

---

## The Relationship Between Sustainable Logistics and Customer Experience - The Study of the Current Situation

---

Submitted 08/10/24, 1st revision 20/11/24, 2nd revision 06/12/24, accepted 15/12/24

Joanna Majchrzak<sup>1</sup>, Agnieszka Kretkowska<sup>2</sup>, Laura Zielińska<sup>3</sup>,  
Magdalena Hryb<sup>4</sup>

### Abstract:

**Purpose:** The aim of the study is to identify the current state of the related research in which elements of sustainable, green logistics and marketing management are integrated. In marketing, it refers, in particular, to issues related to Customer Experience. The aim of the study is to assess the size and importance of the current set of publications and identify the most frequently undertaken research problems.

**Design/Methodology/Approach:** The work uses the method of Systematic Literature Review (SLR) applying a four-stage model of research activities, taking into account bibliometric analysis – analysis of the number of publications and citations, and classification of publications to specific categories of research works - and content analysis relating to the recognition of undertaken research problems in selected most frequently cited publications from a separate set of scientific publications.

**Findings:** The research area in the scope of research activities in which the concepts of marketing management and sustainable logistics are integrated is in the phase of dynamic growth - the first results of research in this area have already been implemented and their results constitute a prerequisite for further research work. The undertaken research problems can be classified into the category of research, i.e., Cluster 1 (circular approach), Cluster 2 (environmental approach), Cluster 3 (sustainable consumption approach), Cluster 4 (supply chain management), Cluster 5 (green supply chain and quality issues).

**Practical Implications:** For each of the identified research categories, a set of elements related to marketing has been specified. They are taken into account in the implementation of specific goals of sustainable logistics, including, Relationship Marketing, Customer Relationship Management, B2B marketing, Customer behavior, Customer satisfaction, Customer loyalty, Consumer value, Customer collaboration, Customer segmentation, Internal marketing, Pricing policies, Sustainable marketing, Green marketing.

**Originality/Value:** The work compiles a set of interdisciplinary works, the results of which both contribute to the area of logistics management and determine the basis for marketing

---

<sup>1</sup>Corresponding Author, Poznań University of Technology, Poland,  
ORCID: 0000-0001-8742-0283, e-mail: [joanna.majchrzak@put.poznan.pl](mailto:joanna.majchrzak@put.poznan.pl);

<sup>2</sup>Poznań Institute of Technology, Logistics Research Group, Poland,  
ORCID: 0009-0002-4081-0879, e-mail: [agnieszka.kretkowska@pit.lukasiewicz.gov.pl](mailto:agnieszka.kretkowska@pit.lukasiewicz.gov.pl);

<sup>3</sup>Poznań University of Technology, Faculty of Management, Poland,  
ORCID: 0009-0005-6910-6852, e-mail: [laura.zielinska@student.put.poznan.pl](mailto:laura.zielinska@student.put.poznan.pl);

<sup>4</sup>Poznań University of Technology, Faculty of Mechanical Engineering, Poland,  
ORCID: 0000-0002-3114-5910, e-mail: [magdalena.hryb@put.poznan.pl](mailto:magdalena.hryb@put.poznan.pl);

*management. The classification of problems in which the elements of logistics and marketing management are integrated was made. A set of individual problems was identified, indicating a reference to the works in which the concepts of their solutions were presented.*

**Keywords:** Sustainable logistics, green logistics, sustainable marketing, marketing management, customer experience, literature review, marketing of logistics services.

**JEL Codes:** M11, M31, Q01.

**Paper Type:** Research article.

## 1. Introduction

The aim of this paper is to identify the current set of publications in which the issue of the relationship between sustainable logistics and marketing management is considered. In the field of marketing, the work focuses on the issue of modeling the so-called Customer Experience (CX). The American Society for Quality (asq.org) defines the Customer Experience as the short- and long-term interactions and relationships between a company and its customers. The customer experience journey may include customer interactions with a company's employees, facilities, and marketing in both the real and digital worlds.

Here, modeling the customer experience means working towards several goals beyond the basic delivery of products and services, e.g., (1) Delivering the right product or service for the customer's needs; (2) Selling the product or service honestly; (2) Ensuring ease of use and preventing failures; (3) Making it easy for customers to do business with the organization; (4) Creating an emotional connection and providing added value when appropriate.

Currently, societies are increasingly becoming environmentally conscious, and designers and manufacturers must incorporate 'environmental qualities' and sustainable development practices into products (Yeh *et al.*, 2010). In today's logistics operations, sustainability and ecological aspects have become key issues.

To address broader goals and challenges in supply chains, researchers are exploring sustainable supply chain management and green logistics, leading to the development of new methods for conducting logistics activities. However, enterprises encounter various obstacles when adopting these methods. Understanding the distinctions between various logistics concepts is crucial for a comprehensive grasp of customer experience.

To add clarity, it is important to define and compare these concepts. Distinguishing between definitions such as sustainable logistics and green logistics may be confusing, so it is necessary to compare them with each other in order to come to some conclusions.

In fact, sustainable logistics refers more to practices that reduce the environmental impact of logistics activities, such as using eco-friendly transportation, optimizing routes, and implementing energy-efficient systems in warehouses. Green logistics, on the other hand, focuses on minimizing the environmental footprint of logistics operations by using sustainable packaging, reducing emissions, and promoting recycling and waste reduction (El-Berishy *et al.*, 2013).

The issue of sustainable logistics is the subject of numerous scientific publications (Ren *et al.*, 2020; Wang *et al.*, 2022; He *et al.*, 2018). These works consider, among others, the impact of so-called green logistics on shaping the concept of sustainable development (Kumar, 2015), environmental sustainability practices used on the logistics services market (Evangelista *et al.*, 2018), or sustainable reverse logistics concepts (Dabees *et al.*, 2023).

There are also studies presenting sustainable logistics in relation to such issues as, among others: (1) sustainable logistics and sustainable production for Industry 4.0 (Grzybowska and Awasthi, 2020; Sun *et al.*, 2021; Ferraro *et al.*, 2023; Cantini *et al.*, 2023; Akkad and Bánya, 2020). (2) Sustainable logistics and e-commerce (Cano *et al.*, 2022) (3) Decision support system and Sustainable logistics (Qaiser *et al.*, 2017). (4) sustainable logistics practices for the circular economy (Jayarathna *et al.*, 2023).

A separate group of studies are publications indicating the need, practices and concept of implementing systematic innovation methods and tools for ensuring sustainable logistics (Björklund and Forslund, 2018).

This paper considers the relationship between Sustainable Logistics and modeling of the broadly understood Customer Experience. Referring to the analysis of the literature, a set of search terms referring to the issues related to the provision of sustainable logistics practices was identified. Similarly, referring to the concept of customer experience management, a set of elements influencing its shaping was identified.

To achieve the formulated research goal, i.e., to recognize the relationship between sustainable logistics and the Customer Experience (EX) studies, a Systematic Literature Review (SLR) procedure was used (van Dinter *et al.*, 2021; Page *et al.*, 2021). The work uses a four-stage model of research activities (Czakoń, 2016) by performing bibliometric analysis and content analysis relating to the recognition of undertaken research problems in selected most frequently cited publications from a separate set of scientific publications.

## 2. Literature Review

When considering current and important problems relating to the relationship between marketing management and shaping the concept of sustainable logistics, the following areas should be distinguished, i.e., shaping the strategy related to sustainable supply chain management, information quality management and information systems, product management in the supply chain and product pricing strategy, research related to the so-called customer-based sustainable logistics.

Overall, the concept related to the marketing contribution on the demand side, manufacturing, operations, and the supply chain in general can be distinguished (Sharma *et al.*, 2010). There are also publications referring to the study of the impact of green marketing in general on supply chain management in industrial markets (Chan *et al.*, 2012).

As part of shaping the strategy related to sustainable logistics, one can distinguish works referring to the need to implement supply chain management strategies to reduce the environmental impacts of the products and services (Zhu *et al.*, 2005) and related to the diagnosis of the elements related to growing awareness about environment protection (Mathiyazhagan *et al.*, 2014). Particularly important are the issues related to Closed-Loop Supply Chains (CLSCs), which generate profits by taking back products from customers and recovering the remaining added value.

As part of the issues related to information quality management, papers examining the impact of information integration in the supply chain (Kulp *et al.*, 2004) and the role of supporting integrated supply chain management using sophisticated information systems and dedicated equipment (Govindan *et al.*, 2012) can be distinguished. In addition, the problems of information asymmetry and low visibility in the relationship with customers, who find it difficult to access product data that can facilitate ethical buying practices or assure product authenticity (Agrawal *et al.*, 2021), are also considered.

What is considered in the area of issues related to shaping the relationship with the client are, among others, the impact on the manufacturer's relationship with customers and suppliers (Kulp *et al.*, 2004) or studying the solutions related to the exploration of the business-to-consumer (B2C) market and with the development of new business models that simultaneously increase profits and are more environmentally and socially sustainable (Mont *et al.*, 2006).

As part of broadly understood product management, research is carried out related to the recognition of the impact of product returns on the strategies of multichannel retailers, e.g., referring to a group of products that are subject to more frequent returns due to the greater need for physical inspection by buyers (Ofek *et al.*, 2010). Issues related to the companies need to view customer returns as an opportunity to give this returns pile a new lease of life are considered.

Referring to the so-called customer-driven green supply chain management studies related to customer needs and requirements, e.g., the concepts related to the identification of appropriate green supply chain management practices to strengthen the performance areas that need improvement may be distinguished (Çankaya and Sezen, 2018).

In the area of works referring to customer satisfaction and loyalty, the issues taken up include, among others, the tendency to enhance the reliability and sustainability of their supply chains to increase customers' satisfaction in terms of on-time fulfillment of demands and to be compatible with environmental regulations (Tirkolaee *et al.*, 2020; Chavez *et al.*, 2014); the problems related with the customer loyalty and understanding how to balance ecological and economic goals in reverse logistics (Lee and Lam, 2012).

### 3. Research Methodology

In this paper, to achieve the formulated research goal, i.e., to recognize the relationship between sustainable logistics and Customer Experience (EX), a Systematic Literature Review (SLR) procedure was used (van Dinter *et al.*, 2021; Page *et al.*, 2021). Four phases of research activities were specified (Czakon, 2011; Czakon, 2016):

- Determining the purpose of the study, i.e., recognizing the current state of sustainable logistics relationship with customer experience.
- Identifying primary literature using the Web of Science database; selection of publications by using a set of keywords appearing in the title of the work, abstract or in keywords specified by the authors ( $n=876$ ); developing a database of publications, i.e., the so-called "database clean up" ( $n=857$ ).
- Bibliometric analysis, i.e., analysis of the number of publications and citations over the years and classification of publications according to Web of Science Core Collection Categories.
- Content analysis relating to the recognition of undertaken research problems related to marketing and logistics in selected most frequently cited publications from a separate set of scientific publications ( $n=34$ ), detailing the basic areas of research with an indication of their relationship with the area related to marketing and logistics.
- Development of a report.

In the first stage of the research work, in reference to the Customer Experience (CX) model adopted by the American Society for Quality (asq.org), a set of search terms related to marketing was recognized, the list of search terms was summarized in Table 1. In the next stage of research activities, the literature related to the issue of sustainable logistics was analyzed in order to identify a set of keywords defining its complexity. It was checked which keywords are taken into account in publications related to the issue of sustainable logistics.

The recognized set of keywords was the basis for determining the set of search terms related to sustainable logistics, which is summarized in Table 1.

**Table 1.** Search terms used at the publication selection stage.

| <b>Search Terms related to Marketing Management, i.e., Customer Experience</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| "Digital Marketing" OR "Online Marketing" OR "Internet Marketing" OR "Search Engine Marketing" OR "Social Media Marketing" OR "Digital Content Marketing" OR "Customer* preference*" OR "Consumer's Preference*" OR "Consumers' Preference*" OR "Consumer* preference*" OR "consumer's Preference*" OR "consumers' Preference*" OR "User* preference*" OR "User's Preference*" OR "Users' Preference*" OR "Customer * Online Behavior*" OR "Customer's Online Behavior *" OR "Online Behavior*" OR "Consumer's Online Behavior*" OR "Consumer's Online Behavior*" OR "Consumers' Online Behavior*" OR "User * Online Behavior*" OR "User's Online Behavior*" OR "Users' Online Behavior *" OR "Behavior*" OR "Customer* Behavior*" OR "Customer's Behavior*" OR "Customers' Behavior*" OR "Consumer* Behavior*" OR "Consumer's Behavior*" OR "Consumers' Behavior*" OR "User's Behavior*" OR "User's Behavior*" OR "Users' Behavior*" OR "Customer * Online Experience*" OR "Customer's Online Experience*" OR "Customers' Online Experience*" OR "Consumer * Online Experience *" OR "Consumer's Online Experience*" OR "Consumers' Online Experience*" OR "User's Online Experience*" OR "Users' Online Experience*" OR "Customer *" OR "Customer's Experience*" OR "Customer's Experience*" OR "Customers' Online Experience*" OR "Consumer* Experience *" OR "Consumer's Experience*" OR "Consumers' Experience*" OR "User* Experience*" OR "User's Experience*" OR "Users' Experience*" OR "Customer* understanding" OR "Customer's understanding" OR "User* understanding" OR "Customer* Need*" OR "Customer's Need*" OR "Customers' Need*" OR "Consumer * Need *" OR "Consumer's Need*" OR "Consumers' Need *" OR "User * Need*" OR "User's Need*" OR "Users' Need *" OR "Customer * Want*" OR "Customer's Want*" OR "Customers' Want*" OR "Consumer's Want*" OR "Consumer's Want*" OR "Consumers' Want*" OR "User * Want*" OR "User's Want*" |
| <b>AND Search Terms related to Sustainable Logistics</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| "green* supply chain" OR "sustainability in supply chain" OR "sustainable supply chain management" OR "sustainable supply chain*" OR "supply chain* sustainability" OR "green supply chain management" OR "sustainable supplier selection" OR "ecological practices in logistics" OR "environmental concerns in logistic*" OR "Reverse logistics" OR "green logistics" OR "environmentally sensitive logistic" OR "sustainable logistics" OR "reverse-logistics" OR "sustainable development of logistics" OR "sustainable logistics enterprises" OR "green logistics initiative" OR "green purchasing of raw material*" OR "green transportation" OR "green distribution" OR "sustainable distribution network" OR "vehicle routing"                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

**Source:** Authors' own study.

This study took into account articles published and indexed in Web of Science data base. The search terms were searched for in the Title, Abstract and Key-words. As a result,  $n=89$  publications were identified. The selected collection of publications has been ordered concerning the number of citations, i.e., Citations: Highest First. The bibliometric analysis took into account the total number of selected publications.

The content of the most frequently cited publications was analyzed, i.e.,  $n=34$ . The results of the conducted analyzes are summarized in the next section of the work.

#### **4. Research Results**

In the first stage of the research work, the distribution of the number of publications and the analysis of the number of citations were identified, see Figure 1. This allows us to assess the changing size of the collection of publications and its importance on the map of science.

The analysis of publications in the following years allows for assessing the stage of development of a given research area. Assuming that the number of publications is subject to lifecycle regularities, after birth, there is a slow growth that accelerates, then stabilizes at a given level to finally decrease.

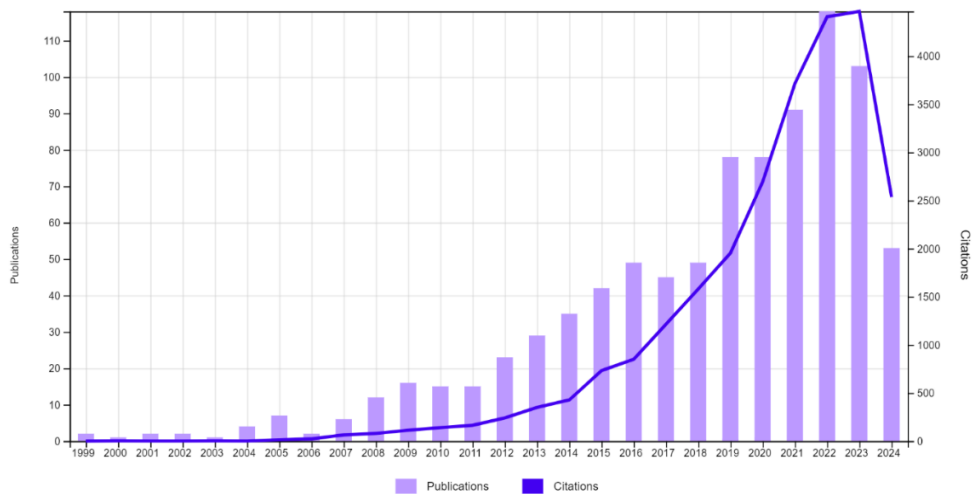
Referring to the results obtained, it can be noted that the research area in the scope of research activities in which the concepts of marketing management, i.e., Customer Experience study, and sustainable logistics are in the second phase of dynamic growth. This means that the first results of research in this area have already been implemented and their results constituted a prerequisite for further research work.

The analysis of the number of citations reflects, relative to the number of publications, the significant impact of the obtained results, measured by the number of works that use them. The next step of the research was to check which categories individual publications can be classified in a specific set of scientific publications.

It was recognized that most publications are classified into such categories specified in the Web of Science as: Management ( $n=184$ ); Environmental Science ( $n=177$ ); Green Sustainable Science Technology ( $n=173$ ) and Operation Research Management Science ( $n=160$ ). At the next stage, the analysis of content, the so-called keyword frequency survey using the VOSviewer software (Van Eck and Waltman, 2014, Ding et al., 2014, Springer et al., 2010), was conducted. Subsequently, 177 distinguished keywords with the highest level of occurrence were classified.

A specific set of keywords was extracted after the adoption of the so-called minimum number of keyword repetitions. In order to separate the crucial keywords in the analyzed data set ( $n=857$ ), after initial verification of the number of repetitions based on the graphical presentation of the results, a minimum number of keywords repetitions amounting to five was adopted. In the next step, in order to increase the reliability of the results, the keywords with the lowest correlation value, i.e., the value of the Total Link Strength indicator calculated by VOSviewer, were removed from the data set.

**Figure 1.** Analysis of the Number of Publications and Citations Over the Years.



**Source:** Web of Science, Citation Report.

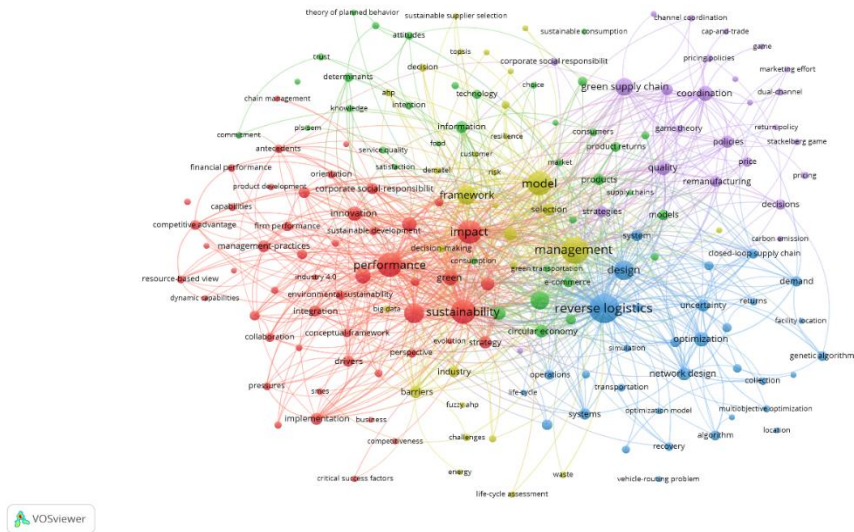
Having the created set of keywords, the VOSviewer software algorithm was used, which classifies keywords by taking into account thematically and meaningfully similar areas in which the words occurred. As a result, four clusters were isolated, as shown in Figure 2.

The first cluster refers to problems related to reverse logistics and closed-loop supply chain management. The issue of marketing management refers here to elements such as recognizing the demand for given products or analyzing the product life cycle. The second cluster refers to the problems of integration of activities in the field of logistics and marketing in order to ensure the development of the enterprise while maintaining the concept of sustainable development, and environmental sustainability.

The third cluster refers to the issues of management, improving decision-making processes, managing the set of data concerning the customer and shaping the so-called sustainable consumption. The fourth cluster refers specifically to supply chain management.

In marketing, the issues related to meeting the requirements and shaping customer satisfaction are taken into account above all. The fifth cluster takes into account the issue of coordination to ensure the so-called green supply chain, including the acquisition of new solutions using, e.g., methods and tools supporting quality management.

**Figure 2.** Map of Five Clusters of the Keywords Related to the Domain.



**Source:** Own study with an application of VOSviewer software.

At the last stage of analyzing the content and studying the results of the research presented in the most frequently cited publications ( $n=34$ ), the research problems related to marketing management and sustainable logistics were identified. Referring to the issues related to marketing management, a set of problems was specified such as:

- (1) general strategic management of the issues related to sustainable marketing (Zhu *et al.*, 2005; Çankaya and Sezen, 2018; Laari *et al.*, 2016; Mathiyazhagan *et al.*, 2014; Meng *et al.*, 2021; Chan *et al.*, 2012; Toffel, 2004; Lee and Lam, 2012; Fleischmann *et al.*, 2002; Dey *et al.*, 2019);
- (2) Relationship marketing and the issues related with customer satisfaction (Kulp *et al.*, 2004; Tirkolaee *et al.*, 2020; Östlin *et al.*, 2008; O'Rourke, 2014; Jayaraman and Luo, 2007; Donner *et al.*, 2020; Büyüközkan and Berkol, 2011; Pishvaei *et al.*, 2010; Chen *et al.*, 2016; Mangla *et al.*, 2013; Chavez *et al.*, 2014),
- (3) product-service marketing system (PSS), B2C and marketing OM-marketing, remarketing interface (Mont *et al.*, 2006, Shulman *et al.*, 2009, Agal *et al.*, 2021). and Setoputro, 2004),
- (4) customer relationship management and customer marketing (O'Rourke, 2014; Wittstruck and Teuteberg, 2011; Büyüközkan and Berkol, 2011);
- (5) Competitive and innovative marketing (Manavalan and Jayakrishna, 2019),
- (6) Internet marketing (Ofek *et al.*, 2010),
- (7) economy and market performance elements of marketing management (Meng *et al.*, 2021; Blome *et al.*, 2014; Foerstl *et al.*, 2014);
- (8) Industrial marketing specificity (Govindan *et al.*, 2012, Atasu *et al.*, 2009, Sharma *et al.*, 2010).

## 5. Discussion

Referring to the results of research on recognizing the relationship between issues related to sustainable logistics and the issue of marketing management, including, in particular, the customer experience, five areas of research activities were specified.

The identified areas of research activities were distinguished as a result of the analysis of keywords occurring in the set of publications studied ( $n=857$ ). By assigning specific research problems undertaken in the most frequently cited research papers ( $n=34$ ), it is possible to indicate to what extent the most common problems are the points of contact between shaping the basis for sustainable logistics and the issue related to marketing management. This is presented in Table 1.

**Table 1.** Identification of research areas and key intersections of sustainable logistics and marketing management in the literature analysis.

| Cluster 1 - circular approach                                                                                                                                                                                                                                                                                                                                               | Cluster 2 - environmental approach                                                                                                                                                                                                                                                               | Cluster 3 - sustainable consumption approach                                                                                                                                                                                                                                                                                                   | Cluster 4 - supply chain management                                                                                                                                                                                                                                                           | Cluster 5 - green supply chain and quality issues                                                                                                                                                                                                                                         |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Reverse logistics</b> AND Relationship marketing (Östlin et al., 2008); Function-Oriented PSS (Mont et al., 2006); Competitiveness (Jayaraman and Luo, 2007); Green market development (Toffel, 2004; Lee and Lam, 2012; Fleischmann et al., 2002); Customer behavior (Atasu et al., 2008); Customer satisfaction (Shulman et al., 2009; Pishvae et al., 2010); Customer | <b>Green distribution</b> AND Sustainable marketing (Çankaya and Sezen, 2019). <b>SCM</b> AND Competitiveness in Industry 4.0 (Manavalan and Jayakrishna, 2019); Customer collaboration (Blome et al., 2014); Customer segmentation (Foerst et al., 2015); Process innovation (Dey et al., 2019) | <b>Green LOGISTICS</b> AND Green marketing (Chan et al., 2012); Relationship marketing (Chen et al., 2016; Mangla et al., 2013). <b>Reverse logistics</b> AND Customer relation (Govindan et al., 2012); Internal marketing (Sharma et al., 2010); Pricing policies (Shulman et al., 2010). <b>Sustainable supplier selection</b> AND customer | <b>Reverse Logistics</b> AND Marketing mix (Ofek et al., 2011); Consumer value (Donner et al., 2020). <b>SCM (Information Integration)</b> AND Relationship marketing (Kulp et al., 2004; O'Rourke, 2014); B2B marketing (Agrawal et al., 2021); Customer satisfaction (Chavez et al., 2016). | <b>Green SCM</b> AND Sustainable marketing (Zhu et al., 2005); Green marketing (Laari et al., 2016; Mathiyazhagan et al., 2014); Pricing policies (Meng et al., 2021); Customer loyalty (Wittstruck and Teuteberg, 2011); Customer Relationship Management (Büyüközkan and Berkol, 2011). |

|                                                     |  |                                              |  |  |
|-----------------------------------------------------|--|----------------------------------------------|--|--|
| demand<br>(Mukhopadhyay<br>and Setoputro,<br>2005). |  | satisfaction<br>(Tirkolaee et<br>al., 2020). |  |  |
|-----------------------------------------------------|--|----------------------------------------------|--|--|

**Source:** Authors' own study.

The table identifies various research areas within sustainable logistics and marketing management, highlighting where these fields overlap. It provides insight into how various marketing strategies can be integrated with logistics practices to promote sustainability, as well as the impact they have on the customer relationship. Worth emphasizing is also the importance of integrating sustainable practices across marketing and logistics functions, which, when properly combined, can lead to long-term environmental and economic benefits.

Furthermore, the table analysis allows us to draw a conclusion that highlights the need for continuous innovation and strategic adaptation to address emerging challenges in sustainable logistics and marketing management. This summary captures the essence of the research areas and their interrelationships, providing a clear overview of the key topics covered in the literature research.

## **6. Limitation of the Study**

The article has several limitations to consider when interpreting the results. It is important to remember that each analysis has its own set of limitations, such as different methodologies, data sources and analytical approaches, which can lead to different results and interpretations.

Accordingly, the analysis of this article should be viewed as one of many perspectives, recognizing that alternative analyses may yield different insights, whether accurate or less accurate. Recognizing these limitations is critical to comprehensive understanding of the research and guiding future research to build on and improve current work. The presented results are limited to the 'Web of Science' database - the study exclusively utilizes data from the Web of Science database, which may limit the comprehensiveness of the findings.

Other relevant studies and data sources outside this database are not considered, potentially omitting significant research contributions. The content analysis included 34 publications, i.e., the analysis is based on a relatively small sample. The content analysis highlights logistics problems and their intersection with marketing - the analysis doesn't propose specific solutions or strategies to address these issues.

This limitation means that while the study highlights important areas of concern, it does not offer actionable recommendations for practitioners or policymakers. Expanding on these limitations provides a clearer understanding of the study's scope and the potential areas for future research. It emphasises the need for a more

comprehensive approach that includes diverse data sources, a larger sample size, detailed issue-specific analysis, and practical solutions to the identified problems.

## **7. Conclusion**

This paper analyzes the current state of research referring to the recognition of the relationship between research relating to sustainable logistics and marketing management. In the area of marketing, the focus was on a set of research referring to customer experience management. In the first part of the work, an analysis of the literature was made, recognizing the actual collection of work on the assessment of the current state of research on sustainable logistics.

A set of works related to sustainable Logistics and sustainable production for Industry 4.0, e-commerce, Decision support system and sustainable logistics practices for the circular economy has been specified. Attention was drawn to the need to recognize the relationship between sustainable logistics and customer experience development. Referring to a set of search terms related to sustainable logistics and customer experience, and using the database of scientific publications Web of Science, the collection of basic literature was selected.

Bibliometric analysis was made by checking the number of publications and citations in the consecutive years, which allowed for the assessment of the size of the collection and its significance on the map of science. It was indicated that the research area in the scope of research activities in which the concepts of marketing management and sustainable logistics are integrated is in the second phase of dynamic growth. This means that the first results of research in this area have already been implemented and their results constituted a prerequisite for further research work.

As part of the content analysis, the analysis of the keyword frequency was made, which allowed for the selection of five basic research areas, i.e.; Cluster 1 (circular approach - reverse logistic, closed-loop supply chain management); Cluster 2 (environmental approach - integration of activities in the field of logistics and marketing in order to ensure the development of the company while maintaining the concept of sustainable development, and environmental sustainability); Cluster 3 (sustainable consumption approach - improvement of decision-making processes, management of the set of data concerning the customer and shaping the so-called sustainable consumption); Cluster 4 (supply chain management – taking into account the requirements and shaping customer satisfaction); Cluster 5 (green supply chain and quality issues – taking into account coordination issues to ensure the so-called green supply chain, including the acquisition of new solutions using, e.g., methods and tools supporting quality management).

The analysis of 34 publications revealed several key findings. These findings highlight the importance of a holistic approach to sustainability, where logistics and

marketing are viewed as interconnected elements that have a profound impact on how a company is perceived. Based on the analysis of the content and research problems related to the area of logistics and marketing, a set of interdisciplinary works was identified, the results of which contribute both to the area of logistics management and determine the bases for marketing management, in particular in the area related to Customer Experience.

## **References:**

- Agrawal, T.K., Kumar, V., Pal, R., Wang, L.C., Chen, Y. 2021. Blockchain-based framework for supply chain traceability: A case example of textile and clothing industry. *Computers and Industrial Engineering*, 154, 107130. <https://doi.org/10.1016/j.cie.2021.107130>.
- Akkad, M.Z., Bányai, T. 2020. Applying sustainable logistics in Industry 4.0 era. In: J.K.K. G. Kovács and M. Bányai (Eds.), *Vehicle and Automotive Engineering*, 222-234. Springer Singapore. [https://doi.org/10.1007/978-981-15-9529-5\\_19](https://doi.org/10.1007/978-981-15-9529-5_19).
- Atasu, A., Guide, V.D.R., Van Wassenhove, L.N. 2008. Product reuse economics in closed-loop supply chain research. *Production and Operations Management*, 17(5), 483-496. <https://doi.org/10.3401/poms.1080.0051>.
- Björklund, M., Forslund, H. 2018. A framework for classifying sustainable logistics innovations. *Logistics Research*, 11(1), 1-12. <https://doi.org/10.23773/20181>.
- Blome, C., Paulraj, A., Schuetz, K. 2014. Supply chain collaboration and sustainability: A profile deviation analysis. *International Journal of Operations and Production Management*, 34(5), 639-663. <https://doi.org/10.1108/IJOPM-11-2012-0515>.
- Büyüközkan, G., Berkol, Ç. 2011. Designing a sustainable supply chain using an integrated analytic network process and goal programming approach in quality function deployment. *Expert Systems with Applications*, 38(11), 13731-13748. <https://doi.org/10.1016/j.eswa.2011.04.171>.
- Çankaya, S.Y., Sezen, B. 2019. Effects of green supply chain management practices on sustainability performance. *Journal of Manufacturing Technology Management*, 30(1), 98-121. <https://doi.org/10.1108/JMTM-03-2018-0099>.
- Cano, J.A., Londoño-Pineda, A., Rodas, C. 2022. Sustainable logistics for e-commerce: A literature review and bibliometric analysis. *Sustainability*, 14(19), 12247. <https://doi.org/10.3390/su141912247>.
- Cantini, A., Leoni, L., De Carlo, F. 2023. Sustainable logistics 4.0: A study on selecting the best technology for internal material handling. *Sustainability*, 15(9), 7067. <https://doi.org/10.3390/su15097067>.
- Chan, H.K., He, H., Wang, W.Y.C. 2012. Green marketing and its impact. *Journal of Industrial Engineering and Management*, 5(1), 1-3. <https://doi.org/10.1016/j.indmarman.2012.04.002>.
- Chavez, R., Yu, W., Feng, M., Wiengarten, F. 2014. The effect of customer-centric green supply chain management on operational performance and customer satisfaction. *Business Strategy and the Environment*, 25(3), 205-220. <https://doi.org/10.1002/bse.1868>.
- Chen, L., Zhang, D., Wang, L., Yang, D., Ma, X., Li, S., Wu, Z., Pan, G., Nguyen, T.M.T. 2016. Dynamic cluster-based over-demand prediction in bike sharing systems. *IEEE Transactions on Intelligent Transportation Systems*, 17(8), 2374-2384. <https://doi.org/10.1145/2971648.2971652>.

- Czakon, W. 2016. Podstawy metodologii badań w naukach o zarządzaniu. Wydawnictwo Nieoczywiste – imprint GAB Media.
- Dey, P.K., Malesios, C., De, D., Chowdhury, S., Ben Abdelaziz, F. 2019. Could lean practices and process innovation enhance supply chain sustainability of small and medium-sized enterprises? *Business Strategy and the Environment*, 28(4), 582-598. <https://doi.org/10.1002/bse.2266>.
- Donner, M., Gohier, R., de Vries, H. 2020. A new circular business model typology for creating value from agro-waste. *Sustainability*, 12(10), 1-22. <https://doi.org/10.1016/j.scitotenv.2020.137065>.
- El-Berishy, N., Rügge, I., Scholz-Reiter, B. 2013. The interrelation between sustainability and green logistics. *Proceedings of the 2013 International Conference on Industrial Engineering and Operations Management*, 567-575.
- Evangelista, P., Santoro, L., Thomas, A. 2018. Environmental sustainability in third-party logistics service providers: A systematic literature review from 2000-2016. *Sustainability*, 10(5), 1627. <https://doi.org/10.3390/su10051627>.
- Cantini, A., Leoni, L., De Carlo, F. 2023. Sustainable logistics 4.0: A study on selecting the best technology for internal material handling. *Sustainability*, 15(9), 7067. <https://doi.org/10.3390/su15097067>.
- Fleischmann, M., Kuik, R., Dekker, R. 2002. Controlling inventories with stochastic item returns: A basic model. *European Journal of Operational Research*, 138(1), 63-75. [https://doi.org/10.1016/S0377-2217\(01\)00100-X](https://doi.org/10.1016/S0377-2217(01)00100-X).
- Foerstl, K., Azadegan, A., Leppelt, T., Hartmann, E. 2014. Drivers of supplier sustainability: Moving beyond compliance to commitment. *Journal of Supply Chain Management*, 51(1), 67-92. <https://doi.org/10.1111/jscm.12067>.
- Govindan, K., Palaniappan, M., Zhu, Q., Kannan, D. 2012. Analysis of third-party reverse logistics provider using interpretive structural modeling. *International Journal of Production Economics*, 140(1), 204-211. <https://doi.org/10.1016/j.ijpe.2012.01.043>.
- Grzybowska, K., Awasthi, A. 2019. Literature review on sustainable logistics and sustainable production for Industry 4.0. In: K. Grzybowska, A. Awasthi, and R. Sawhney (Eds.), *Sustainable Logistics and Production in Industry 4.0: New Opportunities and Challenges* (pp. 1-18). Springer. [https://doi.org/10.1007/978-3-030-33369-0\\_1](https://doi.org/10.1007/978-3-030-33369-0_1).
- He, M., Shen, J., Wu, X., Luo, J. 2018. Logistics space: A literature review from the sustainability perspective. *Sustainability*, 10(8), 2815. <https://doi.org/10.3390/su10082815>.
- Jayaraman, V., Luo, Y. 2007. Creating competitive advantages through new value creation: A reverse logistics perspective. *Academy of Management Perspectives*, 21(2), 56-73. <https://doi.org/10.5465/amp.2007.25356512>.
- Jayarathna, C.P., Agdas, D., Dawes, L. 2023. Exploring sustainable logistics practices toward a circular economy: A value creation perspective. *Business Strategy and the Environment*, 32(1), 704-720. <https://doi.org/10.1002/bse.3170>.
- Kulp, S.C., Lee, H.L., Ofek, E. 2004. Manufacturer benefits from information integration with retail customers. *Management Science*, 50(4), 431-444. <https://doi.org/10.1287/mnsc.1030.0182>.
- Kumar, A. 2015. Green logistics for sustainable development: An analytical review. *IOSRD International Journal of Business*, 1(1), 7-13.
- Laari, S., Töyli, J., Solakivi, T., Ojala, L. 2016. Firm performance and customer-driven green supply chain management. *Journal of Cleaner Production*, 112, 1960-1970. <https://doi.org/10.1016/j.jclepro.2015.06.150>.
- Lee, C.K.M., Lam, J.S.L. 2012. Managing reverse logistics to enhance sustainability of

- industrial marketing. *Industrial Marketing Management*, 41(4), 589-598.  
<https://doi.org/10.1016/j.indmarman.2012.04.006>.
- Manavalan, E., Jayakrishna, K. 2019. A review of Internet of Things (IoT) embedded sustainable supply chain for Industry 4.0 requirements. *Computers and Industrial Engineering*, 127, 925-953. <https://doi.org/10.1016/j.cie.2018.11.030>.
- Mangla, S., Madaan, J., Chan, F.T.S. 2013. Analysis of flexible decision strategies for sustainability-focused green product recovery system. *International Journal of Production Research*, 51(11), 3428-3442.  
<https://doi.org/10.1080/00207543.2013.774493>.
- Mathiyazhagan, K., Govindan, K., Haq, A.N. 2014. Pressure analysis for green supply chain management implementation in Indian industries using analytical hierarchy process. *International Journal of Production Research*, 52(1), 188-202.  
<https://doi.org/10.1080/00207543.2013.831190>.
- Meng, Q., Li, M., Liu, W., Li, Z., Zhang, J. 2021. Pricing policies of dual-channel green supply chain: Considering government subsidies and consumers' dual preferences. *Sustainable Production and Consumption*, 26, 10211030.  
<https://doi.org/10.1016/j.spc.2021.01.012>.
- Mont, O., Dalhammar, C., Jacobsson, N. 2006. A new business model for baby prams based on leasing and product remanufacturing. *Journal of Cleaner Production*, 14(17), 1509-1518. <https://doi.org/10.1016/j.jclepro.2006.01.024>.
- Mukhopadhyay, S.K., Setoputro, R. 2005. Optimal return policy and modular design for build-to-order products. *Journal of Operations Management*, 23(5), 496-506.  
<https://doi.org/10.1016/j.jom.2004.10.012>.
- Ofek, E., Katona, Z., Sarvary, M. 2010. "Bricks and clicks": The impact of product returns on the strategies of multichannel retailers. *Marketing Science*, 30(1), 42-60.  
<https://doi.org/10.1287/mksc.1100.0588>.
- O'Rourke, D. 2014. The science of sustainable supply chains. *Science*, 344(6188), 1124-1127. <https://doi.org/10.1126/science.1248526>.
- Östlin, J., Sundin, E., Björkman, M. 2009. Product life-cycle implications for remanufacturing strategies. *Journal of Cleaner Production*, 17(11), 999-1009.  
<https://doi.org/10.1016/j.jclepro.2009.02.021>.
- Pishvae, M.S., Kianfar, K., Karimi, B. 2010. Reverse logistics network design using simulated annealing. *The International Journal of Advanced Manufacturing Technology*, 47, 269-281. <https://doi.org/10.1007/s00170-009-2194-5>.
- Qaiser, F.H., Ahmed, K., Sykora, M., Choudhary, A., Simpson, M. 2017. Decision support systems for sustainable logistics: A review and bibliometric analysis. *Industrial Management and Data Systems*, 117(7), 1376-1388. <https://doi.org/10.1108/IMDS-09-2016-0410>.
- Ren, R., Hu, W., Dong, J., Sun, B., Chen, Y., Chen, Z. 2020. A systematic literature review of green and sustainable logistics: Bibliometric analysis, research trend and knowledge taxonomy. *International Journal of Environmental Research and Public Health*, 17(1), 261. <https://doi.org/10.3390/ijerph17010261>.
- Sharma, A., Iyer, G.R., Mehrotra, A., Krishnan, R. 2010. Sustainability and business-to-business marketing: A framework and implications. *Industrial Marketing Management*, 39(2), 330-341. <https://doi.org/10.1016/j.indmarman.2008.11.005>.
- Shulman, J.D., Coughlan, A.T., Savaskan, R.C. 2009. Optimal restocking fees and information provision in an integrated demand-supply model of product returns. *Manufacturing and Service Operations Management*, 11(4), 577-594.  
<https://doi.org/10.1287/msom.1090.0256>.

- Shulman, J.D., Coughlan, A.T., Savaskan, R.C. 2010. Optimal reverse channel structure for consumer product returns. *Marketing Science*, 29(6), 1071-1085. <https://doi.org/10.1287/mksc.1100.0578>.
- Sun, X., Yu, H., Solvang, W.D., Wang, Y., Wang, K. 2021. The application of Industry 4.0 technologies in sustainable logistics: A systematic literature review (2012-2020) to explore future research opportunities. *Environmental Science and Pollution Research*, 29, 1-32. <https://doi.org/10.1007/s11356-021-17693-y>.
- Tirkolaee, E.B., Mardani, A., Dashtian, Z., Soltani, M., Weber, G.W. 2020. A novel hybrid method using fuzzy decision making and multi-objective programming for sustainable-reliable supplier selection in two-echelon supply chain design. *Journal of Cleaner Production*, 250, 119517. <https://doi.org/10.1016/j.jclepro.2019.119517>.
- Toffel, M.W. 2004. Strategic management of product recovery. *California Management Review*, 46(2), 120-141. <https://doi.org/10.2307/41166214>.
- Van Dinter, R., Tekinerdogan, B., Catal, C. 2021. Automation of systematic literature reviews: A systematic literature review. *Information and Software Technology*, 136, 106602. <https://doi.org/10.1016/j.infsof.2021.106589>.
- Van Eck, N.J., Waltman, L. 2014. Visualizing bibliometric networks. In: Y. Ding, R. Rousseau, and D. Wolfram (Eds.), *Measuring scholarly impact: Methods and practice* (pp. 285-320). Springer. [https://doi.org/10.1007/978-3-319-10377-8\\_13](https://doi.org/10.1007/978-3-319-10377-8_13).
- Wang, J., Lim, M.K., Wang, C., Tseng, M.L. 2022. Comprehensive analysis of sustainable logistics and supply chain based on bibliometrics: Overview, trends, challenges, and opportunities. *International Journal of Logistics Research and Applications*, 26(10), 1285-1314. <https://doi.org/10.1080/13675567.2022.2052823>.
- Wittstruck, D., Teuteberg, F. 2011. Understanding the success factors of sustainable supply chain management: Empirical evidence from the electronics and electronics industry. *Corporate Social Responsibility and Environmental Management*, 19(3), 141-158. <https://doi.org/10.1002/csr.261>.
- Yeh, C.H., Huang, J.C.Y., Yu, C.K. 2010. Integration of four-phase QFD and TRIZ in product RandD: A notebook case study. *Research in Engineering Design*, 22(3), 125-141. <https://doi.org/10.1007/s00163-010-0099-9>.
- Zhu, Q., Sarkis, J., Geng, Y. 2005. Green supply chain management in China: Pressures, practices and performance. *International Journal of Operations and Production Management*, 25(5), 449-468. <https://doi.org/10.1108/01443570510593148>.