

Uncertain Supply Chain Management

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Enhancing supply chain management to contribute the efficiency of the sharing economy in Vietnam

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ABSTRACT

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Supply chain plays a very important role in the socio-economic development of countries, especially in the context of the fourth industrial revolution associated with the development of the sharing economy as well as associated with the rational and optimal allocation of resources. Studying the impact of supply chain management on the development of the sharing economy in the case of Hanoi, Vietnam and using advanced quantitative analysis methods, the research results show that perfecting the supply chain helps businesses rationalize costs and thus can improve business performance and promote the sharing economy. The study also shows that the quality of human capital and technological level have a positive impact on the sharing economy. Therefore, when the economy increases the contribution of technology to production activities, it helps businesses increase their choice of the sharing economy and thus helps to allocate resources more effectively and optimally.

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1. Introduction

Supply chains play a very important role in the socio-economic development of countries. Indeed, supply chains play an important role in connecting production activities to best meet the production activities of enterprises, while connecting consumption activities. The connectivity of supply chains helps the economy achieve economic efficiency, and conversely, when the supply chain does not promote its operational efficiency, it can increase costs for the economy. In other words, supply chains play a very important role in the development of most countries. In that context, the emergence of the fourth industrial revolution has brought many different benefits to the economy. The fourth industrial revolution has promoted the contribution of technology to production and consumption activities, specifically, cleaner production and green consumption have been promoted. This shift is the basis for the economy to operate more optimally and towards sustainable development. The fourth industrial revolution is also a driving force for the role of green supply chains in the economy, helping supply chains operate efficiently at low costs and thus increasing the contribution of supply chains to economic activities. At the same time, the fourth industrial revolution is associated with the expansion and development of the sharing economy. The sharing economy is an economic method in which assets or services are shared among individuals, helping to connect buyers and sellers for an economic activity. Thus, the sharing economy represents a change in the method of product transfer from transferring product ownership to providing services on demand. Therefore, the benefits of the sharing economy are huge in helping to save costs and protect the environment, increase economic efficiency and reduce waste of resources in society (Le et al., 2022; Nguyen et al., 2019; Nguyen et al., 2024). Therefore, the sharing economy has great potential for future development and is adaptable on a global scale. Vietnam is known as a country with a rapid economic growth rate in the Asia-Pacific region. Starting from a closed and command economy, when consumption, investment and distribution activities were all controlled by the state. Since 1986, Vietnam has opened up and gradually integrated into the world economy. With economic development, Vietnam has gradually transformed its economy towards green growth and sustainable development

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goals. Implementing green supply chain development to promote the sharing economy is an essential task that Vietnam is pursuing, in which increasing the benefits of the economy becomes more optimal to improve labor productivity and per capita income.

2. Literature review

Logistics embraces the sharing economy with supply chain collaboration, industry crossovers, and unexpected partnerships, delivering integrity and transportation efficiency. The sharing economy, characterized by peer-to-peer exchange of goods and services facilitated by digital platforms, has several key enablers: Technology (Digital platforms, mobile apps, and data analytics that enable efficient matching of supply and demand), Trust and reputation (User review, rating, and verification systems that build trust among participants), Economic factors (Cost savings, additional income opportunities, and asset utilization that drive participation), Social and cultural changes (Increased willingness to share, environmental awareness, and community-oriented behaviors), Regulatory environment (Government policies and regulatory frameworks that address issues such as taxes, labor rights, and safety standards), Market dynamics (Competition between sharing platforms and traditional businesses, market penetration, and user adoption rates), Network effects (The value of a platform increases with the number of users, enhancing its attractiveness and utility). The determinants of the sharing economy are diverse and interconnected. Understanding these determinants is essential for stakeholders, including policymakers, businesses, and consumers, to effectively navigate and capitalize on the opportunities presented by the sharing economy.

Supply chain management (SCM) involves the coordination and optimization of all activities involved in sourcing, producing, and delivering goods and services. Some of the key determinants that influence the effectiveness and performance of SCM are Infrastructure, Technology, Regulatory Environment, Globalization, Market Dynamics, Supplier Relationships, Sustainability, Risk Management, and Cost Efficiency. Because the quality of transportation, warehousing, and communications networks directly affects supply chain performance. Advances in information technology, automation, and data analytics enhance visibility, coordination, and decision-making across the supply chain. Government policies, trade regulations, and compliance requirements affect the flow of goods and services. The increasing interconnectedness of markets requires effective management of international logistics, sourcing, and distribution. Consumer demands, competition, and market volatility require flexible and responsive supply chain strategies. Close partnerships and collaboration with suppliers enhance reliability, quality, and innovation in the supply chain. Environmental concerns and corporate social responsibility drive the adoption of sustainable practices and green logistics. Identifying and mitigating risks, such as supply disruptions, geopolitical instability, and natural disasters, are critical to maintaining supply chain resilience. Managing costs associated with procurement, manufacturing, transportation, and inventory is essential to gaining a competitive advantage. Understanding these determinants enables organizations to develop robust supply chain strategies that align with their overall business objectives and adapt to changing market conditions.

Logistics is a key component of supply chain management, which involves planning, implementing and controlling the efficient movement and storage of goods, services and information. Some of the key determinants that influence logistics operations are Infrastructure (Quality of transportation networks, warehousing facilities and technology), Regulatory environment (Customs, trade regulations and environmental laws), Cost factors (Fuel prices, labor costs and capital investment), Market demand (Customer expectations, demand variability and globalization), Technology (Automation, data analytics and supply chain visibility tools), Sustainability (Environmental impact and green logistics practices), Risk management (Minimizing disruptions, geopolitical factors and supply chain resilience). Understanding these determinants helps companies optimize logistics operations, improve efficiency and enhance customer satisfaction.

Discussing the relationship between the sharing economy and the logistics sector, one can mention a study such as Ocicka & Wieteska (2017). The authors assert that the challenges in the business environment in today's digital age require supply chain and logistics managers to constantly seek modern, adaptive methods in managing business processes, aiming to achieve simultaneous economic, social and environmental effects. This once again shows that the sharing economy is increasingly important in business practice. It has a positive impact on the building and development of cooperative relationships between business partners in the supply chain as well as between potential competitors in the market. The sharing economy in logistics and supply chain management determines the potential management requirements of companies and the relationships between them. The authors also argue that the factors contributing to a successful strategy of the sharing economy include:

- Managing collaborative relationships between stakeholders,
- Integrating economic, social and environmental objectives in supply chain management and logistics to achieve long-term sustainable performance,
- Sharing different assets simultaneously and integrating their use,
- Using advanced digital technologies,
- Continuously improving the implemented processes that are effective.

Meanwhile, Pawlicz (2019) asserts that the sharing economy is a relatively new phenomenon that has completely changed the nature of the economy, including the urban hotel market. New suppliers entering the market on a small scale without state or government-controlled quality certification, limited service provision, and using only intermediary brands will face difficulties in a market with fierce competition. The growth challenges of the sharing economy, many pillars of the service and transportation economy have become the focus of many studies. The author asserts in his study that (1) there is no general solution for regulating the sharing economy and (2) decisions on regulatory characteristics must be made under imperfect information.

Li et al. (2020) studied the urban logistics distribution routing problem of electric vehicles in the context of the sharing economy considering CO₂ emission tax and time-of-use electricity price, and proposed an optimization model for the electric vehicle routing problem from the perspective of the sharing economy. The simulation scenario presented by the authors shows that the application of distribution sharing can reduce the travel distance as well as the total cost compared with having separate distribution systems. Another simulation scenario according to the electricity price at different times shows that lower time-of-use electricity price will reduce traffic congestion and reduce the total cost. The third simulation scenario discusses the impact of different carbon taxes. The results show that CO₂ emissions will decrease as the carbon tax rate increases.

Recently, Carissimi & Creazza (2022) commented that the sharing economy (SE) is a new innovative business model that can meet the demand for more flexible, agile and sustainable logistics. Logistics service providers share warehousing, transportation and equipment. The study analyzes the role of facilitators in coordinating SE logistics solutions by establishing different types of tripartite relationships and comments on the influence of facilitators on solution implementation mechanisms and outputs. Discussing the relationship between the sharing economy and supply chain management, there are some studies such as Hu et al. (2019). The authors argue that the research problem of the sharing economy has been raised in many fields and brings significant benefits to consumers as well as asset owners. In their study, Hu et al. (2019) apply the perspective of sustainable supply chain management (SSCM). The survey sample collected data from 420 people and found that investment recovery (IR) and corporate social responsibility (CSR) activities carried out by sharing economy platforms significantly and positively influence customers' intention to use sharing economy-based services/products, while internal green management (IGM), supplier green management (SGM), eco-design (ECD) and customer green management (CGM) do not influence customers' intention to use sharing economy-based services/products.

This hot topic continues to be discussed in Peng (2023). The author states that the significance of sustainable development has long been a global requirement due to the profound economic and environmental issues that require research attention. The purpose of Peng (2023) is to study the impact of sustainable supply chain management (SSCM) practices of sharing economy platforms towards sustainable development goals (SDGs). Peng (2023) addresses SSCM according to three pillars, including environmental pillar, economic pillar and social pillar. The survey subjects of the study are customers with relevant knowledge and experience in the sharing economy from China. The observation sample of 260 people was selected through Amazon Mechanical Turk to conduct analysis using the AMOS statistical tool. The empirical results show a statistically significant relationship between SSCM practices of sharing economy platforms and SDGs. According to the results, the three pillars of SSCM are of key importance to the SDGs. These pillars have a positive impact in driving customer intentions, which in turn further advance the SDGs.

Meanwhile, the connection between supply chain management and logistics is an endless topic, which can be mentioned in the study of Grant & Shaw (2021). The authors assert that performance measurement in the field of logistics and supply chain is difficult due to the many levels and number of organizations involved. In addition, sustainable and humane logistics and supply chain management are thoroughly commented on. Continuing this topic, Sandberg et al. (2022) commented that logistics and supply chain management (SCM) activities are growing in both scale and complexity. The authors introduce interactive research (IR) in the field of logistics and SCM research. Another approach is proposed by Yan et al. (2022), specifically reinforcement learning (RL) methods to solve problems in organizational and business operations are developing in the field of logistics and supply chain management (SCM) in the context of urban logistics which has been developing in recent years due to the popularity of e-commerce and last-mile delivery.

Continuing this theme, Tsang et al. (2022) asserted that due to the rapid development of the Internet of Things (IoT), logistics and supply chain operations have been digitally transformed. Physical objects are interconnected to perform real-time monitoring and decision support through cyber-physical systems. In addition to machine-to-machine communication, humans play an essential role in IoT-enabled supply chain operations to monitor and configure IoT devices and interact with IoT systems to enhance industrial intelligence. Extended reality (XR) technology is exploited to create immersive images to enhance the connection between humans and cyber-physical systems. The authors introduced the readers to the latest XR technologies and summarized the major research opportunities/challenges. Meanwhile, Yalcin & Daim (2022) focused on the research and development processes of technology in the field of logistics and supply chain management. The authors found that connected ecosystem components such as bitcoin, Internet of Things (IoT), and smart contracts are open and relatively undeveloped areas, promising many research gaps and attracting much attention from researchers.

3. Data and methodology

In this study, we collected data from 192 businesses operating in Hanoi, which is considered an important economic center in Vietnam. The businesses operate logistics activities and have used the sharing economy to serve their business activities. The sample size should be at least 5 times the number of scales, or 5 times the number of survey questions to ensure high reliability of the analysis. The data is processed for errors, then selected for analysis. In this case, we used 190 businesses with complete and reliable survey information. The equation is expected to be as follows:

$$SHARE_t = \beta_0 + \beta_1 CHAIN_t + \beta_2 HUMAN_t + \beta_3 STRATE_t + \beta_4 TECH_t + \varepsilon_t$$

In which, $SHARE_t$ is a factor reflecting the level of sharing economy usage in businesses;

$CHAIN_t$ is a factor reflecting the level of supply chain development that the enterprise has applied;

$HUMAN_t$ is a factor reflecting the quality of human resources of the enterprise;

$STRATE_t$ is a factor reflecting the sharing economy promotion strategy that businesses are implementing;

$TECH_t$ is a factor reflecting the application of the enterprise's technological level in production, measured through the contribution of technology in the enterprise;

4. Results

4.1. Descriptive statistics

According to the descriptive statistics, we can see that: in terms of enterprise type, there are 85 commercial enterprises corresponding to 44.7% of the enterprises in the survey sample, followed by real estate and construction enterprises with the number of 36 and 38, and the proportions are 18.9% and 20% respectively. There are about 12 agricultural enterprises, corresponding to 6.3% in this research sample. In terms of business locations, enterprises are mainly concentrated in Cau Giay and Nam Tu Liem, which are areas assessed to have a high level of economic, commercial and service development and at the same time have a large number of enterprises. In terms of the number of employees in the enterprise, most enterprises have a low number of employees, less than 10 employees, which shows that the scale of enterprises in the survey sample is small. Research through revenue shows that over 77% of enterprises have revenue under 10 billion VND, showing that the scale of enterprises in terms of revenue is still small.

Table 1
Descriptive statistics

		Quantity	Percentage
Form of firm	Trading business	85	44.7%
	Real estate and construction	36	18.9%
	Manufacturing firm	38	20.0%
	Agricultural firm	12	6.3%
	Others	19	10.0%
Address	Cau Giay district	98	51.6%
	Nam Tu Liem district	75	39.5%
	Dong Da district	12	6.3%
	Others	5	2.6%
Number of employees	10 employees and less	88	46.3%
	10 – 50 employees	67	35.3%
	51 – 100 employees	34	17.9%
	More than 100 employees	1	0.5%
Revenue	5 billion and less	92	48.4%
	5 – 10 billion	56	29.5%
	10 – 50 billion	24	12.6%
	More than 50 billion	18	9.5%
Total		190	100%

Source: authors' analysis

4.2. Cronbach's alpha and Rotated Component Matrix

In theory, Cronbach's alpha test is used to determine the reliability of scales. Specifically, scales with coefficients greater than 0.6 can be said to have achieved the necessary reliability, so the study conducted Cronbach's alpha test analysis to determine the reliability of the scale and thereby serve as a basis for the next analysis.

Table 2
Cronbach's alpha

Variable	Number of Scales	Cronbach's alpha	Decision
SHARE	5	0.894	Reliability
CHAIN	4	0.864	Reliability
HUMAN	4	0.825	Reliability
STRATE	5	0.805	Reliability
TECH	6	0.835	Reliability

Source: Authors' analysis

The Cronbach's alpha test results in Table 2 show that the variables have Cronbach's alpha coefficients greater than 0.6, and therefore it can be affirmed that the variables have achieved the necessary level of reliability. Then the study conducted EFA analysis, the analysis results must satisfy the convergent EFA values. The results are as follows:

Table 3
Rotated Component Matrix

Scales	Rotated Component Matrix			
	1	2	3	4
CHAIN1	0.902			
CHAIN3	0.896			
CHAIN4	0.876			
CHAIN2	0.854			
TECH1		0.878		
TECH3		0.865		
TECH5		0.843		
TECH6		0.822		
TECH2		0.810		
TECH4		0.801		
HUMAN3			0.843	
HUMAN2			0.811	
HUMAN1			0.789	
HUMAN4			0.778	
STRATE1				0.798
STRATE2				0.768
STRATE5				0.744
STRATE4				0.721
STRATE3				0.702

Source: Authors' analysis

According to the results of the analysis, the rotated component matrix shows the convergence values, and the study also shows that the KMO test and Bartlett's test also give statistically significant values, so the quality of the research model is guaranteed.

4.3. Regression results

Table 5 shows the results of the regression estimates.

Table 5
Regression results

Model	Unstandardized coefficients		Standardized coefficients	t	Sig.	Multilinearity		
	B	S.E	Beta			Tolerance	VIF	
1	cons	4.324	0.243	4.143	0.000			
	CHAIN	0.355	0.043	0.368	3.112	0.000	0.909	1.1001
	HUMAN	0.301	0.046	0.323	2.982	0.000	0.913	1.0953
	STRATE	0.265	0.046	0.298	0.878	0.387	0.905	1.1050
	TECH	0.276	0.042	0.288	3.662	0.000	0.916	1.0917

Source: Authors' analysis

The research results show that:

The regression coefficient of CHAIN is positive and statistically significant, meaning that there is a possibility of a positive impact of supply chain quality on the ability to develop the sharing economy. Indeed, this research result supports the view that supply chain development aims to increase the efficiency of the economy, helping businesses to reduce transaction costs and thus making the economy more efficient. Therefore, governments of countries, especially Vietnam, need to improve supply chain operations to increase the sharing economy and thus help the economy optimize resource use and optimize social cost management. The research results have also shown that the quality of human resources has a positive impact on the development of the sharing economy. Or it can be said that high-quality human resources help the economy operate more efficiently and thus develop the sharing economy and optimize the use of resources in the economy. The results of this study support the view of improving human capital in countries. Through policies promoting training in schools and in practice, the quality of human resources is improved and this helps businesses operate more effectively, and therefore the economy becomes more optimal. The results of the study show that business development strategies have not had an impact on the development of the sharing economy, however, the level of technology has a positive impact on the sharing economy.

Specifically, when increasing the contribution of technology to production activities, it helps businesses increase their choice of the sharing economy and thus helps to allocate resources more effectively and optimally. This research result affirms the great benefits of the fourth industrial revolution, helping businesses and organizations to be able to take advantage of advantages in production and development.

5. Conclusion

Supply chains play a very important role in the socio-economic development of countries. Indeed, the supply chain plays an important role in connecting production activities to best meet the production activities of enterprises, while connecting consumption activities. Researching the impact of supply chain management on the development of the sharing economy in the case of Hanoi, a leading developing city in Vietnam, the research results show that perfecting the supply chain helps businesses rationalize costs and thus can improve business performance and promote the sharing economy. At the same time, the quality of human capital and technology level have a positive impact on the sharing economy. Increasing the contribution of technology to production activities helps businesses increase their choice of the sharing economy and thus helps to allocate resources more effectively and optimally.

References

- Carissimi, M. C., & Creazza, A. (2022). The role of the enabler in sharing economy service triads: A logistics perspective. *Cleaner Logistics and Supply Chain*, 5, 100077. <https://doi.org/10.1016/j.clscn.2022.100077>.
- Grant, D. B. & Shaw, S., (2021). Logistics and Supply Chain Management Performance Measures. *International Encyclopedia of Transportation*, 16, 23. <https://doi.org/10.1016/B978-0-08-102671-7.10210-6>.
- Hu, J., Liu, Y. L., Yuen, T. W. W., Lim, M. K., & Hu, J. (2019). Do green practices really attract customers? The sharing economy from the sustainable supply chain management perspective. *Resources, Conservation and Recycling*, 149, 177-187. <https://doi.org/10.1016/j.resconrec.2019.05.042>.
- Le, T.T.H., Nguyen, V., & Phan, T.H.N. (2022) Foreign Direct Investment, Environmental Pollution and Economic Growth—An Insight from Non-Linear ARDL Co-Integration Approach. *Sustainability*, 14, 8146. <https://doi.org/10.3390/su14138146>
- Li, Y., Lim, M. K., Tan, Y., Lee, S. Y., & Tseng, M. (2020). Sharing economy to improve routing for urban logistics distribution using electric vehicles. *Resources, Conservation and Recycling*, 153, 104585. <https://doi.org/10.1016/j.resconrec.2019.104585>.
- Nguyen, P. A., Abbott, M., & Nguyen, T. L. T. (2019). The development and cost of renewable energy resources in Vietnam. *Utilities Policy*, 57, 59–66. <https://doi.org/https://doi.org/10.1016/j.jup.2019.01.009>
- Nguyen, M.P., Ponomarenko, T., & Nguyen, N. (2024). Energy Transition in Vietnam: A Strategic Analysis and Forecast. *Sustainability*, 16, 1969. <https://doi.org/10.3390/su16051969>
- Ocicka, B., & Wieteska, G., (2017). Sharing economy in logistics and supply chain management. *LogForum*, 13(2), 183- 193. <http://dx.doi.org/10.17270/J.LOG.2017.2.6>.
- Pawlicz, A., (2019). Pros and cons of sharing economy regulation. Implications for sustainable city logistics. *Transportation Research Procedia*, 39, 398- 404. <https://doi.org/10.1016/j.tpro.2019.06.042>.
- Peng, S., (2023). Sharing economy and sustainable supply chain perspective the role of environmental, economic and social pillar of supply chain in customer intention and sustainable development. *Journal of Innovation & Knowledge*, 8(1), 100316. <https://doi.org/10.1016/j.jik.2023.100316>.
- Sandberg, E., Oghazi, P., Chirumalla, K., & Patel, P. C. (2022). Interactive research framework in logistics and supply chain management: Bridging the academic research and practitioner gap. *Technological Forecasting and Social Change*, 178, 121563, <https://doi.org/10.1016/j.techfore.2022.121563>.
- Tsang, Y.P., Yang, T., Chen, Z.S., Wu, C.H., & Tan, K.H. (2022). How is extended reality bridging human and cyber-physical systems in the IoT-empowered logistics and supply chain management? *Internet of Things*, 20, 100623. <https://doi.org/10.1016/j.iot.2022.100623>.
- Yan, Y., Chow, A. H. F., Ho, C. P., Kuo, Y. H., Wu, Q., & Ying, C., (2022). Reinforcement learning for logistics and supply chain management: Methodologies, state of the art, and future opportunities. *Transportation Research Part E: Logistics and Transportation Review*, 162, 102712. <https://doi.org/10.1016/j.tre.2022.102712>.
- Yalcin, H. & Daim, T. U. (2022). Logistics, supply chain management and technology research: An analysis on the axis of technology mining. *Transportation Research Part E: Logistics and Transportation Review*, 168, 102943. <https://doi.org/10.1016/j.tre.2022.102943>.

