp, exponential rise from 2020 onwards, heavily driven by global technological transitions and accelerated industrial digitalisation. The thematic mapping identified core clusters focusing on Internet of Things architecture, automated management systems, and cloud-driven supply chain integration.

Conclusion: The study concludes that transitioning to digital infrastructures is vital for the modernisation of the logistics sector. Synthesised data across both analytical dimensions confirms that the strategic integration of digital capabilities yields a profoundly positive impact on end-to-end supply chain optimisation and operational agility.

Unique Contribution: This systematic bibliometric review advances the field by providing a unified, multidimensional taxonomy of digital logistics research, explicitly illustrating how technologies such as the Internet of Things, artificial intelligence, and automated enterprise systems intersect to eliminate operational friction. It provides scholars and practitioners with a clear, data-backed developmental timeline of the evolution of industrial supply chains.

Key Recommendation: Logistics firms should systematically upgrade traditional operational models by adopting scalable digital frameworks to maintain market competitiveness and resilience. Furthermore, organisational leaders should invest in targeted digital upskilling programmes for workers, while future research should focus on empirical frameworks to evaluate the return on investment of specific digital tools in developing economic contexts.

Keywords: Bibliometric analysis; digital logistics; digital transformation; digitalisation; platforms; supply chain management; systematic review.

Introduction

Digital transformation has become a major concern and strategic issue for the majority of logistics companies, regardless of their size. Indeed, in just over fifteen years, digital has revolutionised the way logistics are done, and this disruption will become even more widespread and accelerated with the advent of connected objects. The logistics area has changed from a simple cost centre to a strategic project for logistics companies. In addition, the fourth industrial revolution is creating a more connected ecosystem. In this context,

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companies are reorganising their strategies to become more and more transparent, including their logistics management (Seyedghorban et al., 2020).

In this sense, the advent of digital transformation and its arsenal of technological tools has significantly changed the environment and also triggered radical changes in logistics, due to the current persistence in the global sphere of strategies for improving productivity and efficiency, while calling for renewal and change of models of manufacturing of worn-out products and services in logistics (Koh et al., 2019).Logistics companies in advanced countries are well-digitally prepared, possessing state-of-the-art infrastructure and excellent systems integration. By contrast, developing economies are less prepared because of technical, financial, and skill constraints.In summary, this article explores the conceptualisation of digital transformation, its technological tools and their impacts on logistics management through scientific literature.

It is organised as follows: first, we provide a set of concepts for digital transformation, second, we illustrate the set of technologies related to this new phenomenon, Third, we explain the impacts of the adoption of the technological tools in question on logistics. We conclude this article with a discussion of the literature reviewed and opportunities for future research directions.

Digital Transformation: Conceptual Background

Definition of Digital Transformation

Used to describe the transformations in work practices related to the widespread use of smartphones, tablets and the application and hardware universe associated with them in the daily lives of employees, this term sometimes covers very different realities.

For digital transformation, there is no single definition. Since the concepts of digitalisation are generally used in replaceable ways (Bloching et al. 2015). In the literature, several concepts to the phenomenon in question have been brought. In the context of 'digital transformation', several definitions come up such as: According to Westerman et al. (2014), as known the use of technologies to widely develop the performance of companies represents today a keen interest for companies on an international scale. Leaders from different sectors use innovative digital tools such as analysis, Big Data, social media, and artificial intelligence, and develop the use of classic technological tools such as ERP to improve business relationships and internal processes. Therefore, digitalisation has managed to implement these tools and then exploit them. The use of these innovative tools allows one to question their usefulness.

Additionally, for Stolterman and Fors (2004), digital transformation is the change caused or affected by digital technology in all aspects of human life. This broad perspective is particularly relevant to the present bibliometric review, as the clusters identified in the results reflect not only technological tools, but also wider organisational and informational changes associated with digital transformation in logistics. The limit of digital transformation in companies is to revitalise those that have managed to fully leverage information technologies in their supply chain.

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Digital Transformation in Logistics

In a systematic literature review involving a sample of 282 academic papers, Vial (2019) listed 23 definitions formulated by different researchers in distinct contexts. This diversity of definitions is because authors have different conceptions of what the TD phenomenon is. The study of definitions allowed the author to make three important findings: (1) the omnipresence of organisations that remain the main structures or units of analysis involved in TD; (2) the existence of differences in the types of technologies used and the nature of transformation; (3) the mobilisation of similar terms in the different definitions proposed, such as "digital technologies" or "digital technologies".

We retain here the definition of Gong and Ribiere (2021) to build a clear and complete definition: "A process that aims to improve an entity by triggering significant changes in its properties through combinations of information, computing, communication and connectivity"; This generic definition identifies four key characteristics of TD, namely the entity, that is to say the unit of analysis involved in TD; scope, which refers to the extent of changes occurring within the properties of the target entity; the means, which are the technologies used to create change; and the expected outcome of TD. In logistics, digitalisation concerns both the company's activities and logistic processes as well as those shared with upstream and downstream partners. We are now talking about digital logistics (Nadkarni, & Prügl 2021). By leveraging the four essential characteristics of TD, we can define STC TD as:

A process in which information technology is used to create value while managing organisational changes that affect logistics activities and processes.

The evolution of the logistics sector is defined by three distinct phases: digitisation, digitalisation, and digital transformation. Digitisation can be defined as the process of converting analogue information into digital data. Digitalisation can thus be defined as the socio-technical process of leveraging digital technologies to improve or automate specific organisational workflows. Digital transformation can therefore be regarded as a holistic, strategic shift that fundamentally redefines business models and organisational structures to create a connected ecosystem.

The Concept of Digital Logistics

Definition of Digital Logistics

Digitalisation is becoming a requirement for logistics systems to fit in this context. In parallel, scientific research on the subject was very active; many researchers have explored the phenomenon in several ways: its definitions and conceptualisation of the term, its tools and its impacts. To this end, we propose through this paragraph to study the definitions of digital logistics by different.

Table 1. Definitions of Digital Logistics in the Literature

Authors	Year	Digital logistics concept definitions
John T. Mentzer	2001	Digital logistics involves the use of advanced information systems to optimise planning, execution and control of logistics operations.
Martin Christopher	2005	Digital logistics is the integration of digital technologies to improve the management of product, information and service flows within the supply chain.

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Narasimhan, R., & Talluri, S	2009	Digital logistics involves the integrated management of information and goods flows through digital platforms.
Hübner, K., Bock, T., & Holzapfel, A.	2016	Digital logistics refers to the transformation of traditional logistics processes through the use of technologies such as Big Data, IoT and IA for better responsiveness.
Kersten et al	2017	Digital logistics refers to the digital transformation of the supply chain through the use of technologies such as cloud computing, real-time traceability systems and data management platforms.
Wang et al.	2020	Digital logistics such as the use of technologies such as the (IoT), big data, and (AI) to improve the management and execution of logistic activities.

***Source**: Authors' compilation based on Mentzer (2001), Christopher (2005), Kersten et al. (2017), Wang et al. (2020),*

Technological Foundations of Digital Logistics

Several technological elements underlie digital logistics, thus changing the way companies orchestrate their operations. First, the use of logistics management software facilitates the planning and direct control of goods flows. These systems promote the automation of tasks, minimising human faults and increasing efficiency. Secondly, big data technology (MDD) is essential for analysing consumer behaviour and optimising logistics processes. Thanks to AI and machine learning, companies are able to predict queries and adjust their approaches accordingly.

On the other hand, the role of blockchain technology, which has recently emerged as a key enabler of supply chain resilience, is to ensure data immutability, enhance trust among stakeholders, and improve traceability in disrupted environments. In addition, technologies such as barcoding and RFID enhance traceability by enabling rigorous product tracking at each stage of the supply chain. Finally, the advancement of cloud-based logistics platforms facilitates companies' collaboration with their partners and strengthens their ability to respond to market changes. To put it simply, digital logistics brings together innovative solutions that improve companies' performance and competitiveness.

Table 2. Key Technologies Enabling Digital Logistics

Technology	Description	Authors
Big Data	Big data analysis helps with demand forecasting and inventory management to make good decisions, have better clarity and optimise processes.	George, D. 2018.
Internet of Things (IoT)	IoT sensors offer the possibility to monitor goods live and optimise the conditions of their transport.	Tao, F., Zuo, Y., Da Xu, L., & Zhang, L. (2014).
Blockchain	Ensures secure, transparent and tamper-proof data sharing, improving traceability and resilience in supply chains	Naclerio & De Giovanni (2022)

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Cloud Computing	IT helps organisations quickly deploy applications, optimise management and minimise maintenance, to adapt resources faster to meet fluctuating needs.	Liu, B., Chen, Y., Hadiks, A 2014
Intelligent transport	Transport management systems (TMS) as well as live tracking improve the optimisation of delivery routes.	Garg, T., & Kaur, G. (2023).
Supply chain management platforms	Integrated software contributes to the coordination of logistics operations.	Ivanov, D., Dolgui, A., & Sokolov, B. (2022).

***Source**:Authors' compilation based on George et al. (2018); Tao et al. (2014); Liu et al. (2014); Garg and Kaur (2023); Ivanov et al. (2022); Gunasekaran et al. (2017).*

According to research, the main technological barriers to the digital transition include insufficient appropriate infrastructure, system incompatibility and lack of interoperability, cybersecurity threats, as well as the complexity of emerging technologies.

The Impact of Digital Transformation on Logistics

Understudying the Impact

Logistics is characterised by increasing complexity and dynamics, while being subject to various disruptions and threats. In the era of digitalisation, emerging technologies, also known as revolutionary technologies, are leading to a paradigm shift in logistics management.

According to Ali and Govindan (2021), TD supported by emerging technologies is an effective way to mitigate operational risks and disruptions related to unforeseen events. It synchronises production, prevents information distortion and reduces delivery times (Tavana et al., 2022). It is an effective tool for controlling physical flows from production sites to consumption points (Abbad et al.2022). TD has a significant positive impact on logistics processes (Tavana et al., 2022).

Other researchers see TD as a way to evolve traditional logistics into agile, flexible and connected, customer-centric and demand-responsive networks (Shashi et al., 2020). One of its advantages is the ability to respond dynamically to changing customer needs. The benefits of disruptive technologies can also be applied to developing new products. Indeed, they enable companies to seize opportunities in changing markets, and this leads them to develop ambidextrous logistics strategies and improve their innovation capacity (Benzidia et al., 2021).

It is worth emphasising that merging technologies such as blockchain, big data, cloud computing and the IoT play a critical role in enhancing supply chain and sustainability, with particular attention to blockchain as it enables secure, transparent and tamper-proof data sharing, which has become essential in managing disruptions and uncertainties in global logistics systems.

DT and Environmental Sustainability: The Green Logistics Paradigm

Digital transformation has been identified as a structural catalyst for environmental sustainability by enabling the decoupling of logistics growth from its carbon footprint (Feroz et al., 2021). The objective of green logistics is to systematise all supply chain processes to satisfy consumer needs while considering aspects such as pollution, product life cycles, and

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climate change (Iazza & Zouine, 2025). Firstly, the implementation of artificial intelligence (AI)-driven algorithmic optimisation of routing and load factors has been demonstrated to mitigate greenhouse gas (GHG) emissions by minimising empty mileage and enhancing fuel efficiency (Zhao et al., 2022).

Secondly, enhanced supply chain visibility supports data-driven synchronisation, enabling a seamless shift toward low-carbon transport modes (rail/maritime) and optimising intermodal synchronisation (Nicoletti & Appolloni, 2024). The integration of IoT-enabled predictive maintenance has been shown to extend the lifecycle of logistics assets (Junge & Straube, 2020). Digitalised workflows (e.g., e-CMR) and AI-enhanced inventory management have been demonstrated to minimise resource waste and streamline reverse logistics, thereby fostering circularity. Consequently, digital transformation transcends operational automation, aligning Corporate Social Responsibility (CSR) with strategic economic performance.

Methodology

To systematically analyse the literature concerning the digital transformation of logistics, this research was based on all the articles published over the past 10 years in this scientific field on Scopus, the most important database of abstracts and citations between peers. - Literature review - Indexing of academic journals, books and conference proceedings from more than 5,200 publishers.

This research aims to establish the global trends and scope of future research regarding digital transformation in logistics, using the key terms "Digital" AND " Transformation" AND " logistics" in the Scopus search engine. Articles containing the keywords detected in step 1 were gathered by exploiting the search "title, summary, keywords" in the Scopus directory.

This preliminary study produced a list of 1,874 results ranging from 2015 to 2025. Thus, to perfect our research, we have restricted our investigation to publications from those years and to the 'English' language. These results were recorded in CSV format and included all crucial data, such as the article title, the author's identity and affiliated institution, the synopsis, the keywords, and the date and time of publication. They served as the main sources for the systematic analysis of the literature using the Scopus Database.

For data analysis, we are using the free software VOSviewer for bibliometric and network analysis.

In addition, the co-occurrence analysis was performed using a minimum keyword occurrence threshold to identify the most relevant terms within the dataset, and only keywords meeting this threshold were included in the network visualisation, allowing the identification of meaningful clusters based on the strength of co-occurrence links between keywords. These analyses are carried out using the Bibliometrix software package in R, written in R and providing a set of tools for quantitative bibliometric research.

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The objective of the network analysis is to study the relationship between the leading

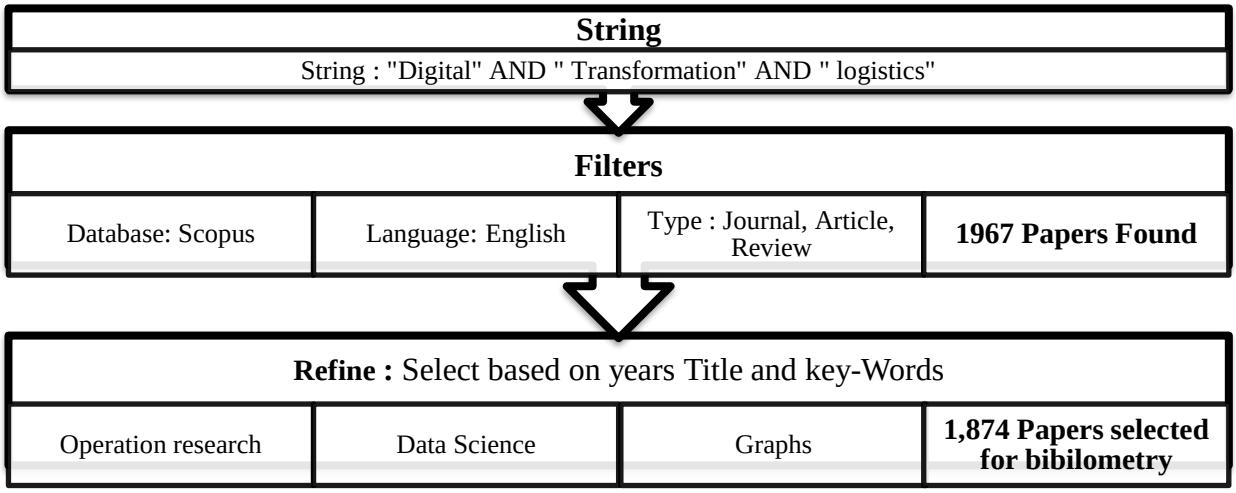


Figure 1: Research methodology

***Source**: Authors' elaboration based on Scopus data*

researchers in the organisation and the country they belong to, as well as the keywords/ideas on which they work.

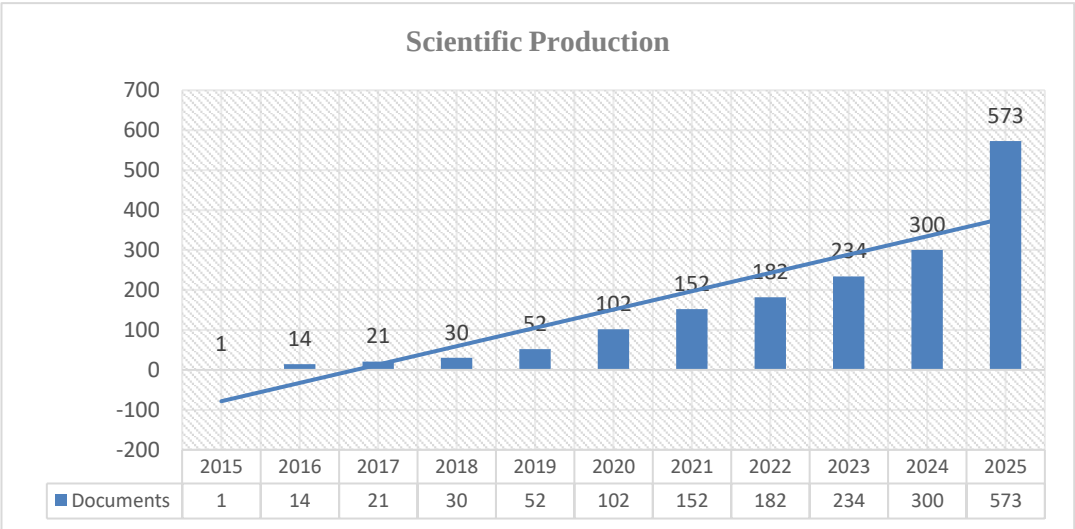
Results

The results of this review reveal several key trends, both qualitative and quantitative. On the one hand, systematic analyses of studies have highlighted recurring themes and significant findings while evaluating the quality of the included research. On the other hand, bibliometrics has made it possible to visualise the progression of publications over the years, identify the most influential authors and institutions, and analyse citation networks.

Over a period of 10 years, a total of 1,874 research articles were published in the international journal Scopus, the earliest publication dating from 2015. It is suggested that research on digital transformation in logistics has attracted considerable interest since 2021.

Scientific Production Analysis and Trends

The graph illustrates a considerable increase in scientific production from 2015 to 2025. There is a preliminary phase of modest growth from 2015 to 2018, followed by a gradual acceleration starting in 2019. This development is particularly noticeable after 2020, with a notable increase



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in the volume of publications, reaching 573 documents in 2025. This dynamic reflects an increase in academic interest for the subject under study, as well as a gradual strengthening of the research field over time.

Most Influential Journal

According to the CiteScore report, the journals with the highest and lowest CiteScore are Sustainability (Switzerland) (6.8) and Lecture Notes in Networks and Systems (0.9), respectively. Papers published in 1,874 international journals, of which 10 have published various articles. Sustainability (Switzerland) and Transportation Research Procedia have been awarded the best CiteScore 2023. The lowest CiteScore was found in the journals Lecture Notes on Data Engineering and Communications Technologies and Lecture Notes in Networks and Systems, with a score of 0.9.

The most cited articles are, respectively, Robots to come: Exploring the implications of the OpenAI codex on introductory programming (208 citations) and Chatbots in Education and Research: A Critical Examination of Ethical Implications and Solutions (179 citations). The least-cited articles are "Federated Edge-Cloud Framework for Heart Disease Risk Prediction Using Blockchain" and "CLEF-2024 CheckThat!". Laboratory: Verification of value, subjectivity, persuasion, roles, authority and contradictory robustness are respectively 5 and 31 cited. The most common subjects are social sciences and computer science. Most of these journals are ranked in the first quartile of citation reports.

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N°	Journal	TP	TC	Cite score	The most cited article	Times cited	Years	publisher
1	Lecture Notes in Networks and Systems	41485	35811	0.9	Natural Language Processing Implementation for Sentiment Analysis on Tweets	79	2019	Springer Nature
2	ACM International Conference Proceeding Series	34510	50881	1,5	The robots are coming: Exploring the implications of OpenAI codex on introductory programming	208	2022	Conference
3	Lecture Notes in Computer Science	76955	203812	2,6	The CLEF-2024 CheckThat! Lab: Check-Worthiness, Subjectivity, Persuasion, Roles, Authorities, and Adversarial Robustness	31	2024	Springer Nature
4	Sustainability (Switzerland)	55991	381357	6,8	Chatbots in Education and Research: A Critical Examination of Ethical Implications	197	2023	(MDPI)
5	IFIP Advances in Information and Communication Technology	3609	5837	1,6	Federated Edge-Cloud Framework for Heart Disease Risk Prediction Using Blockchain	5	2024	Springer Nature
6	CEUR Workshop Proceedings	20954	22350	1,1	The ohioT1DM dataset for blood glucose level prediction: Update 2020	120	2020	Conference Proceeding
7	Smart Innovation, Systems and Technologies	10131	11332	1,1	Application of Gamification in Higher Education in the Teaching of English as a Foreign Language	21	2021	Springer Nature
8	Transportation Research Procedia	3461	10371	3,2	A literature review of the main factors influencing the e-commerce and last-mile delivery projects during COVID-19 pandemic	20	2023	-
9	Communications in Computer and Information Science	21959	23780	1,1	TextWorld: A Learning Environment for Text-Based Games	122	2019	Springer Nature

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10	Lecture Notes on Data Engineering and Communications Technologies	9741	8656	0,9	Analysis of Data Aggregation and Clustering Protocol in Wireless Sensor Networks Using Machine Learning	47	2022	Springer Nature

Table 3. Selected journals publishing research on digital transformation in logistics (2015–2025)
(TP: total publications; TC: total citations)

***Source**: Authors' compilation based on Scopus data*

Authors' Production Over Time

Throughout the period between 2015 and 2025, Voß, Stefan, Barykin, Evgenievich, and Dua, Mohit were the most influential authors (see Table). Voß, Stefan has a h_index of 48, that is to say 48 of his papers have been cited at least 11 times. This author has published 48 articles on the logistics TFD with 9,260 citations. From Barykin, Evgenievich and Dua, Mohit has the same h_index being 22. These two authors have published 22 papers on TFD in logistics with citations greater than 1200. Thus, we infer that Voß, Stefan emerges as the most influential author (having been cited the most), and Fernández-Villacañas-Marín, Kieu, Manh Kha, Ramirez-Valdivia and Maiorova, Ksenia are the least productive authors in terms of publication output within the dataset (having published the fewest number of articles).

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Table 4. Most productive and influential authors in digital transformation and logistics research (2015–2025)
***Source**: Authors' compilation based on Scopus data*

Authors	Doc	*h-index	Citations	Country	Authors	Doc	*h-index	Citations	Country
Barykin, Evgenievich	104	22	1,465	Russian	**Dua, Mohit**	115	22	1,314	India
Behrendt, Fabian	27	7	205	Germany	**Fernández-Villacañas-Marín,**	13	2	6	Spain
Pahl, Julia	27	10	385	Denmark	**Rojas-García, José**	35	5	70	Peru
Schmidtke, Niels	15	5	93	Germany	**Heilig, Leonard**	41	17	1,072	Germany
Trushkina, Nataliia	21	8	340	Ukraine	**Junge, Anna Lisa**	4	3	96	Germany
Voß, Stefan	355	48	9,260	Germany	**Kaczmarek, Sandra**	14	4	44	Germany
Woschank, M.	58	14	703	Austria	**Kieu, Manh Kha**	7	2	9	Viet Nam
Al-Banna, Adnan,	10	4	42	Doha	**Le, Ngoc Bich**	33	8	153	Viet Nam

h-index: indicator measuring both the productivity and citation impact of an author's publications.

Analysis in Terms of Central Themes

The network visualisation shows several key terms in the center, indicating the most frequently discussed and influential topics in the literature on PDT Logistics (Figure 5).

These thematic clusters are consistent with Stolterman and Fors' (2004) view of digital transformation as a broad change enabled by digital technology, and in our case, the clusters show that digital transformation in logistics extends beyond technical adoption alone and includes interconnected dimensions such as information flows, process efficiency, organisational adaptation, and supply chain coordination.

- **Digital transformation**: At the centre of the chart, this term is directly connected to several other concepts, underlining its central role in logistics discussions.
- **Logistics**: Strongly linked to TFD, this theme explores how technology has a positive impact on businesses, especially in the logistics sector.
- **Digitalisation:** Also, central, this term is crucial because TFD is based on digital data, which improves the effectiveness and efficiency of platforms.

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***Source**: VOSviewer software output based on Scopus data*

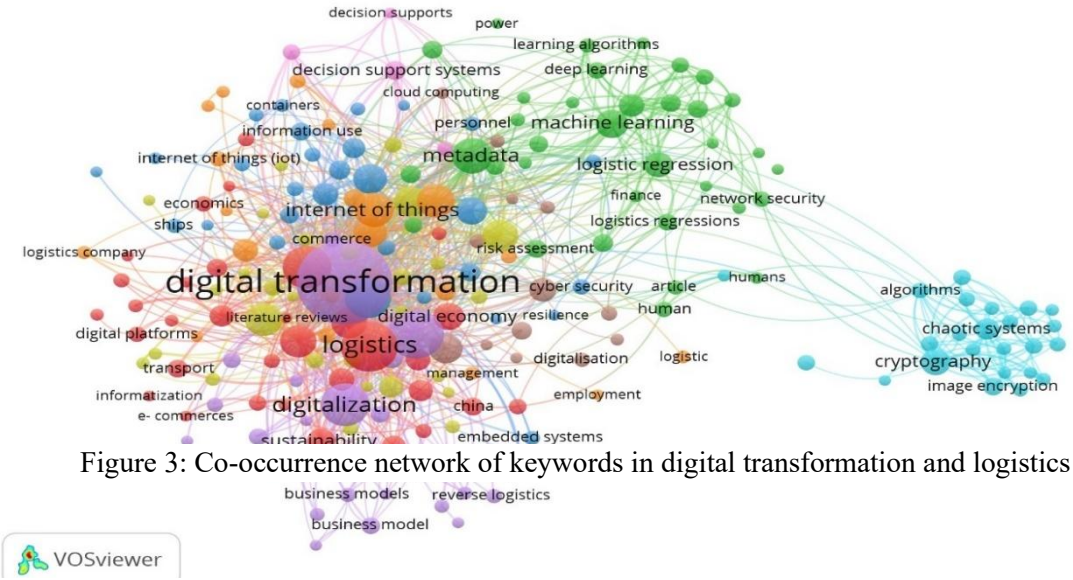

Figure 3: Co-occurrence network of keywords in digital transformation and logistics

Intellectual Structure

To examine the evolution of the intellectual structure of research on the digital transformation of logistics, we use author co-citation analysis. It is a question of constructing a measure of similarity between authors. The idea is to define how often two authors are cited together (Zupic & Čater, 2015), such that the more often they are cited together, the more related their content is.

The analysis by co-citation of authors shows three densities. We note that densities are not the same size. Since the dominant authors are shown in bold with the largest size, there are two to three dominant authors in each density. The first density contains interactions between 12 authors, including Buyukozkan G., min s., and Attaran M., which are dominant. The second density contains 2 authors, of which Tranfield D., and Denyer D. are the dominant authors. The third density includes 2 authors with Hofmann E., and Barreto I. as dominant authors (Figure

Figure 5: Author co-citation network in digital transformation and logistics research

5).

***Source**: Authors' elaboration using the Bibliometrix package (RStudio) based on Scopus data*

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These densities allow us to see not only the most influential authors, but also interdisciplinary teams that contribute to advancing key themes such as supply chain optimisation or process automation. This interpretation also supports the theoretical perspective of Stolterman and Fors (2004), as the co-citation structure suggests that digital transformation research in logistics is organised around multiple, related dimensions of change rather than a single technological phenomenon. This analysis helps to understand how ideas and innovations are spread and what strategic alliances can accelerate progress in the digital transformation of logistics.

Conclusion

This research is part of strategic management and has the general objective of addressing the problem of the impact of digital transformation on logistics. Based on the theoretical model developed in this study, we have grasped that digital switchover plays a decisive role in the development of logistics. Digitalisation is essential in the development of the logistics industry. This systematic bibliographic analysis of the literature has undeniably revealed that the integration of digital technologies such as the Internet of Things (IoT), artificial intelligence (AI), and automated management systems has greatly optimised logistics efficiency. These advances facilitate the optimisation of inventory management, reduce operational costs and allow a timelier response to fluctuating demand. They also ensure greater clarity and visibility at each phase of the supply chain.

This research has observed an increase in publications on the subject, including a growing emphasis on digitalisation in logistics. However, more empirical studies and case reviews are essential to deepen understanding of the effects of these technologies across sectors and geographic contexts. A better understanding and an adapted approach will enable companies to leverage digital transformation to become more competitive globally.

The main conclusions of this systematic study of the digital transformation of the logistics sector are as follows:

- The annual output of research in this area shows that it has increased steadily from 2015 to 2025, but has gone up sharply from 2020 to 2025 with global technological changes.
- The analysis includes 1,874 articles published in the top 10 journals. Analysis shows that the largest number of articles were published in “Lecture Notes in Networks and Systems”, “ACM International Conference Proceeding Series” and “Lecture Notes in Computer Science”.
- Research in this area is particularly advanced in Germany, China and India, which together account for nearly 58% of the world’s publications on the subject.

In response to global disruptions, the increasing integration of blockchain technology reflects a shift towards more secure and resilient logistics systems, thus reinforcing the importance of decentralised technologies in strengthening supply chain robustness.

To sum up, emerging digital technologies are new technologies being developed or to be developed in the coming years that will significantly change the business and social environment. Supply chains can process large amounts of information from partners to collaborate and communicate on digital platforms.

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Declarations

AI Use Statement: The authors confirm that no Artificial Intelligence tools were used in the writing or production of this manuscript.

Data Availability Statement: The data that support the findings of this study are available from the corresponding author, Wafaa Iazza, upon reasonable request.

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Conflict of Interest: The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Ethical Approval: Ethical approval was not required for this study as it did not involve human or animal subjects—e.g., use of public, anonymised bibliometric data.

Authors' Contributions: WI,IE,KA conceived and designed the study; WI,KA,SS performed the data collection; WI,IE,AZ analysed the data; WI,IE,KA,SS,AZ wrote the paper. All authors have read and agreed to the published version.

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