

# THE MODERATING ROLE OF ORGANIZATIONAL SUPPORT ON THE RELATIONSHIP BETWEEN GREEN SUPPLY CHAIN PRACTICES, GOVERNANCE AND SUSTAINABLE ECONOMIC PERFORMANCE: EVIDENCE FROM CHINA

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**Abstract.** Recently, sustainable economic performance (SEP) has been the foremost requirement due to uncertainty of the economy and environment. This issue needs best practices and governance and also needs researchers' focus. Thereby, the paper aims to assess green supply chain (SC) practices, green SC governance and their role in the achievement of SEP in the manufacturing sector of China. The paper also attempts to explore the moderating effect of organizational support in proposed framework. PLS-SEM model was employed to test model's reliability and validity. The very same method has applied to test the linkage among outlined constructs. Obtained results confirms the moderating impact of organizational support among traditional governance, relational governance and the achievement of SEP in the manufacturing industry in China. This article provides guidelines to the regulators in developing policies related to the achievement of SEP using green SC practices and governance.

**Keywords:** green purchases, internal environmental management, green supply chain governance, traditional governance, relational governance, sustainable economic performance.

**JEL Classification:** O16, G34, Q01, Q56, F63.

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## 1. Introduction

In order to stay in the market and improve and maintain their position, business firms must meet the customers' requirements. The firms which show higher performance, as exhibited by the quality of their services and features of their products, attain a high higher rank in marketing (Khan et al., 2020; Tlapana & Sandlana, 2021). But in the present era, customers not only consider products/service quality that are presented in the marketplace. They have environmental awareness and knowledge about the significance of social welfare, and thereby, they must consider the impacts of the business firms on their surroundings and the well-being of the people who somehow come in contact with these firms. So, nowadays, to win the market, firms must achieve sustainable economic performance that is a sum of social, environmental, and financial development (Massadeh et al., 2021; Shahzad et al., 2022; Tseng et al., 2019). In the words of Adebayo et al. (2021), firms achieve sustainable economic performance when they design and perform their functions in such a way as they meet their needs and accom-

plish the expectations of customers and stakeholders without any compromising on them in the future. Sustainable economic performance has three components social, environmental, and financial performance, and these components are interrelated and interdependent.

Supply chain governance consists of establishing, growing, and maintaining relationships between each and every firm nodes within the chain. It organizes the allocation of material, financial, and human resources within the process and framework for making decisions (Babu, 2021; Tumpa et al., 2019). It consists of transactional governance and relational governance. Transactional governance is the monitoring of the quality of transactions among the firms integrated into the supply chain. It also monitors the fulfilment of conditions of contracts related to transactions, delivery times, quality of the goods or services involved in a transaction, the payment to suppliers, etc. For this purpose, supply chain management uses some selective incentives and punishments. The execution of transactional governance in the GSC enhances the sense of responsibility and self-interest of the firms in socially desirable end environmentally friendly activities. This increases the social and environmental performance at the end (Dat et al., 2022; Wang et al., 2020). In a green supply chain, relational governance is establishing, monitoring, evaluating, and improvement of the relations among firms either in the upstream or downstream supply chain. These potential and sustainable relations are fruitful for enacting green initiatives. In this way, the firms achieve sustainable economic development (Ključnikov et al., 2021; Shafi et al., 2020; Zhang & Yousaf, 2020).

Particularly, talking about manufacturing sector, its growth makes a significant contribution to the global economy. It also supports business and creates jobs for communities. However, the sector is responsible for ecological deficit and natural resource depletion. Thus, organizations are asked to address environmental challenges and adopt green strategies because in future, their survival will only be based on sustainability (Cera et al., 2022). This indicates sustainability is a fundamental responsibility of firms if they want to stay in competition at global level. Thus, manufacturing firms are now in pressure to restructure their policies in order to address the challenges which are needed to be resolved for sustainable economic performance. The rapid growth of China makes the country 2<sup>nd</sup> largest economy; however, the country has been struggling to maintain the balance between sustainable resource use and economic development. Due to energy crisis and environmental pollution, China has to face several challenges such as high production cost and environmental issues (Fan & Zhou, 2023; Yodchai et al., 2022).

In 2019, China was accounted for 28.6% of manufacturing output at global level. Between 2005–2017, manufacturing industry of China gained steady growth in terms of energy consumption and GDP growth, meanwhile carbon emissions also started reducing in 2014 (Atkočiūnienė & Siudikienė, 2021). In 2020, China made pledge to attain peak emissions of CO<sub>2</sub> by 2030, however, the country also vowed to achieve carbon neutrality by 2060. Green supply chain practices are an effective solution to minimize carbon emissions as well resource consumption. These practices also have the tendency to promote low-carbon transmission and upgrade the industry accordingly (Xinhuanet, 2020). In this regard, ISO14001, which is an environmental management standard and criteria promotes green supply chain development from consumer and supplier, both ends. According to the reports, 134,926 organizations passed the standard certification in 2019, however, this passing rate is way less in comparison

of total firms. This indicates that green transformation goal of a country is still a long short, yet takes time to achieve (Setiawan et al., 2021; Sheng et al., 2023).

Since the acceptance rate of ISO14001 environmental standard in China is getting higher with the passage of time, thus, GSCM plays a highly essential role in organizational performance. Various firms are now obliged to introduce green practices in order to optimize their existing supply chain processes (Kouhizadeh & Sarkis, 2018; Zimon et al., 2019). Green supply chain management is also viewed as a promising solution which can tackle firm's environmental, economic and social performance at the same time. Thus, it is an ideal and optimal solution for organizations to achieve higher commercial profits but for that organization support is crucial as it helps firms to realize that supply chain transitioning is imperative which simultaneously brings ecological efficiency (Zaid et al., 2018).

As discussed, manufacturing is one of the significant industries in China. Manufacturing firms add to China's GDP by 27.44 %, and 95% of China's exports come from the manufacturing sector. Chinese governments have increased pressure on manufacturers to mitigate the environmental damages produced by their operations due to rising environmental concerns and resource shortages (Dabbous & Tarhini, 2021). The Chinese government has created industry-related regulations and policies with the motive to establish a circular economy, eco-industrial parks, and improving energy savings and pollution reduction (ESPR) in order to enhance economic development without jeopardizing ecological well-being (Hong et al., 2019). Encouragement of the adoption of cutting-edge environmental management methods in the manufacturing sector is the prime motive of these programs and legislation. These more modern laws and rules, however, tend to be optional or focus primarily on providing funding for pilot programs. Chinese government officials are unsure of whether these regulatory actions have encouraged manufacturers to adopt environmental management techniques or whether they have achieved the ESPR objectives (Doroshenko et al., 2021; Li et al., 2020). Typically, these national environmental policies and objectives are met by a diverse organizational reaction. Resultantly, it is expected that such occurrences will continue. For instance, smaller firms could be hesitant to respond because they might be wary of the economic and environmental benefits that policymakers advocate. Chinese enterprises have adopted GSCM which syncs the ecological concept with organizational boundaries, hence, builds an effective management strategy in order to increase productivity with less burden on environment (Feng et al., 2018; Hussain et al., 2022).

Although, the country is making initiatives like economic strategies and environmental regulations to create sustainability in economic development and firm-level performance. But the country is not successful in this regard. Especially the manufacturing sector is causing environmental pollution and social issues, which restrict the country from attaining sustainable economic development. Thereby, sustainability issue needs to be addressed in order to achieve environmental performance without making compromises on economic performance (Abdel-Baset et al., 2019; Wahab et al., 2021). Thus, the present study explores the following questions in China's manufacturing setting:

*How does green supply chain practices and sustainable governance affect sustainable economic performance?*

*What is the moderating role organizational support on the relationship between green supply chain practices, sustainable governance and sustainable economic performance?*

The study, thus, makes several contributions. Firstly, the study offers a reference for the existing studies on GSCM-SEP relationship by revealing the moderating role of organizational support. The study also makes contribution to GSCM theories by verifying the positive linkage of GSCM and SEP in Chinese manufacturing sector. Also, empirical evidences from China are useful as practices of Chinese manufacturing sector can be viewed as a power reference for other developing nations due to which emerging economies can find more efficient ways to transform manufacturing sector.

The current paper is composed of the following parts: the introduction part elaborates on the main concern of the study. The literature review checks the relationship among outlined constructs. In the methodology part, the processes to collect information and check the study proposed hypotheses that are made in the light of preceding literature. Findings are being discussed with contrasted literature in next section. The study ends with the study conclusion, implication, and limitations.

## 2. Literature review

To make significant contribution to the sustainable development of country, the firms not only need to achieve higher economic performance determined by the firms' production, profitability, and asset value. The firms also need to develop sustainability in their economic performance, and for sustainable economic performance, the firms need to show higher social and environmental performance along with meeting the economic goals. The green SC is a business structure which binds similar firms in such a way that they are all linked to and cooperate with one another to attain the green objectives (Marin-Garcia et al., 2022; Qu et al., 2019). Both the green SC practices and green SC governance determine the firms' capacity to achieve sustainable economic development. The current study examines the relationship among green SC practices like green purchasing and internal environmental management as well as green SC governance like transactional governance and relational governance and achieving sustainable economic performance. The influences of green SC green purchasing, green SC internal environmental management, green SC transactional governance, and green SC relational governance on sustainable economic performance have been discussed in previous literature. The present study establishes the hypotheses regarding the relationship among these factors through the lens of past studies.

Yook et al. (2018), explores the role of green purchasing in environmental performance and sustainable economic performance. The evidence for the study was collected from 239 respondents from manufacturing firms in Japan. The study posits that the execution of green purchasing in the firms associated with green SC enables them to maintain the quality of the work environment and improve production quality by responding to the customers' requirements. Hence, the economic performance turns out to be sustainable. Jermsittiparsert et al. (2019), emphasizes the role of green SC practices in achieving sustainable economic performance. Authors empirically analyzed green purchasing, green Logistics, and Legislation for a green environment and SEP in the electronic industry of Thailand using questionnaires. The study implies that with the effective execution of green purchasing, the chances of environmental pollution are reduced, and the economic performance is sustainable. Siminică et al. (2020), examines the relationship of green purchasing, a green SC practice, with sustainable

economic performance in the circular economy. Through Eurostat, the data for green purchasing contribution to sustainable economic performance were collected from EU member states for the time from 2007 to 2018. The study posits that the facility of green purchases in green SC enables firms to implement energy efficiency along with other eco-friendly strategies. In these circumstances, the firms meet their economic goals without damaging the environment where they are operating. Consequently, the economic performance is sustainable. Hence, it can be said:

**H1.** *Green SC practice, green purchasing has a positive association with sustainable economic performance.*

Cankaya and Sezen (2018), explores the role of green SC practices like internal environmental management, environmental education, green purchasing, green production, green packaging, green distribution, green marketing, and investment recovery in achieving sustainable economic performance. Data for the selected green SC practices and SEP were collected through e-mail and face-to-face surveys from manufacturing firms in Turkey. The empirical data and analysis proved that IEM has a positive association with SEP. The firms which consider the need for IEM and implement it while performing main functions achieve sustainability in economic performance. Saeed et al. (2018), analyzes the relation of institutional pressures and internal and external green SC practices with environmental and SEP. A questionnaire-based survey was administered in the manufacturing industry of Pakistan. The study posits that when the green SC puts pressure on the firms at chain links, they should arrange internal environmental management, any environmental issue caused by any partner firms is stopped, and environmental performance improves. As a result, the financial objectives of the firms are secured, and economic performance is sustainable. Purnomo et al. (2018), throws light on the role of green SC internal environmental management in sustainable economic performance. When a firm implements internal environmental management, it itself checks what effects the business operations have on the environment, tries to discover the reasons for environmental pollution, and mitigates the environmental impacts. With improved environmental performance, firms can reduce costs, improve production quality, and set a good image in the eyes of customers. The increased marketing as a result of IEM leads to SEP. That's why:

**H2.** *Green SC practice, IEM has a positive association with sustainable economic performance.*

Yang and Lien (2018), examines the green SC transaction governance role in SEP. The data for the green SC transaction governance role in the SEP of firms in the chain was collected from 969 plants in 17 countries. The study reveals that when the green SC management is successful in implementing transactional governance, fair dealings arise among the firms on the downstream or upstream Chain. This protects the rights of both parties in the contract and develops social links among them. Hence, green SC transactional governance helps attain sustainable economic performance. Pachar et al. (2022), proclaims that executing the green SC transactional governance enables the firms to quickly and efficiently acquire high-quality resources. With such resources, green production of goods and services is possible, and the retention of customers leads to sustainable economic performance achievement. Setyadi (2019), wrote about the influences of green SC transaction governance on sustainable economic performance. The study sample consisted of oil and gas firms in Indonesia. Data

were acquired from 201 respondents. The study highlights that if the transactions among the integrated firms are properly regulated by green SC management, only eco-friendly transactions would be done. The improvement of environmental performance as a result of these transactions adds to the firms' sustainable performance. Therefore,

**H3.** *Green SC transactional governance has a positive association with sustainable economic performance.*

Cankaya and Sezen (2018), debated on the relationship between green SC relational governance and sustainable performance (economic, environmental, and social). The data were drawn from 172 Chinese firms linked to green SC, and the relation between green SC relational governance and sustainable performance (economic, environmental, and social) was analyzed through hierarchical regression analysis on SPSS 22.0. The study posits that the execution of relational governance on the part of green SC management improves the relations among firms. These relations encourage green practices. Hence the performance can be sustainable by social and environmental well-being. Afum et al. (2020), was about the nexus among green SC relational governance, green manufacturing, and sustainable economic performance. The empirical data as evidence for the study were collected through structured questionnaires from 178 Ghanaian manufacturing SMEs operating functions within a green SC. The study implies that when relational governance is effectively executed, it provides green resources and services to manufacturing. Green manufacturing practices help achieve sustainable economic performance. Zaid et al. (2018), sheds light on the relationship between green SC relational governance, GHRM, and sustainable economic performance. A quantitative analytical technique was applied and the sampled data had 121 firms that were operating in highly polluting manufacturing sectors, particularly the firms dealing in food, pharmaceutical products, and chemicals in Palestine. PLS-SEM was applied for relationship estimation among variables of research. When the firms in green SC abide by the relational governance, they can improve green human resource management performance leading to SEP (Vințe et al., 2021). That's why,

**H4.** *Green SC relational governance has a positive association with sustainable economic performance.*

The study conducted by Mousa and Othman (2020) examines the relationship between organizational support, green SC transactional governance and sustainable economic performance. The study indicates that the green SC management defines the rules and regulations for transactional governance among the integrated firm. However, GSCM struggles to enforce transactional governance without the cooperation of firms individually. The chain nodes with organizational support help accelerate the enforcement of transactional governance. The organizational support improves business functioning, and thereby, sustainable economic performance can be achieved. Hence, organizational support builds a linkage between green SC transactional governance and sustainable economic performance. Awan et al. (2019), wrote about the relationship between organizational support, green SC transactional governance, and SEP. The study states that the firms within the green SC can properly execute the transactional governance imposed on them if organizational support is provided to employees. And the employees with organizational support are motivated and facilitated to work for sustainable economic performance. In this situation, transactional governance can better reg-

ulate the firms and assist in creating sustainability in firm performance. Thus, organizational support moderates between green SC transactional governance and sustainable economic performance. Mardani et al. (2020), highlights that when firms adopt supportive behavior towards the employees while forming HR management practices, they create commitment among employees and improve their work efficiency. The firms having efficient employees can implement the transactional governance imposed by green SC management. And these firms are able to protect the planet, create a comfortable work environment, fulfil their social responsibilities towards stakeholders, and enhance the sales transaction leading to sustainable economic performance. Pakurár, Khan, Benedek, and Oláh (2020), also claims that organizational support acts as an accelerator in the relationship between green SC transactional governance and SEP. Based on the above discussion, we can say:

**H5.** *Organizational support moderates the relation between green SC transactional governance and sustainable economic performance.*

Raj and Srivastava (2018), integrate the relationship between organizational support, green SC relational governance and sustainable economic performance. According to the author's views, the firm management provides social, economic, or cognitive support to employees; they get attached to the firm and think about its interests while performing their duties. The committed employees never try to spoil firms' relations with the stakeholders; hence, they are helpful in implementing the green SC relational governance. In these circumstances, green SC relational governance can be more fruitful to firms in attaining SEP based on social and environmental performance. So, organizational support serves as a bridge between green SC relational governance and SEP. Micheli et al. (2020), investigates the association between organizational support, green SC relational governance and sustainable economic performance. The study tells that if green SC management motivates the firms to provide organizational support, the relational governance can better be executed and it can add to firms' sustainable economic performance. In this way, organizational support creates a stronger relationship between green SC relational governance and sustainable economic performance. Jum'a et al. (2021), debates on the relationship between organizational support, green SC relational governance, and sustainable economic performance. The study posits that when individual business firms show supportive attitudes and behavior to their employees, they attain the employees' cooperation while executing green SC relational governance. As a result, the effectively implemented green SC relational governance provides a sound foundation for achieving sustainable economic performance. Thus,

**H6.** *Organizational support moderates the relationship between green SC relational governance and sustainable economic performance.*

### 3. Methodology

The article investigates the impact of green purchases, internal environmental management, traditional governance and relational governance on the achievement of SEP in China's manufacturing industry. The paper also assesses organizational support as a moderator on traditional governance, relational governance and the achievement of SEP in the manufacturing industry in China. The article adopted instruments gather the primary data from the selected respondents (See Table 1).

In addition, the study has also measured transactional governance with the items scale, and it has four items taken from Lee and Choi (2021), while relational governance has six items extracted from Lee and Choi (2021) (See Table 2).

**Table 1.** Items scale for green supply chain practices (source: authors' estimation)

Items	Statements	Sources
Green Purchases		
GP1	"Eco-labelling of products."	Green et al. (2019)
GP2	"Cooperation with suppliers for environmental objectives."	
GP3	"Environmental audit of suppliers' internal management."	
GP4	"Suppliers' ISO 14000 certification."	
GP5	"Second-tier supplier environmentally friendly practice evaluation."	
GP6	"Providing design specifications to suppliers that include environmental requirements for the purchased item."	
Internal Environmental Management		
ITEM1	"Commitment of GSCM from senior managers."	Green et al. (2019)
ITEM2	"Support for GSCM from mid-level managers."	
ITEM3	"Cross-functional cooperation for environmental improvements."	
ITEM4	"Total quality environmental management."	
ITEM5	"Environmental compliance and auditing programs."	
ITEM6	"ISO 14001 certification."	
ITEM7	"Environmental management systems."	

**Table 2.** Items scale for green supply chain governance

Items	Statements	Sources
Transactional Governance		
TGV1	"We have formal agreements that detail the obligations and rights of both parties."	Lee and Choi (2021)
TGV2	"The buyer rarely works with us on the SCC implementation."	
TGV3	"If we struggle in the SCC, the buyer would switch to other suppliers rather than work out a solution with us."	
TGV4	"We have specific, well-designed agreements with the buyer."	
Relational Governance		
RGV1	"The buyer allows open, two-way dialogue on the SCC issues so that the SCC targets can be established jointly."	Lee and Choi (2021)
RGV2	"The buyer works with us closely to implement the SCC (e.g., visiting our production facilities, providing ongoing training programs, etc.)."	
RGV3	"If we comply with the SCC, we will get incentives from the buyer (e.g., extending or renewing contracts, increasing order volumes, financial rewards, etc.)."	
RGV4	"If we struggle in the SCC, the buyer would work out a solution with us rather than simply switch to other suppliers."	
RGV5	"The buyer has invested resources in enabling our capacity."	
RGV6	"The buyer and we view each other as partners and share information well."	



Moreover, the study has also measured organizational support with the items scale, and it has eight items taken from Gayan (2018) (See Table 3).

Finally, the study has also measured sustainable economic performance with the items scale, and it has five items taken from Jabbour et al. (2020) (See Table 4).

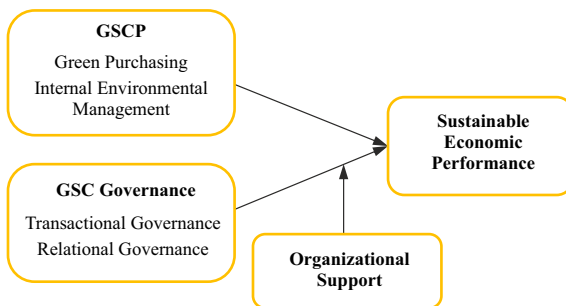
The sampled population of the study were the employees belonged to the Chinese manufacturing firms. The adopted questionnaire was distributed virtually and probability random sampling method was used to sample the data. Around 523 questionnaires were sent to the study sampled but only 291 valid responses the authors received. Moreover, the study used PLS-SEM methodology to assess the model reliability and validity. The said methodology is being selected due to providing best estimations, particularly, in the case of complex frameworks (Hair et al., 2020). Moreover, it has the ability to deal even with small sample size (Hair et al., 2014). Figure 1 presents the proposed framework that is being developed for understudy variables.

**Table 3.** Items scale for organizational support

Items	Statements	Sources
OS1	"My firm values my contribution to its well-being."	Gayan (2018)
OS2	"My firm strongly considers my goals and values."	
OS3	"My firm cares about my well-being."	
OS4	"My firm is willing to extend itself in order to help me perform my job to the best of my ability."	
OS5	"My firm tries to make my jobs as interesting as possible."	
OS6	"My firm takes pride in my accomplishments at work."	
OS7	"My firm shows much concern for me."	
OS8	"My firm cares about my opinions."	

**Table 4.** Items scale for sustainable economic performance

Items	Statements	Sources
SEP1	"Decreased spending on raw materials."	Jabbour et al. (2020)
SEP2	"Decreased spending on electricity."	
SEP3	"Decreased spending on water and sewage treatment."	
SEP4	"Improved return on investment."	
SEP5	"Improved profitability."	



**Figure 1.** Theoretical model (source: authors' estimation)

## 4. Results findings

Results gauged from Table 5 showcase that value of Cronbach alpha and AVE are greater than 0.6 and 0.5 respectively. Moreover, it also shows that composite reliability of each construct also meets the criteria as the values are  $> 0.7$ . It means the model is reliable and valid. Along with it, the table also displays that each of the construct's items are highly correlated, hence, providing an indication of valid convergent validity.

**Table 5.** Convergent validity (source: authors' estimation)

Constructs	Items	Loadings	Alpha	CR	AVE
Green Purchases	GP2	0.680	0.793	0.819	0.533
	GP3	0.712			
	GP4	0.682			
	GP6	0.835			
Internal Environmental Management	IEM1	0.826	0.911	0.929	0.653
	IEM2	0.836			
	IEM3	0.712			
	IEM4	0.775			
	IEM5	0.830			
	IEM6	0.837			
	IEM7	0.833			
Organizational Support	OS1	0.952	0.959	0.968	0.834
	OS2	0.952			
	OS4	0.831			
	OS6	0.950			
	OS7	0.953			
	OS8	0.830			
Relational Governance	RGV1	0.907	0.971	0.976	0.873
	RGV2	0.906			
	RGV3	0.962			
	RGV4	0.952			
	RGV5	0.918			
	RGV6	0.960			
Sustainable Economic Performance	SEP1	0.719	0.815	0.871	0.576
	SEP2	0.747			
	SEP3	0.790			
	SEP4	0.858			
	SEP5	0.667			
Transactional Governance	TGV1	0.893	0.904	0.933	0.776
	TGV2	0.878			
	TGV3	0.851			
	TGV4	0.902			

The findings also show the variables' correlation using Fornell Larcker, and the figures indicated that the first value in column that shows the association of the variable itself is larger than the rest of the values that show the association with other variables. These figures indicated that the variables are not highly correlated and have valid discriminant validity. These values are mentioned in Table 6.

The findings also show the variables' correlation using cross-loadings, and the figures indicated that the values that show the association of the variable itself are larger than the values that show the association with other variables. These figures indicated that the variables are not highly correlated and have valid discriminant validity. These values are mentioned in Table 7.

The findings also show the variables' correlation using Heterotrait Monotrait (HTMT) ratio, and the figures indicated that the values are lower than 0.85. These figures indicated that the variables are not highly correlated and have valid discriminant validity. These values are mentioned in Table 8.

Findings from Table 9 showcased that green purchases, internal environmental management, traditional governance and relational governance are positively linked with SEP in the manufacturing industry in China, hence supported H1, H2, H3 and H4. The findings also ensure the significant role of organizational support as a moderator, hence support H5 and H6 (see Figures 2–4).

**Table 6.** Fornell Larcker (source: authors' estimation)

	GP	IEM	OS	RGV	SEP	TGV
GP	0.730					
IEM	0.464	0.808				
OS	0.437	0.827	0.913			
RGV	0.492	0.487	0.496	0.934		
SEP	0.382	0.492	0.467	0.483	0.759	
TGV	0.656	0.438	0.382	0.415	0.348	0.881

**Table 7.** Cross-loadings (source: authors' estimation)

	GP	IEM	OS	RGV	SEP	TGV
GP2	<b>0.680</b>	0.254	0.226	0.265	0.126	0.624
GP3	<b>0.712</b>	0.245	0.188	0.328	0.150	0.688
GP4	<b>0.682</b>	0.268	0.170	0.260	0.141	0.616
GP6	<b>0.835</b>	0.450	0.469	0.910	0.438	0.367
IEM1	0.386	<b>0.826</b>	0.663	0.386	0.396	0.347
IEM2	0.402	<b>0.836</b>	0.731	0.450	0.426	0.345
IEM3	0.308	<b>0.712</b>	0.536	0.321	0.369	0.345
IEM4	0.392	<b>0.775</b>	0.663	0.400	0.374	0.372
IEM5	0.380	<b>0.830</b>	0.662	0.379	0.392	0.347
IEM6	0.405	<b>0.837</b>	0.724	0.455	0.427	0.350

End of Table 7

	GP	IEM	OS	RGV	SEP	TGV
IEM7	0.346	<b>0.833</b>	0.683	0.350	0.394	0.377
OS1	0.388	0.765	<b>0.952</b>	0.454	0.409	0.334
OS2	0.388	0.769	<b>0.952</b>	0.455	0.423	0.333
OS4	0.414	0.725	<b>0.831</b>	0.441	0.443	0.373
OS6	0.386	0.760	<b>0.950</b>	0.457	0.423	0.332
OS7	0.394	0.776	<b>0.953</b>	0.458	0.413	0.335
OS8	0.417	0.722	<b>0.830</b>	0.443	0.437	0.376
RGV1	0.835	0.448	0.465	<b>0.907</b>	0.426	0.377
RGV2	0.700	0.436	0.468	<b>0.906</b>	0.484	0.353
RGV3	0.694	0.463	0.458	<b>0.962</b>	0.458	0.405
RGV4	0.698	0.467	0.451	<b>0.952</b>	0.439	0.418
RGV5	0.830	0.458	0.474	<b>0.918</b>	0.440	0.371
RGV6	0.692	0.458	0.463	<b>0.960</b>	0.458	0.402
SEP1	0.246	0.259	0.245	0.334	<b>0.719</b>	0.204
SEP2	0.252	0.352	0.378	0.304	<b>0.747</b>	0.279
SEP3	0.344	0.464	0.447	0.426	<b>0.790</b>	0.330
SEP4	0.344	0.441	0.383	0.401	<b>0.858</b>	0.300
SEP5	0.238	0.303	0.279	0.353	<b>0.667</b>	0.174
TGV1	0.581	0.394	0.343	0.360	0.330	<b>0.893</b>
TGV2	0.557	0.370	0.306	0.352	0.311	<b>0.878</b>
TGV3	0.588	0.396	0.355	0.384	0.269	<b>0.851</b>
TGV4	0.591	0.386	0.345	0.371	0.310	<b>0.902</b>

**Table 8.** Heterotrait Monotrait ratio (source: authors' estimation)

	GP	IEM	OS	RGV	SEP	TGV
GP						
IEM	0.456					
OS	0.383	0.882				
RGV	0.641	0.516	0.513			
SEP	0.332	0.557	0.515	0.538		
TGV	0.864	0.485	0.410	0.444	0.394	

**Table 9.** A path analysis (source: authors' estimation)

Relationships	Beta	S.D.	T Statistics	P Values
GP -> SEP	0.175	0.106	1.660	0.050
IEM -> SEP	0.278	0.092	3.021	0.002
OS -> SEP	0.062	0.087	0.707	0.240
RGV -> SEP	0.289	0.096	3.017	0.002
RGV*OS -> SEP	0.282	0.059	4.789	0.000
TGV -> SEP	0.220	0.090	2.438	0.008
TGV*OS -> SEP	0.189	0.052	3.635	0.000

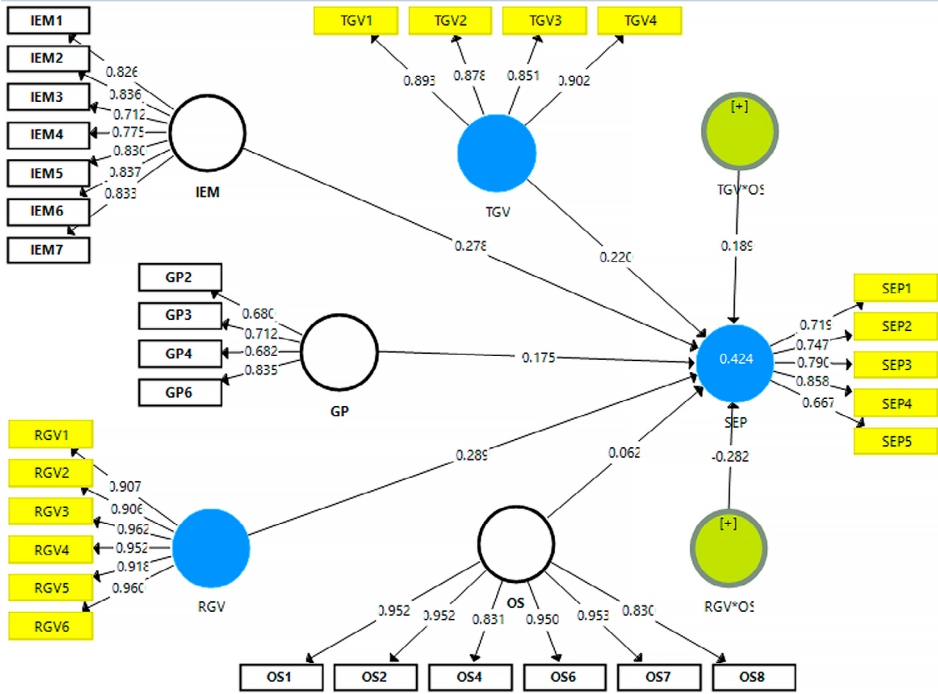


Figure 2. Measurement model

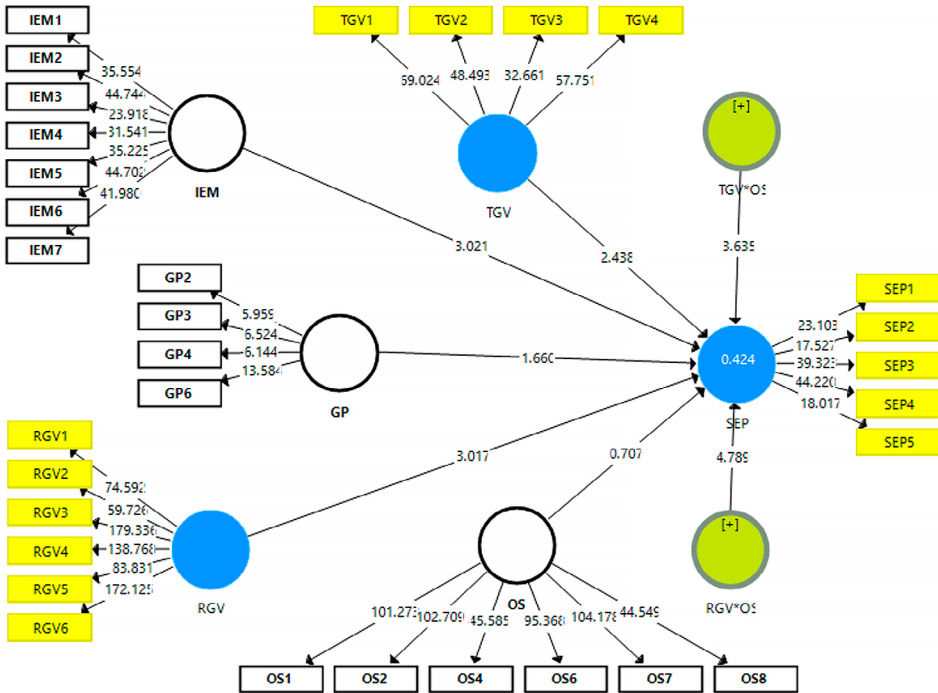


Figure 3. Structural model assessment

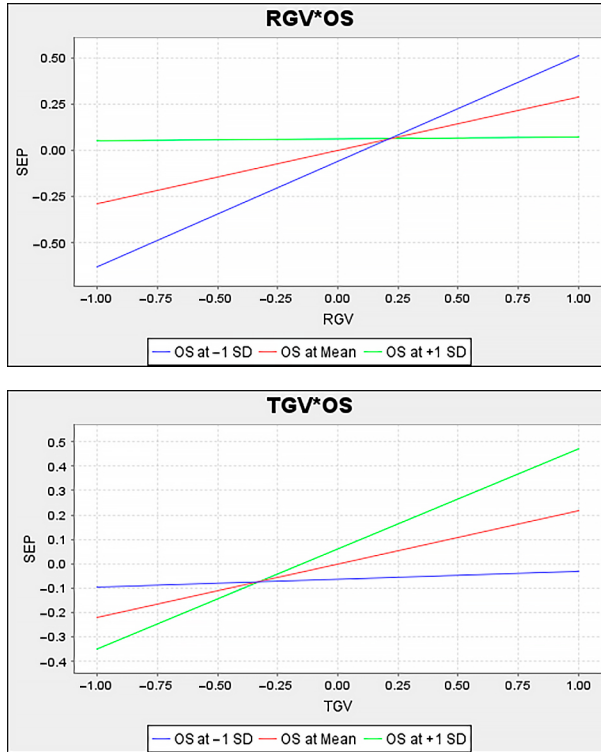


Figure 4. Moderation analysis

## 5. Discussions

Green purchasing and SEP are shown to share positive connection according to the study findings. Similar results were present in the study of Shao and Ünal (2019), which states that within a green SC, it is ensured that the firms make green purchases. In this way, when the firms are facilitated in getting ecologically friendly resources and acquiring eco-friendly services like logistics, they can attain better outcomes from the same inputs without damaging the environment and creating issues for the customers. This enhances the firm marketing and sustains its economic performance. The results agree with the past study of Pinto (2020), who argue about the impacts of green purchasing on SEP. The procurement of green products from suppliers makes it possible for the firms to carry the business operations and attain the set goals without damaging the environmental quality and customers' interests. These advantages of green purchasing under green SC enable the firms to achieve sustainable economic development. Similarly, Kazancoglu et al. (2018) also claimed that the green SC management makes sure that the linked firms can have products and services which have the least environmental impacts. This enables the firms to produce end products and services that are referred to in the market and can bring sustainable profits. So, green purchasing in green SC enhances the progress to sustainable economic performance.

IEM also shares positive connection with SEP according to the findings. Similar evidences were produced by Rehman Khan and Yu (2021) that tells that green SC management monitors the performance of individual firms and motivates them to be active in internal environmental management. When the firms design and follow the environmental strategies voluntarily, they overcome environmental concerns like greenhouse gas emissions, climate change, chemicals flow, and waste emissions. Consequently, the work environment, natural resources, and human resources can be protected and assured for future use. Hence, in green SC, internal environmental management adds to SEP. Similarly, Howard et al. (2019) also posited that the green SC management not only monitors but also evaluates and improves the overall environmental performance of the chain with common environmentally friendly strategies. But it motivates the individual firms to apply internal environmental management and, on their own part, protect the natural environment from the functions they are performing. A clean work environment improves labor productivity and helps attain SEP. The results agree with the past study of Longoni et al. (2018). It states that if the firms themselves employ internal environmental management, they can ensure the production of ecological-friendly products and services which can attract and maintain potential customers. Thereby, sustainable economic performance can be achieved.

Green SC transactional governance is also positively related with SEP. By producing similar evidences, Ilyas et al. (2021) highlights that the execution of green SC transactional governance arouses a sense of responsibility in the supplier firms within the supply chain. When the suppliers have a high sense of responsibility towards the environment and the stakeholders' interest, they have fair dealings and try to produce quality products/services. Similarly, Younis and Sundarakani (2019) also stated that under green SC transactional governance, the individual firms are properly regulated by managing the fairness of transactions through providing incentives and threatening with punishments. If the quality of transactions which are medium to acquire resources (raw material, physical, and human resources) and deliver the products and services to customers, is good, the green integration is possible into business operations, and the trust of the customers can be attained. The ecological-friendly business operations and sustained marketing both help to achieve sustainable economic performance. Similarly, by producing similar evidences, Maditati et al. (2018) also argued that the execution of the green SC transactional governance helps the firms to acquire tangible and intangible resources in time, and these resources are of good quality. With such resources, green production of goods and services is possible, and the retention of customers leads to sustainable economic performance achievement.

The results indicated that the green SC relational governance is positively related with SEP. These results are supported by the past study of Papoutsis and Sodhi (2020). The past study explains that when the green SC management applies relational governance, it enhances the number of firms within the chain, establishes new relations among the green SC firms, and improves these established relations. The strength of the relations among firms in upstream or downstream green SC serves to the progress in sustainable economic performance. The results agree with the past study of Nabeeh et al. (2021), which proclaims that the execution of the relational governance across the SC strengthens the relationship among firms. Arouses the mutual trust, interest, care, and sense of responsibility among them. Thus, the firms get

ready to take care of the quality of the products and services and also checks the impacts of business functions on the surrounding. This improves the firms' image and raises the level of marketing, leading to SEP. Thus, relational governance in green SC positively contributes to SEP. These results are also in line with the study of Orji (2019), which indicates that effective relational governance improves communication among firms and enhances environmental and social friendly awareness. As a result, the improvement of environmental and social performance assists in achieving economic goals. This develops sustainability in economic performance.

The results revealed that organizational support is a moderator between green SC transactional governance and SEP. The results agree with prior literature such as Foo et al. (2018), that explains that when the firms are linked in green SC provide organizational support to their employees, the employees are motivated to follow the regulations imposed on the firms in the best interests of the firms. In this situation, green SC transactional governance can be executed, and with the help of the employees, the goals of sustainable economic performance can be attained. Thus, when organizational support is available, the link between green SC transactional governance and sustainable economic performance becomes stronger. These results agree with the study of Ahmed et al. (2020), which highlights that organizational support helps execute green SC transactional governance and, thereby, attain sustainable economic performance. This study confirms that organizational support moderates green SC transactional governance and SEP. The results revealed that organizational support is a moderator between green SC relational governance and SEP. These results agree with Silva et al. (2019), which proclaims that organizational support is useful to enforce green SC relational governance, which leads the firms to enhance and sustain their economic performance. The results are also supported by the previous study of Qorri et al. (2021), in which organizational support helps execute green SC relational governance and, thereby, attain sustainable economic performance. So, organizational support builds a link between green SC relational governance and sustainable economic performance.

In the previous literature, both the green SC practices and green SC governance on sustainable economic performance are deeply scrutinized. But through separate research, the role of green SC practices and green SC governance in achieving sustainable economic performance has been examined. The current study removes the literary gap and analyzes both green SC practices and green SC governance for sustainable economic performance. The present study also adds to the literature with the analysis of organizational support as a moderator between green SC transactional governance and relational governance and sustainable economic performance. This study also saves its position in the literature for analyzing the green SC green purchasing and internal environmental management, green SC transactional governance and relational governance, and sustainable economic performance in the Chinese economy.

The current study would be useful to emerge countries like China as it addresses the issue of firms' level of sustainable performance. The current study is a set of guidelines for the government and firms' management on how the firm economic performance can be sustainable. The study guides that with effective regulations and economic policies, green SC practices like green purchases must be applied in order to enable business firms to achieve sustainable



economic performance. Likewise, suitable policies should be formulated to execute internal environmental management within the firms interlinked by green SC so that firms are able to achieve sustainable economic performance. The study suggests that government and environmental regulators must motivate the green SC management and linked firms to enforce green SC transactional governance and thereby ensure the SEP of firms. The study suggests that relational governance must be applied by green SC management so that the individual firms must achieve sustainable economic performance. This article guides policy makes in developing policies that linked to the achievement of SEP using green SC practices and governance. It has been revealed by the green SC management and firms' administration that they should try to create organizational support in order to implement green SC transactional governance and, therefore, accelerates the progress to sustainable economic performance. It has also been suggested that organizational support must be created in order to implement green SC transactional governance and, thereby, enhance the progress to SEP.

## 6. Conclusions

The present paper analyzed the influences of green purchasing, internal environmental management, green SC transactional governance, and green SC relational governance on sustainable economic performance. It also examined organizational support as a moderator. It is revealed that within the green SC, green purchasing enables the firms to benefit from the green raw material, resources, and infrastructure and, therefore, can undertake green initiatives. The improved environmental performance adds to sustainable economic performance. Similarly, in the execution of green SC practice, internal environmental management assists the firm in overcoming pollution emissions, and environmental protection develops sustainability in economic performance. The results showed that the execution of transactional governance under green SC improves the transactions among firms which results in environmental sustainability and social well-being. So, firms can attain sustainable economic performance. Likewise, the execution of relational governance under green SC improves the relations among chain nodes along with environmental protection. This facilitates the firms to achieve sustainable economic performance. The study also concludes that in case organizational support is developed in the green SC links, it becomes easy to execute green SC governance, like transactional governance and relational governance, and helps achieve sustainable economic performance. Hence, in the presence of organizational support, green SC governance, like transactional governance and relational governance, contribution to sustainable economic performance accelerates.

### 6.1. Implications

With these evidences, the study offers meaningful implications. First and foremost, China's management system has the capability to transfer the responsibilities. For example, relevant departments and their functionalities must be sound and clear. Currently, existing laws regulates certain aspects of supply chain, hence, it is suggested to design general rules for green government and establish data systems so that environmental aspects of public platform can be sustained. Chinese government must provide financial assistance and tax exemptions

policies, this way, the government can motivate firms to apply green supply chain practices. The transparent governance mechanism and established policy systems could leverage manufacturing firms to have successful GSCM application which eventually would help China to achieve its ambitious goal of carbon neutrality by the year 2060. Moreover, the GSCM policy road map of China can also be used as a reference for other emerging economies.

Besides, Firms should also have a clear understanding of green supply chain practices. Firms must aware that they are not only accounted for business and social practices within their premises but they are equally responsible for environmental along with social performance in whole supply chain procedure. Implementation of green supply chain practices not only support firms to address global concerns but also fulfill stakeholders' needs, thus, increase organizational performance. Firms, thereby, are asked to hold right and clear views of GSCM practices. For suppose, organizations could save energy and at the same time reduce emissions in their supply chain management.

Manufacturing practitioners could also gain a comprehensive understanding of GSCM applications and related management institutions through the present study. This way, they could encourage manufacturing firms to take greater initiatives and provide full support to government institutions, infact, can make GSCM alliances in order to make further improvement in management mode. The present work can also be helpful to identify the gaps in China's GSCM policies by comparing it with developed economies. This way, firms can develop guidelines for future development and ensure sustainability in a longer run. For emerging economies, the successful practices and current deficiencies of China can also be a learning aspect.

## 6.2. Limitations and future directions

There are some limitations as well in the current study. First, the present study examined only two GSCM practices along with two determinants of green governance in order to find their effect on SEP. There are several other green management practices as well which were not considered in the study. Hence, the absence of these variables makes the current study limited. The study considers organizational support as a moderator between outlined constructs. The future authors must also include at least a mediator to evaluate the relationship in the presence of mediating effect. The current study collects evidence for the relationship of green SC green purchasing, green SC internal environmental management, green SC transactional governance, and green SC relational governance with sustainable economic performance in China. The evidence for further research on these factors' relationship must be collected from more than one country. Also, industry wise, results may also vary and GSCM practices in different sectors might affect sustainable performance of firm differently. Besides, the sample population can be extended by including the views multiple upstream and downstream stakeholders. This way future researchers may gain difference insights.

## Data availability

The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

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