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Examining the impact of sustainability dimensions on economic performance: Evidence from Saudi Logistics companies

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A B S T R A C T

The study's purpose is to measure the impact of sustainability initiatives on the economic performance of logistics companies in Saudi Arabia. Quantitative research design was followed and data were collected with a structured questionnaire from employees working in Saudi logistics companies using a convenience sampling technique. Structural equation modeling was used to examine hypothetical relationships between constructs. The findings reveal that sustainable logistics transport, environmental sustainability, and social sustainability have a positive and significant influence on sustainable green practices, which in turn have a positive impact on economic performance. Sustainable green practices act as mediator between sustainability initiatives and the enhancement of the performance of logistics companies. The findings emphasize the significance of sustainability initiatives such as social, economic and logistics dimensions to attain economic outcomes and business sustainability. This provides insights for managers and policymakers to align logistics strategies with organizational and national sustainability goals.

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1. Introduction

Sustainability has become a strategic agenda for business entities around the world that is driven by social, environmental and economic possibilities. Businesses are struggling to manage their profitability with corporate social responsibility, environmental stewardship and are opting for diverse approaches to enhance performance (Gopalan et al., 2025). In the context of the logistics sector, sustainability has emerged as a challenge in terms of managing resources, emissions and enhancing operational performance (Ajike et al., 2025). Sustainable logistics bring positive outcomes for organizations such as reduced environmental impact, financial gain, reputation and operational reliability (Di Nardo et al., 2025). Specifically, sustainable logistics transport, environmental sustainability, and social sustainability are considered important factors that foster sustainable green practices and support to achieving economic performance (Thanh Ha, 2025).

In the context of Saudi Arabia, as the economy is guided by a national development agenda with Vision 2030, it emphasizes global sustainability. The vision pays more attention to a diversified economy with strong measures for environmental safety and social welfare and urge industries towards sustainable practices (Alasmari & Alzahrani, 2025). The importance of the logistics sector arises due to the significant growth observed in e-commerce. Furthermore, it supports the economic activities of other sectors like manufacturing and trade (Khan et al., 2025). Sustainability has become a major concern for businesses in sustaining their operations with reduced cost and environmental impact. An effective transport system, while giving priority to environmentally responsible operations, is a necessary component to ensure that logistics operations add value to national and organizational goals for sustainability (Alkhodair & Alkhudhayr, 2025). Keeping in view the scholarly work on sustainability, the empirical research on such initiatives transforms into green practices and bring positive financial outcomes for Saudi logistics organizations remains unexamined.

Earlier studies have stated that sustainability has a direct and indirect positive influence on performance (Parhi et al., 2022; Dabees et al., 2023). Moreover, environmentally sustainable practices, including recycling, efficient energy systems, and water consumption, play a vital role in increasing operational efficiency and giving a competitive edge to organizations (Maji

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et al., 2023). Social sustainable practices related to safety measures, employee welfare and fair labor wages foster a productive workforce and lead toward green initiatives. Logistics sustainability practices, including smart supply chain, environment-friendly transport and route optimization, ensure efficient service delivery to their customers and result in better economic gains. Hence, altogether, these dimensions help ensure sustainable green practices, which embed operational activities within the sustainability agenda.

Sustainable green practices have a major impact on the operational and financial performance of businesses. When organizations give priority to green practices by using environment-friendly resources and waste reduction, then it leads to a better experience for profitability and resilience (Roy & Mohanty, 2024). It gives a competitive advantage and organizations can make a difference in the market, overcome risks and meet customer demands (Nikseresht et al., 2024). Considering the strategic importance of sustainability for logistics companies, the research gap persists in terms of examining the mediating role of sustainable green practices between sustainability initiatives and economic performance. There is a dearth of literature investigating how social, environmental and logistics transport together influence on green practices and in turn into economic performance in Saudi logistics firms.

Keeping in view this backdrop, this study takes opportunity to examine the direct relationship between sustainable logistics transport, environmental sustainability, social sustainability and sustainable green practices. Moreover, it examines the direct influence of sustainable green practices on the economic performance of Saudi logistics firms. Additionally, the mediating role of sustainable green practices between sustainability initiatives and economic performance is examined. This study provides practical insights for logistics managers and policymakers to overcome the logistical challenges and achieve economic objectives. By using a quantitative research design, this study provides empirical insights to better understand the influence of sustainability initiatives and financial gains for logistics companies.

2. Literature Review

In the modern business environment, sustainability has a become strategic priority for businesses across the globe. Hence, organizations are more judged by their success in terms of social, environment, and sustainable agendas (Cheng et al., 2023). Financial performance measures have become the second priority. When organizations showcase their success based on environment, social, and governance indicators then it gives a competitive edge and increases market reputation (Wan et al., 2022). Business firms are evaluated based on their operational activities that reduce ecological harm, improve social welfare and achieve sustainable goals (Zhou et al., 2023). It links with organizational strategy to sustain their business for a longer period.

In this way, organizations prefer to maintain a balance between profitability and social responsibility and are unable to compromise on the social well-being. The logistics sector plays a critical role in the sustainability discourse as it has a direct impact on greenhouse gas emissions, operations and the efficient supply chain (Luu et al., 2023). Thus, logistics transport consumes more energy and produces more carbon emissions, which can cause environmental damage. Inefficiency in the supply chain can lead to more waste and environmental degradation. Hence, a better strategy for sustainable logistics management including route optimization, fuel management and an efficient delivery system can enhance operational efficiency, overcome indirect costs, and achieve financial performance (Letunovska et al., 2023).

In the Saudi logistics sector, sustainability has been considered a key agenda and is linked with national economic transformation within the framework of Vision 2030. The national agenda emphasizes more on sustainable business initiatives in order to protect the environment, social welfare, and to transform the Saudi economy into a more resilient model (Khayyat et al., 2024). In the view of logistics firms, this creates a pressing need to opt for environmentally friendly strategies to regulate their businesses and increase logistics operational efficiency (Khan et al., 2025). Moreover, it supports the objectives to meet stakeholder expectations and achieve better economic outcomes for logistics companies.

2.1 Sustainable Logistic Transport

Sustainable logistics transport comprehends operational practices with a strategy to minimize the environmental footprint related to transport and logistics while ensuring timely delivery of goods to the final destination (Cano et al., 2022). It brings several advantages such as lower fuel consumption, smart vehicles, the use of efficient route systems, and the utilization of advanced technology for fleet management (Okyere et al., 2022). When logistics firms use sustainable transport then it provides extensive support to minimize operational costs, reduce energy consumption, and control operational expenses (Kumar, 2022). Re-routing systems provide vital support to reduce expenditures while using in transportation (Schliwa et al., 2015). Moreover, sustainable logistics transport improves delivery reliability, minimizes product damage and adds positive value to operational reputation in front of consumers who are environmentally conscious.

In the context of the Saudi logistics sector, the demand for logistics management has been steadily increasing due to the significant growth in e-commerce. Hence, the scrutiny has been intensified with national sustainability goals and environmental standards. As the market becomes competitive, the implementation of sustainable logistics transport has been

urged as firms able to reduce emissions and improve quality service delivery to their customers (Alasmari & Alzahrani, 2025). When logistics organizations set priority for sustainable logistics, then it promotes a culture of sustainability with supporting technology and the adoption of green practices (Ezmigna et al., 2024). Sustainable logistics transport has become a strategic agenda for logistics organizations in order to sustain in the market for a longer period. Thus, it is hypothesized that;

H_1: *Sustainable logistic transport influences sustainable green practices.*

2.2 Environmental Sustainability

Environmental sustainability relates to activities that aim to take initiatives for environment safety and reduce the ecological impact of business operations (Evangelista et al., 2017). It includes steps and strategies for waste reduction, lower energy consumption, and making the environment cleaner while doing the business in the market. It is also linked to using smart technologies to make systems more efficient (Dabees et al., 2023). When organizations opt for environmental sustainability and it is directly aligned with the sustainability of their routine operations. It provides vital support for sustainable green practices (Nikseresht et al., 2024).

In the context of Saudi Arabia, environmental sustainability has been strategically implemented in recent years, whereby companies have to follow the environmental agenda and government policies to overcome carbon emissions and responsibly manage resources under Vision 2030. It is necessary for companies to take part in environmental initiatives by conducting awareness sessions for their employees, implement waste management programs, and being responsible toward social issues (Alexander, 2016). Such initiatives play a vital role in improving operational efficiency of businesses, especially in the logistics sector. Moreover, it helps to adopt green practices while performing operational tasks. When organizations are more inclined towards environmental sustainability then it is more likely to see better strategic implementation of green practices (Bhatti et al., 2025). Hence, this translates environmental awareness programs into measurable outcomes in line with ecological and monetary gains for the companies. Thus, it is hypothesized that;

H_2: *Environmental sustainability influences sustainable green practices.*

2.3 Social Sustainability

Social sustainability relates to ethical practices, welfare and employee development programs in a business environment (Fernandes et al., 2023). It covers health and safety measures for employees, fair wages, development initiatives, and community engagement activities (Martins et al., 2023). Social sustainability should be a priority for organizations in order to have a motivated workforce and be able to deal with challenges promptly (Ranasinghe & Grosse, 2025). Social sustainability initiatives provide fundamental support for organizations to make sure they opt for green practices.

In the context of Saudi Arabia, social sustainability is necessary when keeping in view labor market regulations, the hiring locals, and pay more attention to employee welfare. It provides extensive support for long-term engagement of employees (Tsang et al., 2023). Moreover, companies spend more on the health and well-being of their employees. Additionally, social sustainability practices ensure better support for vulnerable communities and give job priority to locals. When logistics companies consider social sustainability as a strategic initiative, then it gives advantages in terms of lower turnover and better performance results (Sharma et al., 2025). Social sustainability also supports the development of a better organizational culture and leads toward green practices. Additionally, these socially sustainable initiatives provide extensive support to engage employees in green initiatives and support the environment. Thus, it is hypothesized that;

H_3: *Social sustainability influences sustainable green practices.*

2.4 Sustainable Green Practices

Sustainable green practices are related to sustainability initiatives in terms of performing business operations. These initiatives cover waste reduction, lower energy consumption, environmental audit, environmentally friendly systems and product design (Vienažindienė et al., 2021). It comes under a tangible mechanism where sustainable operations ensure a direct impact on organizational performance (Leung et al., 2023). When organizations prefer to opt for the green initiatives within the organization then it gives them a competitive edge and supports building their reputation (Daniel et al., 2022).

Multiple benefits can be attained by companies when they give priority to green initiatives in terms of cost savings, better operational efficiency, and comply with environment regulations (Alasmari & Alzahrani, 2025). The Saudi logistics sector can benefit from green practices by transforming their organizations in line with the national agenda and remaining competitive in the market. Green practices can be used to manage logistics operations and smart re-routing systems to cope with environmental challenges (Trivellas et al., 2020). Hence, companies can integrate green practices with core operations in order to ensure sustainable logistics operations that are good for the environment. Moreover, socially responsible logistics can lead to measurable outcomes for companies. Thus, it is hypothesized that;

H4: *Sustainable green practices influence economic performance.*

Economic performance can be attained by companies via investment returns, cash flow and operating profits as compared to their competitors (Li et al., 2021). When organizations prefer to strategize their operations with sustainability initiatives and green practices, then it leads to the achievement of economic performance. It becomes a valuable source for companies to sustain their business in the market and take a competitive edge (Khan et al., 2025). Sustainable green practices act as a mediator between environmental, social, and logistics transport, and economic performance. Therefore, the selection of logistics transport with environmental safety and a socially responsible workforce brings better outcomes for logistics organizations and improves service quality. Thus, the following hypotheses are proposed.

H5: *Sustainable green practices mediate between sustainable logistic transport and economic performance.*
H6: *Sustainable green practices mediate between environmental sustainability and economic performance.*
H7: *Sustainable green practices mediate between social sustainability and economic performance.*

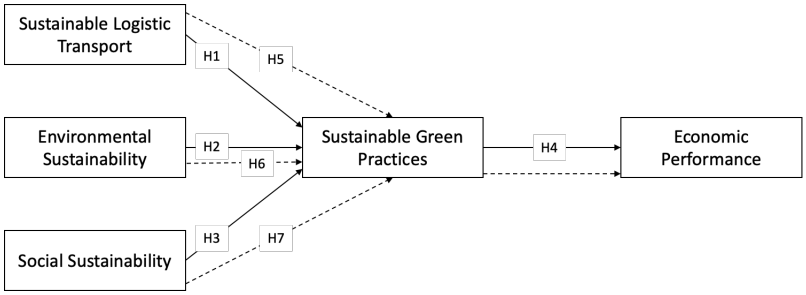

Fig. 1. Research model

3. Methodology

A quantitative research design was used to measure the relationship between the study constructs in the Saudi logistics sector. Data were collected from employees working in Saudi Arabian logistics companies during December 2025. A convenience sampling technique was used to collect data from 321 targeted participants. An online survey was used to be shared with study participants. A five-point Likert scale was used to record the responses where 1 = strongly disagree and 5 = strongly agree for four constructs (sustainable logistics transport, environmental sustainability, social sustainability and sustainable green practices). Economic performance was measured with a five-point Likert scale where 1 = well below average and 5 = well above average.

A validated tool was used to measure the constructs as adapted from published studies. Three items were used for sustainable logistics transport adapted from Ali et al. (2021). Nine items were used for environmental sustainability adapted from Roxas et al. (2017). Nine items were used for social sustainability adapted from Rai et al. (2021). Six items were used for sustainable green practices adapted from Kerr (2006). Three items were used for economic performance adapted from Henri and Journeault (2010) to rate firm performance as compared to their competitors over the past 12 months. Structural equation modeling was used to perform data analysis using SmartPLS.

4. Results

Table 1 shows the demographic profile of study the participants (n=321). Most of the participants were male (75%) and belonged to age group ranging between 15 to 44 years, as depicts a mid-career age population. Regarding experience, most of the participants fell within the range of 1 to 6 years of experience. Most participants held a bachelor's degree, accounting for 73%.

Table 1
Participant profile (n=321)

Variables	Category	Frequency	Percentage (%)
Gender	Male	241	75%
	Female	80	25%
Age (Years)	Less than 25	67	21%
	25–34	107	33%
	35–44	124	39%
	45–54	23	7%
Experience	Less than 1 year	57	18%
	1–3 years	101	31%
	4–6 years	133	41%
	7–10 years	24	7%
	More than 10 years	6	2%
Educational	Secondary or below	43	13%
	Bachelor's degree	234	73%
	Master's degree	44	14%

Table 2 presents the assessment of the measurement model.

Table 2
Measurement model

Items with constructs	Loadings	Cronbach's alpha	Composite reliability	Average variance extracted (AVE)
Sustainable Logistic Transport		0.874	0.821	0.635
SLT1: The product becomes better available after using sustainable means of transport by the logistic service providers	0.729			
SLT2: It is rare to receive a damaged product due to your logistic service providers using sustainable means of transport	0.883			
SLT3: Using a re-route system enhances the orders' delivery at the right time	0.763			
Environmental Sustainability		0.785	0.816	0.656
ES1: Our company practice recycling of wastes	0.820			
ES2: Our company work on water and electricity conservation	0.765			
ES3: Our company conduct training on environmental awareness	0.877			
ES4: Our company participates in environmental programs	0.772			
ES5: Our company has low impact manufacturing technology	0.868			
ES6: Our company communicate with customers/buyers	0.811			
ES7: Our company deals with environment-friendly suppliers	0.738			
ES8: Our company sustainability is an integral part of our business plans and operations	0.734			
ES9: Our company plan for environmental protection is part of business	0.826			
Social Sustainability		0.875	0.759	0.719
SS1: We have not laid-off workers during the lockdown	0.875			
SS2: We pay fair wages to our manpower	0.759			
SS4: We invest in our workers' health and safety even during the crisis	0.749			
SS3: We have not reduced the salaries of our employees during the crisis	0.817			
SS5: We ensure our employees for health issues	0.831			
SS6: We focus on protecting our workers' rights	0.854			
SS7: We comply with hygiene and social distancing norms	0.757			
SS8: We educate and train our employees for new safety requirements	0.829			
SS9: We focus on job creation for local and economically, affected society	0.743			
Sustainable Green Practices		0.731	0.880	0.692
SGP1: Our company requires all suppliers meet certain environmental criteria before sourcing materials	0.792			
SGP2: Our company products are designed in a way that minimizes adverse impact on the environment	0.778			
SGP3: Our company uses Life Cycle Analysis to assess the environmental impact of the product	0.790			
SGP4: Our company identifies activities that are environmentally harmful and provides alternatives that minimize these harmful effects	0.883			
SGP5: Our company carries out environmental audits at regular intervals	0.739			
SGP6: Our company has a clear vision of the importance of environmental policies	0.711			
Economic Performance		0.795	0.816	0.689
Performance of the organization over the past 12 months compared to leading competitors:				
EP1: Return on investment	0.824			
EP2: Operating profits	0.793			
EP3: Cash flow from operations	0.717			

The item loadings for all the constructs above 0.7, which is above the threshold. For sustainable logistics transport, the items loadings ranged from 0.729 to 0.883, Cronbach's alpha for internal consistency was 0.874 and composite reliability was 0.821, which is above the threshold of 0.7. Convergent validity was confirmed with an average variance extracted (AVE) of 0.635, which is above the threshold of 0.5. For environmental sustainability, the items loadings ranged from 0.734 to 0.877, Cronbach's alpha for internal consistency was 0.785 and composite reliability was 0.816, which is above the threshold of 0.7. Convergent validity was confirmed with AVE of 0.656, which is above the threshold of 0.5. For social sustainability, the items loadings ranged from 0.743 to 0.875, Cronbach's alpha for internal consistency was 0.875 and composite reliability was 0.759, which is above the threshold of 0.7. Convergent validity was confirmed with AVE of 0.719, which is above the threshold of 0.5. For sustainable green practices, the items loadings ranged from 0.711 to 0.883, Cronbach's alpha for internal consistency was 0.731 and composite reliability was 0.880, which is above the threshold of 0.7. Convergent validity was confirmed with AVE of 0.692, which is above the threshold of 0.5. For economic performance, the items loadings ranged from 0.717 to 0.824, Cronbach's alpha for internal consistency was 0.795 and composite reliability was 0.816, which is above the threshold of 0.7. Convergent validity was confirmed with AVE of 0.689, which is above the threshold of 0.5.

Table 3 presents discriminant validity using the Fornell-Larcker Criterion. The diagonal values show the square root of AVE and the off-diagonal value show inter-construct correlations. The results indicate that discriminant validity is established as each construct is distinct from the others.

Table 3
Discriminant validity

	EP	ES	SGP	SLT	SS
Economic Performance (EP)	0.795				
Environmental Sustainability (ES)	0.402	0.825			
Sustainable Green Practices (SGP)	0.592	0.613	0.744		
Sustainable Logistic Transport (SLT)	0.448	0.528	0.433	0.792	
Social Sustainability (SS)	0.539	0.409	0.494	0.551	0.805

Table 4 presents the assessment of the structural model and the hypothetical relationships among constructs. Sustainable logistics transport has a positive and significant influence on sustainable green practices ($\beta = 0.131$, $t = 5.540$, $p < 0.001$), H_1 is accepted. Environmental sustainability has a positive and significant influence on sustainable green practices ($\beta = 0.838$, $t = 14.260$, $p < 0.001$), H_2 is accepted. Social sustainability has a positive and significant influence on sustainable green practices ($\beta = 0.409$, $t = 7.086$, $p < 0.001$), H_3 is accepted. Sustainable green practices have a positive and significant influence on economic performance ($\beta = 0.192$, $t = 2.187$, $p = 0.029$), thereby supporting H_4. Furthermore, sustainable green practices act as mediator between the independent and dependent variables. Sustainable green practices significantly mediate between sustainable logistics transport and economic performance ($\beta = 0.025$, $t = 2.073$, $p = 0.038$), H_5 is accepted. Sustainable green practices significantly mediate between environmental sustainability and economic performance ($\beta = 0.161$, $t = 2.519$, $p = 0.012$), H_6 is accepted. Sustainable green practices significantly mediate between social sustainability and economic performance ($\beta = 0.078$, $t = 3.731$, $p = 0.014$), H_7 is accepted. Hence, the findings indicate that green practices play a vital role in linking sustainability factors and economic performance of logistics organizations.

Table 4
Path coefficients

Paths	Beta	Standard deviation	T statistics	P values	Results
SLT → SGP	0.131	0.024	5.540	0.000	H_1 supported
ES → SGP	0.838	0.059	14.260	0.000	H_2 supported
SS → SGP	0.409	0.058	7.086	0.000	H_3 supported
SGP → EP	0.192	0.088	2.187	0.029	H_4 supported
SLT → SGP → EP	0.025	0.012	2.073	0.038	H_5 supported
ES → SGP → EP	0.161	0.064	2.519	0.012	H_6 supported
SS → SGP → EP	0.078	0.045	3.731	0.014	H_7 supported

Note: economic performance (EP), environmental sustainability (ES), sustainable green practices (SGP), sustainable logistic transport (SLT), social sustainability (SS).

Fig. 2 presents the coefficient of determination (R^2) with explanatory power. Sustainable green practices show an R^2 value of 0.461, suggesting that the three independent variables explain 46.1% of the variance in sustainable green practices. Moreover, economic performance shows an R^2 value of 0.346, depicting that 34.6% of the variance is explained by sustainable green practices.

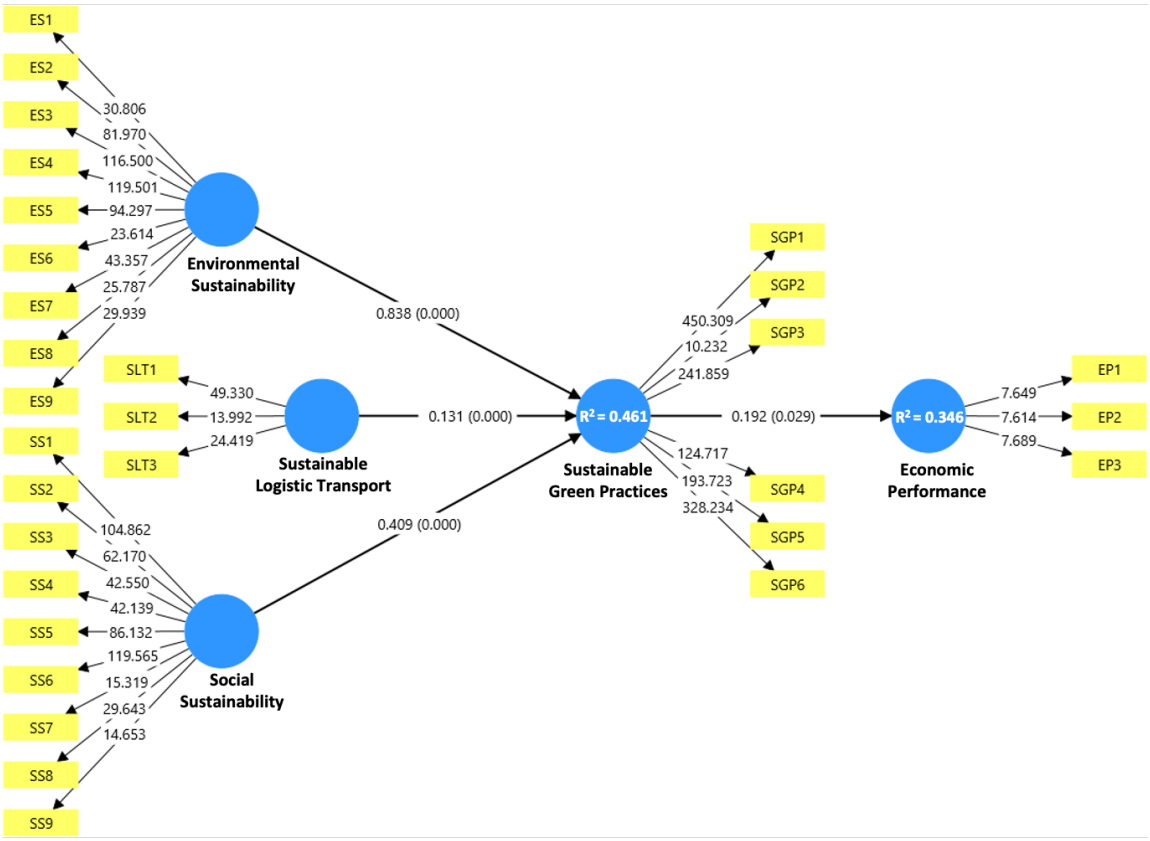

Fig. 2. Structural model

5. Discussion

The study provides valuable insights in terms of sustainability initiatives by logistics organizations in other to have better performance outcomes. The results indicate that sustainable logistics transport, environmental sustainability, and social sustainability play a significant role and have an impact on sustainable green practices, as they give value to the multidimensional aspects of sustainability in support of logistics businesses.

Among these constructs, environmental sustainability shows the strongest impact on sustainable green practices. This suggests that when logistics companies run their operations in compliance with environmental regulations then it gives better results to businesses. Environmental initiatives comprise reducing waste, improving energy efficiency and resource optimization leading toward the better adoption of green practices (Nikseresht et al., 2024). It gives strategic priority to logistics operations and organizations can maintain their sustainable profile in the market (Bhatti et al., 2025).

Moreover, sustainable logistics transport plays a vital role in ensuring the green practices by logistics companies in order to plan their delivery routes efficiently, use environmentally friendly transport and make sure of their major contribution to green operations (Kumar, 2022). Hence, logistics sustainability is a vital component for an organization in order to ensure the effective application of a green strategy. On the other hand, social sustainability is linked to the welfare of employees in terms of health, safety, and wages, which ensures a productive culture in the organization and leads toward environmentally conscious practices (Ranasinghe & Grosse, 2025).

Sustainable green practices have a significant positive influence on economic performance. It supports the argument that sustainable business practices are more of a competitive advantage for the logistics companies over the compliance of ethical and regulatory obligations (Daniel et al., 2022). When organizations prefer to focus more on green practices then it gives better improvements and results in shape of profitability, cash flow, investment returns and operational efficiency. Hence, this is aligned with the resource-based view that sustainable practices are linked to organizational reputation, and value creation. Sustainable green practices play a mediating role between sustainable logistics transport, environmental sustainability and social sustainability, and economic performance (Khan et al., 2025). Thus, the green initiatives by logistics companies play an integral role for the betterment of logistics companies. It is necessary for logistics companies to opt for sustainable practices in terms of performing their operations and to avail the positive outcomes for businesses and ensure long-term sustainability.

The study findings provide implications for Saudi logistics organizations related to sustainability and green initiatives in order to link their operations with Vision 2030. From a theoretical perspective, the significance of logistics related sustainability initiatives brings positive outcomes for organizations in terms of financial performance and gaining competitive advantage. Hence, Saudi logistics firms can leverage these strategic initiatives to focus more on sustainability and green practices in order to sustain their business and enhance their reputation in the market. When organizations set priority for social and environmental regulations then it provides extensive support to streamline their operations.

From a practical perspective, Saudi logistics organizations should practice environmental initiatives such as waste reduction, energy efficiency, adoption of smart technologies and re-routing systems to align operational processes with an environmentally friendly approach. This gives a competitive advantage and makes a better contribution to national sustainability goals. When logistics organizations prefer to focus on eco-friendly transport, then it will support them in overcoming expenses and making a contribution to environmental safety.

It is necessary for logistics firms to provide training to their managers in order to deploy their strategy for safe environment and efficient operational systems. It will enhance the effective utilization of resources. A better skilled workforce can support to implement the sustainable strategy and build a culture that follows sustainable business development.

For policymakers, the study findings add value to promote sustainable strategy across industries. Hence, regulation and policies can be properly deployed to emphasize businesses to follow green practices and work for economic diversification under Vision 2030.

6. Conclusion

The study findings revealed that sustainable green practices act as a mediator between logistics transport, environmental and social sustainability initiatives, and the economic performance of logistics firms in Saudi Arabia. Moreover, logistics transport, environmental and social sustainability significantly and positively influence sustainable green practices, which in turn provide significant benefits to firms in seeking profitability, return on investment and cash flow. Hence, sustainability initiatives bring positive outcomes for organization and ensure their long-term sustainability. It supports the development of operational systems that cause less damage to the environment. The results emphasize that logistics organizations can set their sustainable agenda with the national Vision 2030 in Saudi Arabia by highlighting environmental safety protocols, workforce welfare and sustainable initiatives for logistics operations. In order to do so, organizations can avail the potential growth, resource optimization, and competitive advantage. Thus, it is necessary for organizations to opt for a holistic strategy in order to gain potential economic growth via ethical and socially responsible logistics operations.

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