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GREEN LOGISTICS CONCEPT AND THE IMPACT OF ITS IMPLEMENTATION IN THE ORGANISATION: A SYSTEMATIC LITERATURE REVIEW AND META-ANALYSIS

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ABSTRACT

Green logistics aims to minimise its environmental footprint by leveraging advanced equipment and technology while maximising revenue and asset utilisation. This concept is considered a sustainable development approach that can efficiently address environmental challenges without compromising organisational performance or economic growth. Academic literature extensively delves into the concept of green logistics, exploring both theoretical and practical aspects. Many researchers connect green logistics with reducing environmental pollution in the logistics industry through implementing eco-friendly initiatives, new technologies, and innovative practices. However, from a scientific standpoint, the concept currently lacks a systematic understanding. This paper seeks to categorise research related to green logistics and identify future research directions through a systematic literature review and meta-analysis. The research approach employed in this study endeavours to identify the concept, research areas, and implementation perspectives of green logistics. Systematic literature review and meta-analysis enable the authors to comprehensively review recent scientific publications on green logistics, pinpoint existing gaps in the literature, and summarise the key characteristics of the analysed scientific works. Research has demonstrated that the fundamental objective of green logistics is to integrate and coordinate the environmental, social, and economic dimensions of the logistics system to achieve environmentally oriented logistics management. This article makes a significant contribution to the field by providing a comprehensive overview of the current state and evolution of green logistics, emphasising established and emerging areas of interest.

KEY WORDS

green logistics, implementation, systematic literature review, meta-analysis

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INTRODUCTION

Logistics activities like transportation, warehousing, packaging, and waste management have positive economic impacts and negative environmental consequences. These activities contribute to global

warming through the emission of harmful gases and cause water and air pollution, waste disposal, and fuel consumption. The green logistics concept has been developed to address these issues. Green logistics aims to minimise environmental impact by utilising advanced equipment and technology while maximising revenue and asset utilisation. It is considered

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a sustainable development concept that can help solve environmental problems without compromising organisational performance or the economy (Richnák et al., 2021; Baah et al., 2020; Karaman et al., 2020; Trivellas et al., 2020; Ibrahim et al., 2018; Patra, 2018; Lew et al., 2018; Centobelli et al., 2017; Mckinnon et al., 2015; Sulich et al., 2023).

The green logistics concept has been thoroughly examined in academic literature, addressing theoretical and practical aspects. Research authors often link green logistics with reducing environmental pollution in the logistics industry by implementing eco-friendly initiatives, new technologies, and innovations. These approaches are environmentally beneficial and can potentially increase profitability (Su-Young Kwak et al., 2020; Trivellas et al., 2020; Zowada & Niestrój, 2019; Patra, 2018; Athanasios, 2018; Mckinnon, 2015; Jedlinski, 2014). Sustainable logistics practices involve conserving resources, minimising waste, and enhancing operational efficiency by eliminating redundant processes in logistics operations (Baah et al., 2021; Chhabra et al., 2017).

Kekkonen et al. (2023), Rahman et al. (2020), Jakhar et al. (2019), Cosimato and Troisi (2015), Pazirandeh and Jafari (2013), and Vasiliauskas et al. (2013) noted that green logistics, as a part of the micro-level of social processes, is constantly influenced by societal development, economic and social progress, and environmental initiatives. However, incorporating green logistics practices into traditional logistics operations is challenging. Enhancing the sustainability of logistics processes in operations includes sourcing, transportation, packaging, distribution, warehousing, manufacturing, materials, infrastructure, etc. (Kekkonen et al., 2023; Rahman et al., 2020; Jakhar et al., 2019; Vasiliauskas et al., 2013). The sustainability of a company's logistics processes enhances its competitiveness, better its image, and yields economic benefits for producers and companies (Rahman et al., 2020).

In scientific terms, the concept of green logistics currently lacks a systematic approach to understanding it. This paper aims to classify the research related to the green logistics concept and identify future research directions through a systematic literature review and meta-analysis. The authors of this scientific paper seek to address the following questions:

RQ1. What is the prevalence of research in green logistics?

RQ2. What is the definition of green logistics?

RQ3. What are the main research fields and implementation perspectives in green logistics?

RQ4. What are the criteria that impact the implementation of green logistics?

1. RESEARCH METHODS FOR A SYSTEMATIC LITERATURE REVIEW AND META-ANALYSIS OF THE GREEN LOGISTICS CONCEPT

A systematic literature review and a meta-analysis were conducted to define the basis of the green logistics concept. The research methods combined, analysed, and summarised data from different studies. A systematic literature review is a process that gathers relevant evidence on a given topic, meeting predefined eligibility criteria, and answers formulated research questions (Baloch & Rashid, 2022; Mengist et al., 2020). Meta-analysis uses statistical methods to summarise data from analysed studies to determine the significance of the topic, provide a more detailed overview of the research on a given topic, and identify current research trends related to the concept of green logistics (Baloch & Rashid, 2022; Ahn & Kang, 2018).

The research approach used in this study aims to identify the concept, research fields, and implementation perspectives of green logistics. The methodology allows the authors to comprehensively review recent scientific publications on green logistics, identify existing gaps in the literature, and summarise the main characteristics of the analysed scientific literature. This includes prevalence in terms of years, country of origin, main keywords, and their co-occurrence.

The study followed the standard PRISMA (Preferred Reporting Item for Systematic Reviews and Meta-Analyses) requirements (Moher et al., 2015; Shamseer et al., 2015). The systematic literature review comprised three stages: initial literature search, extraction and analysis of scientific data, and meta-analysis of selected scientific articles. The primary literature search was conducted using the Scopus bibliographic database. No contact was made with the authors of the publications during the scientific literature search.

The bibliographic data was selected based on specific criteria. These include keywords "green AND logistics", type of publications (scientific articles with open access content), language (English), publication year (2000–2023), and subject area (business, management, and accounting). The following criteria were applied to exclude specific scientific literature:

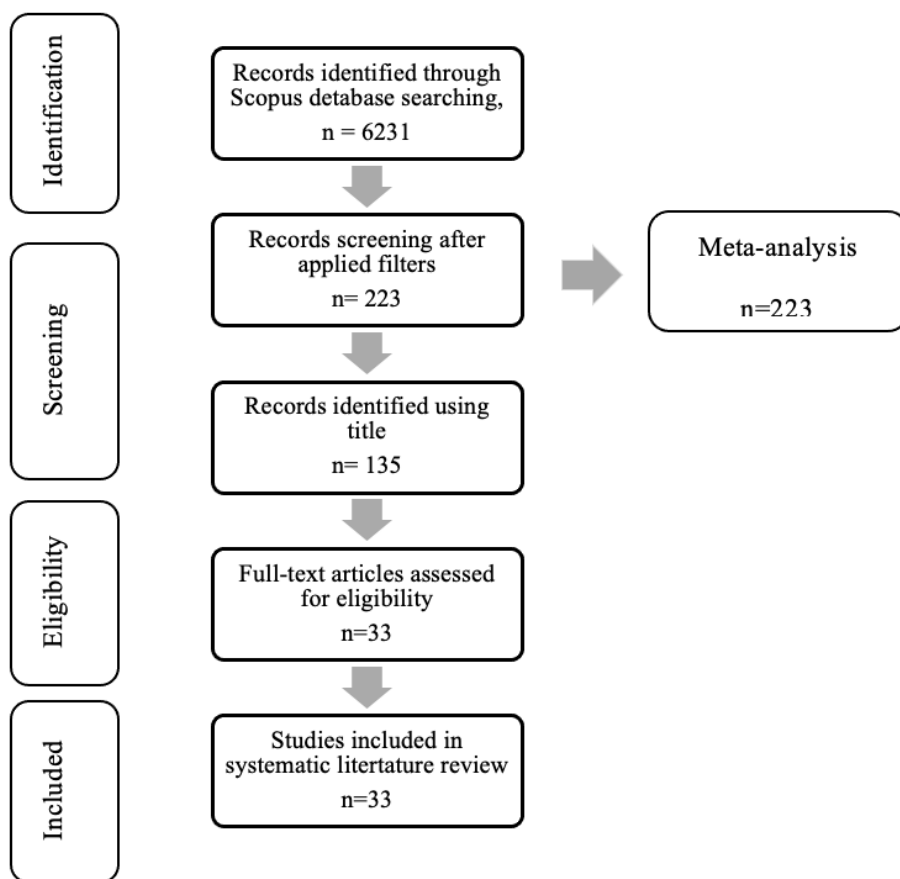


Fig. 1. Publication selection process according to the PRISMA model

articles older than 2000, publications without full-text availability, publications in languages other than English, and publications categorised as systematic literature analysis, meta-analysis, research protocol, or abstract. Additionally, publications that did not correspond to the field of management or logistics were excluded.

The Scopus bibliographic database was initially used to search for scientific literature, which yielded 6231 bibliographic records. After applying the above-mentioned criteria, 223 publications were selected for further analysis. Fig. 1 depicts the structured process of publication selection following the PRISMA model.

2. RESEARCH RESULTS

2.1. META-ANALYSIS OF THE GREEN LOGISTICS CONCEPT

This section is devoted to a comprehensive analysis of 223 scientific articles sourced from the Scopus

database. The detailed examination identifies the leading countries contributing to green logistics research (Fig. 2). Notably, 21.5 % (48) of the selected articles were published in the United Kingdom, followed by China with 14 % (31), Italy, and Sweden each representing 8 % (18), India with 7 % (15), and the United States accounting for 5 % (12).

The data presented in Fig. 2 indicates that the United Kingdom stands out as a prominent leader in green logistics research, amassing an impressive total of 2,374 citations. In contrast, China has emerged as a significant contributor to scholarly publishing in this realm, with a total of 616 citations. This disparity reflects a robust research environment in the UK while also underscoring China's increasing impact on the academic discourse surrounding green logistics, as evidenced by Scopus' open-access publications.

In addition to the contributing countries in the research area, the year of publication and the number of scientific publications were analysed to assess the relevance of the topic in the current context.

Fig. 3 shows a rapid increase in scientific publications on green logistics starting from 2018. This was

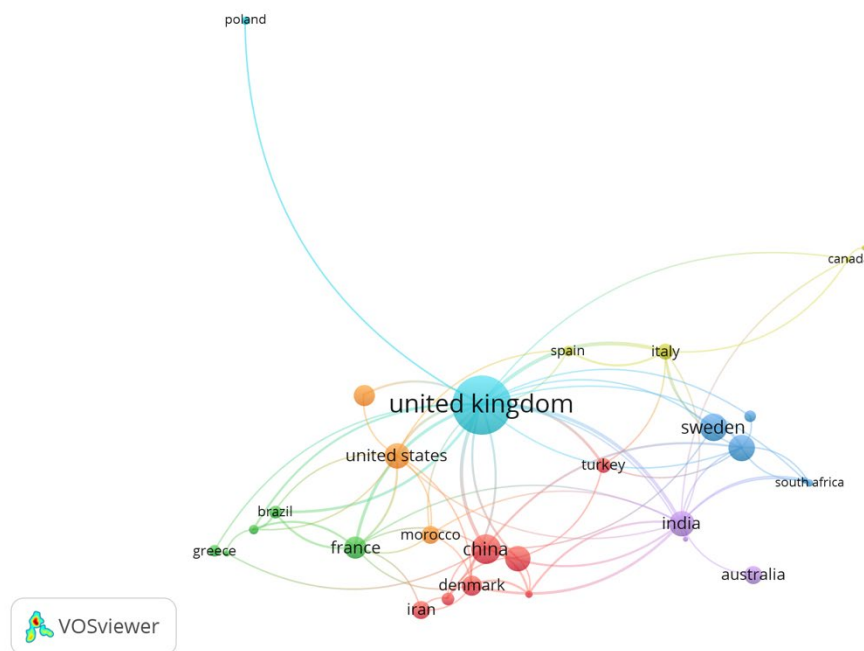


Fig. 2. Bibliographic analysis of scientific data – countries that publish scholarly work

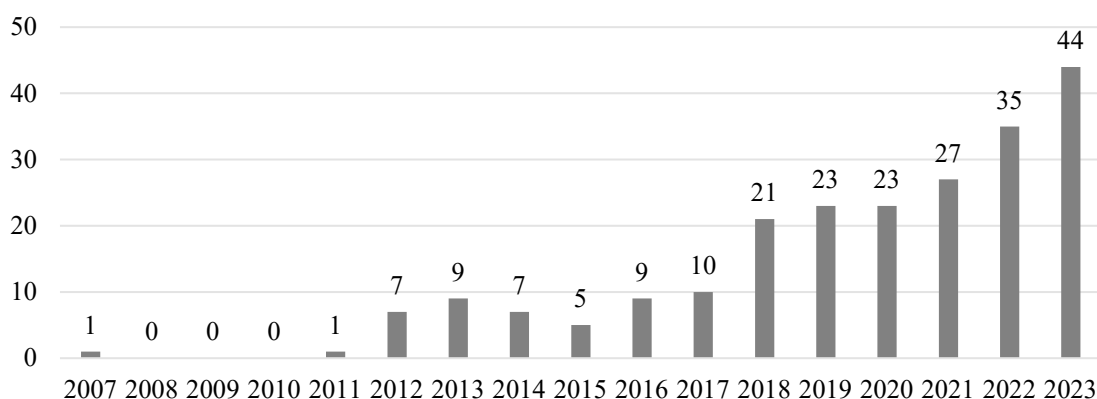


Fig. 3. Bibliographic analysis of scientific data — distribution of publications per year

around the time when the concept of supply chain had already been established in organisations, and the significance of supply chain management was becoming more apparent. Consequently, at that time, explorations commenced of the environmental impact of logistics and potential measures to mitigate it.

Data presented in Fig. 3 infers that green logistics is an increasingly relevant topic in contemporary research, with the number of scientific publications on this topic consistently increasing by 26 % in recent years.

The analysis of the articles found certain most frequent keywords used by the authors (Fig. 4). The VOSviewer software was used to determine the frequency of these keywords, and the circle size in the visual representation indicates the importance of each keyword. Lines connecting the keywords show commonalities, with brighter lines indicating stronger relationships. The distance between keywords signifies the level of cooperation, with closer items representing more intense cooperation. The network is divided into clusters, each represented by a different colour.

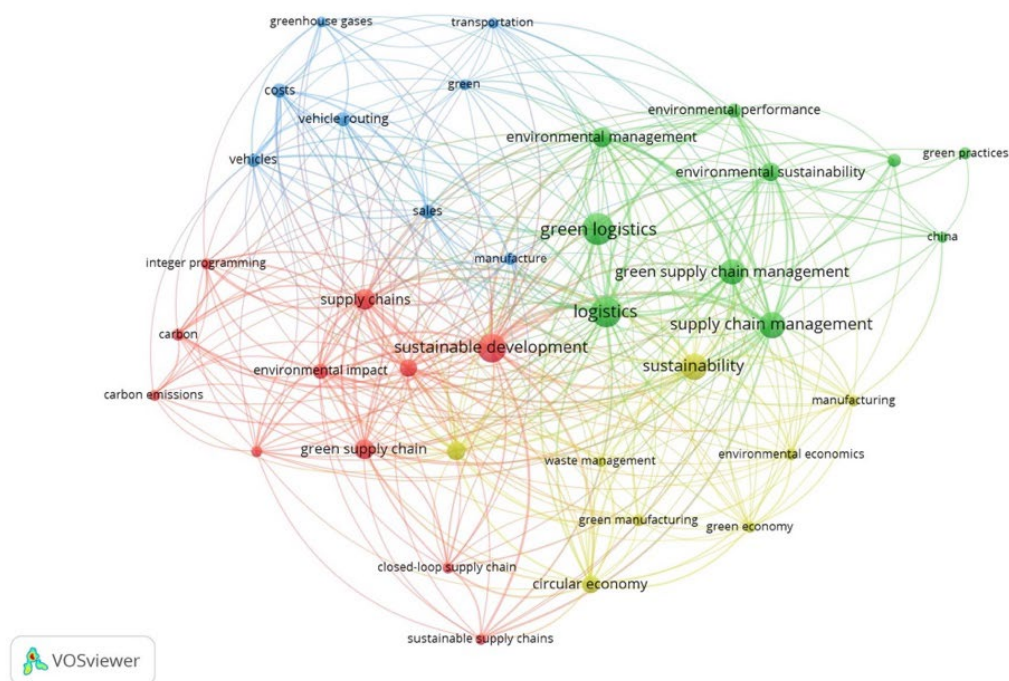


Fig. 4. Co-occurrence of keywords
Source: author's elaboration on the basis of VOSviewer software.

A total of 37 keywords were identified. The most prominent keywords are: “green logistics”, “supply chain management”, “green supply chain management” (green cluster), “sustainable development”, “green supply chain” (red cluster), and “sustainability” (yellow cluster).

The literature on green logistics (green cluster) includes contributions from Baah et al. (2022), Do Carmo Netto et al. (2020), Karaman et al. (2020), Khan et al. (2019), and Lew et al. (2018). Green logistics utilises advanced technology to minimise the environmental impact while maximising revenue and asset utilisation, serving as a sustainable development approach that harmonises ecological concerns with economic performance. Chhabra et al. (2021), Wang (2019), Chhabra et al. (2017), and Cosimato and Troisi (2015), among others, focused on green supply chain management (red cluster), viewing green logistics as a strategy that lessens ecological footprints in goods distribution. It highlights the efficient management of material flows, waste, packaging, and transportation. Boz and Pinto (2024), Hryhorak and Pichugina (2024), Trstenjak et al. (2022), Dzwigo et al. (2021), Frazzon et al. (2019), and He et al. (2017) further investigated green logistics within the context of sustainability and the circular economy (yellow cluster). They regarded it as a crucial aspect of social responsibility that decreases logistics costs while

ensuring environmental protection, aligning with corporate social responsibility principles.

In addition, an analysis of co-cited authors (Fig. 5) was conducted, revealing a network of connections among the primary authors of scientific publications on green logistics. Out of 13,797 authors, 87 lead authors were cited at least 18 times. The network consists of five clusters (red — 26 authors, green — 23 authors, yellow — 16 authors, blue — 19 authors, and green — 3 authors), with the most prominent authors being Sarkis (217 citations, 7531 strength of association) and Govindan (121 citations, 4232 strength of association). The strength of the connection attribute indicates the level of association between the co-authors and other researchers.

The theoretical access to the selected 223 articles was analysed using bibliometric methods. This analysis included identifying the most frequently cited authors, the most used keywords in citations, and authors cited overall. Afterwards, a third stage of scientific analysis and synthesis was conducted, involving the evaluation of the title, abstract, and full text of the publications to select articles for further literature analysis. Consequently, 135 scientific articles were selected based on their titles, and 33 articles were selected based on their full text for the systematic literature analysis of the theoretical concept of green logistics.

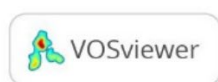
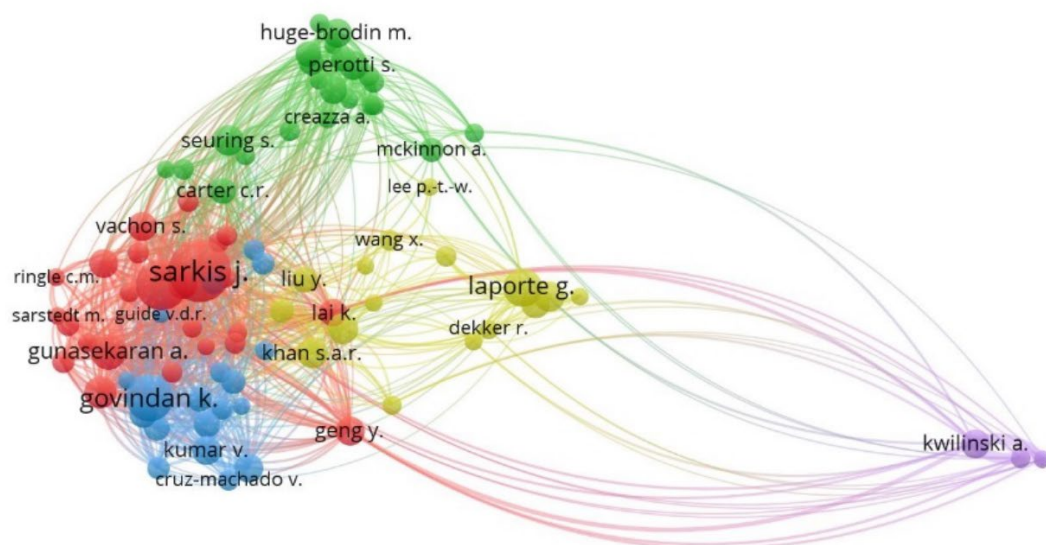


Fig. 5. Co-citation of authors

Source: author's elaboration on the basis of VOSviewer software.

The meta-analysis presented in this section of the paper allows the authors to identify research directions in green logistics, such as green logistics supply chain, green logistics supply chain management, sustainable management, sustainable development, and the circular economy, among others. Further research specifically adopts a systematic literature analysis to enhance the understanding of the green logistics concept.

2.2. SYSTEMATIC LITERATURE ANALYSIS OF THE GREEN LOGISTICS CONCEPT

The scientific literature recognises that logistics operations generate economic benefits and have detrimental environmental impacts. Activities such as transportation, warehousing, packaging, and waste management utilise facilities that directly contribute to global warming by emitting harmful gases causing the greenhouse effect. Furthermore, these activities result in significant water and air pollution, waste disposal, and fuel consumption. The scientific literature addressing these issues emphasises the importance of green logistics, which involves employing advanced equipment and technology to minimise environmental damage while maximising revenue and asset utilisation. Green logistics is considered a sustainable development concept that can help

address environmental problems without compromising the organisation's performance and economy in the exchange of goods and services (Baah et al., 2021; Do Carmo Netto et al., 2020; Karaman et al., 2020; Khan et al., 2019; Lew et al., 2018; Cosimato & Troisi, 2015; Jefimovaitė et al., 2022).

The green logistics concept is complex and has been thoroughly studied from theoretical and practical standpoints. Scientific literature often associates green logistics with reducing environmental pollution in the logistics industry by implementing green initiatives, relevant innovations, and technologies while increasing profitability. Lerher, Pejic and Jereb (2016) considered green logistics a multidimensional discipline that encompasses economic, environmental, and social elements, focusing on actions to reduce harmful environmental impacts and presenting measures and behaviours that contribute to improving society's well-being and economic level. Atmayudha, Syauqi and Purwanto (2021) define green logistics as a logistics activity that emphasises energy efficiency by using energy-efficient means of transport, optimising distribution processes through better routing and scheduling of deliveries, integrating transport processes to reduce the amount of transportation, and using environmentally friendly equipment and vehicles. On the other hand, from the perspective of Kanyepe, Alfameta and Zizhou (2023),

green logistics is a business approach aimed at reducing the environmental impact of the inventory flow, funds, and related information from the extraction of raw materials to the finished products reaching the end user.

According to Do Carmo Netto et al. (2020), Wang (2019), and Chang and Qin (2009), green logistics involves the planning, organisation, coordination, and control of all logistics operations to achieve customer satisfaction. Furthermore, Chhabra et al. (2022), Wang (2019), Chhabra et al. (2017), Cosimato and Troisi (2015), and Chang and Qin (2009) define four main areas where green logistics principles are actively applied:

- Green logistics product design is crucial as the product designer determines the environmental impact of most products. Sustainable product design involves sufficient use of existing resources, such as cost-effective and environmentally friendly raw materials, rational utilisation of production equipment, and recyclable packaging materials.
- Green transportation involves implementing an environmentally friendly logistics system that aims to minimise pollution during distribution. Modern companies should prioritise reducing environmental impact when planning and implementing their logistics distribution system and operational strategies.
- Green warehousing involves effective warehouse management planning, reducing storage time,

and improving freight turnover to enhance logistics efficiency and customer service levels.

- Green packaging promotes the reduction of packaging layers and recycling. The packaging used should be sustainable at all levels, including design, assessment, and construction.

According to De Souza et al. (2022), a green logistics framework has been developed, encompassing green supply logistics, green manufacturing logistics, green sales logistics, and reverse logistics (Fig. 6).

According to Fig. 6, green logistics encompasses a sustainable sourcing process that includes supplier evaluation and selection, and a “green” purchasing and transport process. Green manufacturing logistics refers to ensuring that the product design aligns with green logistics standards and focuses on efficient resource use. This should be continuously improved through enhancements in production management and techniques. The production logistics system must be optimised to reduce energy consumption and waste in material handling, storage, loading, and unloading. Green sales logistics involves intelligently planned sales networks that help optimise transport routes, while the overall transport system aims to make rational and appropriate choices for vehicles and distribution models. Reverse logistics, which operates directly in line with green logistics standards, is key to the entire logistics process.

Navavongsathian et al. (2020) and Klumpp et al. (2010) categorised green logistics into four groups

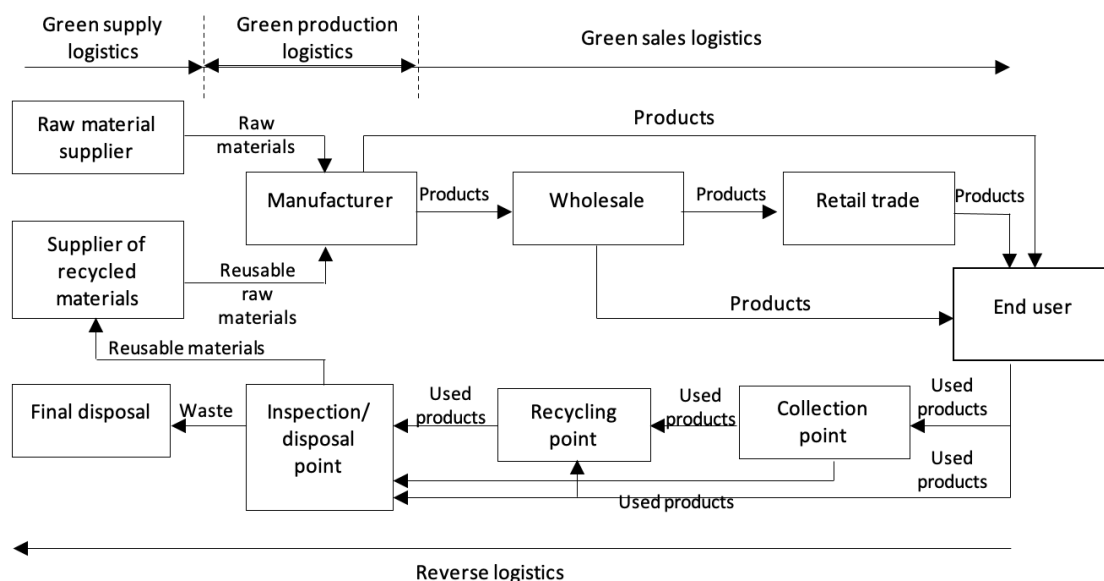


Fig. 6. Green logistics framework

Source: author's elaboration on the basis of (De Souza et al., 2022; Chunguang et al., 2008).

based on research fields and implementation perspectives for integrating green logistics processes.

- Green logistics, from a sustainability perspective, involves the organisation's efforts to achieve a sustainable supply chain performance and the company's responsibility to the community by reducing costs. It includes the cost-effectiveness perspective that focuses on reducing the use of non-renewable materials (such as energy and raw materials), operating environmentally safely, and preventing environmentally harmful events (such as oil spills) and potential injuries to workers. Additionally, the pollution efficiency perspective aims to reduce the emission of greenhouse gases and other pollutants.
- The logistics perspective is based on three key objectives: availability that ensures the right goods at the right place and time; logistics transparency, which provides accurate and real-time information on transport, the status of goods, and the overall performance of logistics to customers and other partners in the supply chain; and quality of the logistics service, addressing the need for intact transport of freight and the smoothness of the logistics service (service-orientation and security awareness).
- Customer perspective covers customer and industry needs, quality, value, and customer expectations. The value perspective addresses the cost ratio and the quality of the goods purchased, which need to be protected and improved. The risk management objective defines the overall risk management approach to avoid situations threatening the enterprise's existence. The process efficiency objective determines the process time and internal process costs to be reduced in supply management, for example, through e-procurement.
- In terms of operational and flexibility perspectives, there are three key factors to consider. First, due to the high frequency of supply chain disruptions and the interference with normal logistical processes, there is a need for speed to respond more quickly to unusual situations and to standardise supply chain events. Second, the increasing technological impact on all steps in the supply chain, individuals, and companies emphasises the need for adaptability, which is the flexibility goal. Finally, the implementation goal recognises that future technologies will require even more education and learning efforts to reach their full potential in supply chain event

management, thus posing an implementation barrier.

These perspectives provide an integrated view and allow for adopting green logistics practices, incorporating more sustainable operational logistics solutions. The integration of the green logistics and supply chain management perspectives is illustrated in Fig. 7, which explains that implementing green logistics requires the consideration of four key factors: customer, sustainability, logistics processes, and operational and flexibility perspectives.

Sustainable logistics practices offer the opportunity to conserve resources, reduce waste, and enhance operational efficiency by eliminating unnecessary processes in logistics operations (Do Carmo Netto et al., 2020; Baah et al., 2020; Chhabra et al., 2017). In a broader analysis of the implementation of green logistics, Baah et al. (2020) and Yu (2016) emphasised that this implementation requires a significant investment, particularly in the initial phase, which can impact the financial capacity of companies. However, this investment improves environmental reputation in the long run, ultimately increasing market share and revenues. Aibin et al. (2020) argued that the implementation of green logistics is directly linked to the ecological environment, which must be assessed to promote green logistics. The authors highlight that the sustainable development of logistics activities and the protection of the ecological environment can only be ensured by implementing green logistics. They also state that without the protection of the ecological environment, green logistics activities would not exist.

Meanwhile, Baah et al. (2020) stated that awareness organisations can take a proactive or reactive approach to implementing green logistics practices. The authors explained that a reactive approach involves an organisation limiting its environmental activities to what existing legislation mandates to avoid legal issues. On the other hand, a proactive approach involves voluntary decisions and practices aimed at further reducing negative environmental impacts. Consequently, important factors drive green logistics and influence organisations to either react to or initiate green logistics implementation.

In a study by Bozhanova et al. (2022), the main goal of green logistics is integrating and coordinating environmental, social, and economic aspects within the logistics system. The aim is to achieve environmentally oriented logistics management. The authors conducted a qualitative empirical study to clarify and justify the impact of green logistics on the organisa-

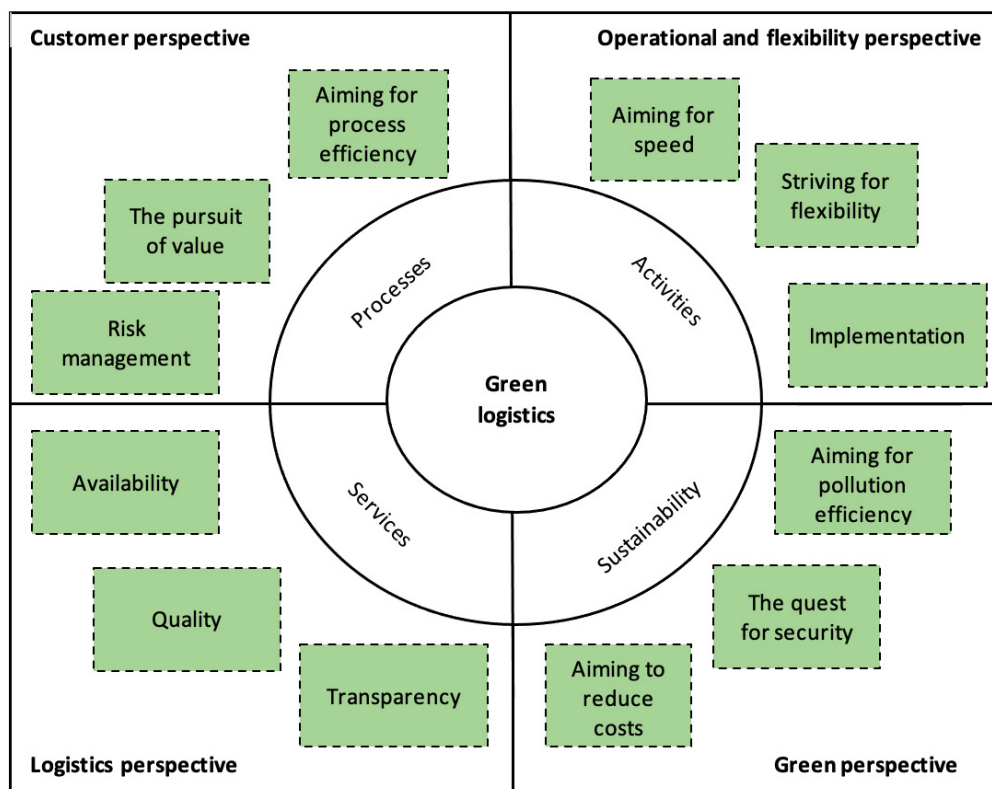


Fig. 7. Perspectives on the Green Logistics System

Source: author's elaboration on the basis of (Navavongsathian et al., 2020; Klumpp & Saur, 2010).

Tab. 1. Impact of implementing green logistics on an organisation and a region

ECONOMIC EFFECT	SOCIAL IMPACT	ENVIRONMENTAL EFFECT
• The increase in Gross Domestic Product (GDP) in absolute terms and per capita due to the expansion of environmental services is particularly decisive for waste management initiatives. • Increases in regional and municipal budgets through income taxes and property taxes. • Introducing fewer polluting technologies and saving resources. • Agricultural and recreational development. • Generating electricity and heat using alternative energy sources.	• Creating new jobs and reducing unemployment. • Declining urban and rural pollution. • Raising awareness. • Developing a caring attitude towards nature.	• Preventing pollution of the atmosphere, soil, and groundwater. • Preserving biodiversity and protecting the environment. • Reducing greenhouse gas emissions. • Saving scarce energy resources and developing alternative energy sources. • Creating an environmentally friendly image of the city and the region.

Source: author's elaboration on the basis of (Bozhanova et al., 2022).

tion and the region in which the logistics activities are carried out, particularly in terms of economic, social, and environmental effects (Table 1).

In a recent study, Dzwigo et al. (2021) proposed that the term “green logistics” should be understood from four scientific perspectives: as a concept for sustainable development of logistics systems at differ-

ent levels, as a tool for the circular economy, as a component of corporate social responsibility, and as a type of distribution logistics activity. Introducing a mechanism for green logistics can help minimise the costs of managing logistics flows while maintaining an appropriate level of environmental protection, which is crucial for corporate social responsibility,

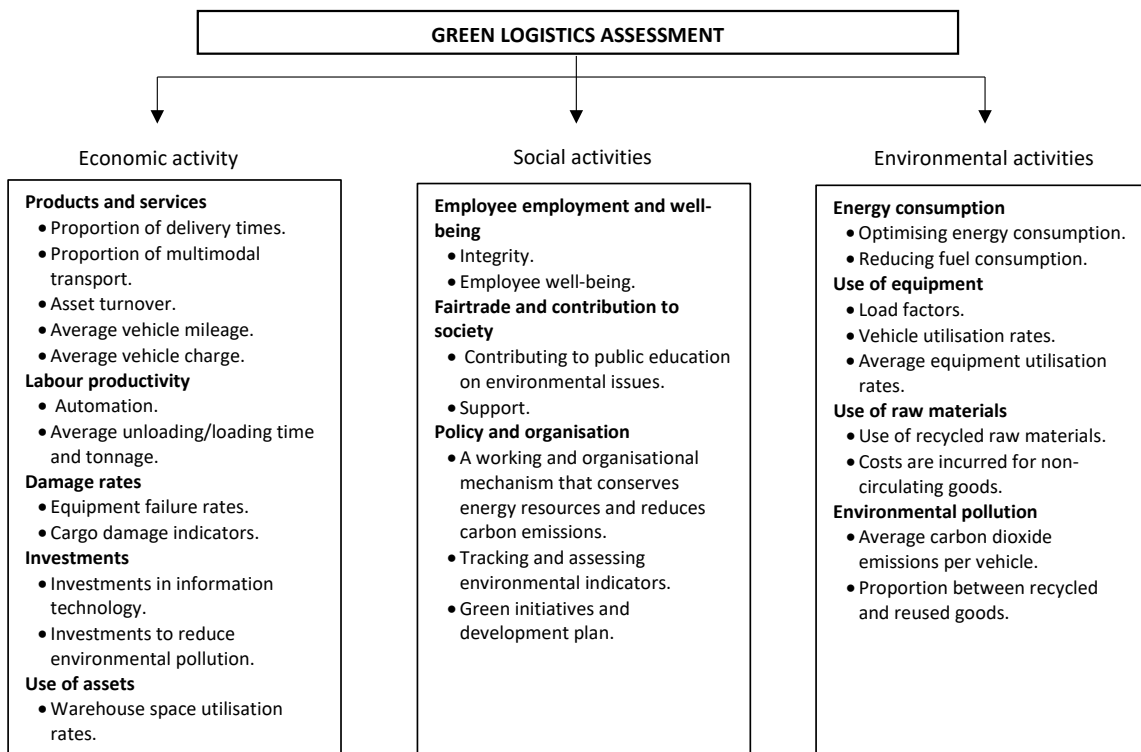


Fig. 8. Green logistics performance evaluation criteria
Source: author's elaboration on the basis of (He et al., 2017).

especially in the context of the circular economy. The authors also outlined the main principles of green logistics (Dzwigo et al., 2021):

- A comprehensive approach to managing logistics flows.
- Rational use of resources involves efficient utilisation of production, finance, energy, and information.
- Minimised use of non-recyclable raw materials and packaging.
- Cost-effective and environmentally friendly transportation and storage of material resources.
- Maximised utilisation of production waste, containers, and packaging to create secondary raw materials or ensure their environmentally friendly disposal.
- Optimised cost of coordinating logistics operations.
- Reduced risk involved in operating transport and logistics systems.
- Raised level of environmental education and staff accountability.
- Introduced innovative technologies to lessen the impact on the environment.
- Application of information systems and digital technologies to environmental protection.

In a scientific publication by He et al. (2017), the authors clarified the criteria for assessing green logistics performance. These criteria can be associated with the impact of green logistics on the organisation, as analysed by Bozhanova et al. (2022). A consensus is that it is advisable to evaluate green logistics from economic, social, and environmental perspectives (Fig. 8).

As noted by He et al. (2017), the evaluation of green logistics places significant importance on economic performance, with profit being the main objective of logistics. Social performance indicators encompass measures in areas such as education, equity, well-being, access to social resources, health, and charity within a community or region. According to the guidelines provided by He et al. (2017), social performance can be categorised into three dimensions: employment and well-being of workers, fair trade and contribution to society, and policy and organisation. This framework is commonly used to assess logistics performance in the context of low-carbon and sustainable development. The environmental performance of a logistics company essentially defines its social responsibility.

Green logistics integrates environmental goals into traditional logistics operations, encompassing

economic, social, and environmental activities. The success of green logistics showcases a company's ability to protect the environment by conserving natural resources and reducing waste through efficient product flow and storage. It focuses on environmental performance and traditional logistics management goals of cost reduction and increased product value. Currently, green logistics is mostly offered as a value-added service, but it presents an opportunity for companies to gain a competitive edge. There is a visible need to encourage businesses to take the initiative and implement green innovations (Sureeyatanapas et al., 2018).

Green logistics involves incorporating sustainability into the management of logistics and supply chains to minimise environmental impacts, such as greenhouse gas emissions, waste, and energy consumption. Future green logistics research will likely focus on sustainable transport systems, supply chain optimisation, circular economy, and reverse logistics. Additionally, it will emphasise integrating new technologies and sustainable practices to balance operational efficiency and environmental responsibility. This research will also prioritise stakeholder cooperation, improved regulatory frameworks, and better methods for assessing environmental impacts. The future of green logistics will depend on the convergence of technology, policy, and innovative management strategies.

CONCLUSIONS

The green logistics concept was defined using a systematic literature review and meta-analysis based on PRISMA requirements. The review involved three steps: an initial search in the Scopus database, selection and analysis of scientific data, and a meta-analysis of selected articles. The analysis encompassed 223 publications. The review found a consistent increase in scientific publications on green logistics, with a 26 % rise in recent years. The most prominent keywords in the publications were “green logistics”, “supply chain management”, “green supply chain management”, “sustainable development”, “green supply chain”, and “sustainability”.

Moreover, a co-cited author analysis revealed linkages between the main authors of green logistics research publications. Out of 13,797 authors, 87 main authors were identified and cited at least 18 times. The selected articles were predominantly published in the UK, China, and Italy.

Green logistics is a sustainable development concept that aims to address environmental issues while facilitating the exchange of goods and services within organisations and across countries. In the scientific literature, green logistics is primarily linked to reducing environmental pollution in logistics operations by implementing green initiatives, innovative technologies, and practices that also contribute to increased profitability.

Green logistics can be categorised into four groups based on the research fields and implementation perspectives for integrating green logistics processes: the sustainability perspective of green logistics, the logistics perspective, the customer perspective, and the operational and flexibility perspective. The primary goal of green logistics is to integrate and coordinate the environmental, social, and economic aspects of the logistics system to achieve environmentally oriented logistics management.

It is suggested that green logistics should be considered from economic, social, and environmental perspectives. Economic performance aims to maximise profits, while social performance involves measures of the well-being of a community or region. Environmental criteria involve an organisation's capability to reduce pollution, manage raw materials, and conserve energy.

The meta-analysis and systematic literature review identified additional research directions for green logistics. Future efforts are likely to focus on sustainable transportation systems, supply chain optimisation, circular economy, and reverse logistics. It will prioritise integrating new technologies and sustainable practices for operational efficiency and environmental responsibility. Additionally, there will be an emphasis on stakeholder cooperation, improved regulatory frameworks, and better methods for assessing environmental impacts, all underpinned by the convergence of technology, policy, and innovative management strategies.

This study has several limitations. First, it relied exclusively on the Scopus bibliographic database as its data source. Second, the systematic literature review was conducted using only 33 open-access articles. Future research would benefit from expanding the number of databases and academic journals included to achieve more comprehensive results in green logistics. Additionally, it could incorporate conference papers, book chapters, review articles, and books as they could enhance generalisability.

Notwithstanding the limitations mentioned above, the study opens a space for discussion.

It makes a significant contribution to advancing research on the concept of green logistics and its implementation perspectives, the results of which are of great relevance to business managers, practitioners, policymakers and other stakeholders looking for an effective transition to green logistics.

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