THE SHARING ECONOMY AS A DRIVER OF SUSTAINABLE DEVELOPMENT IN LOGISTICS: OPPORTUNITIES FOR THE GREEN TRANSITION

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Stručni članak
https://www.doi.org/10.58952/zr20251401414
UDK / UDC 658.7:330.34:502.131.3

Abstract

This paper addresses the integration of sharing economy models into logistics and supply chains, exploring their potential contribution to the goals of sustainable development and the green transition. Based on resource-sharing through digital platforms, the sharing economy optimises logistics processes by reducing underutilised capacities, increasing operational flexibility, and lowering greenhouse gas emissions. The central research question is: How can sharing economy models contribute to optimising logistics processes and achieving the green transition goals within the sustainable development framework? The study aims to identify the benefits and challenges of applying the sharing economy in logistics, focusing on its environmental efficiency. A qualitative method was used, combining a review of scientific literature and case studies, upon which a SWOT analysis was conducted. The results confirm the sharing economy's potential to support systemic logistics changes by enabling more sustainable, flexible, and inclusive supply chain systems. Despite regulatory, technological, and social challenges, the sharing economy offers concrete opportunities to accelerate the green transition in logistics.

Keywords: *sharing economy, sustainable logistics, green transition, digital platforms, supply chains, business models*
JEL classification: O18, L91, Q01

INTRODUCTION

The logistics industry is finding itself in a more and more challenging position when meeting sustainable development goals and green transformation because of global environmental threats, energy volatility, and growing demand for more energy-efficient logistics systems. A very innovative strategy that has been fully embraced at the junction of digitalisation, innovation, and environmental responsibility is the sharing economy. This concept optimises logistical operations without additional physical investment and is based on temporary access to resources, such as vehicles, warehouses, and information systems, rather than ownership [8], [25].

With the development of digital platforms, new business models are emerging that enable real-time coordination of logistics services, improved resource utilisation and lower environmental impacts [7], [16]. These solutions contribute to both cost efficiency and the decarbonisation of supply chains, representing an innovative response to the environmental and economic demands of the logistics sector [9], [20].

The sharing economy is also viewed as a value-creating model that enables access to services without ownership, providing companies greater operational flexibility [3], [4]. Integrating stakeholders via digital platforms increases the responsiveness and resilience of supply chains, which is crucial for long-term adaptability to environmental and market changes [21], [22]. In addition to ecological benefits, this approach holds economic and social value, such as greater accessibility and inclusion of smaller service providers [10],[11].

Nevertheless, the literature points out unresolved issues regarding systematically evaluating the sharing economy's impact on logistics sustainability. A research gap persists in assessing how digital infrastructure, regulatory frameworks, and resource efficiency interact in the long-term integration of such models [2], [17].

The subject of this paper is the impact of the sharing economy on the sustainable development of logistics, particularly in the context of the green transition. The aim is to analyse how sharing-based business models can reduce environmental footprint and improve the resilience of logistics systems. The paper identifies this approach's main benefits and limitations through a literature review and SWOT analysis and proposes directions for practical integration into sustainable logistics systems.

2.THEORETICAL BACKGROUNDS

2.1 THE SHARING ECONOMY AS A RESOURCE-SHARING MODEL

The sharing economy emerged as a response to changes in consumer behaviour, the rise of digital technologies, and the growing need for more efficient use of resources. It is a systemic model based on sharing goods, services, and information rather than traditional ownership [6]; [14]. This model allows temporary access to resources through digital platforms, including various forms of interaction, from peer-to-peer (e.g., vehicle sharing) to B2C or B2B business models.

Sundararajan (2016) highlights that the sharing economy transforms traditional industries through crowd-based capitalism, which enables greater accessibility to resources, reduces transaction costs, and enhances the user experience. Digital platforms play a central role by connecting users and providers and collecting data to optimise operations [11], [19]. Sharing economy models increasingly appear in sectors where high capital investments, such as logistics, have historically limited resource access.

2.2 THE SHARING ECONOMY IN LOGISTICS AND SUPPLY CHAINS

Applying sharing economy principles in logistics enables companies to share transport vehicles, warehouse capacities, and information resources. This leads to greater operational efficiency, reduced empty runs, better capacity utilisation, and increased flexibility [7], [16]. Franklin and Spinler [8] emphasise that shared logistics infrastructure (e.g., warehouses) reduces costs and improves ecological efficiency by lowering the need for new facilities.

Digital platforms such as Uber Freight, Convoy, and Flexe facilitate real-time logistics service supply and demand coordination, increasing supply chain responsiveness [1]. Sharing-based logistics also includes on-demand models that enable flexible capacity management, especially relevant in fluctuating demand contexts.

Practices such as shared urban delivery vehicles and micro-logistics illustrate the broader potential of the sharing economy to support environmental sustainability.

2.3 SUSTAINABLE LOGISTICS AND THE GREEN TRANSITION

Sustainable logistics involves strategies and practices to reduce the environmental impact of logistics activities while maintaining economic efficiency and service [24]. Key goals include lowering CO_2 emissions, increasing energy efficiency, reducing resource consumption, and implementing circular business models. Here, the sharing economy is pointed out to be directly making sustainable models more achievable as it implies decreased private capacity needed and the increase of available assets utilisation [9], [25]. One of the key points is the resonance with Sustainable Development Goals (SDGS), in particular SDG 9 (infrastructure and innovation), SDG 11 (sustainable cities), SDG 12 (responsible consumption), and SDG 13 (climate action) [17].

2.4 LINKING THE SHARING ECONOMY TO SUSTAINABLE DEVELOPMENT GOALS

Many studies have examined the link between the sharing economy and sustainable development goals in recent years. A systematic review by Boar and coauthors [2] finds that the sharing economy can positively impact all three pillars of sustainability: environmental, economic, and social. Similarly, Rathnayake and coauthors [20] emphasise that sharing models enhance resource efficiency and social inclusion while noting the need for regulation and stakeholder protection. In logistics, these benefits are manifested through more efficient route optimisation, greater use of existing infrastructure, and lower energy consumption [8], [10]. Thus, the sharing economy contributes to business competitiveness and the broader objectives of sustainable development and the green transition, especially in the transport and urban logistics sectors.

3. METHODOLOGY

The research is based on a qualitative method of scientific literature review, which served to identify and analyse the key characteristics of sharing economy models in logistics from the perspective of sustainable development and green transition. A systematic literature review was used as the primary research strategy, enabling comprehensive insights, comparative analysis, and synthesis of findings [2], [20]. Based on scientific articles and professional sources published in the last decade, we identified major trends, benefits, challenges, and impacts of the sharing economy on sustainable logistics. We also included existing case studies that demonstrate practical applications of sharing economy concepts in logistics, such as shared warehouses (Flexe), transport platforms (Uber Freight), and urban delivery solutions (DHL). These examples, taken from secondary sources, served as an empirical basis for developing the SWOT elements [1], [7], [8]. SWOT analysis was conducted, clearly categorising internal (strengths and weaknesses) and external (opportunities and threats) factors. This method is especially suitable for analysing new business models in dynamic and complex environments such as logistics [17], [23]. The SWOT approach enabled the synthesis of multidimensional influences – from technological and economic to environmental and regulatory – which are crucial for understanding the sharing economy's role in achieving sustainability goals in logistics.

4.RESULTS

Based on the review of scientific literature and analysed case studies, a SWOT analysis was developed, categorising key internal (strengths and weaknesses) and external (opportunities and threats) factors of sharing economy models in logistics in terms of their impact on sustainability and the green transition (Table 1).

Table 1: SWOT Analysis of Sharing Economy Models in Logistics [13]

Strengths	**Weaknesses**
• Reduction of logistics costs • Better utilisation of existing resources (vehicles, warehouses, data) • Fewer empty runs and route optimisation • Increased system flexibility and responsiveness • Digitisation of logistics services • Contribution to CO_2 reduction and energy efficiency	• Lack of regulatory clarity and tax policy • Lack of platform standardisation and interoperability • Income instability for individual service providers • Data privacy and cybersecurity concerns • Resistance from traditional market players • Lack of Systemic green Logistics integration policies
Opportunities	**Threats**
• Development of smart cities and sustainable urban logistics • Incentives for green business models and EU policies • Reduced environmental footprint of logistics • Shared assets as an alternative to high-impact infrastructure • Integration of SMES into global value chains	• User distrust in platform security • Complexity of multi-stakeholder platform management • The market concentration of dominant platforms • Legal framework lagging behind digital innovation • Increased dependence on major tech providers

The SWOT analysis highlights that sharing economy models offer cost and operational flexibility advantages and meaningful contributions to logistics' environmental goals. Key ecological benefits include emission reduction, maximised use of existing assets, and less reliance on infrastructure expansion, each representing tangible progress toward sustainability.

5.DISCUSSION

The results demonstrate that the sharing economy can support a systemic shift toward sustainable logistics models. The shared use of transport, warehousing, and digital systems enhances emission reduction and resource efficiency, as documented by Franklin and Spinler [8], Ocicka and Wieteska [16], Ingram [10], and further supported by Zhu and Liu [26]. These benefits increase the adaptability and resilience of supply chains, which are essential for operating in volatile and competitive environments [5], [22].

Nonetheless, the analysis identifies persistent weaknesses such as regulatory ambiguity, lack of platform standardisation, and provider income instability. These concerns have been echoed in the literature as critical risks to long-term scalability [4], [6], [11]. Cybersecurity and user protection also remain underdeveloped in platform-based logistics systems [12], [15].

Opportunities—such as innovative city development, circular urban delivery, and EU green policies—underline the relevance of this model for future planning [9], [25]. The strategic role of digital platforms in fostering ecological and social value creation underlines the long-term importance of technological enablers in green transitions.

The SWOT findings point to the transformative potential of sharing economy models in logistics, particularly where operational agility and sustainability intersect. Such models can reduce costs, maximise existing resources, and align with climate action targets, offering companies competitive and environmental gains.

However, successful implementation demands:

- the development of coherent regulatory support,
- enhanced digital security and infrastructure, and
- interoperable platform standards to unify stakeholders.

A better understanding of environmental performance indicators and SME-specific integration pathways would support evidence-based sustainability policymaking.

CONCLUSION

The results indicate that sharing economy models promise a new route to logistics systems that are greener and more resilient. These systems will emit less through sharing resources and managing them via digital platforms on a real-time basis, optimise capacity, be adaptable, and directly contribute to green transformation, thus contributing to sustainable development goals.

Should anyone be unaware, some barriers like vague rules, digital trust, and lack of standardisation hinder more widespread acceptance. For the implementation of the system to be effective, solid strategies and control systems are necessary to cover protection, honesty, and environmental integrity.

The current paper fills the knowledge gap between the sustainability theory and actual digital sharing models in logistics by being a bridge. The following steps that researchers might take include working on comprehensive sustainability metrics, calculating the environmental effects, and exploring how these models can be re-designed for the local supply chains and be beneficial for SMES.

With the new policy and technical support, the sharing economy could be a powerful force in the future of environmentally friendly logistics.

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