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Article

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Sharing economy benefits and sustainable development goals: Empirical evidence from the transportation industry of Vietnam



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ABSTRACT

Sustainable development goals (SDGs) are the foremost requirement of the entire world, and a sharing economy is potentially the best way to achieve them, a phenomenon which needs to be emphasized. This study empirically investigates the impact of the environmental, social and economic benefits of a sharing economy on SDG achievement, along with the mediating impact of innovative culture on the association between these benefits of a sharing economy and SDG achievement. This study gathered primary data from sample of employees of transportation industry of Vietnam. The study employs PLS-SEM using Smart-PLS to analyse the association among the constructs. The findings show that the social and economic benefits positively and significantly relate to SDGs achievement. Additionally, the findings also indicate that in the presence of innovative culture as a mediator, the determinants of sharing economy benefits are significantly correlated with sustainable development goals. This study provides guidelines for regulators formulating regulations related to SDG achievement through a sharing economy.

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Introduction

The pressure on natural resources, such as soil, has increased with the expanding population and economic practice. Many social and environmental problems persist which can destroy the future growth of economies. Undoubtedly, many individuals and enterprises make efforts to remove social and economic issues and improve the situation, but these efforts are often unsatisfactory. Social, environmental, and economic development are a major concern for many scholars and reformers hoping to achieve sustainable development goals (SDGs) (Chien et al., 2022; Galkina & Sorokin, 2020; Xueying et al., 2021). Various policies show increasing environmental and social awareness, and campaigns are being carried out for social and environmental wellbeing as well as financial development. The presentation of the United Nations (UN) 17 SDGs is the outcome of

environmental and social awareness among people worldwide and state initiatives in this regard.

The 17 SDGs represent humanity's most ambitious goals for the future. In September 2015, 193 countries agreed on these goals, and 169 sub-goals, which must be achieved by 2030 under the 2030 Agenda at the UN General Assembly, (Chien et al., 2021a; Vasylyeva, Lyulyov, Bilan, & Streimikiene, 2019; Xiang et al., 2021). The SDGs are international guidelines that the global community must follow to address global challenges. They are designed to ensure that people can live in full dignity, peace and prosperity for future generations by better maintaining the natural world and life on the planet. The goals operate in three areas: social development, environmental development, and financial development, with consideration for the people, the planet, peace, prosperity and collaboration (Chien et al., 2021b; Kutun, Paramati, Ummalla, & Zakari, 2018; Tan et al., 2021).

The sharing economy is an economic concept that involves the practice of buying, providing or sharing access to goods and services between individuals or businesses, and sharing ideas, techniques,

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processes and information (Chien et al., 2021c; Çiftçioğlu & Sokhanvar, 2021; Ehsanullah et al., 2021; Sadiq et al., 2021c). The primary goal the sharing economy is to minimize the consumption of resources and services used to perform company operations, while achieving maximum outcomes. The undertaking of sharing economy practices contributes to the three types of SDGs, with many social benefits (increased social wellbeing of the stakeholders), environmental benefits (reduced negative environmental impacts of business practices) and economic benefits (reduced total costs, enhanced marketing and increased profits) (Zygmunt, 2020).

Vietnam is becoming established as a major manufacturer. The country's goal is to become an export-driven economy. The rapid increase in goods transportation has forced the expansion of the country's logistics business for manufacturing. The logistics industry saw a 12 per cent rise in 2018. According to the World Bank, the country is placed 39th out of 139, up 25 positions from 2016. In the first quarter of 2020, Vietnam's economic income hit \$390 billion. Within two years, the industry rose from 53rd to 48th place (Cheba et al., 2020). Although this ranking began to decline over the next two years, Vietnam eventually hit 64th, with a quickly improving trend over the following two years, by the end of 2018, Vietnam was ranked 39th, demonstrating the importance of the industry. The logistics business contributes to the growth of the Vietnamese economy in a variety of ways (Bierwiazzonek et al., 2020). Despite a mixed contribution of the logistics industry to the GDP, with the overall contribution in 2015 being 2.73 per cent, dropping to 2.68 per cent the following year, followed by a 2.70 per cent increase in 2017, the industry continued to develop, generating 2.78 per cent of the country's GDP. Despite the recent worldwide epidemic, the industry makes up 2.48 per cent of the GDP (Richterová et al., 2021). These tendencies compel academics to investigate this sector. The transportation industry's contribution to Vietnam's GDP is given in Figure 1.

The present study addresses some gaps that exist in the literature: (1) despite being an essential topic, research into the sharing economy and sustainable development has not reached its peak; (2) Lai, Chuang, Zhang and Nepal (2020), investigate the nexus between a sharing economy, sustainable development, and social responsibility, whereas the present study tests the relationship between a sharing economy and sustainable development by adding: (a) the moderating factor of innovative culture; (b) the sharing economy factors of economic, social and environmental benefits; and (c) a Vietnam perspective; 2) Karobliene and Pilinkiene (2021) test the sharing economy and sustainable development in the context of European Union

countries whereas this study tests the model from a Vietnam perspective, adding the moderation effect of innovative culture; 3) Govindan, Shankar, and Kannan (2020), test sustainable goal achievement through a sharing economy from an Indian perspective, whereas this study adds the moderating effect and selects Vietnam's transportation sector; and 4) from a Vietnam perspective, there is less evidence regarding the relationship with the moderating effect of innovative culture.

The significance of the study is: 1) it highlights the importance of a sharing economy to achieving SDGs; 2) it helps professionals refine their policies for the best utilization of resources to achieve the goals of their organisations; and 3) it helps researchers identify the importance of a sharing economy for any economy or business. The structure of the study has several phases. The first phase is the introduction. The second deals with evidence regarding economic, social, and environmental sharing economy benefits, innovative culture and the achievement of SD goals from preceding literature. The third phase concerns the methodology applied, data collection, analysis, and validity. The fourth phase compares the study results to the findings of other authors and thus approves the results. The paper ends with the study's implications, conclusions, and future recommendations.

Theoretical background

The sharing economy is a phenomenon that supports sustainable economic activity. It combines information technology and management methods to develop a new culture in which resources are used more efficiently. As a result, it provides an innovative framework that may pave the way for long-term economic development and energy efficiency. The sharing economy offers a route to long-term development based on resource efficiency and stronger social links. This strengthens non-profit links and has an empowering influence on communities (Ciulli & Kolk, 2019; Huang, Sadiq & Chien, 2021a; Zhao et al., 2021). As noted in the literature, the emergence of the sharing economy has been received with enormous enthusiasm, owing to its potential to improve outcomes and lead to a more equitable and sustainable economy. It has changed the old manner of doing things, resulting in a new culture of sharing and transacting in digital spaces. The potential benefits include more efficient resource use, which leads to less overproduction and resource exploitation (Acquier, Daudigeos, & Pinkse, 2017; Huang, Sadiq & Chien, 2021b; Mahmood et al., 2021). One characteristic of the digital economy is the rise of

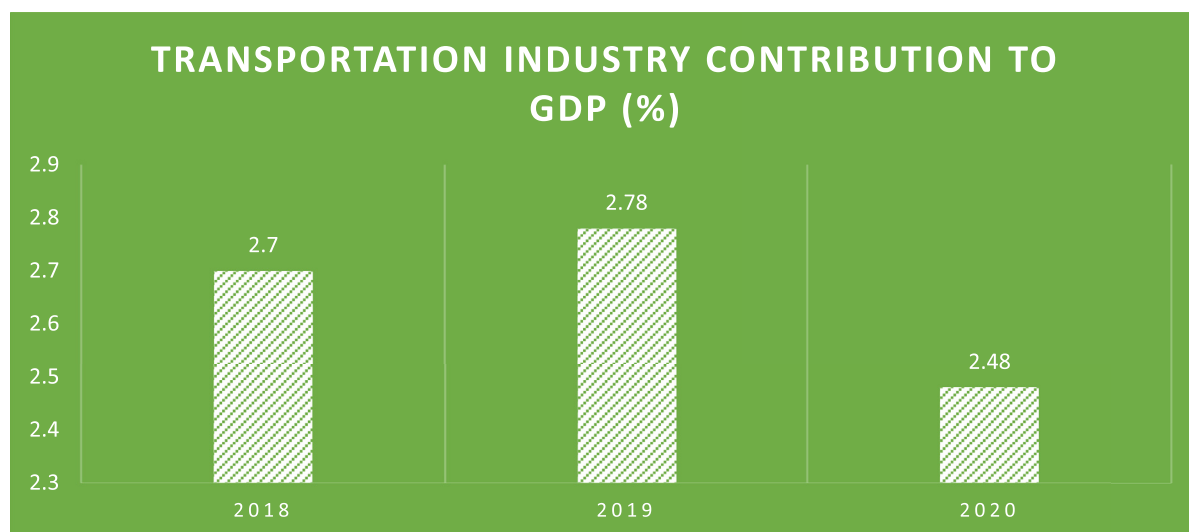


Figure 1. Contribution of the transport industry to Vietnam's GDP

the sharing economy in company models. In the intensely developed theory of the sharing economy, the topic of sustainable development is of special importance. To study the link between the sharing economy and sustainable development, methodological techniques need to be investigated. Economic models that allow for a quantitative assessment of the sharing economy's influence on achieving SDGs must be improved (Casado-Díaz, Casado-Díaz, & Hoogendoorn, 2020; Flores & Chang, 2020; Huang, Chien & Sadiq, 2021c).

Having a sharing economy means sharing economic resources. When resources are shared, there are many pros and cons. Economic activity is key to the achievement of development goals. In this context, van Zanten and van Tulder (2021) and Tabeikyna et al. (2021) explore the impact of economic activity on SDGs. A systematic review of 876 papers focused on agriculture, industry, and manufacturing, concludes that economic activity positively influences SDGs. Both Lyaskovskaya and Khudyakova (2021a) and Pérez-Pérez, Benito-Osorio, García-Moreno, and Martínez-Fernández (2021), explore the nexus between the sharing economy and SDGs, and reveal a positive association between them. Hao, Zhang, and Wei (2022) examine the impacts of the economic benefits of a sharing economy on financial flexibility and sustainable economic development through sustainable innovation. The China A-share market serves as the context for the analysis, and the data covers the period 2007 to 2019. A sustainable innovation model shows a positive relation between the economic benefits of a sharing economy and SDGs, as they enhance financial flexibility and sustainable innovation. Thus, the first hypothesis is derived:

H1: There is a positive association between the economic benefits of a sharing economy and SDG achievement.

The sharing economy is a new phenomenon that has received a lot of attention over the last five years and has the potential to transform how individuals and businesses interact. It is built on the concept of shared consumption and the monetization of spare capacity. Participating in the sharing economy has several benefits. The sharing economy is a social and economic movement that encourages people to share their leftover resources with others, reducing waste, and eventually leading to a greater degree of shared interest in society. Significant economic and social benefits can only be realized if the sharing economy is employed in a consistent and long-term manner (Apostoaie and Bilan, 2020). The idea of sustainable or continuous use differs from first-time use and is concerned with a person's user behaviour and engagement with systems over a longer time than the initial use behaviour. Sustainable use behaviour refers to the extension of an original usage and is an important component to consider when evaluating the advantages of the sharing economy (Méndez-Picazo et al., 2021). As a result, it is critical to represent and identify the elements that influence people's willingness to engage in sustainable purchasing via the sharing economy. In this context, Boateng, Kosiba, and Okoe (2019) and Heinrich, Blauuw & Pretorius (2020) explore the relationship between sharing economic factors and environmental and sustainable development. A review of 74 papers on the sharing economy and SDGs concludes that there is a positive association between sharing social and economic factors and SDGs. Gössling and Michael Hall (2019) and Wei et al. (2021) explore the nexus of a collaborative economy with SDGs in the tourism industry, conceptualizing the impact of the sharing economy on SDGs and concluding that the sharing economy impacts SDGs. Govindan et al. (2020) investigate the relationship between the achievement of SDGs by a sharing economy of SMEs in India. The study identifies 15 common barriers, including a lack of control, trust, and capital cost, which affect the achievement of SDGs. Among the most influential is capital cost. The costs associated with any project are key to the project's success. The economic benefits pivot towards achieving any related financial objective. Furthermore, Fuster Morell, Espelt, and Renau

Cano (2020) and Koloba (2020), explore the nexus between the sharing economy and SDGs. Analysis of the data on 60 platforms reveals that the sharing economy impacts SDGs. In this context, Sapena, Almenar, Apetrei, Escrivá, and Gil (2018) and Sadiq et al. (2021b), investigate the sharing economy from a social perspective, i.e., poverty eradication and its impacts on SDGs, and show that a sharing economy reduces costs, enhances employment opportunities and thus, provides a source of poverty eradication, which is a SDG. Therefore, the second hypothesis is derived:

H2: There is a positive association between the social benefits of a sharing economy and SDG achievement.

The sharing economy is a fascinating phenomenon, in which people are increasingly granting each other access to existing resources (Bilan, Hussain, Haseeb, & Kot, 2020; Sharma, 2020). As a result, society's resources are being used more efficiently, encouraging a shift to a more sustainable form of consumption. Sustainable consumption has a common environmental effect, allowing human needs to be addressed, now and in the future. The environment is one of the key factors in the betterment of any country's life and economy. The UN SDGs are universally agreed-upon goals to eradicate poverty, safeguard the planet's natural resources, and ensure that all people live in peace and prosperity (Pilgrimiené et al., 2021). The SDGs incorporate the three elements of sustainable development, economic, environmental, and social, apply to high-income and low-income nations, and include accountability measures. Firstly, a systems approach to future-proof health and social justice is required. Secondly, a research-based strategy must be implemented for improving communication, framing, and engagement. Thirdly, actions should have co-benefits (i.e., both immediate and long-term benefits to health, equity, and prosperity). The SDGs give public health professionals a critical chance to help society build the circumstances for a brighter future through concerted effort (Allen, Metternicht, & Wiedmann, 2017; Dong, Liu, & Bian, 2021; Kikulwe & Asindu, 2020; Li et al., 2021).

The UN has five environment-related goals: clean and water sanitation (SG # 6); affordable and clean energy (SG # 7); decent work and economic growth (SG # 8); responsible consumption and production (SG # 12); and life on land (SG # 15). In this context, Schroeder, Anggraeni, and Weber (2019) and Liu et al. (2021a) explore the nexus between the sharing economy and the environment-related UN SDGs. The results reveal that the sharing economy influences sustainable development and environment-related goals. The circular economy (CE) concept provides an innovative and systematic method to address various urban sustainability concerns by examining synergistic approaches to constructing circular urban systems and optimizing cities' material and energy metabolisms to reduce their environmental footprints. The SDGs published by the UN highlight urban sustainability as a significant issue, and a circular economy might offer a variety of ways to achieve SDGs in an urban context. As a trade-off, the circular economy may have negative consequences for the business-as-usual scenario, which are often overlooked. Dong et al. (2021) explore the nexus between a sharing economy and sustainable development in rural areas. The results reveal that the sharing economy impacts rural sustainability. One major threat to the environment is a lack of proper waste management. This has become a global issue and needs special attention. Dabbous and Tarhini (2021) and Dlalisa & Govender (2020) apply empirical research to the environmental benefits of a sharing economy on energy efficiency and sustainable economic development. A sample of 18 OECD countries, and data on the sharing economy, energy efficiency, and sustainable economic development from 2014 to 2018, show a positive association of the sharing economy with energy efficiency and sustainable economic development. The incorporation of a sharing economy reduces energy use without reducing

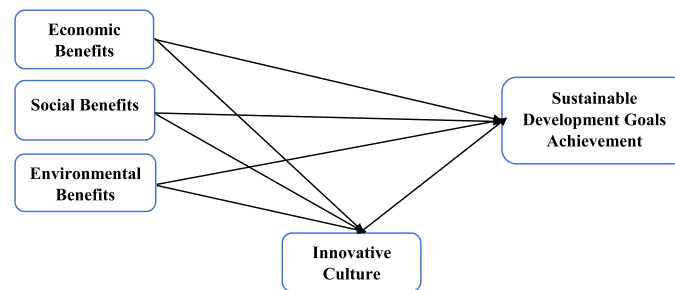


Figure 2. Theoretical framework

productivity. The reduced use of energy contributes to the achievement of SDGs. Thus, the third hypothesis is derived:

H3: There is a positive association between the environmental benefits of a sharing economy and SDG achievement.

The world is seeing rapid technological change, which impacts every aspect of life. This change is the outcome of innovation, the basis for which is research and development, which requires strong support from organizations and nations. Developing countries are less focused on innovation culture, which plays a pivotal role in developing innovation, and this is considered one of the main differences between developed and developing countries (Al Mamun, Muniady, & Nasir, 2021; Al-Omoush, Simón-Moya, & Sendra-García, 2020). Governments and international organizations recognize the potential of science, technology, and innovation to facilitate and accelerate progress toward SDGs. To exploit the benefits, governmental policies and investments must be re-aligned and streamlined. Innovation does impact the achievement of SDGs and, in this context, Cordova and Celone (2019) explore the nexus between innovation and sustainable development goals from a business perspective. The results reveal that different business stakeholders respond in different ways to SDGs. Innovation acts as a driver toward achieving SDGs. Aibar-Guzmán, García-Sánchez, Aibar-Guzmán, and Hussain (2022) investigate the relationship between the sharing economy, innovative culture, and SDGs, revealing that, when there is an innovative culture, there is a tendency to adopt a sharing economy, which helps achieve SDGs. Michal, Mariana, and Paul (2019) test innovation-oriented policy from a sustainable development goals perspective. The results reveal that policy roadmaps can increase innovation policy coherence and establish synergies between public, commercial, and civil society activities and investments in high-impact mission-oriented technologies for sustainable development. Muñoz-La Rivera, Hermosilla, Delgadillo, and Echeverría (2020) and Othman, Nordin, and Sadiq (2020), explore SDGs from an innovative skills point of view in industry 4.0. The results reveal that employees' innovative skills impact the achievement of firms' SDGs. The present study views the sharing economy from an innovative cultural point of view. Liu, Feng, and Wang (2019) and Sadiq et al. (2021a) explore product innovation from a sharing economy perspective. The results reveal that a sharing economy influences innovative products in the market, as we live in a digital world. This digitalization has changed the concept of business across the world, as the sharing economy is about the privatization of economic resources. The best use of resources depends on the availability of the most advanced tool due to innovation. In this context, Shaikh, Sharma, and Karjaluo (2020) explore digital innovation and the sharing economy, revealing that the existence of digital innovation supports the sharing economy. Ljungholm (2018) also explores the sharing economy, economic growth, and innovation, and reveals an association between the sharing economy and innovation. Shereni (2019) explores the sharing economy and SDGs in developing countries. Thus, the following hypotheses are derived:

H4: The relationship of economic benefits of a sharing economy and SDG achievement is mediated by innovative culture.

H5: The relationship of social benefits of a sharing economy and SDG achievement is mediated by innovative culture.

H6: The relationship of environmental benefits of a sharing economy and SDG achievement is mediated by innovative culture.

The current article applies social exchange theory, from which the framework is developed. Social exchange theory describes the social behaviour of collaboration between parties by implementing a cost-benefit analysis to determine the risks and benefits (Cropanzano, Anthony, Daniels, & Hall, 2017; Moslehpour et al., 2022b). The theory shows that, when people or organizations interact with each other, they exchange resources to reduce costs (Liu et al., 2021b; Moslehpour et al., 2022a; Wang, Xiang, Yang, & Ma, 2019). This study examines the impact of sharing economy benefits on SDG achievement using social exchange theory. Most previous articles also use social exchange theory to examine the benefits of a sharing economy to attain specific goals. For example, Lai et al. (2020) use social exchange theory to predict the sharing economy's benefits for organizational success, and Boateng et al. (2019) examine the sharing economy's role in achieving organizational goals using social exchange theory to develop their framework. This study uses social exchange theory to examine the impact of the benefits of a sharing economy for the achievement of SDGs, and develops its framework accordingly, given in Figure 2.

Research methods

This research investigates the impact of the economic benefits, social benefits, and environmental benefits of the sharing economy on SDG achievement and examines the mediating impact of innovative culture on the links between these economic, social, and environmental benefits and SDG achievement in the transportation industry in Vietnam. It employs the primary data collection method of questionnaires to gather data from selected employees. Transportation industry employees currently operating in Vietnam are the selected respondents. The researchers use purposive sampling to select the respondents, and only those employees related to SDG activities are selected. The researchers apply mail and personal visit methods to distribute surveys to the employees. The researchers sent out 535 surveys, and 290 were received and used for analysis, a 54.21 per cent response rate. The research uses three predictors: economic benefits of a sharing economy (EBSE); social benefits of a sharing economy (SBSE); and environmental benefits of a sharing economy (ENBSE), in addition to one mediation variable, innovative culture (IC), and one predictive variable, SDG achievement (SDGA). The measurement scales for the constructs under study are extracted from previous studies.

The measurement scale for SDG achievement is taken from Zamora-Polo, Sánchez-Martín, Corrales-Serrano, and Espejo-Antúnez (2019) and has 17 items, given Table 1, below.

Table 1
Measures of SDG achievement

Construct	Item	Statement	Source
SDG Achievement	SDGA1	"My organization takes part in poverty reduction."	(Zamora-Polo et al., 2019)
	SDGA2	"My organization plays a significant role in hunger reduction."	
	SDGA3	"My organization is working for healthcare and wellness."	
	SDGA4	"My company provides quality education to their employees and employees' families."	
	SDGA5	"My firm always works for gender equality."	
	SDGA6	"I have access to clean water and sewerage."	
	SDGA7	"My firm uses accessible and non-polluting energy."	
	SDGA8	"My firm takes part in decent work and economic growth."	
	SDGA9	"My firm has innovation and effective infrastructure."	
	SDGA10	"My firm always works to reduce inequalities."	
	SDGA11	"My firm is creating sustainable cities and communities."	
	SDGA12	"My firm has the ability for responsible consumption and production."	
	SDGA13	"My organization always considers weather care."	
	SDGA14	"My firm always cares about underwater life."	
	SDGA15	"My firm always cares for life in terrestrial ecosystems."	
	SDGA16	"My firm participates in peacebuilding, justice, and corruption-free institutions."	
	SDGA17	"My organization strives to build alliances to achieve the above goals."	

Table 2
Measures of innovative culture

Construct	Item	Statement	Source
Innovative Culture	IC1	"My organization's culture is challenging."	(Khan et al., 2019)
	IC2	"My organization's culture is creative."	
	IC3	"My organization's culture is enterprising."	
	IC4	"My organization's culture is stimulating."	
	IC5	"My organization's culture is driving."	
	IC6	"My organization's culture is risk-taking."	
	IC7	"My organization's culture is results-oriented."	
	IC8	"My organization's culture is pressurized."	

Instrument for innovative culture is adapted from Khan, Hussain, Maqbool, Ali, and Numan (2019), and has eight items, given in Table 2, below.

The measures of the economic benefits of a sharing economy are taken from Jelinkova, Tetreova, Vavra, and Munzarova (2021) and have four items, given in Table 3.

The social benefits of a sharing economy are taken from Jelinkova et al. (2021) with four items, shown in Table 4.

Finally, the environmental benefits of a sharing economy are taken from Jelinkova et al. (2021) with two items, given in Table 5.

The research applies PLS-SEM using Smart-PLS to analyse the links among the constructs. Smart-PLS is an effective statistical tool that works with large sample sizes and complex frameworks (Hair et al., 2021; Moslehpour et al., 2021). The framework of the study is given in Figure 2, below.

Table 3
Measures of the economic benefits of a sharing economy

Construct	Item	Statement	Source
Economic Benefits of Sharing Economy	EBSE1	"The sharing economy is beneficial to the economy of the country."	(Jelinkova et al., 2021)
	EBSE2	"The sharing economy is a way to ensure more efficient utilization of resources."	
	EBSE3	"Use of services in the sharing economy saves users a significant amount of money."	
	EBSE4	"The sharing economy may be an interesting source of income for providers of assets."	

Table 4
Measures of the social benefits of a sharing economy

Construct	Item	Statement	Source
Social Benefits of Sharing Economy	SBSE1	"The sharing economy contributes to a greater level of employment and creates new jobs."	(Jelinkova et al., 2021)
	SBSE2	"Participation in the sharing economy simplifies work-life balance."	
	SBSE3	"Use of services in the sharing economy is a source of unusual experiences."	
	SBSE4	"Sharing via platforms saves users' time."	

Table 5
Measures of the environmental benefits of a sharing economy

Construct	Items	Statements	Source
Environmental Benefits of Sharing Economy	ENBSE1	"Sharing is environmentally friendly thanks to saving resources."	(Jelinkova et al., 2021)
	ENBSE2	"Sharing limits the production of waste."	

Table 6
Validity (Convergent)

	Item	Loading	Cronbach	CR	AVE
Economic Benefits of Sharing Economy	EBSE4	0.878	0.880	0.917	0.735
	EBSE1	0.867			
	EBSE2	0.844			
	EBSE3	0.839			
Environmental Benefits of Sharing Economy	ENBSE1	0.971	0.779	0.885	0.795
	ENBSE2	0.804			
Innovative Culture	IC1	0.802	0.920	0.935	0.642
	IC2	0.784			
	IC3	0.837			
	IC4	0.811			
	IC5	0.832			
	IC6	0.819			
	IC7	0.793			
	IC8	0.729			
Social Benefits of Sharing Economy	SBSE1	0.967	0.955	0.968	0.882
	SBSE2	0.921			
	SBSE3	0.903			
	SBSE4	0.964			
SDG Achievement	SDGA10	0.773	0.936	0.941	0.522
	SDGA11	0.854			
	SDGA12	0.640			
	SDGA13	0.655			
	SDGA14	0.621			
	SDGA15	0.666			
	SDGA16	0.641			
	SDGA17	0.710			
	SDGA2	0.672			
	SDGA3	0.471			
	SDGA4	0.673			
	SDGA5	0.857			
	SDGA6	0.776			
	SDGA8	0.857			
	SDGA9	0.854			

Results

The study examines the content validity, using factor loading. The results show factor loading values bigger than 0.50, indicating content validity. The convergent validity is tested using average variance extracted (AVE). The results show AVE values bigger than 0.50, indicating convergent validity. The composite reliability (CR) is tested using Cronbach's alpha. The results show alpha values bigger than 0.70, indicating significant reliability. Table 6 shows these findings.

The discriminant validity is tested using the Fornell Larcker criterion. The results show that the first value, the linkage with the construct itself, is larger than the other values in the column, the linkages with other constructs. These results show discriminant validity and low linkages among the variables, presented in Table 7.

The discriminant validity is tested using cross-loading. The results show that the values representing the linkage with the construct itself are larger than the other values in the rows, which represent the linkages with other constructs, showing discriminant validity and low linkages among the variables, presented in Table 8.

The discriminant validity is tested using the heterotrait monotrait (HTMT) ratio. The results show values not bigger than 0.90, indicating

Table 7
Fornell Larcker validity

	EBSE	ENBSE	IC	SBSE	SDGA
EBSE	0.857				
ENBSE	0.165	0.891			
IC	0.435	0.178	0.801		
SBSE	0.427	0.347	0.481	0.939	
SDGA	0.459	0.218	0.517	0.549	0.723

Table 8
Cross-loadings

	EBSE	ENBSE	IC	SBSE	SDGA
EBSE4	0.878	0.165	0.394	0.392	0.453
EBSE1	0.867	0.138	0.368	0.343	0.365
EBSE2	0.844	0.126	0.406	0.379	0.385
EBSE3	0.839	0.134	0.315	0.344	0.360
ENBSE1	0.163	0.971	0.208	0.331	0.235
ENBSE2	0.125	0.804	0.056	0.293	0.118
IC1	0.352	0.137	0.802	0.389	0.635
IC2	0.340	0.179	0.784	0.379	0.638
IC3	0.375	0.104	0.837	0.350	0.646
IC4	0.350	0.072	0.811	0.317	0.588
IC5	0.350	0.154	0.832	0.407	0.728
IC6	0.331	0.206	0.819	0.440	0.743
IC7	0.363	0.144	0.793	0.455	0.699
IC8	0.332	0.129	0.729	0.317	0.515
SBSE1	0.418	0.323	0.456	0.967	0.508
SBSE2	0.370	0.316	0.437	0.921	0.525
SBSE3	0.400	0.342	0.458	0.903	0.513
SBSE4	0.414	0.321	0.454	0.964	0.514
SDGA10	0.396	0.140	0.781	0.442	0.773
SDGA11	0.333	0.176	0.782	0.454	0.854
SDGA12	0.326	0.171	0.433	0.404	0.640
SDGA13	0.317	0.141	0.371	0.307	0.655
SDGA14	0.343	0.131	0.375	0.330	0.621
SDGA15	0.340	0.157	0.413	0.334	0.666
SDGA16	0.315	0.163	0.362	0.307	0.641
SDGA17	0.330	0.140	0.455	0.393	0.710
SDGA2	0.356	0.185	0.411	0.345	0.672
SDGA3	0.239	0.178	0.247	0.344	0.471
SDGA4	0.351	0.135	0.464	0.429	0.673
SDGA5	0.332	0.182	0.786	0.456	0.857
SDGA6	0.394	0.149	0.780	0.440	0.776
SDGA8	0.333	0.180	0.775	0.459	0.857
SDGA9	0.336	0.186	0.794	0.457	0.854

discriminant validity and low linkages among variables, presented in Table 9.

The results reveal that the economic benefits and social benefits of a sharing economy have positive and significant links with SDG achievement in the transportation industry in Vietnam, thus H1 and H2 are accepted. However, the environmental benefits of a sharing economy is not significantly correlated with SDG achievement in the transportation industry in Vietnam, hence H3 is rejected. The findings reveal that the relation of economic benefits of a sharing economy, the social benefits of a sharing economy and SDG achievement in the transportation industry in Vietnam is mediated by innovative culture, hence H4 and H5 are accepted. In contrast, innovative culture insignificantly mediates the link between the environmental benefits of a sharing economy and SDG achievement in the transportation industry in Vietnam, hence H6 is rejected. Table 10 shows these findings.

Conclusion

Discussion

The results reveal that the economic benefits of a sharing economy positively impact the achievement of SDGs. This implies that traditional energy resources are minimized in an energy-efficient

Table 9
Heterotrait monotrait ratio

	EBSE	ENBSE	IC	SBSE	SDGA
EBSE					
ENBSE	0.191				
IC	0.481	0.175			
SBSE	0.463	0.400	0.508		
SDGA	0.507	0.232	0.808	0.573	

Table 10
Path analysis

Relationship	Coeff	S.D.	t-Stats	P Value	LL	UL
EBSE -> SDGA	0.079	0.042	1.854	0.033	0.002	0.133
ENBSE -> SDGA	0.021	0.033	0.643	0.261	-0.033	0.078
IC -> SDGA	0.695	0.035	19.903	0.000	0.638	0.757
SBSE -> SDGA	0.173	0.052	3.300	0.001	0.071	0.253
EBSE -> IC -> SDGA	0.195	0.048	4.088	0.000	0.118	0.287
SBSE -> IC -> SDGA	0.249	0.045	5.522	0.000	0.174	0.310
ENBSE -> IC -> SDGA	0.005	0.032	0.154	0.439	-0.043	0.067

economy, and cheaper energy resources are used. These low-cost energy resources save money and allow the economy to move towards economic growth, a source of social development. These results agree with Boar, Bastida, and Marimon (2020), that struggles to use the least amount of energy to maintain the work environment, by applying energy-efficient practices such as sealing cracks or using insulation, save about 10 per cent of the costs of heating or cooling, and that using sunshine for lighting and shades save running costs. These cost reductions improve business profitability and motivate the achievement of SDGs, representing a positive relationship between the economic benefits of a sharing economy and the achievement of SDGs. The results also align with Gössling and Hall (2019), who show that innovative processes or technologies which require expert personnel increase energy efficiency, firstly by increasing jobs opportunities, thereby reducing poverty and hunger, and secondly, by enhancing capital formation and addressing SDGs.

The results reveal that the social benefits of a sharing economy positively impact the achievement of SDGs. This means that the energy efficiency adoption has many social benefits, and the SDGs based on social wellbeing are made easier, sustaining development. These results confirms the empirical shreds of Lucas et al. (2021), who examine sharing economy benefits from a social perspective and their role in achieving SDGs. The adoption of energy efficiency improves the quality of life by reducing health risks, securing resources, increasing jobs, reducing poverty, and enhancing employment, all of which enhance sustainability and development. The positive relationship between the social benefits of a sharing economy and SDG achievement also support the findings of Chen, Cheng, Edwards, and Xu (2020), that energy efficiency has social benefits such as encouraging renewable energy from food and non-food crops and forests, promoting agriculture. Agricultural growth enhances the environment, provides raw materials and other resources, and helps achieve SDGs. The results also agree with Labbate et al. (2021), who analyse the role of the social benefits of a sharing economy in addressing SDGs. In countries where businesses follow regulations for energy efficiency, harmful gas emissions are minimal, and there is a clean environment for human beings where they can breathe easily and have healthy and nutritious food. The improved living of people indicates the achievement of SDGs.

The results reveal that the environmental benefits of a sharing economy have a positive but insignificant impact on SDG achievement. In Vietnam, energy efficiency is not effectively implemented and provides only weak environmental benefits. The low level of benefits weakens the country's ability to achieve SDGs, especially those based on environmental development. Therefore, the firms engaged in sharing economy practices must focus on its impacts on environmental quality so that SDGs can be achieved. The result of an insignificant positive relationship between the environmental benefits of a sharing economy and the achievement of SDGs is also presented by Lyaskovskaya and Khudyakova (2021b). They also find an insignificant relationship based on the idea that energy efficiency has many environmental benefits, which could help the country address SDGs. However, if entities fail to implement energy efficiency and attain environmental benefits effectively, it becomes difficult to achieve

SDGs. This suggests that firms and individuals must implement a sharing economy and attain its environmental benefits and achieve SDGs.

The findings shows that economic benefits of sharing economy and SDG achievement both are related indirectly in the presence of innovation culture as a mediator. This is supported by Boateng et al. (2019). When firms adopt sharing economy policies, reducing expenditure and removing the adverse impacts of energy consumption, the financial resources saved can bring innovation to the firms' cultures as they adopt research and development practices and develop creativity in human resources. An innovative culture improves firms' management and ability to address and achieve SDGs. So, innovative culture has a mediating effect on the relationship between the economic benefits of a sharing economy and SDG achievement. These results are in line with van Niekerk (2020), who shows that to adopt innovation, firms need resources, technologies, techniques, and information to enhance their innovative culture. The acquisition of these resources, technologies, information, and techniques is possible through the economic benefits of energy efficiency. When firms develop innovative culture, they can achieve the SDGs that relate to innovation, work improvement, and economic culture.

The results are similar in the case of social benefits too. This results show consistency with the work Fuster Morell et al. (2020), which show that one of the greatest social benefits of a firm adopting a sharing economy is the achievement of employee commitment, as employees want a clean environment that does not damage their health or that of their loved ones. Committed employees cooperatively develop an innovative culture, which provides a solution to many problems and clears the way for SDG achievement. This study shows innovative culture to be a mediator between the social benefits of a sharing economy and SDG achievement, in agreement with Parmentola, Petrillo, Tutore, and De Felice (2022), who show that an innovative culture is an environment in which employees can present their creative ideas to one another and people above their rank, and get their ideas implemented. Such a culture is developed when employees feel valued due to energy efficiency adoption. As the innovative culture is attained, the employees contribute to the organization's SDGs.

The results show innovative culture to be an insignificant mediator between the environmental benefits of a sharing economy and SDG achievement. Innovative culture links the environmental benefits of energy efficiency and SDG achievement, but this link is vulnerable because the level of energy efficiency has only few and insignificant environmental benefits because of the lack of effectiveness with which energy efficiency is implemented. It is not easy to achieve SDGs if the sharing economy is not implemented effectively and environmental benefits are not fully achieved through innovative culture. These results agree with Kuzhady, Seyfi, and Béal (2020), who also show an insignificant mediating role of innovative culture between the environmental benefits of a sharing economy and SDG achievement.

Implications, limitations & future recommendation

The current study has a great deal of theoretical significance. It is an addition to the sustainability literature addressing SDGs. It analyses the sharing economy's role in achieving SDGs and ensuring sustainable development. The study examines the economic, social, and environmental benefits of a sharing economy and their impact on SDG achievement. While sharing economy benefits for achieving SDGs have previously been addressed collectively, without dividing them into the subheadings of economic, social, and environmental benefits, this study looks deeply into the impacts of the economic, social, and environmental benefits. Innovative organizational culture relates to the economic, social and environmental benefits, and SDGs achievement, as shown by previous literature, but the present study

adds to the literature by exploring the mediating role of innovative culture between the economic, social, and environmental benefits of a sharing economy and SDG achievement. The current study has several empirical implications. It is an essential guide for commissions established by governments for addressing SDGs, which must focus on implementing a sharing economy, especially with respect to its economic, social, and environmental benefits. Individual businesses can increase their contribution to SDG achievement, and this study guides regulators formulating regulations relating to SDG achievement through a sharing economy. Firms must effectively implement a sharing economy and gain its economic, social, and environmental benefits, so that an innovative culture comes into existence making it easier to contribute to SDG achievement. Business enterprises in the transportation industry, the focal point of the study, must adopt sharing economy principles to remove the adverse impacts of their activities based on energy consumption. This exploration of the social, economic, and environmental benefits of a sharing economy highlights how, with the incorporation of sharing economy practices, social wellbeing can be achieved, environmental issues can be resolved, the quality of environmental elements such as air, water, and soil can be maintained, the abundance of natural resources can be preserved, and financial resources can be saved. The prosperity of people in various social areas, environmental protection, and financial strength all contribute to countries' sustainable development.

Vietnam is a lower-middle-income developing country which focuses on the need for sustainable development. Vietnam intends to achieve the SDGs presented by the UN General Assembly by 2030. Sustainable development goals are divided into social, economic, and environmental development, hence social, economic, and environmental practices are required. A sharing economy reduces energy consumption and has several other social, economic, and environmental benefits. This study leads the way to adopting a sharing economy for SDG achievement by examining the influences of sharing economy benefits. The study explores the role of innovative culture in the economic, social, and environmental benefits of a sharing economy and SDGs achievement. Using a survey conducted in Vietnam's transportation industry, the authors analyse sharing economy benefits and SDGs achievement. The findings show a positive relationship between the economic, social, and environmental benefits of a sharing economy and SDG achievement. The findings reveal many economic benefits such as job creation, increased income, affordable energy, reduced operational and production costs, and enhanced profit. The economic benefits of a sharing economy are helpful to achieving SDGs based on economic development. The results reveal that the social benefits of a sharing economy, including improved health, availability of resources, increased employment, and improved environment, are helpful to achieving SDGs. Likewise, if environmental benefits are successfully achieved by a sharing economy, the SDGs relating to environmental development can be achieved. The study concludes that sharing economic benefits, social benefits, and environmental benefits enhances innovative culture and helps achieve SDGs.

The study has some specific limitations, which must be addressed by future research to create a study for practical use. Firstly, this study addresses only the economic benefits, social benefits and environmental benefits of a sharing economy for achieving SDGs, while there are many other significant variables such as human resource management, green finance, eco-innovation, corporate governance, and human capital, which play a significant role in the achievement of SDGs aimed at sustainable development. The researchers suggest that future research covers the impact of these significant factors. Secondly, the study confirms the role of sharing economy benefits in SDGs achievement by the analysis of the practices and SDG contributions of transportation firms in a single country, Vietnam, which limits the study's validity and reliability, because of the limited information about the role of sharing economy benefits in SDG

achievement. Future authors could select evidence from multiple countries and industries for better validity and reliability.

Conflict of interest

We declare that we do not have any commercial or associative interest that represents a conflict of interest in connection with the work submitted.

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