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Artificial Intelligence in Logistics Service Quality: A Bibliometric Analysis of Research Trends, Intellectual Structure, and Future Directions

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Abstract. This study aims to analyse the existing literature and identify major research trends in artificial intelligence in logistics service quality research. Data were retrieved from the Scopus database, comprising 281 journal articles and review papers published between 2002 and 2026, after applying predefined inclusion and exclusion criteria to an initial dataset of 533 records. A bibliometric analysis was conducted using R Studio (Bibliometrix/Biblioshiny) and VOSviewer to examine publication trends, citation patterns, influential sources, country productivity, highly cited documents, keyword co-occurrence networks, and thematic structures within the research domain. The findings indicate a rapidly expanding body of research linking artificial intelligence and digital technologies with logistics service quality, customer satisfaction, e-commerce logistics, last-mile delivery, route optimization, and digital supply chain management. The field has experienced particularly strong growth after 2020, reaching its highest publication output in 2025. Customer satisfaction emerges as the most central keyword, suggesting that the literature remains strongly grounded in a service-quality and customer-experience perspective, even as advanced technologies such as artificial intelligence, machine learning, big data analytics, the Internet of Things, blockchain, automation, and optimization techniques become increasingly integrated into logistics service systems. Keyword co-occurrence analysis and thematic mapping are used as two complementary techniques. The keyword co-occurrence analysis identifies four major clusters representing distinct research streams, while thematic mapping reveals five thematic areas, reflecting different analytical logics underlying network-based clustering and centrality–density-based classification. The study contributes to a clearer understanding of the intellectual structure of AI-driven logistics service quality research and provides future research directions related to customer experience, sustainable last-mile delivery, responsible AI adoption, and intelligent logistics service systems.

Keywords: logistics service quality; customer satisfaction; customer experience; last-mile delivery; e-commerce logistics; bibliometric analysis; VOSviewer

1. Introduction

Logistics services have become a critical determinant of customer satisfaction, supply chain responsiveness, and distribution competitiveness in increasingly digital and service-oriented business environments. While earlier logistics research primarily emphasized transportation efficiency, warehousing, and cost reduction, more recent studies highlight that logistics services are increasingly shaped by intelligent technologies and customer-facing service outcomes. In particular, artificial intelligence (AI), machine learning, big data analytics, the Internet of Things, blockchain, automation, and decision-support systems have been adopted to improve coordination, visibility, responsiveness, and real-time decision-making across logistics and distribution networks. Prior studies on intelligent e-commerce fulfilment and IoT-enabled logistics systems indicate that logistics services are moving toward more connected, data-driven, and intelligent service systems (Leung et al., 2018; Wang et al., 2020).

Alongside this technological transformation, logistics service quality has emerged as a strategic construct linking operational performance with customer-perceived value. Logistics service quality refers to customers' evaluation of delivery reliability, responsiveness, timeliness, information accuracy, order condition, tracking visibility, flexibility, and service recovery. These dimensions are particularly important in e-commerce logistics and last-mile delivery, where logistics performance directly shapes customers' post-purchase experience and may influence satisfaction, purchasing behavior, loyalty, and sales outcomes. Empirical studies show that logistics service quality is closely associated with customer satisfaction in online retailing, fresh e-commerce logistics, and digital logistics service contexts (Sucena & Cury, 2023). In this study, artificial intelligence in logistics service quality is understood as a research area that connects AI-enabled logistics technologies with service-related outcomes. Accordingly, operational topics such as routing optimization, delivery-time prediction, automation, blockchain-enabled traceability, IoT-based monitoring, and intelligent decision-support systems are considered relevant when they are linked to logistics service delivery, customer satisfaction, customer experience, or delivery performance. These operational factors are not treated as logistics service quality itself, but as mechanisms through which AI may improve service reliability, responsiveness, timeliness, transparency, and customer-oriented logistics performance.

In this context, AI has become an important mechanism for enhancing logistics service quality. This perspective is consistent with recent evidence in digital workplace research, which demonstrates that digital employee experience functions as a key job resource that reduces technostress and burnout within the JD-R framework (Hoai et al., 2026). In addition, agent-based deep reinforcement learning models have been proposed to support adaptive decision-making processes, enabling systems to learn optimal actions through interaction with dynamic environments without requiring fully specified transition models (Zhu, 2023). AI-supported systems can improve demand forecasting, route optimization, delivery-time prediction, resource allocation, customer feedback analysis, and proactive service recovery. By processing large-scale operational and customer data, logistics providers can improve delivery reliability, fulfilment efficiency, service responsiveness, and customer experience. Recent studies on machine-learning-enabled logistics efficiency and deep-learning-based logistics service quality evaluation further suggest that AI is increasingly used not only to optimize logistics operations but also to assess and improve customer-perceived service quality (Malhotra & Kharub, 2025; Li & Nichols, 2026).

The role of AI in logistics services has expanded further as firms face growing pressure from e-commerce growth, last-mile delivery complexity, sustainability requirements, and digital supply chain transformation. Technologies such as blockchain, IoT, automation, intelligent routing systems, and data analytics are increasingly used to improve traceability, transparency, delivery efficiency, and service reliability. For example, blockchain-based evaluation approaches have been used to assess customer delivery satisfaction, while digitalization studies show that electronic delivery orders and logistics

digitalization can strengthen logistics service quality in port and shipping contexts (Tian et al., 2021; Ricardianto et al., 2023). These developments indicate that AI-driven service quality research increasingly extends beyond traditional logistics efficiency toward broader concerns related to customer experience, sustainable distribution, intelligent service systems, and digitally enabled logistics competitiveness.

Despite growing scholarly attention, existing research on AI-driven service quality in logistics services remains fragmented across several streams, including AI in logistics, logistics service quality, customer satisfaction, e-commerce logistics, third-party logistics, last-mile delivery, route optimization, blockchain-enabled logistics, and data-driven service evaluation. Some studies focus on specific technologies, such as machine learning, IoT, or blockchain, while others emphasize logistics service quality, customer satisfaction, or delivery performance. As a result, the literature provides valuable but dispersed insights, making it difficult to identify a coherent intellectual structure of the field. This fragmentation is particularly visible in studies ranging from drone-assisted vehicle routing and last-mile delivery optimization to cross-border e-commerce logistics service quality evaluation (Nguyen et al., 2022; Zhao et al., 2024).

Recent developments in logistics and supply chain research therefore highlight the need for systematic mapping approaches capable of clarifying how AI-enabled logistics service quality has evolved as a research domain. Bibliometric analysis offers an objective and replicable method for identifying publication patterns, influential sources, intellectual structures, thematic clusters, and research evolution through quantitative synthesis of large-scale datasets. Such an approach is especially valuable for a rapidly expanding and interdisciplinary field that connects logistics management, service quality, artificial intelligence, operations research, transportation studies, e-commerce, and sustainability-oriented distribution systems.

Accordingly, this study aims to systematically map the research landscape of AI-driven service quality in logistics services using bibliometric analysis. Specifically, this study seeks to: (1) examine publication and citation trends; (2) identify leading publication sources, countries, and influential publications; (3) uncover thematic clusters through keyword co-occurrence analysis; (4) examine keyword evolution and emerging topics over time; and (5) propose future research directions for AI-enabled logistics service quality, customer experience, and distribution service performance. By providing a comprehensive overview, this study contributes to a clearer understanding of how AI-driven logistics service quality research has developed and how this research increasingly intersects with intelligent logistics systems, e-commerce logistics, last-mile delivery, sustainable distribution, and responsible AI adoption.

This study contributes theoretically by clarifying the intellectual foundations, knowledge structure, and thematic streams that shape AI-driven logistics service quality research. It extends current understanding by positioning logistics service quality as an outcome of both technological capability and customer-oriented service performance. Practically, the findings can support logistics managers, technology providers, and policymakers in making more informed AI adoption decisions, improving logistics service quality strategies, and designing intelligent logistics service systems that enhance delivery reliability, responsiveness, customer satisfaction, and sustainable distribution performance.

2. Literature Review

2.1. Logistics Service Quality in Logistics and Supply Chain Management

Logistics service quality is a central construct in logistics and supply chain management as it connects operational execution with customer-perceived value. Unlike internal efficiency metrics, logistics service quality reflects how customers evaluate delivery reliability, responsiveness, timeliness, order fulfilment, information accuracy, flexibility, product condition, and service recovery. These dimensions are particularly critical in customer-facing logistics contexts such as e-commerce logistics and last-mile

delivery, where logistics performance directly influences customer satisfaction, loyalty, and post-purchase experience.

Prior research has consistently demonstrated that logistics service quality is a key determinant of customer satisfaction across online retailing, fresh e-commerce logistics, and cross-border logistics environments (Rajendran et al., 2018; Mentzer et al., 2001; Parasuraman et al., 1988). From a theoretical perspective, logistics service quality can be interpreted as a firm-specific capability aligned with the resource-based view (RBV), where superior service delivery contributes to sustained competitive advantage through differentiated logistics performance (Barney, 1991).

The importance of logistics service quality has further increased as logistics providers are required to deliver not only physical goods but also reliable and information-rich service experiences. Customer-perceived logistics quality is shaped by delivery consistency, service communication, fulfilment accuracy, and reliability. Evidence from agri-food supply chains and third-party logistics further shows that logistics service quality influences outsourcing decisions, operational continuity, and long-term supply chain relationships (Govindan et al., 2016; Christopher, 2016). Accordingly, logistics service quality should be understood as a multidimensional capability linking logistics operations, customer satisfaction, and supply chain performance.

2.2. Digital Transformation and Artificial Intelligence in Logistics Services

The evolution of logistics service quality is closely associated with the broader digital transformation of logistics and supply chain systems. Digital technologies such as automation, big data analytics, the Internet of Things, blockchain, Logistics 4.0, and decision-support systems have reshaped how logistics providers plan, monitor, and evaluate service processes. These technologies enhance visibility, information accuracy, operational flexibility, and responsiveness, thereby strengthening service quality dimensions expected in modern logistics environments.

Earlier studies on intelligent logistics systems highlight the role of digital technologies in improving coordination, third-party logistics efficiency, and supply chain flexibility (Cheung et al., 2006; Choy et al., 2008). From a dynamic capabilities perspective, firms must continuously sense, seize, and reconfigure digital resources to adapt to rapidly changing logistics environments driven by technological advancement (Teece et al., 1997).

Within this transformation, artificial intelligence represents an advanced stage of digitalization, enabling predictive, adaptive, and autonomous decision-making. AI techniques such as machine learning, deep learning, predictive analytics, and optimization algorithms have been widely applied to routing, dispatching, demand forecasting, warehouse operations, and service evaluation. These applications demonstrate that AI simultaneously enhances operational efficiency and service responsiveness in logistics systems (Ivanov & Dolgui, 2021; Wang et al., 2020; Yu et al., 2026).

In e-commerce logistics and last-mile delivery, AI-based systems support order fulfilment, routing optimization, time-window scheduling, and resource allocation. Empirical studies confirm that intelligent logistics systems improve fulfilment accuracy, delivery reliability, and operational responsiveness in dynamic environments (Leung et al., 2018; Nguyen et al., 2022; Ha et al., 2018).

2.3. Artificial Intelligence in Logistics Service Quality

The relationship between artificial intelligence and logistics service quality can be explained through multiple service enhancement mechanisms. First, AI improves service reliability by enabling predictive analytics, demand forecasting, and disruption anticipation. Second, it enhances responsiveness through real-time dispatching, dynamic routing, and adaptive decision-making. Third, AI improves customer experience through sentiment analysis, feedback mining, and service evaluation based on digital data sources.

Empirical studies using machine learning and deep learning approaches show that AI can effectively identify customer perceptions of logistics service quality and improve evaluation accuracy in e-commerce and cross-border logistics environments (Sucena & Cury, 2023; Li & Nichols, 2026; Malhotra & Kharub, 2025). From a service-dominant logic perspective, logistics service value is co-created through interactions between providers and customers, where AI acts as an enabling mechanism for value co-creation rather than a standalone operational tool (Vargo & Lusch, 2008).

AI-enabled logistics service quality is also supported by digital infrastructures such as the Internet of Things, blockchain, smart contracts, and Industry 4.0 technologies. These systems enhance traceability, transparency, and information integration across logistics networks. Evidence suggests that intelligent logistics ecosystems integrating IoT and blockchain significantly improve service reliability and customer satisfaction (Tian et al., 2021; Raj et al., 2022).

Finally, it is important to distinguish logistics service quality from logistics performance. Logistics performance refers to operational efficiency indicators such as cost, speed, routing efficiency, and capacity utilization. In contrast, logistics service quality reflects how these operational outcomes are perceived by customers in terms of reliability, responsiveness, timeliness, information quality, and service recovery. Accordingly, logistics performance serves as an antecedent of logistics service quality rather than being synonymous with it.

3. Methodology

This study employed a bibliometric approach to examine the research evolution, knowledge structure, and future directions of AI-driven service quality in logistics services. Bibliometric analysis is appropriate for this study because the topic spans several interconnected domains, including artificial intelligence, logistics service quality, customer satisfaction, e-commerce logistics, last-mile delivery, third-party logistics, and digital supply chain management. As illustrated in Figure 1, the study followed a sequential process consisting of data collection, screening, bibliometric analysis, and visualization.

Data were retrieved from the Scopus database because of its broad coverage of peer-reviewed publications in logistics, supply chain management, service management, business, information systems, operations research, transportation studies, and artificial intelligence. The search was conducted in the title, abstract, and keyword fields. The search query applied was:

TITLE-ABS-KEY (("artificial intelligence" OR AI OR "machine learning" OR "deep learning" OR "big data" OR "data analytics" OR "predictive analytics" OR algorithm* OR digital* OR automation OR "intelligent system*") AND ("service quality" OR "service delivery" OR "service performance" OR "customer satisfaction" OR "customer experience" OR "customer service" OR "delivery performance") AND ("logistics service*" OR "logistics service quality" OR "logistics service provider*" OR "third-party logistics" OR "3PL" OR "last-mile delivery" OR "last mile delivery" OR "e-commerce logistics" OR "urban logistics"))

The search covered publications indexed in Scopus from 2002 to 2026 and was conducted on 04/04/2026. The starting year 2002 was retained because it represents the earliest publication identified under the search criteria used in this study. The year 2026 was included because Scopus had already indexed relevant publications at the time of data collection. However, 2026 should be interpreted as a partial and still-developing publication year rather than a complete annual record. The query was structured around three dimensions: AI and digital technologies, service quality and customer-related outcomes, and logistics service contexts. Because the topic is interdisciplinary, the query was intentionally designed to capture both customer-facing service-quality studies and operational studies that are directly connected to logistics service delivery. This design allowed the study to identify publications related to AI technologies, digital analytics, automation, intelligent systems, customer satisfaction, service delivery, logistics service quality, third-party logistics, last-mile delivery, e-commerce logistics, and urban logistics. To reduce the risk of over-inclusion, the three groups of terms

were combined rather than used independently. During screening, studies that were purely technical or operational without a clear link to logistics service delivery, delivery performance, customer satisfaction, customer experience, or service-related outcomes were excluded. The interpretation of the results was also checked against a narrower conceptual focus on artificial intelligence, machine learning, logistics service quality, and customer satisfaction.

The initial search produced 533 records. These records were screened according to document type, language, duplication, and topic relevance. During the screening process, 252 records were excluded due to non-article/review document types, non-English publications, duplicate records, topic irrelevance, or the absence of clear service-related outcomes. In particular, purely technical or operational studies without a clear connection to logistics service delivery, logistics service quality, delivery performance, customer satisfaction, customer experience, or other service-related logistics outcomes were excluded. After this screening process, 281 publications were retained for bibliometric analysis.

The analysis combined performance analysis and science mapping. Performance analysis was used to examine annual scientific production, citation patterns, source productivity, country productivity, and highly cited documents. Science mapping was used to identify the conceptual and thematic structure of the field through keyword co-occurrence analysis, thematic mapping, and keyword evolution. Data processing and visualization were conducted using Bibliometrix/Biblioshiny in R Studio and VOSviewer. Prior to analysis, keyword preprocessing was conducted to ensure data consistency, including merging synonymous terms, harmonizing singular and plural forms, standardizing spelling variations, and removing generic or non-informative keywords to improve the clarity of the co-occurrence network. The cleaned dataset was then used for VOSviewer analysis to ensure reproducibility and reliable cluster formation. The VOSviewer analysis was conducted using full counting method, association strength normalization, and a minimum keyword occurrence threshold to ensure reproducibility of the network results. Biblioshiny was used to generate descriptive bibliometric indicators and thematic analyses, while VOSviewer was used to construct keyword co-occurrence networks, overlay maps, and cluster visualizations. Together, these tools enabled a transparent and reproducible analysis of the publication trajectory, intellectual structure, thematic dynamics, and future directions of AI-driven service quality in logistics services.

In the keyword co-occurrence analysis, VOSviewer was used. Full counting was applied to keyword occurrences. A minimum occurrence threshold of 5 was set to ensure that only frequently appearing keywords were included in the network visualization. The association strength normalization method was applied to standardize link strengths between keywords. For clustering, the resolution parameter was set at 1.0, and the minimum cluster size was set at 5. Node size represents keyword frequency, while link thickness indicates co-occurrence strength. Visualization was based on total link strength. All bibliometric analyses were conducted in a reproducible and parameter-controlled manner.

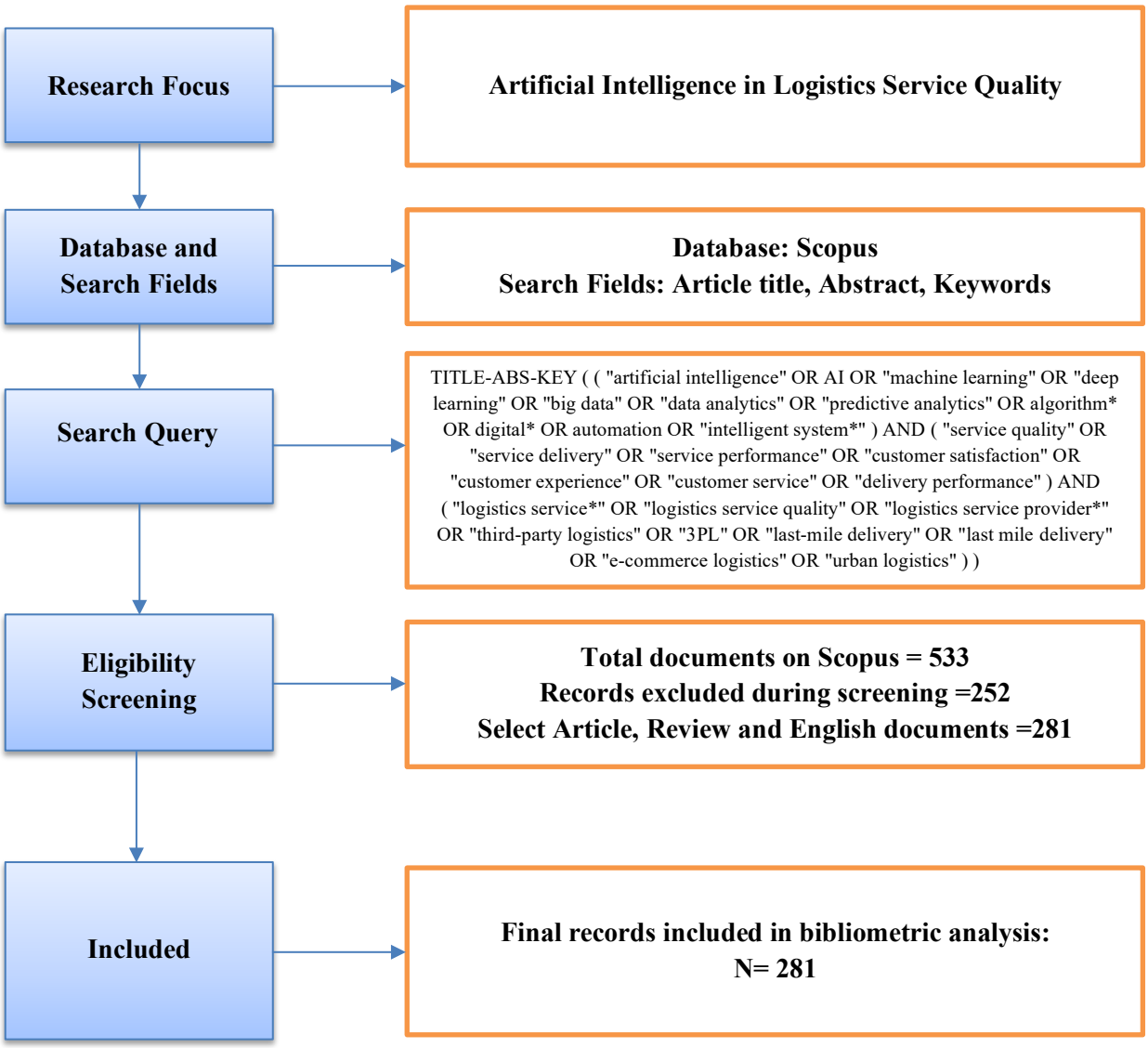


Fig.1: PRISMA Flow Diagram of the Data Selection Process

4. Results and Discussion

Table 1: Main Information of Data

Timespan	**2002:2026**
Sources	175
Documents	281
Annual Growth Rate %	17.7
Document Average Age	3.67
Average citations per doc	19.74
References	12860
Keywords Plus (ID)	1535
Author's Keywords (DE)	965

Table 1 presents the main descriptive statistics of the dataset. The bibliometric review covers 281 documents published between 2002 and 2026 across 175 sources. The annual growth rate of 17.7% indicates a strong increase in scholarly attention to AI-driven service quality in logistics services. The average document age of 3.67 years suggests that this is a relatively recent and rapidly developing research area.

The dataset records an average of 19.74 citations per document, showing that the topic has gained notable academic visibility. In total, the corpus includes 12,860 references, 1,535 Keywords Plus, and 965 Author's Keywords, reflecting the broad and interdisciplinary nature of the field across logistics, service quality, artificial intelligence, e-commerce logistics, and digital supply chain research.

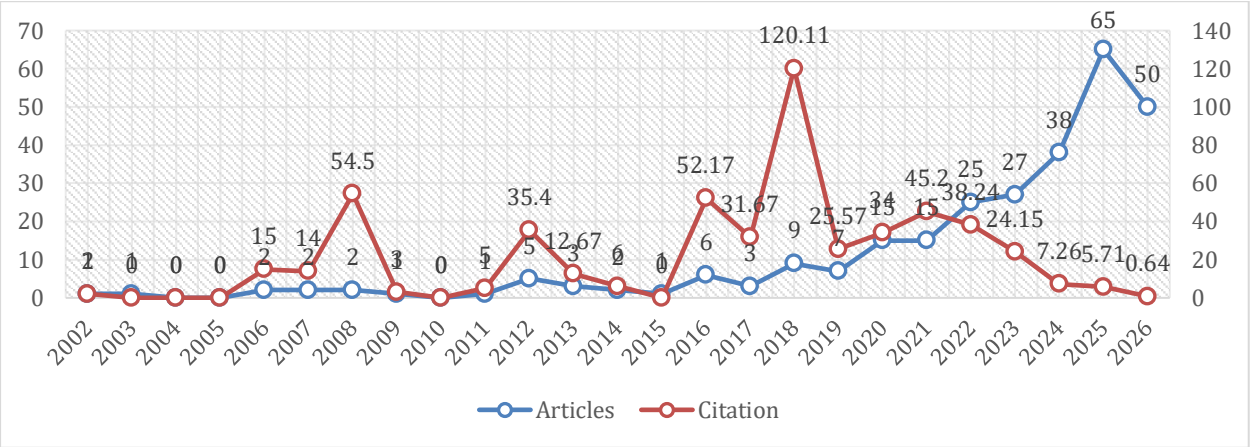


Fig.2: Number of documents and citations

The annual publication data show that the research domain developed from a small and fragmented body of work into a rapidly growing field over 2002–2026, with 281 publications in total. In the early stage (2002–2007), output was minimal and intermittent, indicating an embryonic phase of development. From 2008 to 2015, publication activity remained low and uneven, reflecting a slow consolidation of foundational studies. A clearer growth phase emerged after 2016, when annual output increased steadily, reaching nine publications in 2018 and seven in 2019. The most pronounced expansion occurred from 2020 onward, with publications rising from 15 in 2020–2021 to 25 in 2022, 27 in 2023, 38 in 2024, and a peak of 65 in 2025.

Although 2026 records 50 publications at the time of data collection, this figure should be interpreted cautiously because 2026 represents a partial publication year and Scopus indexing for that year was still ongoing. Citation patterns are uneven and do not strictly follow publication trends. The highest citation impact appears in 2018 (120.11), despite moderate publication volume. Other notable peaks include 2008 and 2016, while recent years (2024–2026) show lower citation values (7.26, 5.71, and 0.64), which is consistent with citation time-lag effects.

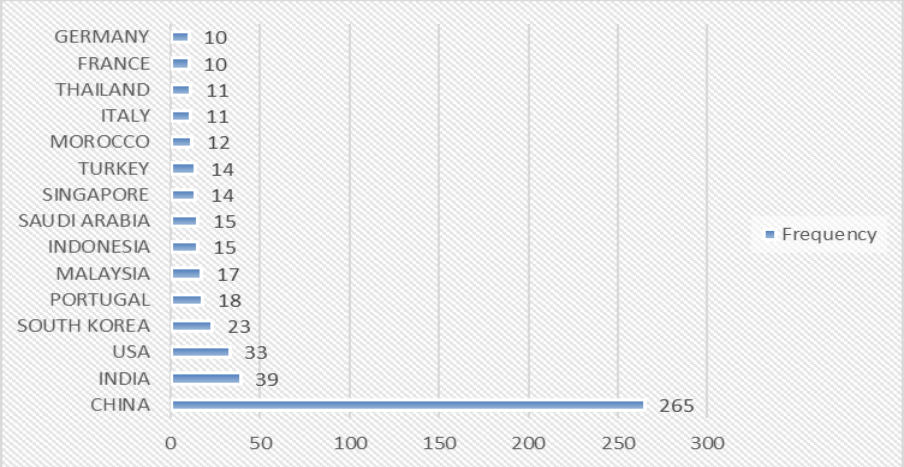


Fig.3: Countries' Scientific Production

Figure 3 presents the country-level distribution of publications on artificial intelligence in logistics service quality. The country productivity values were generated using Bibliometrix based on author affiliation information and should therefore be interpreted as affiliation-based publication records rather than unique document counts. Since a single publication may include authors from multiple countries or multiple affiliations, the total number of country records may exceed the number of unique documents in the dataset. China accounts for the largest share of affiliation-based records, with 265 records, followed by India (39), the United States (33), and South Korea (23).

These results should be interpreted as indicators of geographical participation in the dataset, rather than as normalized measures of national research performance. Country-level publication counts do not account for differences in research capacity, funding availability, population size, institutional resources, or citation impact. Nevertheless, the strong representation of China and other Asian countries suggests that research on artificial intelligence in logistics service quality is closely associated with regional developments in e-commerce logistics, digital supply chains, and last-mile delivery. China's dominant position may reflect the rapid expansion of platform-based retailing, large-scale parcel delivery systems, logistics digitalization, and investment in AI-enabled logistics infrastructure. These developments provide a strong research context for studies linking AI technologies with logistics service quality, delivery reliability, customer satisfaction, and customer experience. Future studies could extend this analysis by examining citation impact, international co-authorship networks, and country-level productivity adjusted for research capacity.

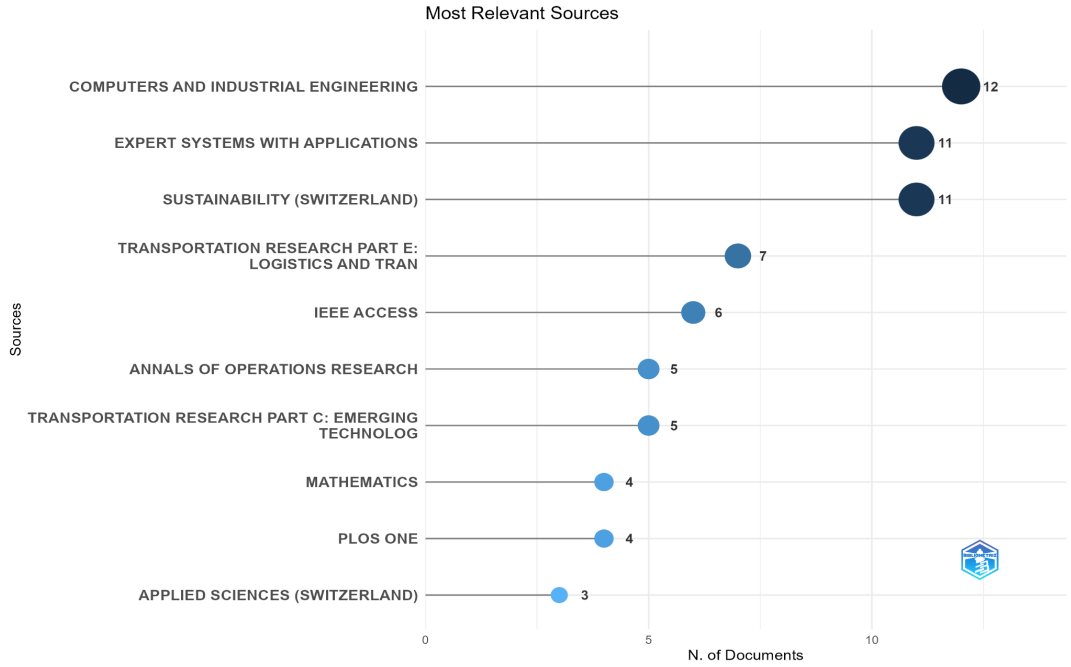


Fig.4: Top 10 most relevant sources

Figure 4 shows the leading publication sources in AI-driven service quality in logistics services. Computers and Industrial Engineering is the most productive outlet, with 12 documents, followed by Expert Systems with Applications and Sustainability (Switzerland), each with 11 documents. Transportation Research Part E: Logistics and Transportation Review contributes 7 documents, while IEEE Access contributes 6. Annals of Operations Research and Transportation Research Part C: Emerging Technologies each record 5 documents. Overall, the top 10 sources account for 68 publications, indicating a moderate concentration of research output.

The source distribution suggests that this field is mainly positioned at the intersection of industrial engineering, intelligent systems, logistics, transportation, operations research, and sustainability studies. The prominence of Computers and Industrial Engineering and Expert Systems with Applications reflects the strong role of computational methods, optimization, and decision-support systems. Meanwhile, transportation-focused journals indicate the importance of routing, last-mile delivery, and logistics network design, while Sustainability (Switzerland) highlights the growing relevance of sustainable logistics and digital transformation perspectives.

Table 2. Top 10 studies with the highest citation

No.	Article Title	Author(s)	Year	Total Citations
1	On the min-cost Traveling Salesman Problem with Drone	Ha, Quang Minh; Deville, Yves; Pham, Quang Dung; Hà, Minh Hoàng	2018	551
2	Third party logistics (3PL) selection for cold chain management: a fuzzy AHP and fuzzy TOPSIS approach	Singh, Rajesh Kr.; Gunasekaran, Angappa; Kumar, Pravin	2018	202
3	A grey DEMATEL approach to develop third-party logistics provider selection criteria	Govindan, Kannan; Khodaverdi,	2016	192

		Roohollah; Vafadarnikjoo, Amin		
4	Vehicle routing under time-dependent travel times: The impact of congestion avoidance	Kok, A.L.; Hans, E.W.; Schutten, J.M.J.	2012	166
5	The min-cost parallel drone scheduling vehicle routing problem	Nguyen, Minh Anh; Dang, Giang Thi-Huong; Ha, Minh Hoang; Pham, Minh-Trien	2022	139
6	A B2C e-commerce intelligent system for re-engineering the e-order fulfilment process	Leung, K.H.; Choy, K.L.; Siu, Paul K.Y.; Ho, G.T.S.; Lam, H.Y.; Lee, Carman K.M.	2018	139
7	Integrating Internet of Things and multi-temperature delivery planning for perishable food E-commerce logistics: a model and application	Tsang, Y.P.; Wu, C.H.; Lam, H.Y.; Choy, K.L.; Ho, G.T.S.	2021	130
8	An intelligent logistics service system for enhancing dispatching operations in an IoT environment	Wang, Jianxin; Lim, Ming K.; Zhan, Yuanzhu; Wang, XiaoFeng	2020	118
9	Procurement, traceability and advance cash credit payment transactions in supply chain using blockchain smart contracts	Raj, Praveen Vijaya Raj Pushpa; Jauhar, Sunil Kumar; Ramkumar, M.; Pratap, Saurabh	2022	116
10	A blockchain-based evaluation approach for customer delivery satisfaction in sustainable urban logistics	Tian, Zonggui; Zhong, Ray Y.; Vatankhah Barenji, Ali; Wang, Y.T.; Li, Zhi; Rong, Yiming	2021	115

Table 2 illustrates the 10 most globally cited documents in the field of AI-driven service quality in logistics services. The most cited study is Ha et al. (2018), On the min-cost Traveling Salesman Problem with Drone, with 551 citations, far exceeding the other documents and indicating its dominant influence in the citation structure. It is followed by Singh et al. (2018), with 202 citations, Govindan et al. (2016), with 192 citations, and Kok et al. (2012), with 166 citations. These leading studies suggest that highly cited research in this field is mainly associated with *drone-based routing, third-party logistics selection, cold chain logistics,* and *vehicle routing optimization*. Other influential documents, with citations ranging from 115 to 139, focus on *e-commerce fulfillment, IoT-enabled logistics* and *blockchain-based logistics transactions.* Overall, the citation distribution indicates that the intellectual foundation of the field is shaped by optimization methods, intelligent logistics technologies, and service-quality-oriented logistics decision-making. Several highly cited studies are primarily operational or technical in nature, focusing on drone routing, vehicle routing, 3PL selection, IoT-enabled dispatching, or blockchain-based logistics transactions. These studies are not treated as direct measurements of logistics service quality, but as technological and operational foundations that may improve service-related outcomes such as delivery reliability, timeliness, responsiveness, transparency, and customer satisfaction.

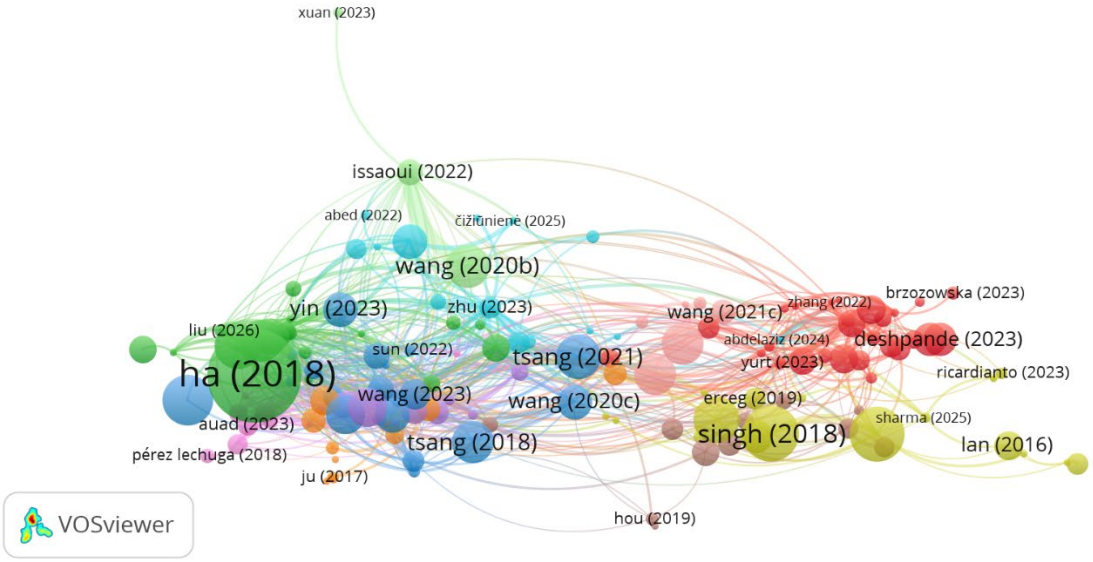


Fig.5: Bibliographic Coupling Network of Documents

To further examine the knowledge structure of the field, a bibliographic coupling analysis was conducted using VOSviewer. Bibliographic coupling links documents that cite the same references and helps identify research streams with shared intellectual foundations. As shown in Figure 5, the network is organized around several related clusters. The cluster centered on Ha et al. (2018) reflects the influence of drone-assisted routing, vehicle routing, and last-mile delivery optimization. The cluster associated with Wang (2020) and Tsang (2021) represents intelligent logistics systems, IoT-enabled logistics, and e-commerce fulfilment. Another cluster around Singh et al. (2018) reflects research on third-party logistics provider selection and decision-support methods. Overall, the bibliographic coupling analysis shows that the knowledge structure of the field is shaped by both operational optimization studies and service-oriented logistics research.

Keyword Co-occurrence and Thematic Clusters

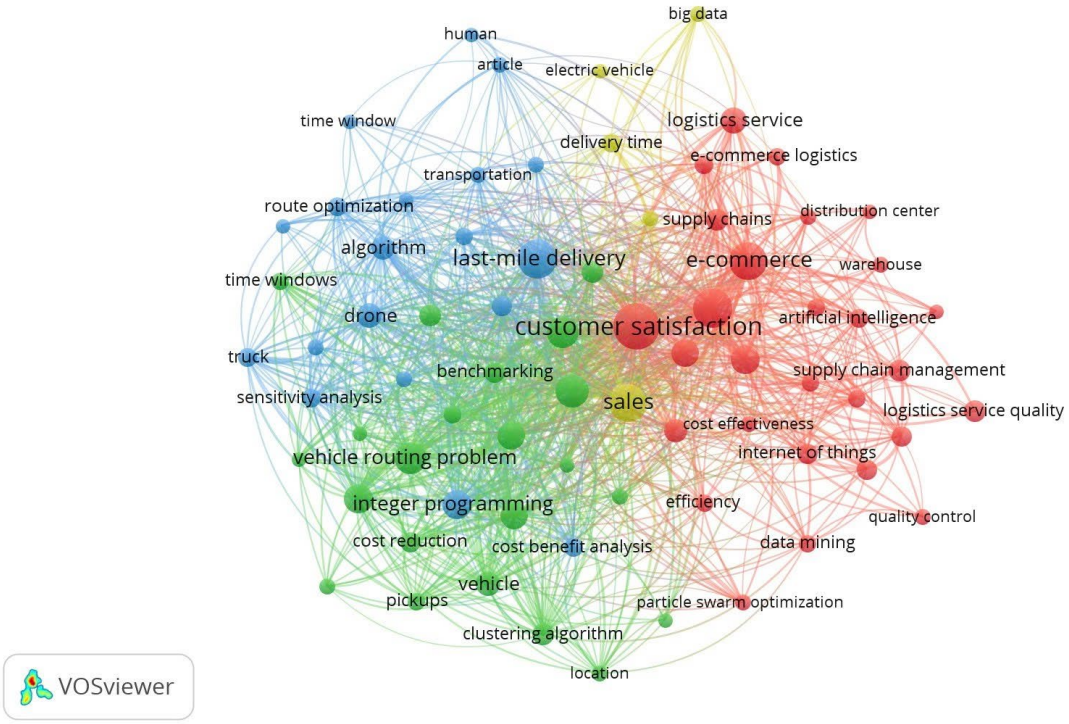


Fig.6: The network of co-occurring keywords

Based on the keyword co-occurrence analysis conducted using VOSviewer, four main research clusters were identified in the literature on AI-driven service quality in logistics services. Figure 6 presents the network of co-occurring keywords and shows how major concepts are connected within the dataset. The clusters were generated by VOSviewer according to the co-occurrence link strength among keywords, meaning that keywords appearing together more frequently across publications were grouped into the same cluster. The interpretation and labeling of each cluster were based on the most prominent keywords, their relative positions in the network, and their conceptual consistency with related terms. Therefore, the cluster labels should be understood as analytical interpretations of the keyword structure rather than fixed or mutually exclusive categories.

Cluster 1 represents technology-enabled logistics service quality and customer satisfaction. This cluster includes keywords such as customer satisfaction, e-commerce, logistics, logistics service quality, service quality, artificial intelligence, machine learning, Internet of Things, decision making, decision support system, warehouse, distribution center, and third-party logistics. The central position of customer satisfaction indicates that this cluster forms the service-oriented core of the network. Conceptually, it shows that AI and digital technologies are frequently examined in relation to customer-facing logistics outcomes, including responsiveness, fulfilment efficiency, delivery reliability, and perceived service value. Within this cluster, two sub-themes can be identified. The first focuses on customer satisfaction and logistics service quality evaluation, while the second emphasizes the role of intelligent technologies and decision-support systems in improving logistics service performance.

Cluster 2 focuses on optimization-based logistics service design and vehicle routing. The main keywords include optimization, genetic algorithm, heuristic algorithm, multi-objective optimization, vehicle routing problem, routing, time windows, urban logistics, freight transportation, cost reduction, delivery service, and sustainable development. This cluster reflects a technical-operational research stream in which logistics service quality is addressed through routing efficiency, cost minimization, delivery-time management, and system optimization. Unlike Cluster 1, which emphasizes customer

satisfaction and service evaluation, Cluster 2 explains the operational mechanisms that enable better logistics service delivery. Two sub-themes are visible in this cluster. The first concerns routing models and algorithmic optimization, while the second relates to sustainable and cost-efficient urban logistics service design.

Cluster 3 captures research on last-mile delivery technologies and customer-facing delivery constraints. This cluster includes keywords such as last-mile delivery, drone, integer programming, route optimization, truck, transportation, traffic congestion, travel time, transportation cost, time window, and traveling salesman problem. Compared with the broader optimization and routing-model orientation of Cluster 2, this cluster is more specifically concerned with the final stage of logistics delivery, where customers directly experience service quality. The presence of drone-related, travel-time, and delivery-constraint terms suggests that recent studies increasingly examine autonomous and hybrid delivery systems as ways to improve delivery speed, flexibility, reliability, and customer experience. Two sub-themes can be observed. The first focuses on last-mile delivery under time, cost, and transportation constraints, while the second highlights drone-assisted and truck–drone delivery systems as emerging technological solutions for customer-facing logistics services.

Cluster 4 reflects big data, delivery time, fleet operations, and commercial logistics performance. Although this is the smallest cluster, it links logistics service quality with data-driven performance measurement, sales outcomes, electric vehicles, and fleet operations. The co-occurrence of big data, delivery time, and sales suggests that logistics service quality is increasingly evaluated through measurable service signals that can influence customer decisions and commercial performance in e-commerce platforms. At the same time, the presence of electric vehicle and fleet operations indicates an emerging connection between logistics service performance and sustainable delivery systems. This cluster contains two related sub-themes. The first concerns data-based logistics performance and commercial outcomes, while the second focuses on sustainable fleet operations and delivery-time efficiency.

Taken together, the four clusters show that research on AI-driven service quality in logistics services is multidimensional and strongly interconnected. Cluster 1 provides the customer-oriented service-quality foundation of the field, while Cluster 2 explains how algorithmic optimization and routing design support logistics service performance. Cluster 3 narrows this operational logic to last-mile delivery, where delivery speed, routing constraints, and drone-assisted systems directly affect customer experience. Cluster 4 extends the field toward big data, delivery-time analytics, fleet operations, sales performance, and sustainability-oriented logistics outcomes. Overall, the keyword structure suggests that the field is moving from traditional logistics service quality evaluation toward AI-enabled, data-driven, and optimization-oriented logistics service systems. However, the network also indicates that human-centered issues such as customer trust, perceived fairness, service recovery, user acceptance, and ethical governance of AI-enabled logistics remain relatively underdeveloped. These areas provide important directions for future research.

Table 3. Summary of Keyword Co-occurrence Clusters

Cluster	Representative keywords	Occurrences	Total link strength
Cluster 1: AI-enabled logistics service quality and customer satisfaction	customer satisfaction	100	99
	logistics	68	67
	sales	60	60
	e-commerce	59	57
	service quality	31	28
	decision making	28	28
	logistics service	25	23

	artificial intelligence	12	12
Cluster 2: Optimization-based logistics service design and routing models	genetic algorithm	44	42
	optimization	43	42
	vehicle routing problem	41	39
	routing	31	31
	heuristic algorithm	29	29
	multi-objective optimization	29	29
	vehicle	21	21
	cost reduction	14	13
Cluster 3: Last-mile delivery technologies and customer-facing delivery constraints	last-mile delivery	67	62
	drone	23	22
	integer programming	33	33
	route optimization	11	10
	truck	11	11
	traffic congestion	10	10
	time windows	9	8
	travel time	8	8
Cluster 4: Big data, delivery time, fleet operations, and commercial logistics performance	big data	7	7
	delivery time	12	12
	fleet operations	8	8
	electric vehicle	6	5
	supply chain management	15	13
	sustainability	10	10
	data mining	9	9
	efficiency	9	9

Table 3 supports the interpretation of the keyword co-occurrence network in Figure 6. The results show that customer satisfaction has the highest occurrence frequency (100) and total link strength (99), confirming its central role in the research field. In the optimization-oriented cluster, genetic algorithm, optimization, and vehicle routing problem are the most prominent keywords, indicating the strong presence of algorithmic and routing-based logistics research. The last-mile delivery cluster is mainly represented by last-mile delivery, drone, and integer programming, showing the importance of customer-facing delivery technologies and delivery constraints. Finally, the fourth cluster links delivery time, big data, fleet operations, and sustainability, suggesting an emerging connection between data-driven logistics performance and sustainable delivery systems.

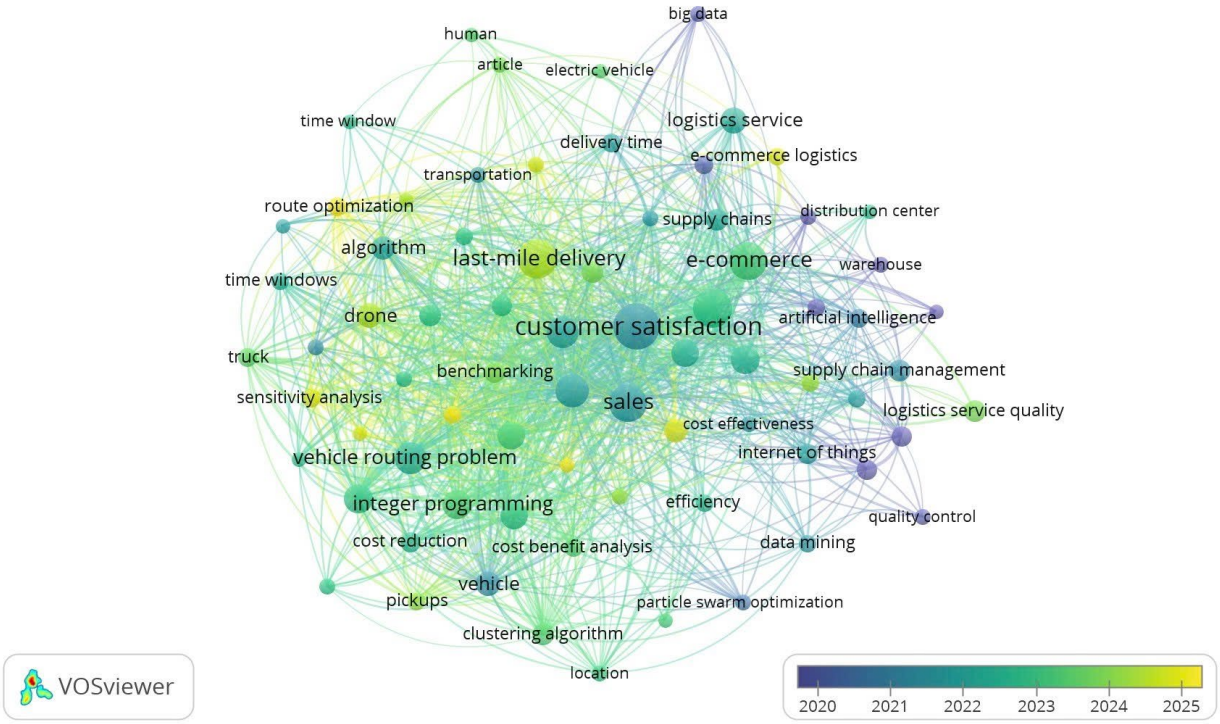


Fig.7: Keyword co-occurrence evolution

Figure 7 illustrates the temporal development of keyword co-occurrence in the literature on AI-driven service quality in logistics services, using an overlay visualization generated by VOSviewer. In this map, the colour gradient from darker blue and purple to green and yellow represents the average publication year of keywords. This allows the analysis to identify how research attention has shifted over time. Rather than simply showing which keywords appear in the dataset, the overlay map provides an approximate indication of when specific topics became more prominent in the literature. In the present dataset, the visible keyword evolution is concentrated mainly between 2020 and 2025, suggesting that the field has developed rapidly in recent years.

In the earlier stage, represented by darker blue and purple keywords, the literature mainly focused on general digital logistics and service-quality foundations. Keywords such as logistics service, logistics service quality, artificial intelligence, warehouse, distribution center, e-commerce logistics, big data, and quality control indicate that early studies were concerned with digital logistics infrastructure, service-quality assessment, and technology-supported logistics operations. These terms suggest that the field initially developed around the use of digital and intelligent technologies to improve logistics processes and evaluate service performance.

In the middle phase, represented by green-coloured keywords, research attention moved toward more operational and customer-oriented themes. Keywords such as customer satisfaction, sales, last-mile delivery, vehicle routing problem, integer programming, drone, and Internet of Things became more visible. This shift indicates that the literature increasingly linked logistics service quality with customer-facing delivery performance, smart logistics technologies, and optimization-based service design. It also shows that last-mile delivery and customer satisfaction became central concerns as e-commerce logistics and technology-enabled delivery systems expanded.

In the most recent stage, shown by yellow-coloured keywords, the literature has become more focused on route optimization, delivery time, transportation, supply chain management, cost effectiveness, and related algorithmic routing concepts. These emerging terms suggest growing

attention to AI-enabled optimization, delivery-time performance, cost-efficient logistics systems, and intelligent service operations. Overall, the overlay visualization indicates a temporal progression from general digital logistics and service-quality evaluation toward more advanced, data-driven, and optimization-oriented research. This development reflects the increasing importance of last-mile delivery, customer satisfaction, route optimization, and intelligent logistics service performance in shaping the future direction of AI-driven logistics service quality research.

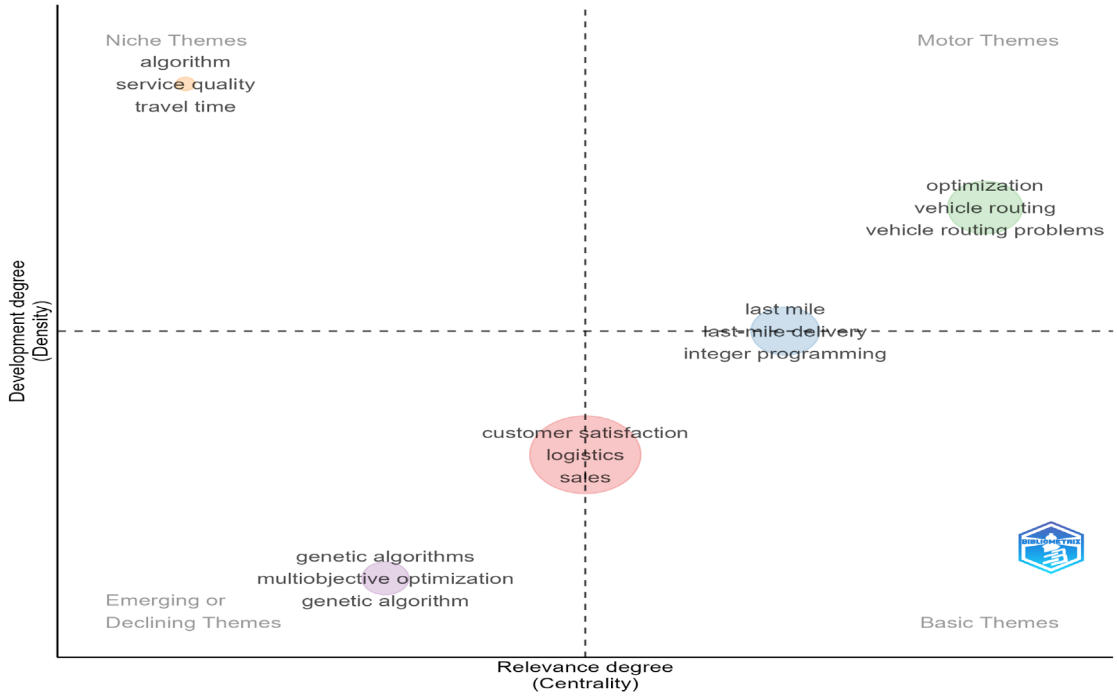


Fig.8: Thematic Map

The thematic map provides an overview of the conceptual development of AI-driven service quality in logistics services by positioning themes according to centrality and density. The results show five main thematic areas. First, customer satisfaction, logistics, and sales appear as a basic theme, indicating that customer-oriented logistics performance forms the core foundation of the field. Second, optimization and vehicle routing are positioned as a motor theme, suggesting that algorithmic routing and operational optimization are both highly developed and central to the literature. Third, last-mile delivery and integer programming represent a highly relevant transitional theme, linking customer-facing delivery performance with mathematical modelling and advanced delivery technologies. Fourth, algorithm, service quality, and travel time form a niche theme, reflecting a specialized stream focused on time-sensitive logistics service performance. Finally, genetic algorithm and multi-objective optimization appear as an emerging or potentially declining theme, indicating a methodological area that is still developing but less central to the overall structure.

Taken together, the thematic map complements the keyword co-occurrence and keyword evolution analyses by showing which themes are central, mature, specialized, or still emerging. These patterns provide the basis for the following discussion of the field's intellectual development, remaining gaps, and future research directions.

Table 4: Centrality and Density Analysis of Thematic Clusters

Theme label	Representative keywords	Centrality	Density
Customer satisfaction and logistics	customer satisfaction; logistics; sales	15	50
Last-mile delivery and integer programming	last mile; last-mile delivery; integer programming	16	55
Optimization and vehicle routing	optimization; vehicle routing; vehicle routing problems	19	58
Genetic algorithms and multi-objective optimization	genetic algorithms; multiobjective optimization; genetic algorithm	14	47
Algorithm, service quality, and travel time	algorithm; service quality; travel time	10	65

Table 4 reports the centrality and density values of the thematic clusters shown in Figure 8. The optimization and vehicle routing cluster has the highest centrality value (19), indicating that it is the most strongly connected theme within the field. The algorithm, service quality, and travel time cluster has the highest density value (65), suggesting that it is a relatively well-developed but more specialized theme. Customer satisfaction and logistics shows moderate centrality and density, confirming its role as a basic theme in the research domain. Last-mile delivery and integer programming also shows relatively high centrality and density, reflecting its growing importance in linking customer-facing delivery issues with optimization-based logistics research. Finally, genetic algorithms and multi-objective optimization has comparatively lower centrality and density, suggesting that it is less central to the current thematic structure.

Discussion and Future Research

The findings of this bibliometric analysis provide a structured overview of how research on AI-driven service quality in logistics services has evolved intellectually and thematically over time. Across the publication trends, keyword clusters, overlay visualization, thematic map, and keyword evolution analysis, the evidence points to a gradual movement from broad supply chain management and logistics service evaluation toward more specialized research streams involving customer satisfaction, e-commerce logistics, last-mile delivery, Internet of Things, blockchain, vehicle routing, and algorithmic optimization. This evolution suggests that logistics service quality is increasingly understood not only as a traditional customer evaluation construct but also as an outcome shaped by intelligent technologies, data-driven decision-making, and digitally connected logistics systems. At the same time, the bibliometric structure shows that the field remains fragmented across service management, logistics operations, artificial intelligence, transportation optimization, and digital supply chain research.

A key insight from the analysis is the central role of customer satisfaction in shaping the field. In the keyword co-occurrence network, customer satisfaction is the most dominant keyword, indicating that customer-oriented outcomes remain the main evaluative foundation of AI-driven logistics service quality research. This finding suggests that the value of AI in logistics service quality should not be assessed only through operational efficiency or cost reduction. Rather, AI-enabled logistics systems become service-quality enhancing when they improve customers' perceived reliability, responsiveness, transparency, and overall delivery experience. Therefore, the centrality of customer satisfaction indicates that the field is gradually moving from a technology-push perspective toward a more customer-oriented understanding of AI-enabled logistics services. Although the field has become more technology-oriented, the literature continues to assess logistics performance through customer experience, delivery reliability, responsiveness, and satisfaction. Prior studies on fresh e-commerce logistics and AI-based e-commerce logistics evaluation also show that customer satisfaction remains closely linked to logistics service quality and digital service performance (Sucena & Cury, 2023).

Another important finding is the strong presence of digital technologies and optimization-based methods. The keyword clusters show close connections among artificial intelligence, machine learning, Internet of Things, decision-making, logistics service quality, vehicle routing, genetic algorithm, multi-objective optimization, last-mile delivery, and drone-assisted routing. This pattern also shows that operational optimization functions as a service-quality enabler rather than merely a technical objective. Routing algorithms, IoT-enabled dispatching, and blockchain-based traceability can contribute to logistics service quality when they reduce delivery uncertainty, improve information visibility, and support timely service recovery. This pattern suggests that researchers increasingly examine logistics service quality through both service-management and operations-analytics perspectives. In particular, intelligent e-commerce fulfilment, IoT-enabled dispatching, blockchain-based delivery satisfaction evaluation, and drone-assisted routing demonstrate how digital and algorithmic systems can support fulfilment accuracy, delivery reliability, cost efficiency, and service responsiveness (Leung et al., 2018; Wang et al., 2020; Tian et al., 2021; Nguyen et al., 2022).

The growing prominence of last-mile delivery is another major development. The keyword network shows that last-mile delivery is strongly connected with drones, route optimization, integer programming, traffic congestion, travel time, time windows, and transportation cost. The emphasis on last-mile delivery is particularly important because this stage represents the most visible interface between logistics providers and customers. AI-enabled delivery planning, drone-assisted delivery, and real-time routing may therefore influence not only delivery efficiency but also customers' perceptions of convenience, reliability, fairness, and trust. This indicates that the final delivery stage has become a critical site where customers directly experience logistics service quality. Recent studies on drone-assisted delivery and truck–drone routing show that last-mile logistics is no longer treated only as an operational problem, but increasingly as a technology-enabled service interface where delivery speed, flexibility, reliability, and cost efficiency jointly affect customer experience (Ha et al., 2018; Nguyen et al., 2022).

From a service science perspective, AI-enabled logistics systems should be viewed not only as operational tools but also as service systems that shape customer experience and service value creation. Technologies such as intelligent routing, delivery-time prediction, IoT-based tracking, blockchain-enabled traceability, and automated customer service may improve logistics service quality by increasing transparency, reliability, responsiveness, and service recovery capability. Thus, the contribution of AI lies not only in improving logistics efficiency, but also in strengthening customer-perceived service value, trust, service interaction, and long-term service performance. This interpretation helps connect AI-enabled logistics research more closely with service science by linking operational optimization with customer experience, service recovery, transparency, and service co-creation.

The thematic map further confirms the maturation of the field. Earlier research was mainly associated with broad supply chain management and logistics service concerns. Over time, the field diversified into e-commerce logistics, customer satisfaction, vehicle routing, e-logistics, mixed integer programming, and third-party logistics. More recent themes include last-mile delivery, logistics service quality, Internet of Things, blockchain, genetic algorithm, time windows, and e-commerce logistics. This trajectory suggests that AI-driven logistics service quality research has moved from general logistics and supply chain issues toward more specialized, technology-enabled, and customer-facing service systems.

The thematic map further refines this interpretation by showing the relative maturity and centrality of key research themes. Customer satisfaction, logistics, and sales function as a basic theme, confirming the central role of customer-oriented logistics performance. Optimization and vehicle routing appear as a motor theme, indicating that algorithmic routing and operational optimization are highly developed and central to the field. Meanwhile, last-mile delivery and integer programming represent a transitional

theme that connects customer-facing delivery performance with mathematical modelling and advanced delivery technologies. More specialized or emerging themes, such as algorithm, service quality, travel time, genetic algorithm, and multi-objective optimization, suggest that methodological development remains important but still requires stronger integration with customer experience, sustainability, and logistics service quality theory.

Despite this progress, several gaps remain. First, the literature is still dispersed across AI applications, logistics service quality, customer satisfaction, e-commerce logistics, route optimization, last-mile delivery, and digital supply chain management. This makes it difficult to develop an integrated framework explaining how AI capabilities shape specific logistics service quality dimensions. Second, many studies focus on operational efficiency, delivery-time reduction, routing optimization, and cost performance, while less attention has been paid to customer trust, service recovery, perceived fairness, customer acceptance, and human-centered logistics experiences. Third, although technologies such as machine learning, blockchain, IoT, drones, and big data analytics are increasingly discussed, their specific relationships with reliability, responsiveness, flexibility, information quality, and customer satisfaction remain insufficiently synthesized. Finally, sustainability-related topics such as electric vehicles, green fleet operations, and sustainable last-mile delivery are emerging but remain less central than optimization and customer satisfaction. These gaps are also reflected in the bibliometric results. While the keyword network and thematic map show strong attention to customer satisfaction, optimization, vehicle routing, last-mile delivery, IoT, blockchain, and delivery performance, human-centered and governance-related topics such as customer trust, perceived fairness, service recovery, responsible AI, and ethical governance remain relatively underrepresented in the current thematic structure.

Building on these findings, future research should move toward a more integrated and service-oriented agenda. First, scholars should develop conceptual frameworks explaining how specific AI capabilities, including predictive analytics, intelligent routing, blockchain, IoT, automation, and machine learning, influence logistics service quality dimensions and customer outcomes. Second, future studies should connect optimization models more directly with customer-perceived service experience, including transparency, convenience, responsiveness, trust, and satisfaction. Third, last-mile delivery research should extend beyond technical routing problems to examine customer acceptance, perceived safety, regulatory readiness, and human-centered design in autonomous and drone-assisted delivery systems. Fourth, future studies should investigate how AI-enabled logistics service quality affects commercial outcomes such as customer loyalty, repeat purchase behavior, platform ratings, sales growth, and long-term customer value. Finally, sustainability should be more strongly integrated by examining how AI supports low-carbon delivery, electric vehicle fleets, sustainable urban logistics, and environmentally responsible service quality.

By applying bibliometric techniques, this study maps the intellectual structure and keyword evolution of AI-driven service quality in logistics services. The findings show that the field has progressed from broad supply chain management and logistics service evaluation toward intelligent, data-driven, and optimization-oriented service systems. Although the analysis is limited to Scopus-indexed publications and the selected search strategy, the results provide a structured foundation for advancing future research on AI-enabled logistics service quality, customer experience, sustainable distribution, and intelligent logistics service management.

Practical Implications

The findings provide several practical implications for logistics managers, technology providers, and policymakers. First, the central position of customer satisfaction in the keyword network suggests that AI adoption should not be evaluated only through operational efficiency or cost reduction. Logistics firms should also assess whether AI-enabled systems improve delivery reliability, responsiveness, transparency, customer experience, and service recovery. Second, the strong presence of routing,

optimization, delivery time, and last-mile delivery indicates that firms should prioritize AI-enabled tools for delivery planning, dynamic routing, delay prediction, and customer expectation management. Third, the visibility of IoT, blockchain, and data-driven systems suggests that logistics providers should strengthen digital infrastructure for real-time tracking, information sharing, traceability, and proactive service recovery. Finally, the emergence of sustainability-related themes, including electric vehicles, green fleet operations, and sustainable last-mile delivery, implies that intelligent logistics systems should be aligned with low-carbon delivery and sustainable urban logistics strategies.

Research Limitations

Several limitations should be acknowledged. First, the dataset was collected only from the Scopus database. Although Scopus provides broad coverage of peer-reviewed publications, relevant studies indexed in Web of Science, Dimensions, IEEE Xplore, Google Scholar, or other databases may have been excluded. Second, the analysis was limited to English-language journal articles and review papers. This may introduce language and document-type bias, particularly because conference papers are often important outlets for artificial intelligence, logistics technologies, and computer science research. Third, the search strategy was intentionally broad in order to capture the interdisciplinary nature of artificial intelligence in logistics service quality. However, broad search terms may also increase the risk of including studies that are only indirectly related to logistics service quality. Fourth, the interpretation of keyword clusters and thematic labels involves a degree of researcher judgment. Although VOSviewer and Biblioshiny generated the clusters and thematic map based on bibliometric algorithms, the naming and interpretation of clusters remain partly subjective. Finally, although this study uses keyword co-occurrence and thematic mapping to identify the conceptual structure of the field, future studies could further strengthen the intellectual structure analysis by incorporating co-citation analysis or systematic literature review methods.

5. Conclusion

This study examined the research landscape of artificial intelligence in logistics service quality based on 281 Scopus-indexed journal articles and review papers published between 2002 and 2026. The findings show that the field has expanded rapidly, particularly after 2020, reflecting the growing relevance of AI, digital logistics, e-commerce logistics, and last-mile delivery in logistics service research. Country-level results indicate that China accounts for the largest share of affiliation-based publication records, followed by India, the United States, and South Korea, suggesting strong research participation from Asian countries. The source analysis shows that the field is mainly published in journals related to industrial engineering, intelligent systems, transportation, logistics, and operations research.

The bibliometric results identify four main thematic clusters. The first cluster focuses on AI-enabled logistics service quality and customer satisfaction. The second cluster emphasizes optimization-based logistics service design and routing models. The third cluster captures last-mile delivery technologies and customer-facing delivery constraints. The fourth cluster links big data, delivery time, fleet operations, and commercial logistics performance. Together, these clusters indicate that the field is shaped by both service-oriented concerns, such as customer satisfaction and service quality, and operational-technical concerns, such as routing optimization, delivery performance, IoT, blockchain, and last-mile delivery.

The results also show that emerging research attention is moving toward last-mile delivery, delivery time, route optimization, blockchain, IoT, data-driven logistics performance, and sustainable delivery systems. However, several important gaps remain. Future studies should pay greater attention to customer trust, perceived fairness, service recovery, responsible AI, ethical governance, service co-creation, and the ways in which AI-enabled logistics systems influence customer experience and long-

term service performance. By clarifying these trends and gaps, this study provides a structured foundation for future research on artificial intelligence in logistics service quality.

References

Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management, 17*(1), 99–120. https://doi.org/10.1177/014920639101700108

Cheung, C. F., Chan, Y. L., Kwok, S. K., Lee, W. B., & Wang, W. M. (2006). A knowledge-based service automation system for service logistics. *Journal of Manufacturing Technology Management, 17*(6), 750–771. https://doi.org/10.1108/17410380610678783

Choy, K. L., Chow, H. K. H., Tan, K. H., Chan, C. K., Mok, E. C. M., & Wang, Q. (2008). Leveraging the supply chain flexibility of third party logistics: Hybrid knowledge-based system approach. *Expert Systems with Applications, 35*(4), 1998–2016. https://doi.org/10.1016/j.eswa.2007.08.084

Christopher, M. (2016). *Logistics and supply chain management* (5th ed.). Pearson.

Govindan, K., Khodaverdi, R., & Vafadarnikjoo, A. (2016). A grey DEMATEL approach to develop third-party logistics provider selection criteria. *Industrial Management & Data Systems, 116*(4), 690–722. https://doi.org/10.1108/IMDS-05-2015-0180

Ha, Q. M., Deville, Y., Pham, Q. D., & Hà, M. H. (2018). On the min-cost traveling salesman problem with drone. *Transportation Research Part C: Emerging Technologies, 86*, 597–621. https://doi.org/10.1016/j.trc.2017.11.015

Hoai, B. C., Ho, T. Q., Dao, Q. T., Nguyen, D. U., & Chang, M. L. (2026). Managing technostress in digital workplaces: The role of digital employee experience within the job demands–resources framework. *Journal of Logistics, Informatics and Service Science, 13*(1), 78–97. https://doi.org/10.33168/jliss.2026.0104

Ivanov, D., & Dolgui, A. (2021). A digital supply chain twin for managing the disruption risks and resilience in the era of Industry 4.0. *Production Planning & Control, 32*(9), 775–788. https://doi.org/10.1080/09537287.2020.1768450

Kok, A. L., Hans, E. W., & Schutten, J. M. J. (2012). Vehicle routing under time-dependent travel times: The impact of congestion avoidance. *Computers & Operations Research, 39*(6), 1440–1450. https://doi.org/10.1016/j.cor.2011.05.027

Leung, K. H., Choy, K. L., Siu, P. K. Y., Ho, G. T. S., Lam, H. Y., & Lee, C. K. M. (2018). A B2C e-commerce intelligent system for re-engineering the e-order fulfilment process. *Expert Systems with Applications, 91*, 386–401. https://doi.org/10.1016/j.eswa.2017.09.026

Li, T., & Nichols, H. (2026). A multidimensional evaluation of cross-border e-commerce logistics service quality based on deep learning sentiment analysis. *Electronic Commerce Research*. https://doi.org/10.1007/s10660-026-10147-y

Liu, J., Chen, W., Yang, J., Xiong, H., & Chen, C. (2022). Iterative prediction-and-optimization for e-logistics distribution network design. *INFORMS Journal on Computing*. https://doi.org/10.1287/ijoc.2021.1107

Malhotra, G., & Kharub, M. (2025). Elevating logistics performance: Harnessing the power of artificial intelligence in e-commerce. *The International Journal of Logistics Management, 36*(1), 290–321. https://doi.org/10.1108/IJLM-01-2024-0046

Mentzer, J. T., Flint, D. J., & Hult, G. T. M. (2001). Logistics service quality as a segment-customized process. *Journal of Marketing, 65*(4), 82–104. https://doi.org/10.1509/jmkg.65.4.82.18390

Nguyen, M. A., Dang, G. T.-H., Hà, M. H., & Pham, M.-T. (2022). The min-cost parallel drone scheduling vehicle routing problem. *European Journal of Operational Research, 299*(3), 910–930. https://doi.org/10.1016/j.ejor.2021.07.008

Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1988). SERVQUAL: A multiple-item scale for measuring consumer perceptions of service quality. *Journal of Retailing, 64*(1), 12–40.

Raj, P. V. R. P., Jauhar, S. K., Ramkumar, M., & Pratap, S. (2022). Procurement, traceability and advance cash credit payment transactions in supply chain using blockchain smart contracts. *Computers & Industrial Engineering, 169*, 108038. https://doi.org/10.1016/j.cie.2022.108038

Rajendran, S. D., Wahab, S. N., Ling, Y. W., & Yun, L. S. (2018). The impact of logistics services on e-shoppers' satisfaction. *International Journal of Supply Chain Management, 7*(5), 1–8.

Ricardianto, P., Christy, E., Pahala, Y., Abdurachman, E., Soekirman, A., Purba, O. R., Prasetiawan, S. T., Wiguna, E. S., Wibawanti, A. B., & Endri, E. (2023). Digitalization and logistics service quality: Evidence from Indonesian national shipping companies. *International Journal of Data and Network Science, 7*(2), 781–790. https://doi.org/10.5267/j.ijdns.2023.1.011

Singh, R. K., Gunasekaran, A., & Kumar, P. (2018). Third-party logistics selection for cold chain management: A fuzzy AHP and fuzzy TOPSIS approach. *Annals of Operations Research, 269*(1–2), 539–558. https://doi.org/10.1007/s10479-017-2591-3

Sucena, M. P., & Cury, M. V. Q. (2023). Artificial intelligence applied to assess perceptions of the quality of e-commerce logistics: Case study of Rio de Janeiro. *Brazilian Business Review, 21*(1), 1–20. https://doi.org/10.15728/bbr.2021.1177.en

Teece, D. J., Pisano, G., & Shuen, A. (1997). Dynamic capabilities and strategic management. *Strategic Management Journal, 18*(7), 509–533. https://doi.org/10.1002/(SICI)1097-0266(199708)18:7%3C509::AID-SMJ882%3E3.0.CO;2-Z

Tian, Z., Zhong, R. Y., Barenji, A. V., Wang, Y. T., Li, Z., & Rong, Y. (2021). A blockchain-based evaluation approach for customer delivery satisfaction in sustainable urban logistics. *International Journal of Production Research, 59*(7), 2077–2093. https://doi.org/10.1080/00207543.2020.1809733

Tsang, Y. P., Wu, C. H., Lam, H. Y., Choy, K. L., & Ho, G. T. S. (2021). Integrating Internet of Things and multi-temperature delivery planning for perishable food e-commerce logistics: A model and application. *International Journal of Production Research, 59*(18), 5563–5580. https://doi.org/10.1080/00207543.2020.1841315

Vargo, S. L., & Lusch, R. F. (2008). Service-dominant logic: Continuing the evolution. *Journal of the Academy of Marketing Science, 36*(1), 1–10. https://doi.org/10.1007/s11747-007-0069-6

Wang, J., Lim, M. K., Zhan, Y., & Wang, X. (2020). An intelligent logistics service system for enhancing dispatching operations in an IoT environment. *Transportation Research Part E: Logistics and Transportation Review, 135*, 101886. https://doi.org/10.1016/j.tre.2020.101886

Yu, S., Zhang, M., Zhao, Z., Pan, S., Lim, M. K., & Huang, G. Q. (2026). Artificial intelligence in logistics and supply chain operations: State-of-the-art and research avenues towards AI-empowered Physical Internet. *International Journal of Logistics Research and Applications*, 1–29. https://doi.org/10.1080/13675567.2026.2685107

Zhao, S., Yin, Z., & Xie, P. (2024). Multi-angle perception and convolutional neural network for service quality evaluation of cross-border e-commerce logistics enterprise. *PeerJ Computer Science, 10*, e1911. https://doi.org/10.7717/peerj-cs.1911

Zhu, C. (2023). An adaptive agent decision model based on deep reinforcement learning and autonomous learning. *Journal of Logistics, Informatics and Service Science, 10*(3). https://doi.org/10.33168/jliss.2023.0309