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The effect of green supply chain management practices on corporate environmental performance. Does supply chain competitive advantage matter?

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Abstract

This paper examines the impact of institutional pressure (IP), top management support (TMS), green supply chain management practices (GSCM), and supply chain competitive advantage (SCCA) on corporate environmental performance (EP). We also analyze the mediation effect of GSCM on the interplay between TMS and EP. Additionally, the paper also provides an analysis of the moderating role of SCCA between IP and EP. To attain the objective of this research, we assembled data from 710 business entities within the Shaanxi province of China utilizing a survey design approach. The structural equation model (SEM) was applied to test and assess the hypothetical outline. The study outcomes empirically show that TMS, GSCM, and SCCA positively and significantly impact EP. Interestingly, our study found an insignificant association between IP and EP. The study's results also demonstrate that IP directly relates to top management support. Moreover, the study's empirical findings reveal that GSCM positively mediates IP and EP. The study findings show that SCCA shapes IP and EP's connection. Accordingly, the practical implications of our study's findings suggest that business managers, investors, and government agencies must know the importance of adopting sustainable practices within the supply chain. Business managers must take action to integrate environmental criteria into supplier selection, evaluate suppliers' environmental performance, and collaborate with eco-friendly suppliers. Hence, government agencies, stakeholders, and business managers can use this information to shape regulations and policies that encourage businesses to adopt sustainable supply chain practices. Offering incentives such as tax benefits or grants for sustainability initiatives can also promote adoption. The study recommends that a business culture that targets improving

environmental performance due to institutional pressure and top management support is essential in achieving GSCM practices, thereby promising competitive advantage.

Keywords: Institutional pressure, Top management support, Competitive advantage, Environmental performance, Green supply chain management practices

1.0 Introduction

Green supply chain management (GSCM) practices are a crucial issue in environmental development (Cahyono et al., 2020). Over the decades, businesses have adopted several strategies to improve society and environmental performance (EP) (Abbas et al., 2021; Wiredu et al., 2023). As a result of the speedy rising environmental alertness, businesses are eager to implement GSCM practices, whereby goods and services are obtained, manufactured, and distributed environmentally friendly to satisfy the shareholders' concerns (Singh et al., 2022). Several research articles on GSCM suggested that administrators and businesses should consider improving the efficacy and competency of their efforts toward the environment (Al-Sheyadi et al., 2019). Upadhyay et al. (2021) recently established that eco-friendly practices improve a business's effectiveness, increasing the organization's profits by decreasing waste. Accordingly, environmentally friendly practices and operations bring competition and cooperative advantages, resulting in a rise in economic success and competitiveness (Karia, 2020). Thus, businesses must advance their abilities to manage and control the environmental performance regarding their actions to tackle stringent organisational protocols alongside growth in consumer demand (Ramanathan et al., 2017; Wiredu, Yang, Saljoughipour, et al., 2023).

Furthermore, Juma et al. (2021) observed that GSCM practices remain fresh in several production businesses. Moreover, current literature on GSCM shows that many firms in developing countries should confront severe environmental problems in years to come because of the gravity of environmental depletion and shortage of resources (Huang & Huang, 2021; Ullah et al., 2021). Businesses, for example, in many developing countries, are reluctant to adopt GSCM practices because of the dire financial implications it might cause them (M. Ahmed et al., 2019).

In previous years, studies done by researchers regarding emerging nations to delve into the influence of GSCM practices on the several performance results of businesses have accounted for mixed results (Ngai et al., 2018; Gölgeci & Kuivalainen, 2020; Hao et al., 2021; Kouhizadeh et al., 2021). These various studies give empirical evidence that businesses occasionally contemplate executing GSCM practices as an encumbrance of the firm's scarce capital (Gawusu et al., 2022; Hao et al., 2021). In analyzing the EP of firms, several factors, such as institutional pressure (IP) and top management performance (TMS), are regarded as pivotal to the EP (Huang et al., 2021). These constructs are pivotal to EP because IP refers to the influence exerted by external factors such as government regulations, industry standards, and societal expectations. Adhering to these pressures ensures that organizations comply with environmental laws and regulations, avoiding legal penalties and reputational damage. TMS, on the hand, plays a crucial role in setting the strategic direction of an organization. When top management is committed to environmental performance, it integrates sustainable practices into the company's overall strategy, leading to more effective and consistent implementation. Therefore, investigating the interplay between IP, TMS, and EP is crucial for organizations aiming to enhance their sustainability efforts, mitigate risks, and capitalize on the benefits of environmentally responsible practices. Failure to investigate this phenomenon can result in missed opportunities, reputational damage, and inadequate responses to environmental challenges.

Research gap, motivation, and contributions

Considering the contradictory findings of the various previous research works, the following research gap was noticed; ***first,*** it was evident that prior studies have provided mixed findings on the nexus among the study variables, and the presentation of these contradicting results could affect both theoretical and managerial implications for the deployment of EP. ***Second,*** few studies have explored how the selected region can advance EP through IP, TMS, GSCM and SCCA. Hence, this analysis sought to fill these gaps by employing partial least squares structural equation modelling (PLS-SEM) methods for producing comprehensive empirical outcomes to evaluate how these factors influence the advancement of EP. Thus, the objective of the present study is to examine the impact of IP, TMS, GSCM, and supply chain competitive advantage (SCCA) on EP. Moreover, the research explores the mediation influence of GSCM on the interplay between IP and EP and the moderation role of SCCA between IP and EP. To achieve the objectives

of this paper, the following research interrogations are raised: ***RQ1:*** How can dynamic capabilities influence IP, TMS, and GSCM on EP? ***RQ2:*** What is the mediation role of GSCM in the interplay between TMS and EP? ***RQ3:*** How can dynamic capabilities moderate the interplay of SSCA between IP and EP? To answer these questions, this research provides a conceptual framework that connects IP, TMS, and GSCM to EP based on the Dynamic Capability View (DCV) theory. The research model and hypothesis are then analyzed with the PLS-SEM.

The present paper offers the following contributions: **First**, it adds to the GSCM literature scope by assessing GSCM practices' effect on environmental and business performance perspectives. The study builds upon the existing GSCM literature and the DCV theory by examining the role of dynamic capabilities in facilitating the adoption, implementation, and continuous improvement of GSCM practices. It highlights how organizations can transform their supply chain processes through dynamic capabilities to achieve better environmental performance. **Second**, this paper adds to the knowledge of business managers, investors, and governments on how to effectively adopt and implement GSCM practices within firms to achieve business performance and improve EP. The study offers insights into how organizations and governments can implement GSCM practices by leveraging their dynamic capabilities. **Third**, the study provides a framework for understanding how dynamic capabilities enable the identification of eco-friendly suppliers, the optimization of logistics to reduce carbon emissions, and the minimization of waste throughout the supply chain. **Fourth**, theoretically, the moderation role of SCCA in the association between IP and EP is significant. It enriches the DVC theory by providing fresh insight into these variables' effects on organizational performance. The study further contributes by bridging the gap between the DCV literature and the context of environmental sustainability. While DCV has been extensively studied in innovation and competitive advantage, this study extends its application to GSCM. The study enriches the theoretical understanding of how dynamic capabilities can be harnessed to drive sustainability initiatives. **Lastly**, the empirical analysis will serve as a reference for SMEs, government, and business organizations in decision-making and policy formulation to enhance EP in China's Shaanxi province.

The rest of the study is systematized as follows: Section 2 gives the theoretical framework and hypothesis development. Section 3 focuses on the methodology adopted. Section 4 expounds on the results grounded on partial least squares structural equation modelling (PLS-SEM) analysis.

Section 5 exhibits this study's discussion, leading to theoretical and managerial consequences, and the conclusion and future study.

2.0 Theoretical Underpinning and Hypothesis Development

Theoretical Underpinning (Dynamic Capability View)

The DCV remains one of the vibrant theories widely recognized for GSCM. It is "the fresh touchstone business-based performance-focused theory" (Akpobi, 2017). The DCV focuses on strategies that evolve around new competencies. Therefore, the DCV-formulated company capabilities linked to GSCM and suppliers' capabilities increase long-term ecological performance (Kähkönen et al., 2018). Given the reactivity of a business's resource stock to progressively disrupt the environment is connected to competitive advantage, DCV is an integral tactic relevant to a business (Singh et al., 2019). Nevertheless, Li & Srinivasan (2019) stated that businesses need DCV in a marketplace characterized by lesser rates of change to maintain pace through competitive dynamics. Moreover, the GSCM practices of a firm, according to Bernacki & Lis (2021), are the features of dynamic capability. Thus, in the literature, GSCM practices are known as the firm's DCV (Bernacki & Lis, 2021). It is perceived that society's environmental performance depends on GSCM practices in one way or another based on the DCV theory. So, scholars now focus on the dynamic capability view theory in studying the theoretical and practical matters of GSCM practices that can advance environmental quality (Bag et al., 2022). Hence, this paper addresses this critical topic to study GSCM practices and then links it to EP using DCV as a theoretical backbone.

GSCM practices incorporate events together with the supply chain through environmental management. The execution of GSCM is known to be causing the enlargement of management practices and operations (Ali et al., 2020). Based on the DVC theory, the GSCM practices (green innovation, supply chain innovation, and supply chain partnering) aim to assess EP based on established standards and estimate product excellence and environmental effects (De Giovanni & Cariola, 2021). More so, the GSCM incorporates client collaboration into environmental management practices. These activities decrease goods' equally direct and indirect effects on the environment (Sahoo & Vijayvargy, 2020). There is increasing global environmental alertness, and environmental prerequisites have been executed internationally. Businesses are pressured to make green innovation practices a part of their main capabilities in acquiring a competitive advantage to

avoid violating rules (Alsayegh et al., 2020). Regarding a teamwork approach, the DVC theory highlights that GSCM requires purchasers to be directly part of advancing the environmental practices of producers. It primarily concentrates on long-term objectives, like creating the possibility and ability of producers (Kumar et al., 2019). GSCM practices have a reasonable prospect of mainly contributing to the businesses' competitive advantage and environmental quality (N. U. Khan et al., 2021).

Moreover, the Dynamic Capabilities View (DCV) is an extension of the traditional Resource Based View (RBV) of organisations (Teece et al., 1997; Eisenhardt & Martin, 2000), which evolves from existing resources and helps organisations transition from static to dynamic or uncertain environments (Díaz-Chao et al., 2021). Whereas the RBV focuses on selection from existing resources, the DCV focuses on resource development, acquisition and exploitation (Edwin Cheng et al., 2022; Moon & Lee, 2021). Organisations should reconfigure their resources and capabilities to address challenges and changing environments to stay competitive. Furthermore, GSCM is essential for organisations to achieve social, environmental and economic goals that arise from customer and stakeholder requirements (Seuring, 2011). The DCV develops appropriate resources and capabilities so that organisations can respond to situation-specific changes and adapt to the peculiarities of dynamic markets.

Further, DCV explains how companies can achieve a competitive advantage in a dynamic market environment (Teece, 2018). Chowdhury & Quaddus (2021) also find that identifying changes and uncertainties in the environment and selecting appropriate capabilities to mitigate the risks arising from an uncertain environment are dynamic capabilities. Along this line and relying on DCV, we argue that firms need dynamic capabilities to identify, adapt and respond to dynamic stakeholder sustainability requirements. Therefore, using the DVC theory to investigate the study's topic, "The effect of green supply chain management practices on corporate environmental performance is relevant and essential. Accordingly, we applied the DCV as a strong theoretical foundation to address the study's research question. Thus, dynamic capabilities are not sources of sustainable competitive advantages but create sustainable competitive advantages through other organizational capabilities (Moon & Lee, 2021).

Hypothesis Development

IP and EP Nexus

Regarding IP and EP, businesses are profit-making entities but acknowledge the benefits of attaining societal legitimacy, leading to environmental performance (Kalyar et al., 2019). With institutional pressures, shareholders compel businesses to use active environmental policies, modify their company techniques and reapportion their resources to boost environmental performance (Davidson et al., 2021). Even though these pressures are mostly the drivers of EP and several ecological initiatives, the diverse pressures might lead to unique feedback. However, such pressures could stem from regulatory changes, societal expectations, or stakeholder demands for improved environmental performance (Epstein et al., 2018; W. Ahmed et al., 2020). Though the community's environmental awareness level rises, clients and downstream GSCM collaborators should choose environmental-friendly goods (de Paula et al., 2019). Due to institutional pressure, businesses need to be mindful of the alteration in green-associated marketing tactics of competitors (El-Kassar & Singh, 2019).

Interestingly, Chaudhry & Amir (2020) postulates that different types of IP, such as normative, mimetic, and coercive pressures, may affect environmental performance differently. It's unclear which pressures are more influential and how they interact. Accordingly, the impact of IP on EP might not be immediate and can take time to manifest. The long-term effects of institutional pressure on sustained environmental improvement may be harder to measure within shorter study periods (Negri et al., 2021). Also, governments naturally employ controlling force via regulations coupled with intimidations of penalties. In doing that, good behavioural ethics and practices of businesses are checked. In the long run, this leads to improvement in EP (Harcup, 2021; Gunarathne et al., 2021).

From the above discourse, we argue that a positive or significant relationship between institutional pressure (IP) and environmental performance (EP) can be elucidated through the lens of the DCV and the insights gleaned from existing literature. The DCV framework suggests that organizations with dynamic capabilities can adapt, learn, and innovate in response to changing environments and demands. In the context of IP and EP, the DCV theory implies that organizations facing institutional pressures will likely develop dynamic capabilities to navigate and comply with these external pressures effectively. Such pressures could stem from regulatory changes, societal expectations, or stakeholder demands for improved environmental performance. Therefore, in conclusion, the DCV provides a theoretical foundation to anticipate a positive or significant

relationship between IP and EP because organizations that cultivate dynamic capabilities are poised to effectively respond to institutional pressures, leading to improved environmental performance as they adapt, innovate, and align their strategies with eco-friendly objectives. Thus, below is the hypothesis derived:

H1: IP has a positive influence on EP

IP and GSCM Nexus

Institutional theory has established three different IPs, namely (memetic pressure, coercive pressure, and normative pressure). These pressures can influence a business's competitive environmental position (Wang et al., 2019). Grounded on DCV, GSCM practices could be affected by coercive force due to its essential factor among global producers. The managers of businesses receive coercive pressure from governing authorities to execute GSCM practices in pursuit of enhanced ecological efficiency (Yassin et al., 2021). Moreover, looking at the market tendency or analyzing the marketplace competitors also aids in operations and manufacturing success (Ahmed et al., 2020). The pressures mentioned above are motivators for GSCM practices, which come with their impacts on GSCM (Samad et al., 2021). Executing GSCM practices remains a central normative pressure from clients and the marketplace due to the rising environmental hopes from producers (Juárez-Luis et al., 2018). Mainly, exportations and overseas sales pressure firms to accept and execute GSCM practices to meet the consumers' terms and situations (G. Li et al., 2020). Captivatingly, (Seman et al., 2019) debated the effectiveness of different types of IP (regulatory, normative, and mimetic) in influencing GSCM practices. Their research suggests that regulatory pressures might lead to more tangible changes.

In contrast, normative and mimetic pressures might result in more superficial or symbolic changes, which means that IP cannot necessarily have a positive and substantial influence on GSCM practices. Again, because of the diminishing of resources and the depletion of human well-being and the environment, businesses are frequently being forced by end customers and high authorities to enforce GSCM practices (Jazairy & von Haartman, 2020). The contentions thus far demonstrate that organizations with dynamic capabilities are well-equipped to integrate green

practices into their supply chain operations. They possess the agility to reconfigure their processes, allocate resources efficiently, and develop innovative strategies to meet environmentally friendly objectives. Hence, we are of the view that the DCV provides a theoretical rationale for expecting a positive or significant relationship between IP and GSCM because organizations that cultivate dynamic capabilities are apt to respond to IP by embracing and effectively implementing sustainable practices within their supply chains. This alignment not only addresses external demands but also fosters the development of environmentally responsible strategies, resulting in improved GSCM outcomes. Thus, below is the hypothesis derived:

H2: IP has a positive impact on GSCM

IP and TMS Nexus

The numerous pressures from shareholders and establishments inspire businesses to follow GSCM-associated practices (J. Zhang et al., 2019). It is essential to assess whether a linear interplay exists between IP and the execution of GSCM practices on the assumption of solid backing from top management through adopting eco-friendly practices (Sahoo & Vijayvargy, 2020). TMS might considerably impact particular kinds of IP like government policies, buyers' wants, and competitors' approaches. Hence, their support may differ regarding each type of IP (Roos & Ört, 2019). Moreover, the impact of IP on TMS may vary over time. Short-term pressures might lead to immediate changes in performance, while long-term pressures might necessitate sustained efforts by top management teams to adapt and improve performance (O. Khan et al., 2020).

Additionally, Sehnem et al. (2022) opined that there could be a threshold beyond which IP becomes counterproductive for TMS. Excessive pressure might lead to burnout or reduced strategic focus, impacting overall performance. Also, government policies strongly underpin innovative environmental activities, and managers see them as the most evident outside force impacting their establishments' governmental operations (Al-Sheyadi et al., 2019). According to Li et al. (2019), IP directly influences TMS behaviour, which leads to adopting the best GSCM practices for businesses. Additionally, we argue that DCV highlights the importance of a firm's ability to adapt to external pressures and changes in the business environment. Institutional pressures represent external factors such as regulatory requirements, social norms, and industry standards that firms must adhere to. Firms must build dynamic capabilities to reconfigure their

resources and processes to respond to these pressures effectively. This could lead top management to actively seek out and implement strategies that enhance performance to meet these pressures. Thus, we anticipate a positive interplay between IP and TMS because, based on the principles of the DCV, a positive or significant relationship between IP and TMS is plausible. The dynamic capabilities perspective suggests that firms that effectively respond to IP by building and leveraging relevant capabilities may enhance their top management performance over time. Thus, below is the hypothesis derived:

H3: IP has a positive and significant interplay with TMS

TMS and GSCM Nexus

The willingness of top managers to support government regulations on the environment is seen through the business' actions. These actions include green manufacturing products, safe delivery of goods and services to buyers, and others known to be among the best practices of GSCM (Epstein et al., 2018). Thus, the function of top management remains significantly highlighted in deciding the swiftness and array of the GSCM practices. The TMS enables the process of thinking over IP for GSCM courses in the business and applying business actions (García-Sánchez et al., 2019). However, Ahaiwe & Nwadigoha (2021) posited that a lack of TMS may lead to higher opposition from the business in integrating IP and disappointment in implementing GSCM practices. Furthermore, the exact impact of TMS on GSCM performance outcomes, such as environmental performance, cost savings, and competitive advantage, is debated. Some researchers argue for a direct positive relationship (Kitsis & Chen, 2021), while others highlight the uncertain nature of this relationship based on industry, firm size, and other factors (Brandon-Jones et al., 2014). The drive from management to support GSCM practices to ensure green production is one of the best forces for businesses to execute different environmental agendas and policies (Jazairy & von Haartman, 2020). In short, TMS is essential for achieving environmental programs and procedures and has a significant relationship with GSCM.

Furthermore, dynamic capabilities involve reconfiguring existing resources and capabilities to meet changing demands. Effective top management can be crucial in aligning the firm's resources with environmental sustainability goals, including implementing green supply chain practices. TMS attuned to the importance of GSCM can lead to the reallocation of resources toward eco-friendly initiatives, thereby enhancing the firm's environmental performance. So, a

positive interaction between TMS and GSCM is expected because the DCV suggests that a positive or significant relationship between TMS and GSCM is plausible. A proactive and performance-oriented top management team can facilitate the development of dynamic capabilities that enable the firm to implement and integrate GSCM practices effectively. This alignment can lead to improved environmental performance, operational efficiency, and overall organizational success. Thus, below is the hypothesis derived:

H4: TMS has a positive and significant connection with GSCM

GSCM and EP Nexus

GSCM practices aim to assess EP based on established standards and estimate product excellence and environmental effects (De Giovanni & Cariola, 2021). Several researchers believe that environmental performance is meant to twin the goals of getting economic than environmental sustainability, enhancing and sustaining the lives of individuals without harming the environmental resources (Pomponi & Moncaster, 2017). The activities of GSCM in manufacturing goods and services to reduce environmental impacts for a good life quality led to the enhancement of environmental performance (Yu et al., 2019). EP result comprises environmental hazard decrease, business image enhancement, and involvement in environmental safety. A business may increase environmental performance by using GSCM practices in manufacturing (Kraus et al., 2020). GSCM practices, once introduced by a company in its operations, will perform eco-friendly supervision within the firm to aid a GSCM. (Yang et al., 2020; Ghosh et al., 2021). Islam et al. (2021) state that GSCM practices have resulted in environmental and firm sustainability by changing how firms work according to the ethics and principles of improving environmental performance. On the other hand, Shou et al. (2020) argue that various contextual and organizational factors can influence the impact of GSCM on EP. These factors, such as industry type, firm size, regulatory environment, and stakeholder pressures, can weaken the strength and nature of the relationship. Similarly, the complexity of the supply chain can influence the relationship between GSCM and EP. Thus, different supply chain stages (e.g., upstream suppliers and downstream distributors) may affect environmental outcomes differently (Dangelico et al., 2017).

Moreso, DCV emphasizes innovation and continuous improvement as critical components of dynamic capabilities. GSCM involves developing and implementing innovative solutions to minimize environmental harm, optimize resource use, and reduce waste throughout the supply chain. A firm focusing on GSCM practices will likely exhibit a culture of innovation and a commitment to ongoing improvement in its EP. Therefore, we suggested a positive and substantial interplay between GSCM and EP because the DCV proposes a positive or significant relationship between GSCM and EP. The inference is that firms that actively engage in GSCM practices will likely develop dynamic capabilities that enable them to align their resources, drive innovation, foster inter-functional collaboration, adapt to changing circumstances, and engage with stakeholders, all of which contribute to improved EP. Thus, below is the hypothesis derived:

H5: GSCM will have a positive impact on EP

SCCA and EP Nexus

It is evident that competition is found everywhere, and businesses are not exempt. Hence, a competitor is a corporation within the same target marketplace. Supply chain competitive advantage (SCCA) is essential in enhancing EP. Business competition generates pressure to improve process efficacy and goods quality because of the pressures from the competition and the business's learning and capability to imitate competitors with the best performance (W. Liu & Atuahene-Gima, 2018). Companies ought to accelerate changes in behaviour and process administration within the work environment to meet the aims of the business in improving EP. This change is traced to the traditional GSCM, which pays attention to quality, the creation of additional value, and cost savings (Habib et al., 2021).

On the contrary, Rua et al. (2018) contended that the relationship between SCCA and EP is likely influenced by changing market conditions, industry dynamics, and regulatory environments, which can introduce complexities and uncertainties. Also, the role of stakeholder pressures, such as regulatory mandates, customer preferences, and investor demands, in shaping the SCCA-EP relationship is crucial. Different stakeholder groups may have varying expectations and influence on these outcomes (Younis & Sundarakani, 2020). Moreover, creating a business principle that aims to improve the environment between competitors is vital to accomplishing environmental quality and leads to competitive advantage (Yong et al., 2020). Also, competitive tension primarily occurs when a business senses the achievement of a competitor's movements.

This urges firms to use the best GSCM practices to attain a competitive advantage over the other, enhancing EP (Bryson, 2018). Hence, Ahmed et al. (2020) observed that competitive pressure among businesses is a vital driving force in implementing GSCM practices among businesses since competitive pressure may influence a company's GSCM practices.

Accordingly, DCV underscores the importance of strategic renewal to adapt to changing conditions. Firms that achieve SCCA continually renew their strategies to stay ahead in the market. Environmental concerns, regulatory changes, and stakeholder expectations demand a similar focus on strategic renewal. Organizations with dynamic solid capabilities for SCCA are better equipped to adapt their supply chains for improved environmental performance. Grounded on the discourse thus far, we hypothesized a positive correlation between SSCA and EP, which is in line with the DCV, which postulates that a positive or significant relationship exists between SCCA and EP. The implication is that Firms that excel in SCCA are likely to possess dynamic capabilities that can be harnessed to drive improvements in EP. These capabilities can facilitate resource reconfiguration, innovation, coordination, adaptation, stakeholder engagement, and long-term orientation, all of which contribute to enhanced EP. Thus, below is the hypothesis derived:

H6: SSCA positively influence EP

Mediation role of GSCM between TMS and EP

Companies tend to adopt eco-friendly training to enhance GSCM practices, environmental performance, and the impact of market setting regarding the relationship among GSCM practices, TMS, and EP. Hence, GSCM practices and TMS influence EP (Li et al., 2020). A scholar established that TMS leads to good GSCM practices, enhancing EP (Abdul et al., 2021). GSCM practices are implemented, leading to changes in the organization's supply chain processes. These changes, such as reduced waste and more efficient resource use, improve environmental performance (EP). Through TMS, firms are compelled to adopt and execute GSCM practices to ensure a green environment, eventually improving EP. Also, an effective TMS understands the importance of environmental sustainability and directs the organization to adopt GSCM practices. (Sahoo & Vijayvargy, 2020). Again, TMS by firms includes GSCM practices in their operations to strengthen EP (Siddiqui & Siddiqui, 2020). A study by (Rehman Khan & Yu, 2021 Shou et al., 2020, and Seman et al., 2019) affirmed that TMS affects both GSCM practices and EP. Additionally, we argue that GSCM practices mediate the relationship between TMS and EP

through the lens of the DCV. The organization's ability to develop and implement GSCM practices manifests its dynamic capability to adapt to environmental sustainability challenges. GSCM practices enable the organization to continuously monitor, learn, and adjust its supply chain processes to enhance its EP. Therefore, effective TMS enables the organization to develop the dynamic capability of GSCM, which, in turn, positively impacts its EP by facilitating adaptive and innovative responses to sustainability challenges. Thus, below is the hypothesis derived:

H7: GSCM mediates the relationship between TMS and EP

Moderation role of SCCA

There is a mediation role of SCCA between IP and EP, which is known through businesses' activities to make a profit and take control of the market scope (Vence & Pereira, 2019). The collective dream of environmental success among companies due to institutional pressure and competition will naturally positively impact environmental performance through the lens of DCV (Epstein et al., 2018). Competitions among businesses put pressure on them to improve process efficacy and product excellence because of the tensions with their competitors. The firm can adjust quickly to achieve the best product performance (Appelbaum & Batt, 2018). So, a business culture that targets improving EP due to IP is essential in achieving GSCM and promises a competitive advantage (Tu & Wu, 2021). A study by a researcher supports the argument that SCCA greatly influences and moderates the interplay between IP and EP (Chi et al., 2019).

Additionally, another strand of authors (Seman et al., 2019; Sriyakul et al., 2019; and Kalyar et al., 2019) found that SCCA compels businesses to adopt and implement GSCM practices through pressures from consumers, government institutions, and competitors, which in the long run led to improvement in EP. In conclusion, we argue that SCCA moderates the relationship between IP and EP. This means that SCCA strengthens or weakens the influence of institutional pressures on an organization's environmental performance. The inference is that from a DCV perspective, the moderation role of SCCA between IP and EP highlights how an organization's ability to develop and leverage dynamic capabilities related to supply chain management can influence the impact of IP on its EP. The presence or absence of SCCA can determine whether an organization effectively translates external pressures into sustainable competitive advantages and improved environmental outcomes. Thus, below is the hypothesis derived:

H8: SCCA moderates the relationship between IP and EP

Conceptual Framework

Figure 1 signifies a graphical representation of the research theoretical framework and hypothesis.

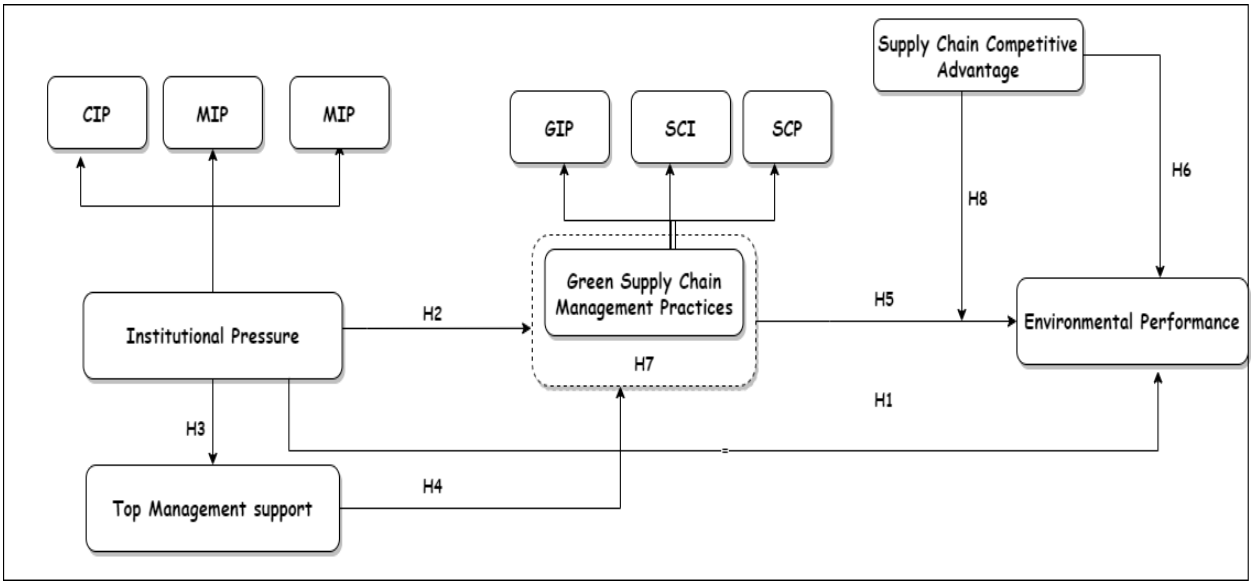

Figure 1: Research Framework

3.0 Methodology

Data Collection and Procedures

To meet the goal of this current research, supply chain experts and administrators from automotive, pharmaceuticals, plastics and rubber, technology and communication-related, and other companies from Xi'an, China, were chosen for the investigation. In conducting this study, a self-administered questionnaire was generated, and the authors used four months (December 2021 through March 2022) to collect responses from the participants. The questionnaires were structured based on previous literary works. The present research was carried out in the Shaanxi Province of China. Shaanxi is among the several provinces determined to ensure green production and conservation of the environment against any harmful environmental practices. In light of this, the researchers sought to carry out the study in Shaanxi. The study questionnaires were first formulated

in the English Language. Experts in this field were consulted and advised to translate the survey questionnaires from English to Standard Chinese Language (Mandarin). The criteria for selecting the participants were the target of the respondents who fall within the category of Chief Executive Officer, General Manager, Assistant Manager, and Low-level Manager who had been in the position for over ten years for their sufficient knowledge of GSCM practices, institutional pressures, environmental performance, and others (Gawusu et al., 2022; Roos & Ört, 2019; J. Zhang et al., 2019; Rehman Khan & Yu, 2021).

When distributing the questionnaires, the researchers added a consent form and the research objectives to the respondents. The participants in this research were guaranteed that their responses would be held in the highest form of confidentiality. Their information remains confidential and will be used only for study purposes. The authors designated the participants of this research survey by employing the stratified sampling approach. The stratified sampling approach is a common sampling technique used in research and statistical analysis. It involves dividing a population into subgroups or strata based on specific characteristics and then drawing a sample from each stratum. The stratified sampling approach is commonly used in various fields, such as market research, public health studies, educational research, and environmental studies. Thus, the study applied the stratified data collection approach because respondents were drawn from automotive, pharmaceuticals, plastics and rubber industries, technology and communication related, and others. During the preliminary phase of the data collection process, the authors contacted 820 respondents through personal contact, email, and WeChat platforms. At the climax of the data collection process, the authors obtained 86% (N=710), signifying a solid feedback rate to the study's questions. This research does not need ethical approval because the investigation did not require any clinical or animal experiments. Also, the research data was gathered anonymously, and the respondents answered the questions voluntarily.

Demographic profile of respondents

From the analysis, the demographic profile of the respondents comprises 390 males (55%) and 320(45%) females, as specified in Table 1. The age of the respondents displayed that: 34% ($n = 240$) are between 18-29 years, whereas 51% ($n = 360$) are between 30-39 years, 10% ($n = 75$)fall between 40-49years, and 5% ($n = 35$) is above50 years. The paper discovered that 15% of the respondents had gotten senior-high-school education, and 50% were holders of bachelor's

degrees. Also, 22% had obtained their master's degree and 13%were PhD holders. The study established that 24% of the respondents hold the position of Chief Executive Officer, 18% are General Manager, 54% have Assistant Manager position, and 4% fall below Manager position.

Profile Information	Characteristics	F	P
Gender	Female	320	45%
	Male	390	55%
Age	18-29 Years	240	34%
	30-39 Years	360	51%
	40-49 Years	75	10%
	Over 50 Years	35	5%
Education	Senior High School	108	15%
	Bachelor Holders	352	50%
	Master's Holders	156	22%
	PhD Holders	94	13%
Job Positions	Chief Executive Officers	167	24%
	General Managers	131	18%
	Assistant Managers	380	54%
	Low-level Managers	32	4%
Business Category	Automotive	90	13%
	Pharmaceuticals	204	29%
	Plastics and rubber	226	32%
	Technology and communication-related	107	15%
	Others	83	11%

Concerning the business category, 13% of the respondents specified they mainly deal in automotive, 29% are in pharmaceuticals, 32% produce plastics and rubber, 15% are technology and communication, and 11% are from other businesses.

Table 1: Profile Information of Respondent's (N=710)

Measures

A self-administered questionnaire model was applied to collect the data for this research analysis. The questionnaire was divided into two parts; the first comprised questions related to the participant's demographic information. Thus, we gathered data regarding the participant's age, sex, educational background, job positions, and business category, displayed in Table 1. The second section of the questionnaires comprised measuring scales adapted from previous literary works,

and the details are presented in Table 2. The questionnaire consisted of two high-order constructs, which include Institutional Pressure (Coercive- Institutional Pressure (CIP), Mimetic- Institutional Pressure (MIP), and Normative- Institutional Pressure (NIP)) and Green Supply Chain Management Practices (Supply Chain Innovation (SCI), Supply Chain Partnering (SCP) and Green Innovation Practices (GIP)). Before sending the questionnaires out for responses, the suggestions and recommendations from industry experts were sought to ensure that the measures utilized in this paper are valid and reliable. The study's measuring variables employed a 5-point Likert scale (1, strongly disagree; 2, disagree; 3, neutral; 4, agree; and 5, strongly agree).

Table 2: Measurement Details

Construct	No of Items	Source
Coercive- Institutional Pressure	3	(Ahmed et al., 2019; Gunarathne et al., 2021)
Mimetic- Institutional Pressure	3	(Ahmed et al., 2019; Gunarathne et al., 2021)
Normative- Institutional Pressure	3	(Ahmed et al., 2019; Gunarathne et al., 2021)
Supply Chain Innovation	3	(Afraz et al., 2021; M. Wang et al., 2021)
Supply Chain Partnering	3	(Ahmed et al., 2019; Zhu et al., 2007, 2013)
Green Innovation Practices	3	(Chu et al., 2018; Iqbal et al., 2021)
Top Management Support	6	(Chu et al., 2017; Dubey et al., 2015)
Supply Chain Competitive Advantage	5	(Qiu et al., 2020; Waqas et al., 2022)
Environmental Performance	7	(Gunarathne et al., 2021; Habib et al., 2021)

Method of Data Analysis

SEM-PLS was utilized to assess the theoretical outline for some reasons. First, SEM-PLS demonstrates precise approximations of paths amid constructs by examining the structural and measurement models instantaneously (Abdul et al., 2021). SEM-PLS is a suitable statistical method for exploratory research that tests the moderation and mediation impacts and investigates complex relationships with a comparatively small sample size (Rehman Khan & Yu, 2021; Sahoo & Vijayvargy, 2020; Hair et al., 2019). Finally, many scholars usually utilize SEM-PLS in different research fields and several GSCM, thereby supporting the robustness of this technique

within the analogous framework (Ahmed et al., 2020; Tu & Wu, 2021; Gawusu et al., 2022; Rehman Khan & Yu, 2021; Hair et al., 2019).

4.0 Results

Reliability and Validity

According to Hair et al. (2019), reliability is the degree of openness of a measurement scale devoid of mistakes and thus yields consistent outcomes. The reliability of this paper was evaluated with the aid of Cronbach's alpha (CA) and composite reliability (CR). Each measure of CA surpasses the lowest value of 0.7 Hair et al., (2019), whereas all CR constructs are higher than the threshold of 0.7. Likewise, validity denotes the degree to which a measurement scale evaluates the intended assessment construct (Sahoo & Vijayvargy, 2020). Therefore, Table 3 depicts that CA, CR, RhoA, and all constructs were more significant than 0.70, demonstrating satisfactory reliability and validity. According to Shou et al. (2020), CR values must be equivalent to or higher than 0.7. From Table 3, all the construct's CR coefficient values vary between 0.843 to 0.934; CA coefficient values vary from 0.799 to 0.906; RhoA values vary from 0.834 to 922, signifying adequate reliability. The study, hence, meets the reliability and validity standard criteria for the entire distinct items chosen for this study (Agyeman et al., 2021; Sampene, Cai et al., 2022; Sampene, Li et al., 2022). The potential structure of each average extracted variance (AVE) should be ascertained to validate the factors' inner consistency (Hair et al., 2019a). The average extracted variance values must exceed 0.5 for the entire construct. Thus, from Table 3, AVE varies from 0.519 to 0.781, signifying that AVE has surpassed the critical value of 0.5 and convergent reliability, validity, and correctness are attained.

Common Method Bias (CMB)

The tendency of the influence of CMB at some point could not be entirely overlooked. Therefore, to avert the influence of CMB, this study used Harman's single-factor method and individual instructions for every variable and positioned them into dissimilar sections of the

questionnaires to alleviate the contextual effects of responses (Abdul et al., 2021). Harman stated that the single-factor method explains only 29.6% of the discrepancy, less than the 50% threshold (Hair et al., 2019). We utilized the variance inflation factor (VIF) coefficient to examine the collinearity amid variables within this study. According to (Hair et al., 2019; and Rehman Khan & Yu, 2021), the VIF coefficient must be less than 5.0. Thus, the correlations in Table 3 depict that CMB is not critical since the VIF coefficient values varied from 1.071 to 2.965. The outcomes disclosed that CMB is not a problem in this research.

Table 3: Synopsis of validity outcomes

	Items	Outer Loadings	Cronbach's alpha	Rho_A (>0.7)	Composite reliability(ρc) (>0.7)	AVE (>0.5)	VIF
Institutional Pressure							
Coercive-Institutional Pressure	CIP1	0.768	0.906	0.908	0.925	0.640	1.992
	CIP2	0.738					2.875
	CIP3	0.773					1.175
Normative-Institutional Pressure	NIP1	0.833	0.906	0.911	0.930	0.726	2.296
	NIP2	0.813					2.185
	NIP3	0.82					1.869
Mimetic- Institutional Pressure	MIP1	0.733	0.902	0.903	0.932	0.774	2.202
	MIP2	0.814					2.965
	NMP3	0.792					2.226
Green Supply Chain Management Practices							
Supply Chain Innovation	SCI1	0.731	0.905	0.922	0.934	0.781	2.493
	SCI2	0.814					2.708
	SCI3	0.815					2.763
Green Innovation Practices	GIP1	0.823	0.884	0.931	0.875	0.672	2.698
	GIP2	0.79					1.075
	GIP3	0.766					1.585
Supply Chain Partnering	SCP1	0.737	0.825	0.843	0.927	0.636	1.934
	SCP2	0.773					1.625
	SCP3	0.890					2.516
Top Management Support							
TMS	TMS1	0.792	0.831	0.902	0.887	0.633	1.529
	TMS2	0.758					1.964
	TMS3	0.775					1.829
	TMS4	0.811					2.278
	TMS5	0.836					2.081
	TMS6	0.813					

Supply Chain Competitive Advantage						
SCCA	SCCA1	0.761	0.799	0.834	0.843	0.519	1.081
	SCCA2	0.943					1.071
	SCCA3	0.916					2.239
	SCCA4	0.904					2.647
	SCCA5	0.761					1.763
Environmental Performance							
EP	EP1	0.768	0.889	0.890	0.916	0.644	2.204
	EP2	0.736					2.230
	EP3	0.757					2.572
	EP4	0.801					2.814
	EP5	0.850					2.236
	EP6	0.836					1.846
	EP7	0.844					2.046

Assessing the reflective measurement model

Discriminate validity (Fornell-Larcker Criteria)

Discriminate validity is apparent once the objects are distinct from another variable (Hair et al., 2019; Fornell & Larcker, 1981). Therefore, Fornell-Larker criteria (1981) suggest a correlational matrix. The square root of the average variance is extracted with the absoluteness value of the correlation of each construct in rows and columns, as depicted in Table 4. Consistent with the test of Fornell and Larcker (1981), the value within the diagonal of all constructs representing square roots of AVE must be higher than its column and row, which is the correlation among constructs, and every AVEs of constructs is above 0.5. Moreover, the correlations among the variables are lower than 0.90; therefore, these outcomes satisfy the criteria regarding discriminant validity.

Table 4: Discriminate validity (Fornell-Larcker Criteria)

Constructs	EP	GSCM	IP	SCCA	TMS
Environmental Performance	**0.800**				
GSCM	0.160	**0.788**			
Institutional Pressure	0.490	0.410	**0.788**		
SCCA	0.330	0.334	0.333	**0.884**	
Top Management Support	0.694	0.786	0.386	0.319	**0.798**

Heterotrait-Monotrait Ratio

The Heterotrait-Monotrait Ratio (HTMT) is another vital technique for examining the multicollinearity and validity of a model such as SEM-PLS. The HTMT ratio evaluates the attribute of correlations in the model; as stated by (Fornell & Larcker 1981 Hair et al., 2019), if the HTMT values are more significant than 0.90, then discrimination shall not be applied. Thus, the HTMT ratio must not exceed 0.90 (Hair et al., 2019a). From Table 5, the outcomes supported all the standard principles established by earlier scholars. Hence, the results demonstrate the HTMT discriminant level approval within this research since all the construct values are below 0.9.

Table 5: Heterotrait-Monotrait Ratio (HTMT)

Constructs	EP	GSCM	IP	SCCA	TMS
Environmental Performance					
GSCM	**0.679**				
Institutional Pressure	0.479	**0.783**			
SCCA	0.360	0.362	**0.762**		
Top Management Support	0.409	0.688	0.648	**0.553**	

Combined loadings and Cross-loadings

Table 6 further shows findings for the variables' cross-loadings and combined loadings. The result specifies that individual variables are associated with higher values for their corresponding item loadings than other constructs. Therefore, we can deduce that all the variables in this research have valid convergent validity to their item loadings. This outcome suggests better reliability and validity of the instrument of measurement in this research. The implication also is that the research model in the present study is not affected by the propensity of measurement bias (I. A. Shah et al., 2020).

Table 6: Item cross-loading matrix of the constructs

Construct	Environmental Performance	GSCM	Institutional Pressure	SCCA	TMS
EP1	**0.768**	0.79	0.792	0.252	0.792
EP2	**0.737**	0.766	0.768	0.234	0.758
EP3	**0.757**	0.737	0.738	0.219	0.775
EP4	**0.801**	0.773	0.773	0.219	0.811
EP5	**0.85**	0.835	0.833	0.27	0.836
EP6	**0.836**	0.815	0.813	0.329	0.813
EP7	**0.844**	0.823	0.82	0.315	0.777
SCI1	0.652	**0.731**	0.733	0.245	0.664
SCI2	0.745	**0.814**	0.814	0.273	0.748
SCI3	0.836	**0.815**	0.813	0.329	0.813
SCP1	0.757	**0.737**	0.738	0.219	0.775
SCP2	0.801	**0.773**	0.773	0.219	0.811
SCP3	0.740	**0.890**	0.835	0.786	0.234
GIP1	0.844	**0.823**	0.82	0.315	0.777
GIP2	0.768	**0.79**	0.792	0.252	0.792
GIP3	0.737	**0.766**	0.768	0.234	0.758
CIP1	0.737	0.766	**0.768**	0.234	0.758
CIP2	0.757	0.737	**0.738**	0.219	0.775
CIP3	0.801	0.773	**0.773**	0.219	0.811
MIP1	0.652	0.731	**0.733**	0.245	0.664
MIP2	0.745	0.814	**0.814**	0.273	0.748
MIP3	0.768	0.79	**0.792**	0.252	0.792
NIP1	0.85	0.835	**0.833**	0.27	0.836
NIP2	0.836	0.815	**0.813**	0.329	0.813
NIP3	0.844	0.823	**0.82**	0.315	0.777
SSCA1	0.228	0.239	0.238	**0.761**	0.221
SSCA2	0.314	0.316	0.316	**0.943**	0.308
SSCA3	0.288	0.292	0.292	**0.916**	0.279
SSCA4	0.323	0.323	0.323	**0.904**	0.31
TMS1	0.768	0.79	0.792	0.252	**0.792**
TMS2	0.737	0.766	0.768	0.234	**0.758**
TMS3	0.757	0.737	0.738	0.219	**0.775**
TMS4	0.801	0.773	0.773	0.219	**0.811**
TMS5	0.85	0.835	0.833	0.27	**0.836**
TMS6	0.836	0.815	0.813	0.329	**0.813**

Note: Bold figure signifies Outer Loadings

Model Performance and Goodness of Fit

Standardized root means square (SRMR) should be higher than 0.08 to estimate PLS-SEM's model fitness, as Henseler et al. (2016) suggested. As shown in Table 7, the results of our investigation disclose a satisfactory degree of model fitness with an SRMR of 0.021. In addition, the R^2 testing is used to assess whether an endogenous variables variable in this study has a predictive value. In summary, the R^2 value denotes the precision of the forecast (Joe F. Hair et al., 2012). Marcoulides et al. (2009) opined that the coefficient of the R^2 value of 0.67 is considered robust or substantial, 0.33 is deemed moderate, and 0.19 is deemed weak. As shown in Table 5, our study's results show that the R^2 values for all the constructs are robust and substantial. The NFI of the model (0.930) likewise proposes that the model meets the NFI requirement postulated by (Hu & Bentler, 1999).

Table 7: Structural Model Fit Summary

Construct	R^2	Adj R^2	F^2	SRMR	NFI
EP	0.975	0.975	0.340	0.021	0.930
GSCM	0.958	0.958	0.136-0.741		
IP	0.753	0.753	0.183-0.630		
SSCA	0.683	0.683			
TMS	0.792	0.792			

Hypothesis Testing

The path co-efficient findings are attained by measuring the structural model. In this paper, we applied a resampling bootstrap technique to get the T-statistics and original means (β) in the PLS-SEM approach. This study processed The data using 5,000 bootstrapped samples (Hair et al., 2012). The eight hypotheses' path coefficients (p-value) vary between 0.000 and 0.05, as revealed in Table 8 and Figure 3.

Direct Path Analysis

H1 to H6 are direct relationships in this study. The empirical results from our research showed that IP (H1 β=0.038; t-value =0.906; p=0.571) has an indirect relationship with EP. This indicates that H1 was not supported. On the contrary, TMS (H2 ($\beta = 0.431$; t-value $= 50.834; p = 0.000$) had a significant direct relationship with EP, implying that our hypothesis

was supported. More so, IP (H3 ($\beta = 0.819$; t-value $= 131.699; p = 0.000$) has a direct and significant interplay with TMS, meaning that our hypothesis was supported. Again, TMS (H4 ($\beta = 0.984$; t-value $= 22.321; p = 0.000$) had a direct and significant relationship with GSCM, affirming our study H4. Likewise, our empirical evaluation demonstrates that both GSCM (H5 ($\beta = 0.368$; t-value $= 81.886; p = 0.000$) and SSCA (H6 ($\beta = 0.742$; t-value $= 41.777; p = 0.000$) had a direct positive relationship with EP. This outcome suggests that our research hypothesis for both H5 and H6 was supported. Therefore, except for H1, which was not supported, H2 to H6 was supported. Table 8 shows the detailed hypothesis testing results.

Table 8: Hypothesis Testing Results

Path Analysis	Coeff.	Standard Deviation	T Statistics	P-Value	Decision
Direct Relationship					
H1 IP----------> EP	0.038	0.831	0.906	0.571	Not Supported
H2 TMS--------->EP	0.431	0.013	50.834	0.000	Supported
H3 IP-------- > TMS	0.819	0.307	131.699	0.000	Supported
H4 TMS-----> GSCM	0.984	0.702	22.321	0.000	Supported
H5 GSCM------>EP	0.368	0.018	81.886	0.000	Supported
H6 SCCA------> EP	0.742	0.002	41.777	0.000	Supported
Mediation Relationship					
H7: GSCM -> TMS -> EP	0.228	0.011	20.999	0.000	Supported
Moderation Relationship					
H8: SCCA*-> IP -> EP	0.309	0.209	10.400	0.000	Supported

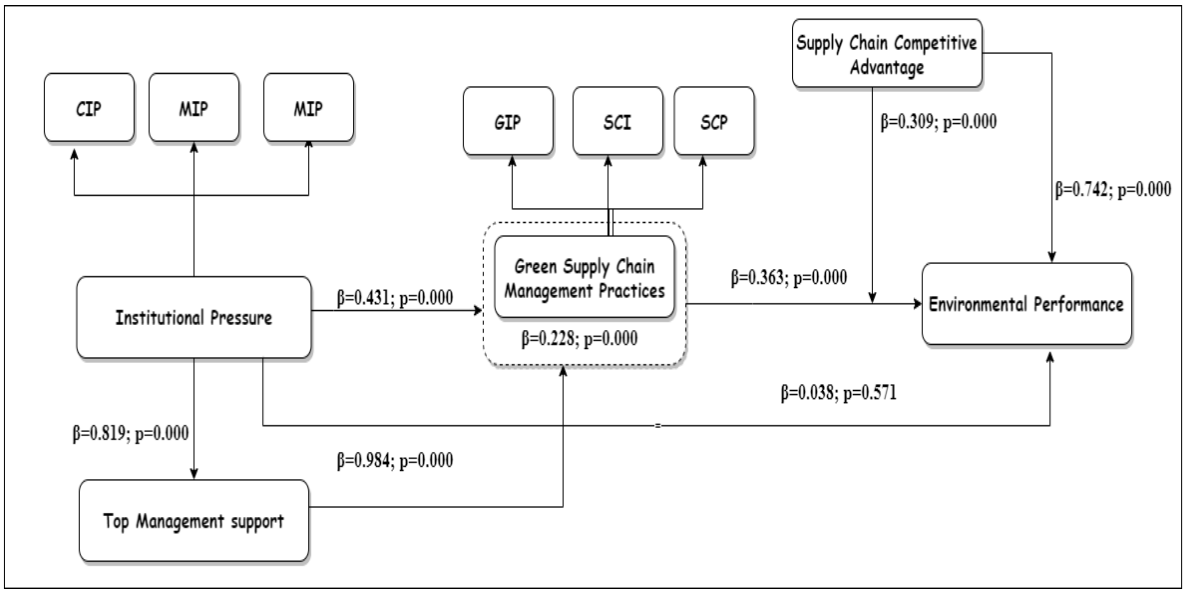

Figure 2: Final Model with Parameter Estimates

Mediation and Moderation Analysis

This current research has one hypothesis connected to the mediating impacts of GSCM on the connection between TMS and EP. The empirical outcomes as depicted in Table 8. The findings indicate that GSCM (H7 ($\beta = 0.228$; t-value $= 20.999; p = 0.000$) mediates the interplay between TMS and EP, confirming our study H7. Also, H8, which assessed the moderation role of SSCA between IP and EP, was hypothesized and grounded on the research outcomes. This hypothesis was supported (H8 ($\beta = 0.309$; t-value $= 10.400; p = 0.000$). Figure 3 further illustrates the interplay diagram of SCCA among IP and EP. The graph proves that a higher level of SCCA activities can reinforce the interplay between IP and result in a higher EP level.

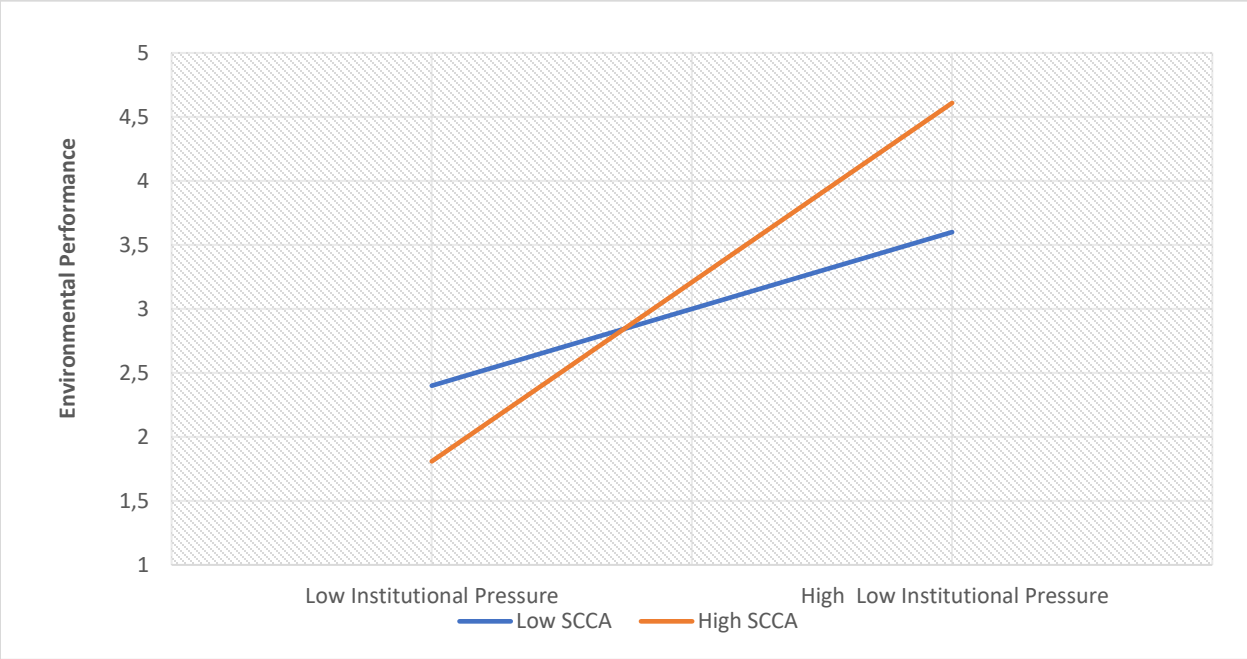

Figure 3: Moderation role of SCCA between IP and EP

5.0 Discussion

Due to the growing public awareness of GSCM practices, businesses encounter pressure from buyers, government, and competition to function while reducing the environmental effect. Therefore, most producers in the Shaanxi province of China try to prevent penalties levied by government institutions and business establishments based on environmental pollution to avert financial loss. Based on DCV theory, businesses and decision-makers are ready to accept GSCM practices to save them from unwelcome loss while ensuring environmental performance in their operations (Bernacki & Lis, 2021; Sampene et al., 2023). Hence, this current research utilized a questionnaire survey in conducting an empirical assessment grounded on earlier research and concepts in the literature to examine the role of businesses and investors as promoters in the acceptance and implementation of GSCM practices. This study is grounded on eight hypotheses for accomplishing the research objectives.

The findings of H1 propose that IP positively impact EP. Nevertheless, this outcome was not supported and agreed with the study outcomes (Maulamin et al., 2020; Bananuka et al., 2021; Lee et al., 2022). The intuition behind these results can be ascribed to the fact that a firm's EP is

not hinged on institutional pressure. Thus, our findings conclude that there is more pressure for TMS to execute plans to protect the environment, and their level of EP is lower. The inference is that IP such as CIP, MIP, and NIP has an insignificant association with EP. Nevertheless, our study result is similar to prior studies indicating that IP significantly impacts EP (Gunarathne et al., 2021; R. Li & Ramanathan, 2020). Interestingly, our study result contradicts these prior studies' findings (Duanmu et al., 2018; W. Ahmed et al., 2020). The possible elucidation to these contradictory results may be that IP could lead organizations to address specific environmental issues that are in the spotlight while neglecting other important aspects of environmental performance. This can result in a skewed allocation of resources and efforts toward a limited set of concerns. Also, another potential reason for these discrepancies in the study's findings could be that institutional pressure is not the only force influencing businesses. In some cases, it may conflict with other pressures, such as cost reduction, profitability, or shareholder demands. When these conflicting pressures are prioritized, environmental performance may suffer.

Furthermore, H2 indicates that IP plays a crucial role in executing GSCM practices, which leads to EP. This empirical result supports past findings from similar studies (Jazairy & von Haartman, 2020; De Giovanni & Cariola, 2021; Nureen et al., 2022). Therefore, from this, we can confirm that the IP in the form of CIP, NIP, and MIP ensures corporate organization engages in GCSM to execute different types of environmental agendas and policies since, in the long run, EP is ensued (Jazairy & von Haartman, 2020; Dai et al., 2021; Shahzad et al., 2022). A possible reason for the support of the study's findings could be that businesses face pressure not only from regulators and customers but also from upstream suppliers. Many companies impose GSCM requirements on their suppliers to ensure that the entire supply chain is environmentally responsible. This cascading effect encourages suppliers to adopt green practices. However, the present study findings do not support the argument by erstwhile studies that IP has an inverse interplay with GSCM (L. Li et al., 2022; Jawaad & Zafar, 2020). The possible explanation and reason for this study's discrepancies by these prior studies is that IP might lead organizations to focus solely on improving the environmental performance of their immediate suppliers (tier 1 suppliers) while neglecting the broader supply chain network. This approach can lead to a limited impact and miss out on addressing significant environmental issues further down the supply chain.

This study's results demonstrate that IP directly relates to TMS, supporting H3. This result is consistent with the finding from past research that TMS has more enormous impacts on particular kinds of IP like government policies, buyers' wants, and competitors' approaches, which aligns with the DCV theory. Hence, their support may differ regarding each type of IP (Moon & Lee, 2021). Similarly, we confirmed that our current study results support prior studies (Al-Sheyadi et al.,2019; Ogbanufe et al., 2021; M. Liu et al., 2022) that institutional pressures have a direct relationship or influence on top management support behaviour, which in turn leads to the embracing of the best GSCM practices of businesses. The possible reasons for the support of the study's findings by these prior studies could be that institutional pressure may be associated with risks such as legal liabilities, financial penalties, or reputational damage for non-compliance. Top management understands that failing to support and respond to these pressures can expose the organization to significant risks. Consequently, they may actively support initiatives to mitigate these risks, including compliance with regulations and adherence to industry standards. Nevertheless, this study's findings are inconsistence with prior studies highlighting that IP negatively impacts TMS (S. Wang et al., 2019; Atupola & Gunarathne, 2022). Hence, the possible reason for these discrepancies in the results of these prior studies could be that IP to address specific issues might clash with other strategic priorities or goals that top management is pursuing. This can create a conflict of interest and result in a lack of dedicated resources or attention to pressure-related initiatives. Also, top management may view institutional pressure as excessive or overly burdensome regulation. They might believe that the regulations or standards imposed by external entities are too strict, costly, or restrictive, which can lead to resistance and opposition to compliance efforts.

Regarding the H4 of this present research, the results show that TMS positively associates with GSCM. Hence, the empirical results of this research display that H4 was strongly supported. As suggested by the DCV theory, the willingness of top managers to support government regulations on the environment is seen through the business' actions (Majuri & Halonen, 2020). These actions include green manufacturing products, safe delivery of goods and services to buyers, and others known to be among the best practices of GSCM (M. Khan et al., 2023). Again, in line with DCV, the empirical results of this present paper affirm that TMS is essential for environmental programs and policies to be achieved and, therefore, has a significant relationship with GSCM, which is approved and similar to these previous literary works (García-Sánchez et

al., 2019; Jazairy & von Haartman, 2020; Men et al., 2023) but it is inconsistent with the study outcome of (Jum'a et al., 2022; Park et al., 2022). Hence, the inference for these discrepancies in the results of these prior studies is that TMS might provide verbal support for GSCM initiatives without a steadfast commitment to implementing and sustaining environmentally friendly practices throughout the supply chain. This lack of genuine commitment can result in inadequate resource allocation and limited progress. Also, another potential reason for these discrepancies in the study's finding by these prior studies could be that budget constraints or resource limitations may accompany top management support for GSCM practices. If top management does not allocate sufficient resources, including financial, human, and technological, GSCM initiatives may not receive the necessary support to succeed.

Furthermore, the H5 of our research results study established that GSCM directly influences EP and, therefore, was supported. Our outcomes show that the activities of GSCM in the manufacturing process of goods and services to reduce impacts on the ecology for a good life quality led to the enhancement of EP (Li et al., 2019; Fu et al., 2023). This recent empirical study finding also supports the previous research results by (Kraus et al., 2020; Ghosh et al., 2021; Aldaas et al., 2022) that EP result comprises environmental hazard decrease, business image enhancement and involvement of ecological safety. A business may increase EP by using GSCM practices in its manufacturing process. Furthermore, another possible reason for the support of the study's findings by these prior studies could be that many GSCM initiatives, such as transportation optimization and energy-efficient manufacturing processes, result in reduced greenhouse gas emissions. This reduction in emissions contributes to a decrease in the organization's carbon footprint and overall environmental impact.

On the contrary, the present study findings do not support the argument by erstwhile studies that GSCM negatively influences EP (Kalyar et al., 2020; Fianko et al., 2021). The possible elucidation to this contradictory results maybe that in an effort to adopt more environmentally friendly practices, organizations might shift their operations to regions with less stringent environmental regulations. This could lead to a global redistribution of environmental impacts rather than a true reduction. Moreso, another potential reason for these discrepancies in the study's finding by these prior studies may be that the success of GSCM practices depends on practical

implementation and monitoring. Poorly executed initiatives or inadequate follow-through can result in wasted resources and minimal environmental benefits.

More so, our results of H6 empirically prove that SCCA significantly connects with EP. Therefore, our research H6 was supported. This result implies that business competition generates pressure to enhance process efficacy and goods quality because of the pressures from the competition and the business's learning and capability to imitate competitors with the best performance (W. Liu & Atuahene-Gima, 2018; N. Shah & Soomro, 2021). Also, our findings revealed and supported that competitive tension primarily occurs when a business senses the achievement of a competitor's movements. This urges firms to use the best GSCM practices to attain a competitive advantage over others and enhance EP. This is supported by past research findings (Bryson, 2018; Yong et al., 2020; Ahmed et al., 2020; Awaliyah & Haryanto, 2022), but it is inconsistent with the study findings of (S. Zhang et al., 2019; García Alcaraz et al., 2022). A possible reason for these discrepancies in this current study's result to these prior studies outcomes could be that an intense focus on SCCA might lead organizations to disregard the concerns and expectations of stakeholders, including customers, communities, and regulators, who are increasingly demanding environmentally responsible practices. Additionally, competitive advantage often translates to offering products at lower prices, driven by consumer demand for affordability. Meeting these price demands may require cost-cutting measures that negatively impact environmental performance.

Additionally, regarding the study's H7, the mediating impact of GSCM between TMS and EP was confirmed. Hence, this research suggests that GSCM positively mediates IP and EP. The empirical outcome of this current paper affirmed that through institutional pressure, businesses are compelled to accept and execute GSCM practices to ensure a green environment, which eventually improves environmental performance (Sahoo & Vijayvargy, 2020; Men et al., 2023). The outcome of this current research agrees with the findings of a strand of authors (Rehman Khan & Yu, 2021; Siddiqui & Siddiqui, 2020; Shou et al., 2020; Aftab et al., 2023). A possible reason for the support of the study's findings by these prior studies could be that GSCM practices help organizations identify and mitigate environmental risks throughout the supply chain. This risk reduction not only ensures compliance with regulatory requirements but also safeguards the organization's reputation and operational continuity, positively impacting environmental performance. Contrary, the study's

finding is not supported by the research results of (Fianko et al., 2021; Aldaas et al., 2022). The inference of the discrepancies in these prior study outcomes may be that while top management might provide support for GSCM initiatives, the actual implementation of environmentally friendly practices might be superficial or lacking in depth. This could result in limited improvement in environmental performance despite the appearance of GSCM adoption. This can weaken the mediating role of GSCM between TMS and EP. Also, in rare instances, GSCM practices may conflict with other business objectives driven by institutional pressure, such as cost reduction or rapid production. If organizations prioritize these conflicting objectives over environmental sustainability, it can negatively mediate the relationship between institutional pressure and environmental performance.

Lastly, the H8 of this present research show the moderation role of SCCA between IP and EP. Therefore, this study suggests that SCCA positively mediates IP and EP. From the empirical result, this study's hypothesis was strongly supported. Our result confirmed that making a business culture that targets improving EP due to IP is essential in achieving GSCM and thereby promises a competitive advantage consistent with the DCV (Tu & Wu, 2021). Also, our study result is supported by the findings of Bananuka et al. 2021; Tian et al., 2022; Gao & Yang, 2022). Furthermore, due to institutional pressure and competition, the collective dream of environmental success among businesses will naturally positively impact EP (Tian et al., 2022). Captivatingly, our study result contradicts the findings of these studies (S. Zhang et al., 2019; Darwish et al., 2021). The possible explanation for these contradictory results could be that Organizations might adopt supply chain competitive advantage strategies in response to institutional pressure without genuinely integrating environmental considerations into their operations. This could result in a mere appearance of SCCA without substantial improvements in environmental performance. In addition, competitive pressures may lead organizations to prioritize relationships with suppliers based on cost and reliability rather than environmental performance. This can result in partnerships with suppliers who do not adhere to environmentally responsible standards.

Theoretical Contribution

This present research contributes theoretically to the dynamic capability view (DCV) and GSCM practices literature. ***First,*** the theoretical support of the dynamic capability view (DCV) theory gives a solid foundation for understanding why businesses pursue GSCM practices. One of

the unique theoretical contributions of our study is the empirical validation of the dynamic capability view within the context of GSCM practices. While DCV has been extensively studied in the broader management field, its application to GSCM has been relatively limited. Our research demonstrates how firms can develop dynamic capabilities, such as the ability to adapt and innovate in response to environmental pressures, to enhance their environmental performance. For instance, the result of the moderation role of SCCA in the association between IP and EP is significant. Thus, the study outcome enriches the DVC theory by providing fresh insight into these variables' effects on organizational performance. Our study identifies specific contextual factors that influence the effectiveness of GSCM practices in mediating institutional pressure and environmental performance. This contributes to a more context-aware approach to GSCM, acknowledging that the impact of these practices can vary depending on organizational, industry, and regulatory contexts. ***Second,*** this research adds to the extant literature on EP study by empirically validating a theoretical model grounded on a unified framework of TMS, IP, SCCA, and GSCM practices, bringing together the earlier research into an extensive one. Accordingly, the study's findings offer new insights into the existing GSCM literature and the DCV theory by examining the role of dynamic capabilities in facilitating the adoption, implementation, and continuous improvement of GSCM practices. The findings highlight how organizations can transform their supply chain processes through dynamic capabilities to achieve better environmental performance. ***Lastly,*** this research shows that producers ought to comprehend the organizational connection between external and internal parts of executing GSCM practices to harmonize business activities for improved functioning and environmental performance.

Managerial Implication

The current paper provides some managerial implications for business managers, investors, and government agencies. These include: ***First,*** the study adds to the knowledge of business managers, investors, and governments on how to effectively adopt and implement GSCM practices within businesses to achieve business performance and improve EP. The empirical results indicate that GSCM positively influences EP. The implication is that business managers, investors, and government agencies must know the importance of adopting sustainable practices within the supply chain. Business managers must take action to integrate environmental criteria into supplier selection, evaluate suppliers' environmental performance, and collaborate with eco-friendly

suppliers. This can lead to reduced carbon emissions, better waste management, and overall lower environmental impact.

Second, the outcomes of this investigation indicate that IP such as CIP, MIC and NIP seem positively correlated to GSCM practices. The inference is that business managers and investors can implement GSCM practices as an efficient answer to this coercion to improve EP. Also, investors and government agencies can engage with businesses through shareholder activism and proxy voting to encourage improved environmental performance. By advocating for transparent reporting, setting emission reduction targets, and aligning corporate strategies with environmental goals, investors and government agencies can influence positive change and hold businesses accountable for their environmental impact. Again, managers need to know that the significant role of strategic structural orientation like SCI, SCP and GIP must be reserved to regulate and adopt a strategic way of GSCM practices towards enhancing EP instead of merely replying to external coerces.

Third, the significant effect of GSCM practices on a business's environmental performance results may let managers attain additional stable performance. Given our study results, by espousing GSCM practices, managers may improve both the competence and efficacy of their businesses in the quest for SCCA. Thus, in the quest for SCCA, business managers embracing circular economy principles, such as recycling, refurbishing, and remanufacturing, can extend the lifecycle of products and reduce resource consumption. Business managers can design products for easy disassembly, establish take-back programs for end-of-life products, and encourage customers to return and recycle products. This can contribute to waste reduction and sustainable resources, thereby improving environmental performance and attaining the business's SCCA.

Fourth, the results indicate that government agencies must also encourage the benefit of GSCM practices and create consciousness of its advantages between the managers and producers, as they possess the power to coerce businesses to adopt GSCM practices in their productions. Accordingly, governments can design and implement incentive programs that reward businesses for adopting environmentally friendly practices. These incentives could include tax breaks for energy-efficient technologies, grants for research and development of sustainable business innovations, and subsidies for transitioning to renewable energy sources. Such programs and

actions can stimulate sustainable business environmental practices while boosting economic growth.

Five, grounded on the study results and in terms of practical implications, government agencies can educate businesses about the benefits of GSCM practices and the potential competitive advantages associated with environmental sustainability. Providing resources, guidelines, and best practices can facilitate adoption. *Also,* we recommend that businesses cultivate strong support from top management for GSCM initiatives. Top leaders should champion sustainability goals, allocate resources, and ensure sustainability is embedded in the business's culture, investor demands, and strategic decisions. Moreover, investors should conduct thorough due diligence to evaluate the environmental performance of companies they consider for investment. Consider environmental, social, and governance (ESG) criteria alongside financial metrics**.** ***Lastly,*** we recommend that stakeholders and NGOs should demand transparency regarding a company's environmental performance and supply chain practices. They can use their purchasing power and advocacy to promote sustainable businesses.

Conclusion

This research profoundly comprehends GSCM practices and their impacts on EP concerning IP, TMS role, and SCCA. This study's empirical findings highlight every construct's crucial role, particularly the TMS role in espousing the IP and GSCM practices accumulating into environmental performance. Furthermore, in assessing the association among different constructs, several theoretical debates of this study agree with those of present literary work through model specification founded on many of the unequalled underpinning hypotheses. Thus, changing these academic outlines and suppositions will be an alternate method toward the core object of study. Also, the empirical outcome of this current paper affirmed that through IP, businesses are compelled to adopt and execute GSCM practices to ensure a green environment, eventually improving environmental performance. Additionally, our result confirmed that a business culture that targets improving EP due to institutional pressure and top management support is essential in achieving GSCM practices and promises a competitive advantage for business organizations.

Limitations and Future Research Agenda

Even though this new paper offers significant contributions to GSCM practices, it has some limitations and allows future research. ***First***, our study results are limited to the geographical scope of Xi'an-Shaanxi province of China. Even though environmental problems remain essential in China, its unique culture, government, and market organizations can vary from advanced economies to other developing economies. We suggest that future study regarding other province (such as Nanjing, Shanghai, Beijing, etc.) and economies (such as the U.S.A, France, Ghana, etc.) is required to assess the generalizability of this study's results and investigate bicultural comparisons. ***Second,*** businesses must cultivate robust monitoring and support from top management for GSCM initiatives. Top leaders should champion and monitor sustainability goals, allocate resources, and ensure sustainability is embedded in the business's culture, investor demands, and the competitive condition of the business. Hence, we suggest that longitudinal research is needed in the future to build upon the current study and to uncover how the modifications influence managers' mental attitudes to GSCM practices in rules, business culture, investor demand, and the competitive condition of the business.

Declarations

Conflicts of Interest: The authors declare no conflict of interest.

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