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Environmental orientation and sustainability performance; the mediated moderation effects of green supply chain management practices and institutional pressure

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ABSTRACT

This research delves into the examination of how green supply chain management practices serve as a channel, and how institutional pressures act as limiting factors, affecting the connection between environmental orientation and sustainability performance. The investigation draws on data collected from 202 small and medium-sized manufacturing enterprises (SMEs) in Ghana. The results of the study indicate that while environmental orientation has a positive impact on environmental performance, it does not significantly influence economic performance. Moreover, the study highlights that the relationship between environmental orientation and environmental performance is mediated by the adoption of green supply chain management practices. However, this mediation is not observed in the context of economic performance. Notably, the research underscores that the positive indirect correlation between environmental orientation and environmental performance, facilitated by green supply chain management practices, remains significant with the boundaries of regulatory institutional pressure. This study makes a noteworthy contribution by offering empirical evidence from an African economy, shedding light on the effectiveness of institutional pressures and environmental orientation on both economic and environmental performance.

1. Introduction

The ongoing environmental crisis due to pollution, emissions, and resource depletion remains a paramount challenge (Kraus et al., 2020). This underscores the imperative of integrating environmental sustainability into all business endeavours similar to Meuer et al. (2020), Yan et al. (2020). Consequently, businesses are progressively adopting perspectives and practices that address environmental concerns while concurrently generating economic benefits (Roxas and Coetzer, 2012; Zollo et al., 2013). This proactive stance, indicative of a firm's commitment to both the environment and society, serves as a crucial precursor to achieving sustainable performance line in (Yan et al., 2020).

Environmental orientation (EO), which emphasizes a firm's duty to the environment, drives the recalibration of business activities to encompass economic, ecological/environmental, and social value creation (Chan et al., 2012b; Menguc and Ozanne, 2005; Yildiz Çankaya and Sezen, 2019). This orientation encourages firms to concurrently fulfill economic, social, and environmental goals. Scholarly viewpoints (Hart, 1995; Schaefer et al., 2015; Smart, 1992; Sroufe and Gopalakrishna-Remani, 2018) posit that integrating sustainable practices can enhance financial performance and confer competitive advantages. In this context, EO serves as a catalyst for identifying and cultivating such practices, thereby enabling firms to achieve the tripartite goals of economic, environmental, and social value creation.

Given the diverse findings in studies examining the impact of EO on firm performance, the relationship remains intricate. Some research indicates that EO positively affects corporate and financial performance (Aboelmaged, 2018; Chan et al., 2012b; Keszey, 2020; Yu and Huo, 2019). Conversely, other studies have found no significant connection

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between EO and firm performance (e.g., Fraj-Andrés et al., 2009). Additionally, limited research has directly investigated the extent of EO's influence on economic and environmental sustainability performance (Zhou et al., 2020). To unravel the divergent findings, certain studies have explored mechanisms such as green supply chain management (GSCM) practices, environmental strategy, environmental marketing, and green supply chain integration (Bu et al., 2020; Keszey, 2020; Zhou et al., 2020). However, the focus on green practices like GSCM as outcomes of EO has been insufficient (Bu et al., 2020), and the role of specific GSCM practices in mediating the relationship between EO and sustainability performance requires more attention (Bu et al., 2020; Chan et al., 2012a).

Moreover, the growing emphasis on environmental activities, management practices, and strategies by firms is driven by escalating external pressures from stakeholders including government regulators, consumers, and shareholders (Porter & Van Der Linde, 2017; Zhan et al., 2018). This shift has prompted inquiries into how institutional pressures moderate the relationship between GSCM practices and performance (Kalyar et al., 2020; Shafique et al., 2017; Wu et al., 2012; Zhu and Sarkis, 2007b). Firms seeking legitimacy are influenced by institutional pressures, which can impact business success (Micheli et al., 2020; Wu et al., 2012; Zhu and Sarkis, 2007b). However, the role of institutional pressures in shaping the link between EO and GSCM practices remains an underexplored area, particularly in varying institutional contexts. This is crucial for understanding the effect of EO on sustainability performance in developing economies facing challenges in enforcing environmental regulations due to globalization and cost considerations.

The study aims to expand our understanding of how EO influences sustainability performance and the underlying mechanisms. It explores the direct impact of EO on sustainability performance, theorizing that EO acts as a strategic resource that enhances sustainability through legitimacy and competitive advantage. It argues that EO's effectiveness hinges on its active demonstration through the adoption of GSCM practices that focus on sustainability. Furthermore, it considers the role of institutional pressures in ensuring that EO and adopted GSCM practices jointly contribute to enhanced sustainability performance. The study posits that GSCM practices serve as an intermediary in the EO-sustainability performance relationship, with the strength of this mediation influenced by varying levels of institutional pressure. To examine these questions, the study focuses on data from small and medium-sized enterprises (SMEs) in Ghana's manufacturing sector, spotlighting the often-overlooked SME domain, which significantly contributes to the global economy (Chan et al., 2012b; Keszey, 2020; Menguc and Ozanne, 2005). Amankwah-Amoah et al. (2018) posit that African economies are quickly becoming hotspots for environmental and sustainability concerns (Asongu et al., 2020; Okewu et al., 2018) because of their accelerated growth rates. This was further echoed by the World Bank Ghana Country Environmental Analysis (CEA), which stated that environmental degradation costs to Ghana is equivalent to 11% of the nation's GDP.[1]

Moreover, with increasing environmental concerns in Africa's rapidly growing economies (Asongu et al., 2020), the study's choice of Ghana as a context contributes to knowledge and solutions for environmental challenges.

The makes numerous contributions. It extends understanding by investigating the impact of EO on both financial and environmental performance, transcending the financial focus of existing studies. It unravels the complexities of the EO-performance relationship by delving into the role of GSCM practices as mediators. Furthermore, by scrutinizing the moderating influence of institutional pressures on the EO-GSCM practices link, the study offers managerial insights into enhancing sustainability performance. Lastly, the study extends the EO-performance discourse to a Sub-Saharan African context, crucial for addressing pressing environmental issues. By investigating how Sub-Saharan African SMEs that adopt a shared vision of environmental responsibility are rewarded in terms of both financial and environmental objectives, the study contributes to the broader sustainability literature. Similar to Yan et al. (2020) a list of abbreviations used in the study are provided, however for ease of reference these are provided as footnotes.

2. Theory and hypothesis development

The natural resource-based view (NRBV) introduced by Hart (1995) provides the theoretical underpinning for studying the mechanism through which EO affects sustainability performance. This theory, which is an adaptation of the firm's resource-based view (RBV), asserts that a firm can create a sustainable competitive advantage with an orientation and strategy that addresses challenges relating to the natural environment. Thus, under the NRBV, an EO enables a firm to develop new resources and capabilities required to respond to the changes in the natural environment (Hart, 1995). These new resources and capabilities would enable the firm to navigate the constraints and challenges posed by the natural environment, the firm, the study argues that environmentally focused postures and practices adopted by firms create both financial and environmental benefits. Thus, a focus on EO guides a firm to develop the strategic sustainability capabilities needed to address dire environmental problems, including pollution, climate change, water shortages and environmental sustainability.

2.1. Environmental orientation and sustainability

The concept of Environmental Orientation (EO) as defined by Menguc and Ozanne (2005) highlights an organization's capability to effectively balance economic and environmental concerns. EO involves a company's acknowledgment of the environmental impact of its operations and the corresponding imperative to mitigate that impact. This approach encompasses how extensively companies adopt strategies to mitigate their negative environmental footprint. According to Menguc and Ozanne (2005), companies face the challenge of not only developing the necessary resources and capabilities for generating economic returns but also doing so within an environmentally conscious framework. This dual challenge underscores the significance of EO as a critical capability for sustaining competitiveness (Zhou et al., 2020).

Drawing on the perspective of the Natural Resource-Based View (NRBV), it can be argued that companies that combine resources and capabilities with both economic and environmental goals are better positioned for competitiveness and improved financial performance (Menguc and Ozanne, 2005). This bundling of intentions can also extend to bolstering environmental performance. EO empowers companies to adapt to market shifts and environmental changes while concurrently enhancing competitiveness and profitability.

Moreover, EO equips firms with the ability to adeptly recognize environmental limitations and consequences. It facilitates the evaluation of novel technologies and practices, as well as more effective management of resources like water and energy. Consequently, EO allows companies to identify and harness innovative eco-friendly technologies and processes that emphasize efficiency, waste reduction, and cost-effectiveness in their operations (Jiang et al., 2018). The efficiencies gained through these environmentally friendly approaches contribute to cost reduction and, in turn, enhanced economic performance.

The escalating demand for environmentally friendly products from consumers further underscores the importance of maintaining an EO-focused culture, deeply integrated into routines and processes. This commitment not only enhances economic performance but also fosters a competitive advantage and expanded market share for companies that prioritize environmental concerns. The positive outcomes of EO initiatives extend to improved cost efficiency and streamlined production.

The products resulting from a company's EO-driven culture play a

[1] GDP: Gross Domestic Product.

pivotal role in shaping its reputation for environmental responsibility, subsequently influencing sales revenue and market share growth. This virtuous cycle further enhances economic performance. A substantial body of research has consistently demonstrated the influence of EO on financial performance (Menguc and Ozanne, 2005; Zhou et al., 2020). Thus, we hypothesise that:

H1a. Environmental orientation will have a positive and significant influence on economic performance.

Firms with an EO are receptive to new and advanced technologies, practices, and processes that focus on efficiency, waste reduction, and increased recyclability of resources and materials. A firm's environmental performance measures the outcomes related to such environment related efficiencies from the firm's business activities. The increasing concern and focus of stakeholders on environmental issues related to a firm's products, distribution, packaging, and manufacturing processes has emphasized environmental performance an integral part of a firm's organisational performance (Kohtala, 2015; Yasir et al., 2020). In fact, Hart's (1995) NRBV of the firm conceptual framework recognises the importance of reducing emissions as a fundamental means for preventing pollution; engaging in product stewardship, which includes selecting raw materials with minimum impact on the natural environment; and a commitment to sustainable development. Therefore, EO enables firms to employ mechanisms and processes that reduce waste, emissions, and pollution to improve environmental performance (Chan et al., 2012a; Hart, 1995). We, therefore, present the following hypothesis:

H1b. Environmental orientation will have a positive and signifcant influence on environmental performance.

2.2. The mediating role of GSCM practices

Green Supply Chain Management (GSCM) practices encompass a range of sustainability-oriented measures applied throughout the supply chain, spanning the life cycle of green products from design to post-sales stages (Chan et al., 2012a). These practices integrate environmental considerations into supply chain management (Micheli et al., 2020). The growing global interest in environmental issues within supply chains has spurred comprehensive research exploring the characteristics and effects of GSCM practices, including their impact on financial performance (Aykol and Leonidou, 2015; Cousins et al., 2019; Kalyar et al., 2020; Micheli et al., 2020; Vijayvargy et al., 2017; Younis et al., 2016; Zhu, Sarkis and Geng, 2005a). Studies have investigated factors driving GSCM adoption, revealing that internal factors such as resources and capabilities play significant roles (Wu et al., 2012). In line with Teece et al. (1997), who emphasized a firm's strategic orientation as a crucial internal capability for implementing performance-improving practices, we propose that Environmental Orientation (EO) represents a vital capability influencing GSCM practices, with the latter in turn enhancing sustainability performance.

Carter and Rogers (2008, p. 368) define GSCM as the "strategic, transparent integration and achievement of a firm's social, environmental, and economic goals in the systematic coordination of key inter-organizational business processes for improving the long-term economic performance of the individual company and its supply chains." Given that EO entails a firm's disposition to adopt environmentally conscious processes, practices, and strategies to mitigate their environmental impact, employees are likely to proactively seek ways to minimize negative environmental effects and achieve the firm's environmental goals (Menon and Menon, 1997). Furthermore, EO not only drives the development and implementation of internal greening policies and procedures but also compels firms to address external environmental concerns raised by stakeholders, thus promoting the adoption of GSCM practices (Dickel et al., 2018). Consequently, EO becomes a driver of a firm's GSCM practices (Ahmed et al., 2019; Chan et al., 2012a; Yu and Huo, 2019).

Although EO is believed to positively impact economic performance through cost savings and enhanced competitive advantage, it's important to note that a capability alone, while valuable, might not translate into economic benefits and improved performance. The transformative impact of capabilities often occurs when directed towards crucial firm practices and strategies. In this context, this study identifies GSCM practices as the mechanisms through which EO influences performance. Expanding on this concept, the study asserts that GSCM practices act as an intermediary through which EO drives performance. This strategic capability guides the adoption of GSCM practices focused on cost reduction, resource recycling, and environmentally friendly production, which, in turn, lower operating costs, enhance brand image, and increase market share. Thus, the study establishes that GSCM practices serve as the conduit through which EO positively impacts both a firm's economic and environmental performance.

We, therefore, hypothesise that:

H2a. Green supply chain management practices will significantly mediate the relationship between environmental orientation and economic performance.

H2b. Green supply chain management practices will significantly mediate the relationship between environmental orientation and environmental performance

2.3. Conditional role of institutional pressures

The field of management literature has consistently explored how external factors shape a firm's actions. Institutional theory posits that external influences profoundly impact a firm's behaviors, decision-making processes, and orientations (DiMaggio and Powell, 1983; North and Institutions, 1990). The institutional context in which a firm operates sets boundaries that either limit or enhance the firm's activities, strategic responses, and practices. Institutional actors, such as customers, competitors, regulatory bodies, and suppliers, exert pressures that define the legitimacy boundaries firms must adhere to. Institutional pressures encompass the expectations and constraints imposed by these stakeholders, particularly within the realm of environmental management, to ensure that business operations align with the highest environmental standards.

(DiMaggio and Powell, 1983) categorize three types of institutional pressures—coercive, mimetic, and normative—acting on firms within specific institutional environments. Although these pressures are interconnected and not mutually exclusive, this study emphasizes coercive institutional pressures due to the pivotal role of governments in enforcing regulations and environmental initiatives, especially in developing countries (Zhu and Sarkis, 2007b). Hoejmose et al. (2014) and Zhu and Sarkis (2007a) underscore that institutional pressures mold a firm's Green Supply Chain Management (GSCM) practices while also minimizing barriers to their implementation (González-Torre et al., 2010). Wu et al. (2012) reveal that institutional pressures moderate the link between GSCM drivers and practices. Similarly, this study contends that while a firm's Environmental Orientation (EO) can drive GSCM practices, coercive institutional pressures amplify this relationship. Grounded in institutional theory, this effect stems from the notion that firms pursuing legitimacy will leverage their EO to enhance GSCM practices.

Furthermore, we argue that, in line with institutional theory, firms adhering to institutional pressures are poised to enhance legitimacy, thereby ensuring survival and success (Berrone et al., 2008). Conforming to such pressures not only enhances access to valuable resources but also fosters innovation and boosts reputation (DiMaggio and Powell, 1983). Consequently, institutional pressures are expected to enhance performance. However, (Berrone et al., 2008; DiMaggio and Powell, 1983) note that conformity can lead to market homogeneity or isomorphism. While coercive institutional pressures might stimulate innovative environmental initiatives, the homogenizing effect of

conforming practices could erode competitive advantage or result in market parity, potentially reducing economic returns.

Despite this theory suggesting that GSCM practices could drive economic performance, we contend that the effect of GSCM practices on economic performance weakens within the boundaries set by institutional pressures. Hence, we propose that as firms respond to stronger institutional pressures, GSCM practices, while widely adopted, lose the diversity and distinctiveness that render them valuable. Consequently, the relationship between GSCM practices and economic performance weakens under high institutional pressures, particularly given the substantial initial costs associated with adhering to these pressures and investing in sustainable practices (Zhu and Sarkis, 2007b). Consequently, in conditions of elevated institutional pressures, market homogeneity resulting from conformity might impede the positive effects of crucial GSCM practices on economic performance.

We have argued that a firm's EO enhances sustainability performance (economic and environmental) through GSCM practices. Strong institutional pressures compel firms to enhance the efficiency and effectiveness of GSCM practices, leading to improvements in environmental performance (e.g., waste reduction, emissions control, and increased recycling). Consequently, institutional pressures fortify the link between GSCM practices and environmental performance (Zhu et al., 2008). Extending this connection, we posit that while EO influences environmental performance through GSCM practices, this indirect relationship is further reinforced under institutional pressures. We, therefore, hypothesise that:

H3a. The indirect relationship between EO and economic performance through GSCM practices will be weakened at high levels of institutional pressures.

H3b. The indirect relationship between EO and environmental performance through GSCM practices will be positive and strengthened at high levels of institutional pressures.

Fig. 1 below illustrates the hypothesized relationships.

3. Methods

3.1. Study context

The proposed hypotheses were tested with data from manufacturing SMEs in Ghana. The choice of Ghana as the research setting was based on various reasons. First, Ghana is currently a nation enjoying economic development with an open market policy. This sound economic backdrop, coupled with the democratic nature of governance has allowed the country to be the highest foreign direct investment recipient in Africa (UNCTAD: WORLD INVESTMENT REPORT, 2019). In lieu of these, the country has introduced a plethora of industry and market reforms through government regulatory policies that seek to encourage businesses to adopt environmentally friendly practices (Amankwah-Amoah, Danso and Adomako, 2019). Second, the country is considered an emerging economy in West Africa (Amankwah-Amoah et al., 2019). These features provide a rich contextual and business environment within which the proposed hypotheses may be tested.

3.2. Data and sample

To examine these hypothesized relationships, the study uses quantitative data collected from manufacturing SMEs doing business in the following manufacturing sectors: chemical, electrical, food and drug, steel, furniture, and textile. The data collection tool was developed with pre-validated items measuring environmental orientation, GSCM practices, institutional pressures, and sustainability performance. The items were intermingled to minimize a priori common method bias (Podsakoff et al., 2012). Additionally, data on the performance of the SMEs was collected from the finance officers or their equivalent, while data on the predictor variables were collected from the owner-managers or operations managers to reduce single-source bias. Following the development of the data collection instrument, approval from the university's Research Ethics Board was received. We began the data collection process by sending letters to the management of 2851 registered manufacturing SMEs in the database of the Ghana Statistical Service (2016) (Quaye and Mensah, 2019). Subsequently, questionnaires were administered to 628 firms who agreed to participate in the study. The data was collected over three months with the help of trained research assistants, after which a total of 254 questionnaires were received. Questionnaires that contained over 5% missing data were discarded (Dong and Peng, 2013; Enders, 2010 Engers). Thus, 52 questionnaires which had more than 5% missing data and were discarded, while 13 other questionnaires were treated with the expectation maximisation (EM) approach: a robust missing data management technique which provides functions of the missing data and improves validity of the data (Hair et al., 2014) and included in the data. Finally, a total of 202 valid responses were used in testing the hypothesized relationships. This demonstrates a response rate of 32%. In assessing non-response bias, the means of firm age and size of early and late respondents were compared. The test showed no significant difference between the two groups, implying that the data was not influenced by non-response bias (Armstrong and Overton, 1977).

3.3. Measurement of variables

All measures used in the study were adapted from existing studies and were measured on a seven-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). Table 1 shows the items used in measuring the study's main constructs. *Environmental orientation* (EO) was measured with three (3) items from (Chan et al., 2012a). *Green supply chain management (GSCM) practices* was measured with four (4) items from (Zhu, Sarkis and Geng, 2005b). *Institutional Pressures* was measured with two (2) items from (Zhu and Sarkis, 2007b), while *Economic performance and Environmental performance* were measured with three (3) items each from Zhou et al. (2020). All measures of the study's variables used in the questionnaire and their model fitness are presented in Table 1 below.

We included business activity, firm size, firm age, and R&D[2] as control variables in the study. To measure firm size, the SMEs were asked to indicate whether the number of employees is less than 30, coded 1, and 30–99, coded 2. Firm age was measured as the log of the number of years the business has been in operation. R&D unit was measured by asking the SMEs whether they have R&D units with "Yes" = 2, and "No" = 1. Firms were asked to indicate their major business activity by selecting one of the following: agro-processing, chemicals, consumables, electrical & electronics, plastics, textiles & footwear, woodwork, and others. The business activity was then categorized into two groups with agro-processing and consumables coded 1, and all others coded 2.

3.4. Reliability and validity analysis

The study used a confirmatory factor analysis (CFA) to examine the validity and Cronbach alpha coefficient (**α**) and composite reliability (CR) to examine the reliability of the constructs. Table 1 also shows the confirmatory factor analysis (CFA) results showing the factor loadings, average variance extracted (AVE), CR and Cronbach's Alpha coefficient. The model fit indices are $\chi 2$[3] = 152.9 with df[4] = 80, CFI[5] = 0.977,

[2] R&D: Research and Development.
[3] $\chi 2$: Chi-Squared.
[4] Df: Degree of Freedom.
[5] CFI: Comparative Fit Index.

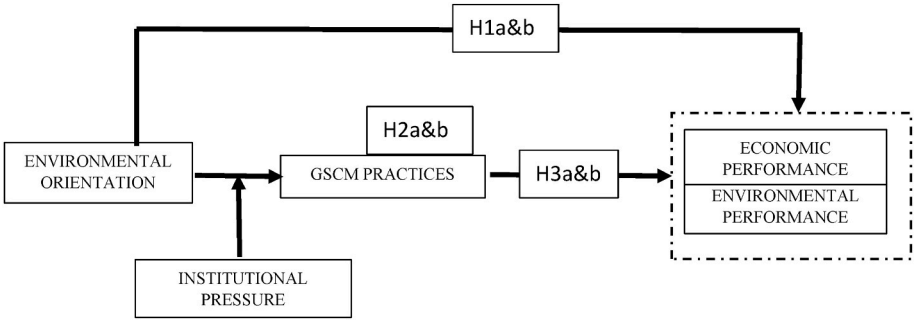

Fig. 1. Research model.

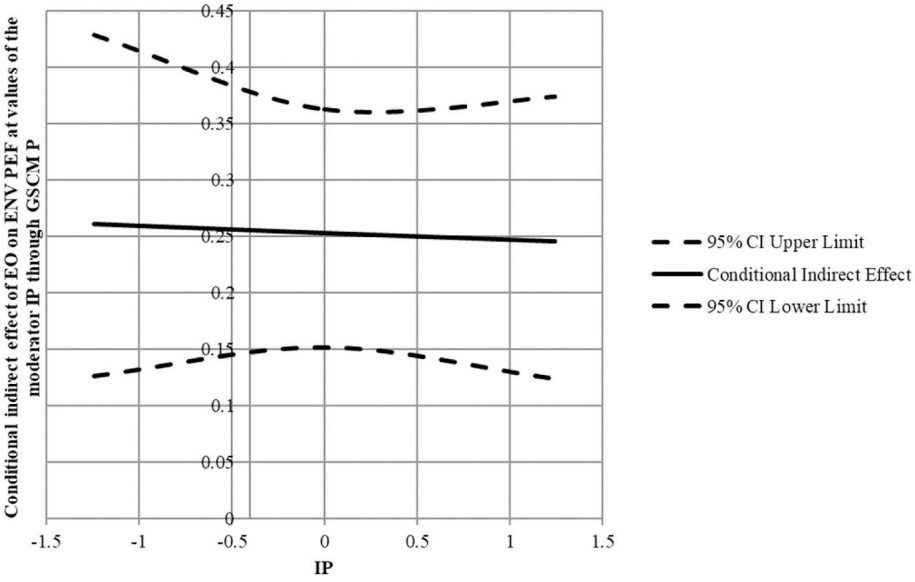

Fig. 2. Conditional indirect effect of EO on Environmental Performance through GSCM Practices at Different Levels of IP.

Table 1
Confirmatory factor analysis.

Construct/Measurement	Alpha	CR	AVE	Factor Loadings	T values
Environmental Orientation (EO)	.802	.843	.642		
Our firm makes concerted efforts to let every employee understand the importance of environmental preservation.				0.76	FIXED
Environmental preservation is a central corporate value of our firm.				0.82	11.75
Environmental preservation is vital to our firm's survival				0.82	11.82
GSCM Practices	.830	.845	.578		
Cross-functional cooperation for environmental improvements				0.76	FIXED
ISO 14001 certification				0.74	10.46
Environmental audit for suppliers' internal management				0.78	11.12
Suppliers' ISO14000 certification				0.76	10.74
Institutional Pressures (IP)	.796	.854	.746		
Government pollution control board (e.g., Environmental Protection Agency) pressurising the firm to adopt green practices				0.85	FIXED
Government regulations provide clear guidelines in controlling pollution level				0.88	11.11
Economic Performance (ECOP)	.717	.823	.615		
Sales growth has increased above industry average during the last 3 years				0.88	FIXED
Profit growth rate has increased above industry average during the last 3 years				0.58	8.23
Market share has increased during the last 3 years				0.86	11.21
Environmental Performance (ENP)	.851	.896	.743		
The resource consumption (e.g., electricity, water, etc.) has decreased during the last 3 years				0.85	FIXED
The percentage of recycled materials has increased during the last 3 years				0.94	17.55
The waste ratio (e.g. kg per unit of product, kg per employee per year) has decreased during the last 3 years				0.79	13.70

Chi-square (X^2)	**Normed X^2**	**DF**	**p-value**	**RMS**	**NNFI**	**CFI**	**GFI**	**SRMR**
152.29	1.904	80	0.00	0.067	0.970	0.977	0.909	0.045

NNFI[6] = 0.970, SRMR[7] = 0.045, and RMSEA[8] = 0.067, which suggest that the model is acceptable. All the loadings on the constructs are also above 0.70 and significant at p[9] < 0.05 indicating convergent validity of the constructs (Fornell and Larcker, 1981). The CR and Cronbach coefficients demonstrate the reliability of the measures used in the study as all values were found to be greater than the acceptable thresholds of 0.70 (Hair et al., 2014). A comparison of the square roots of the AVE with the correlations between all pairs of the constructs in the model provides support for the discriminant validity of the constructs (see diagonals in Table 2). Again, Table 2 provides evidence of the strong correlations between the study's substantial variables and this evidence thus lays the basis for which a regression and conditional process analysis is subsequently conducted. Lastly, Table 2 shows means of 4.88 and above for all the study's substantive variables and the standard deviation ranging between 0.916 and 1.241 shows the nature of the distribution and how the data differs around the mean. This demonstration of normality is important as an assumption and backdrop for the study's regression analysis.

3.5. Common method bias

Additionally, to demonstrate the minimal influence of common method bias in the study, we conducted the Harman (1976) one-factor test which demonstrated that one accounted for 39.21% of the data. This demonstrated that no single factor accounted for a dominant share. This suggests the negligible effect of common method bias in the study's dataset.

4. Results

To test the hypotheses, which focuses on EO's direct and indirect effects through GSCM practices on sustainability performance and the conditional indirect effect of EO on sustainability performance, we analysed the data using the bootstrapping procedure in the conditional process analysis software, PROCESS[10], described in Hayes (2017) with 10.000 bootstrap samples. Following (Toothaker et al., 1994), all continuous variables used in the moderating models were mean centred to account for potential multicollinearity.

This conditional process analysis is a technique used in understanding the conditional nature of a mechanism by which a variable influences another. The study set out to examine the extent to which institutional pressures creates conditions within which GSCM practices facilitates the EO-performance relationship. This objective makes a conditional process analysis a suitable technique to examine this relationship.

4.1. Direct effect and mediation analyses

In the examination of direct and mediated effects, the study employed Hayes' (2017) PROCESS macro-Model 4. The aim was to test hypotheses regarding the impact of environmental orientation (EO) on economic and environmental performance, alongside the mediating role of green supply chain management practices (GSCM). In testing the study's developed hypotheses on the direct and mediation relationships, the following equations were used:

Equation 1: Environmental Orientation and Performance Direct Relationship Equation

$$ECP = i_{ec} + \beta_1 EO + \varepsilon_{ec} \quad \text{H1a}$$

$$ENP = i_{en} + \beta_1 EO + \varepsilon_{en} \quad \text{H1b}$$

Equation 2: Mediation Equation between Environmental Orientation and Performance through GSCM Practices

$$GSCMP = i_g + \beta_1 EO + \varepsilon_g$$

$$ECP = i_{ec} + c_1^{'} EO + \beta_2 GSCMP + \varepsilon_{ec} \quad \text{H2a}$$

$$GSCMP = i_g + \beta_1 EO + \varepsilon_g$$

$$ENP = i_{en} + c_1^{'} EO + \beta_2 GSCMP \varepsilon_{en} \quad \text{H2b}$$

The hypotheses H1a and H1b posited a positive influence of EO on economic and environmental performance, respectively. EO was regressed on economic and environmental performance in Table 3. The results, demonstrate that the effect of EO on economic performance is positive, yet statistically insignificant (B = 0.154, p = 0.19, CI = −0.077, 0.385). The findings demonstrate that although EO positively influences economic performance, this effect is not significant. As evidenced by insignificant p-value and the confidence interval which are not different from zero. The results thus fail to provide support for H1a, the EO positively and significantly influences economic performance. However, the results of the effect of EO on environmental performance (B = .472, p = 0.000, CI = 0.330, 0.614), shows a significant and positive effect on environmental performance. Its significant p-value and confidence intervals different from zero, lends itself to support the hypothesis H1b that EO positively and significantly influences environmental performance.

Hypothesis 2. examined the mediating role of GSCM practices on the direct relationships examined in H1. To examine this mediating effect, the study first examines the effect of EO on GSCM practices. The results presented in Table 3 show that EO has a positive and significant connection with GSCM practices (B = .637, p = 0.000, 95% CI = .525, .750). However, the findings in Table 3 indicate that GSCM practices marginally significantly influence economic performance (B = .225, p = 0.051, 95% CI = −0.001, 0.450). This is evidence by a p-value of 0.051 and a confidence interval straddling zero. Next, examining the mediating effect of GSCM practices on the relationship between EO and economic performance, Table 4 demonstrates that GSCM practices though having a positive effect is unable to significantly influence the indirect effect of EO on economic performance through GSCM practices (B = .143, 95% CI = −.052, .365). These statistically insignificant results fails to provide support for H2a. Thus, H2a is rejected; GSCM practices does not significantly mediate the EO-economic performance relationship.

However, Table 3 showed that GSCM practices positively influences environmental performance (B = 0.455, p = 0.000, 95% CI = 0.317, 0.594). Similarly, the results in Table 4 suggests that the indirect effect of EO on environmental performance via GSCM practices is indeed significant (B = 0.290, 95% CI = 0.176, 0.417). This provides evidence to support H2b; GSCM practices significantly mediates the relationship between EO and performance.

4.2. Conditional indirect (moderated mediation) analyses

In the analysis of moderated mediation relationships, the study employed Hayes' (2017) PROCESS macro-Model 7. This approach aimed to investigate the hypotheses regarding the influence of institutional pressures on the indirect relationships between environmental orientation (EO), green supply chain management practices (GSCM), and economic and environmental performance. The following equations were used in testing these hypotheses:

Equation 3: Moderated Mediation Equation

[6] NNFI: Non-normed Fit Index.
[7] SRMR: Standardised Root Mean Residual.
[8] RMSEA: Root Mean Square Error of Approximation.
[9] p: P-value.
[10] PROCESS is a macros developed by Andrew Hayes used as an extension of statistical programs including SPSS to compute regression analyses containing multiple combinations of mediators, moderators, and covariates/controls.

Table 2
Correlations.

Variables	1	2	3	4	5	6	7	8	9
1. Business activity									
2. Firm size	−.028								
3. R&D unit	.098	−.028							
4. Firm age	.183**	−.001	−.021						
5. EO	−.020	.019	.190**	.028	0.80				
6. GSCM	−.033	.068	.251**	.010	.640**	0.76			
7. IP	−.008	.100	.213**	.052	.519**	.455**	0.86		
8. ENP	−.008	.021	.117	.057	.666**	.661**	.442**	0.86	
9. ECOP	−.048	.082	−.026	−.068	.214**	.235**	.204**	.168*	0.78
Mean	3.640	1.71	1.645	1.091	5.489	5.475	5.335	5.693	4.883
Standard deviation	2.536	.710	.480	.240	.916	.955	1.241	1.047	1.202

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed). The square roots of the AVE are on the diagonal.

Table 3
Mediation regression analysis of the EO-Sustainability performance relationship through GSCM practices.

Antecedent							Consequent										
		GSCM practices					Economic Performance					Environmental Performance					
		B	SE	p	LLCI	ULCI		B	SE	p	LLCI	LLCI		B	SE	p	LLCI	ULCI
EO	a	.637***	.057	.000	.525	.750	c'	.154	.117	.190	−.077	.385	c'	.472***	.072	.000	.330	.614
GSCM								.225+	.114	.051	−.001	.450		.455***	.070	.000	.317	.594
Biz		−.013	.021	.541	*−.054*	.028		−.007	.033	.824	−.073	.058		.005	.020	.794	−.035	.046
Firm age		.008	.218	.970	*−.422*	.438		−.362	.350	.303	−1.052	.328		.164	.215	.446	−.260	588
Firm size		.079	.072	.274	*−.063*	.222		.109	.116	.350	−.121	.339		−.024	.072	.739	−.165	.117
R&D		.278*	.110	.012	.062	.495		−.230	.179	.200	−.583	.123		−.145	.110	.188	−.362	.072
Constant	i_M	1.421	.423	.001	.5864	2.256	i_Y	3.419	.698	.000	2.042	4.797	i_Y	.692	.429	.108	−.154	1.538
		R^2 = .431						R^2 = .081						R^2 = .543				
		F (5,197) = 29.894, p = 0.000						F (6,196) = 2.859, p = <0.000						F (6,196) = 38.867, p = <0.000				

***p < 0.001; **p < 0.01; *p < 0.05; + p < 0.10.
Biz: Business Activity.

Table 4
Mediation effect of GSCM on the EO-Sustainability performance relationship.

	EFFECTS	B	SE	*p*-value	LLCI	ULCI
Economic Performance	Direct effect (c')	.154	.117	.190	−.077	.385
	Indirect effect (ab)	.143	.107		−.052	.365
Environmental Performance	Direct effect (c')	.472	.072	.000	.330	.614
	Indirect effect (ab)	.290	.061		.176	.417

$$GSCMP = i_M + \beta_1 EO + \beta_2 IP + \beta_3 EOIP + \varepsilon_0$$

$$ECP = i_M + c_1^{'} EO + \beta_2 GSCMP + \varepsilon_0 \quad \text{H3a}$$

$$GSCMP = i_M + \beta_1 EO + \beta_2 IP + \beta_3 EOIP + \varepsilon_0$$

$$ENP = i_M + c_1^{'} EO + \beta_2 GSCMP + \varepsilon_0 \quad \text{H3b}$$

H3a proposed that institutional pressures would weaken the indirect link between EO and economic performance through GSCM practices. In contrast, H3b suggested that institutional pressures would strengthen the indirect link between EO and environmental performance through GSCM practices. To begin assessing H3a, the study first examined the moderating role of institutional pressures on the EO-GSCM practices relationship. The outcomes indicated that the interaction between EO and institutional pressures regarding GSCM practices was not statistically significant (B = −0.014, p = 0.686; 95% CI = −0.080, 0.053).

The subsequent step focused on investigating the mediating role of GSCM practices in the EO-economic performance relationship. The results revealed that EO had a positive and significant association with GSCM practices (B = .556, p = 0.000; 95% CI = 0.422, 0.690), while GSCM practices exhibited a marginally significant influence on economic performance (B = 0.225, p = 0.051; 95% CI = −0.001, 0.450), shown in Table 5.

Regarding the examination of the conditional indirect effect of EO on economic performance as hypothesized in H3a, analyses were conducted at varying levels of institutional pressures (low, moderate and high levels of institutional pressure). See Table 6. The findings indicated that the conditional indirect effect of EO on economic performance through GSCM practices was positive but not statistically significant all levels of institutional pressures. At low (B = 0.130, 95% CI = −0.044, 0.368), moderate (B = 0.125, 95% CI = −0.050, 0.297) and high (B = 0.121, 95% CI = −0.054, 0.248) levels of institutional pressure the indirect relationship between EO and economic performance through GSCM practices were positive but not significant. This demonstrated contrary to the expectation that institutional pressures will significantly weaken the indirect relationship, this effect is insignificant. This is because, the conditional indirect effect gets smaller at higher levels of institutional pressure. For instance, at low levels of institutional pressure though insignificant is 0.130, at mean this reduces to 0.125 and at high 0.121). However, these changes at various levels of institutional pressure remain insignificant. By demonstrating that increasing levels of institutional pressures though weakening, insignificantly conditions the indirect relationship, the results fail to lend support to H3a.

Turning to H3b, the outcomes presented in Table 5 indicated that the interaction between EO and institutional pressures was negative but not statistically significant (B = −0.014, p = 0.686; 95% CI = −0.080, 0.053). The investigation into the effects EO on GSCM practices (B = 0.556, p = 0.000; 95% CI = 0.422, 0.690), and GSCM practices on environmental performance (B = 0.455, p = 0.000; 95% CI = 0.317, 0.594) show positive and significant effects.

Table 5
Regression analysis of conditional indirect effect of institutional pressures on the EO-Sustainability performance relationship through GSCM practices.

Antecedent		Consequent														
		GSCM practices					Economic Performance					Environmental Performance				
		B	SE	p	LLCI	ULCI		B	SE	p	LLCI	ULCI		B	SE	p	LLCI	ULCI
EO	a_1	.556***	.068	.000	*.422*	*.690*	c'	.154	.117	.190	−.077	.385	c'	.472***	.072	.000	.330	.613
IP	a_2	.111*	.049	.024	*.015*	*.207*												
EOxIP	a_3	−.014	.034	.686	*−.080*	*.053*												
GSCM								.225+	.114	.051	−.001	.450		.455***	.070	.000	.317	.594
Biz		−.011	.021	.580	*−.052*	*.029*		−.007	.033	.824	−.073	.058		.005	.020	.794	−.035	.046
Firm age		−.020	.217	.926	*−.448*	*.407*		−.362	.350	.303	−1.052	.328		.164	.215	.446	−.260	.588
Firm size		.062	.072	.390	*−.080*	*.205*		.109	.116	.350	−.121	.339		−.024	.072	.739	−.165	.117
R&D		.242*	.110	.029	*.025*	*.459*		−.230	.179	.200	−.583	.123		−.145	.110	.188	−.362	.072
Constant	i_M	−.433	.332	.193	−1.087	.221	i_Y	4.265	.772	.000	2.742	5.788	i_Y	3.282	.474	.000	2.347	4.218
		$R^2 = .447$						$R^2 = .081$						$R^2 = .543$				
		F (7,195) = 22.483, $p = 0.000$						F (6,196) = 2.859, p = <0.000						F (6,196) = 38.867, p = <0.000				

***p < 0.001; **p < 0.01; *p < 0.05; + p < 0.10.
Biz: Business Activity.

Table 6
Conditional indirect effect of institutional pressures on the EO-Sustainability performance relationship through GSCM practices.

	EFFECTS	B	SE	*p*-value	LLCI	ULCI
Economic Performance	Direct effect (c')	.154	.117	.190	−.077	.385
	Conditional indirect effect (Low Level of IP)	.130	.106		−.044	.368
	Conditional indirect effect (Moderate level of IP)	.125	.088		−.050	.297
	Conditional indirect effect (High level of IP)	.121	.077		−.054	.248
Environmental Performance	Direct effect (c')	.472	.072	.000	.330	.614
	Conditional indirect effect (Low Level of IP)	.261	.078		.126	.428
	Conditional indirect effect (Moderate level of IP)	.253	.054		.152	.362
	Conditional indirect effect (High level of IP)	.245	.065		.124	.374

Furthermore, the results demonstrated that the conditional indirect effect of EO on environmental performance through GSCM practices was positive and significant at all levels; at low (B = 0.261, 95% CI = 0.114, 0.431), at moderate (B = 0.227, 95% CI = 0.135, 0.333), and high (B = 0.196, 95% CI = 0.083, 0.344) levels of institutional pressures. However, this conditional indirect effect was found to be stronger at low levels of institutional pressure. Thus, the study finds partial support for H3b (see Fig. 2), that the indirect relationship between EO and environmental performance through GSCM practices is positive and strengthened at levels of institutional pressure. Though positive, the conditional indirect effect is stronger at lower levels of institutional pressure.

4.3. Robustness checks

To enhance the robustness of our findings and bolster confidence in the results, a structural equation model (SEM[11]) was employed using LISREL.[12] SEM enabled a comprehensive analysis of the hypotheses in a simultaneous manner, allowing for a more comprehensive understanding of the relationships under investigation. The SEM analysis produced outcomes consistent with the main analysis of the study.

Likewise, SEM confirmed that environmental orientation (EO) has a significant positive effect on the adoption of green supply chain management (GSCM) practices, environmental performance, and economic performance. Furthermore, the analysis reinforced the study's previous conclusion that GSCM practices serve as a significant mediator in the relationship between EO and environmental performance. However, similar to earlier findings, GSCM practices did not significantly mediate the relationship between EO and economic performance.

See Figs. 3 and 4 for results of structural equation modelling mediation analysis.

Expanding on the SEM analysis, the study evaluated the conditional indirect effect of EO on economic and environmental performance at different levels of institutional pressure through GSCM practices. Once again, results mirrored those previously obtained, indicating that while the conditional indirect relationship between EO and economic performance remains statistically insignificant, the same relationship with environmental performance is also not significant. See Figs. 5 and 6 for path diagrams of the conditional indirect relationships.

The SEM analysis substantiated the results obtained via the bootstrapping analysis with PROCESS macros. The use of a simultaneous analysis in SEM not only collaborated the study's main findings.

5. Discussion

The study examined the indirect effect of EO on sustainability performance through GSCM practices within the boundary conditions created by institutional pressures. The findings indicate that EO significantly influences environmental performance but not economic performance. We further found that whereas GSCM practices did not mediate the relationship between EO and economic performance, it was a significant mediator of the EO-environmental performance relationship. Furthermore, contrary to our hypothesized relationship, the results indicated that the indirect relationship between EO and economic performance through GSCM practices were positive at different levels of

[11] SEM: Structural Equation Modelling.
[12] LISREL: is a 64-bit application for standard and multilevel structural equation modelling.

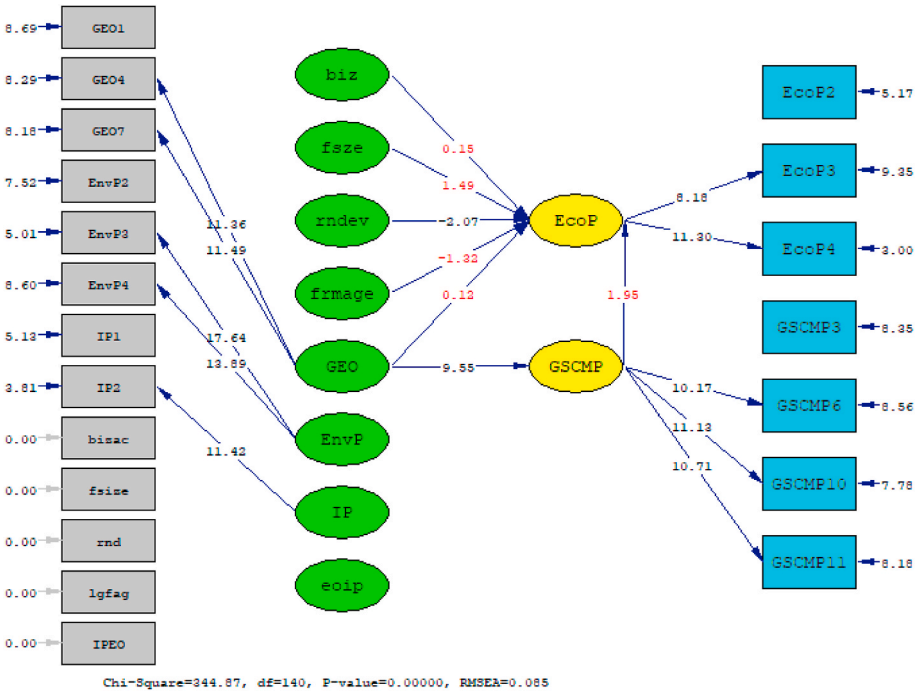

Fig. 3. Path diagram of the indirect relationship between EO and economic performance via GSCM practices.

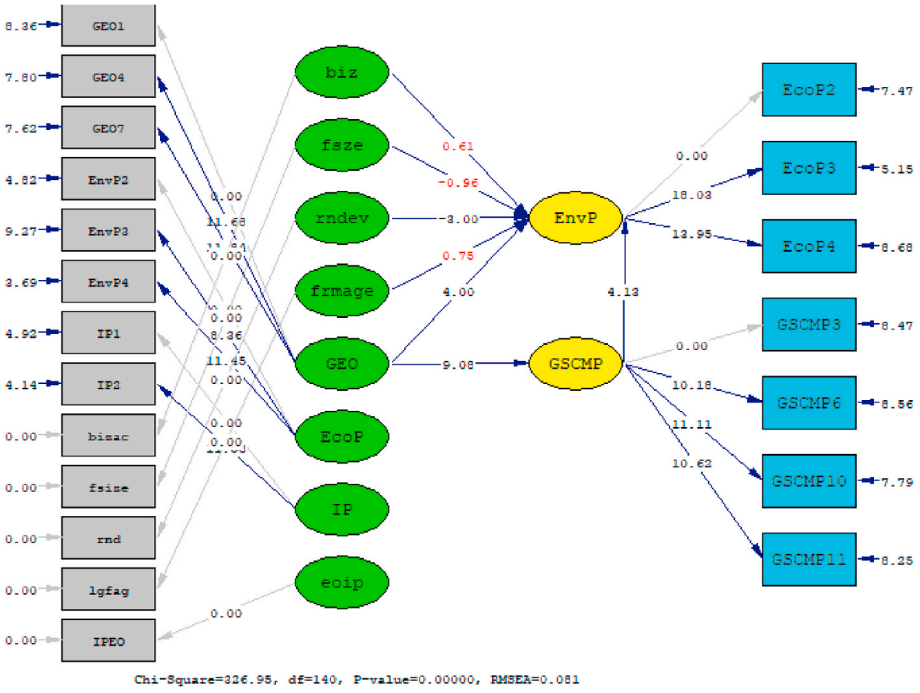

Fig. 4. Path diagram of the indirect relationship between EO and environmental performance via GSCM practices.

institutional pressures, but the relationships were not significant. However, we find that the EO-environmental performance relationship through GSCM practices was positive and significant at various levels of institutional pressures as predicted. However, the results provided a finer-grained understanding of the effect of institutional pressures. These findings contribute to the environmental management as well as GSCM practices literature.

5.1. Theoretical and managerial implications

The study makes a significant contribution to the ongoing discourse on environmental sustainability by shedding light on the nuanced relationship between Entrepreneurial Orientation (EO), economic performance, and environmental performance. While there is a widely held belief that EO can bolster firm competitiveness, profitability, and market share, the empirical support for this notion remains limited (Aboelmaged, 2018; Rao and Holt, 2005; Yu and Huo, 2019). This study extends the body of evidence on this topic, focusing on an African developing

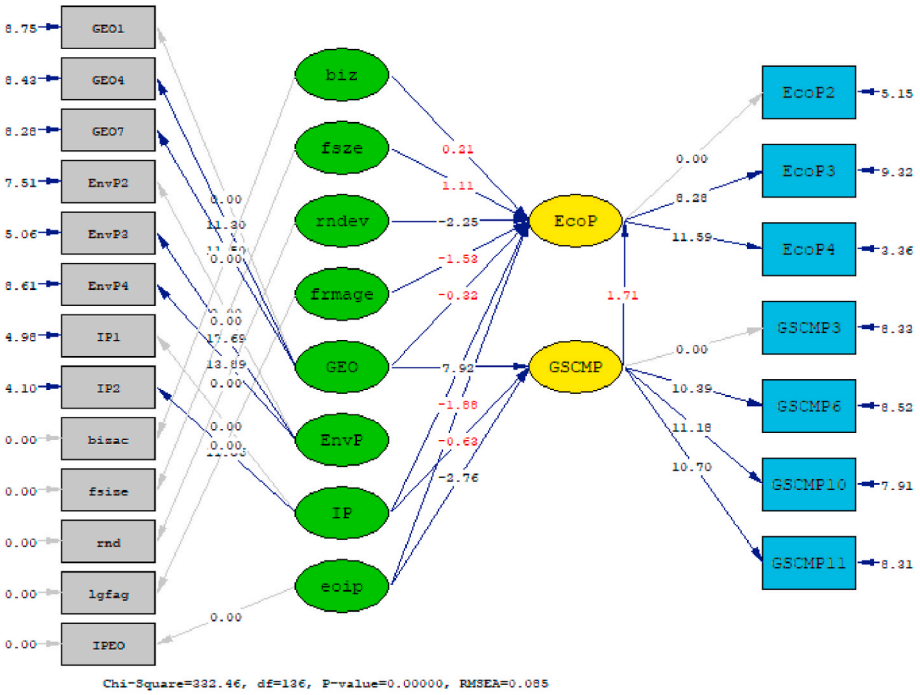

Fig. 5. Path diagram of the conditional indirect relationship between EO and economic performance via GSCM practices.

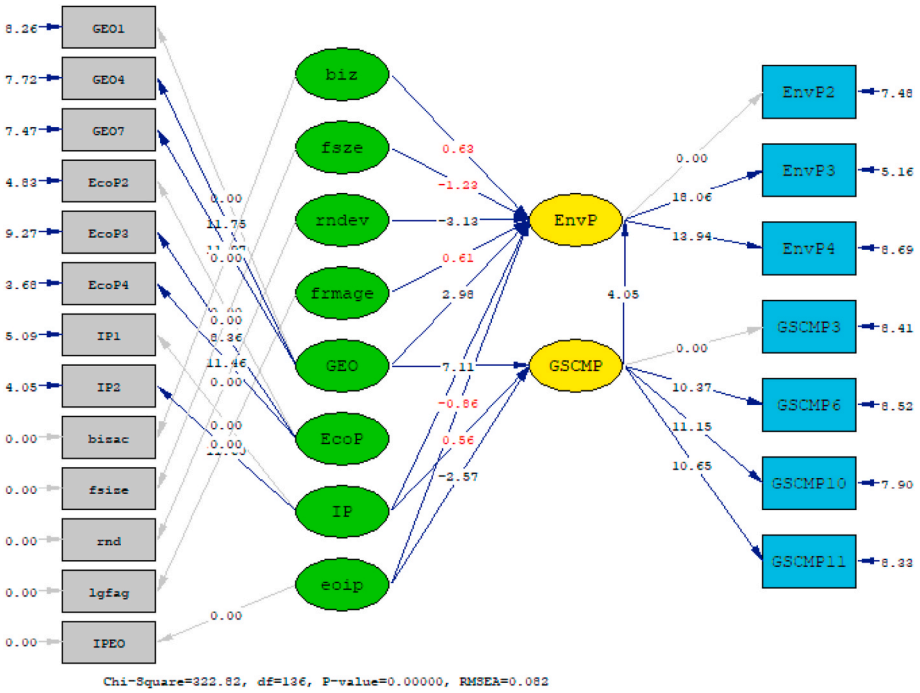

Fig. 6. Path diagram of the conditional indirect relationship between EO and environmental performance via GSCM practices.

nation context. The increasing interest in emerging markets in Africa is driven by their substantial natural resources, rapid economic growth, and productive activities (Ledeneva et al., 2020). Consequently, research into sustainability matters specific to Africa and other developing regions has gained momentum (Adedoyin et al., 2020; Danso et al., 2019; Sánchez-Hernández et al., 2019), with this study contributing to the field by revealing the pivotal role EO plays in shaping both environmental and economic performance.

It is noteworthy that our findings diverge from previous studies that established a direct link between EO and economic performance (Menguc and Ozanne, 2005; Rao and Holt, 2005; Yu and Huo, 2019). This contrast could be attributed to the capital constraints that hinder Small and Medium-sized Enterprises (SMEs) in Ghana and similar African contexts from effectively translating EO into actionable strategies to enhance economic performance and profitability. Notably, the nature of firms considered in our study, predominantly SMEs, might account for the observed insignificant EO-economic performance relationship. Unlike earlier studies that predominantly focused on larger firms, our research showcases that EO has the potential to rally employees' dedication toward sustainable practices in firms of all sizes, thus yielding

remarkable environmental advantages.

Furthermore, our study enriches the discourse surrounding Green Supply Chain Management (GSCM) practices' role in mediating the connection between EO and sustainability performance. This mediating effect is evident in the realm of environmental performance, aligning with the findings of Zhou et al. (2020), who demonstrated the mediating role of green supply chain integration in the EO-environmental performance relationship. This outcome supports the argument that a strong emphasis on environmental sustainability can be advantageous for SMEs, as advocated by the Natural Resource-Based View (NRBV). However, the results diverge when examining economic performance, as opposed to studies that proposed other mediators such as environmental marketing (Keszey, 2020), supplier green management (Yu and Huo, 2019), green supply chain integration (Zhou et al., 2020), and other related factors (Chan et al., 2012a). This deviation in our findings is primarily influenced by the economic implications of implementing sustainability practices within the context of resource scarcity, especially financial resources, and limited management capacity. In such circumstances, although EO can be channelled into GSCM practices, the economic benefits of sustainability-related initiatives via GSCM might not be as pronounced for SMEs.

Moreover, the study uncovers a noteworthy dynamic in which both EO and coercive institutional pressures from the government positively impact GSCM practices, yet the interaction between EO and these pressures fails to significantly influence GSCM practices. This situation creates an environment where EO's capacity to influence economic performance through GSCM practices remains limited across varying levels of institutional pressures. This phenomenon is attributed to the scarceness of financial resources required to adopt necessary technologies and equipment within an African context. Additionally, these institutional pressures could potentially have adverse effects on economic performance. The homogenization caused by uniform institutional pressures across all SMEs may lead to standardized market norms that negate the distinct experiences of individual firms (Delmas and Toffel, 2008). Consequently, these pressures might weaken the relationship between GSCM practices and economic performance, as observed in the current study. Such circumstances suggest that SMEs adhering to these pressures might encounter a substantial decline in economic performance.

Adding to this, the lack of robust government support further compounds the challenges faced by SMEs in implementing green practices. While regulations and laws may mandate environmentally friendly strategies, the absence of effective enforcement mechanisms, corruption, and other obstacles undermine compliance. Consequently, firms are compelled to independently navigate their path toward environmental sustainability. The costs associated with sustainability strategies, coupled with institutional pressures, create a substantial barrier for EO to effectively impact economic performance through GSCM practices.

Additionally, the results demonstrates that firms are able to positively improve environmental performance by leveraging their environmental orientation and GSCM practices. However, stronger institutional pressures are unable to enhance this outcome. This is in line with Qi et al. (2021) who demonstrate that coercive (regulatory) institutional pressure is unable to sufficiently facilitate orientations and practices which improve environmental performance as much as mimetic pressure will be able to.

In conclusion, our findings offer actionable insights for managers and present compelling evidence that demands attention. Managers should proactively strengthen their environmental strategies in the course of business operations to enhance economic and environmental performance. This strategy positions GSCM practices to yield substantial advantages, fostering profitability, growth, and competitive advantages, as demonstrated in prior research (e.g., Chan et al., 2012a; Zhou et al., 2020). Additionally, the findings offer insights for policy and provides evidence of the role of coercive pressure and provides a backdrop against which to develop relevant policies for sustainable performance.

5.2. Limitations and future research

Although we collected data from multiple respondents at two different phases at different times, which helped to overcome the problems with collecting data from a single source (Podsakoff et al., 2012), this study has some limitations. First, the possibility of a bi-directional causal relationship between the study's variables adds a level of complexity to the outcomes because of the use of cross-sectional analysis. As such, we recommend that future studies investigate the extent to which possible alternate and dual-causality relationships exist. Next, although we used institutional pressures as an important contingency factor to moderate the indirect relationship between EO through GSCM practices in the study context, we still need to consider other moderating factors as additional theoretical explanations and further empirical analysis. Furthermore, the study only examined the role of coercive institutional pressures instead of all three dimensions of institutional pressures. Future studies may benefit from a multi-dimensional perspective of institutional pressures as well as other moderators including stakeholder integration. Additionally, although the study examined the hypothesized relationships from a multi-industry perspective, the assessment of the unique effects of industry characteristics promises to offer insightful knowledge to literature.

6. Conclusion

This study delves into the intricate interplay between Environmental Orientation (EO), Green Supply Chain Management (GSCM) practices, institutional pressures, and sustainability performance within the context of small and medium-sized enterprises (SMEs) in the manufacturing sector in Ghana. We examined how the relationship between EO and environmental as well as financial performance is mediated by GSCM practices. We further proposed that the effect of EO on environmental and financial performance through GSCM practices is affected by the levels of institutional pressure. The investigation draws on data collected from 202 small and medium-sized manufacturing enterprises (SMEs) in Ghana. The study underscores the importance of EO as a strategic resource that propels firms toward achieving environmental performance. However, we found that within the context of sub-Saharan Africa, the effect of EO on financial performance is not significant. We further found that within the study context, GSCM practices serve as a mechanism through which EO influences environmental performance but not financial performance. Additionally, we found that the EO-environmental performance relationship through GSCM practices was positive and significant at high and low levels of institutional pressures. These findings contribute to the environmental management as well as GSCM practices literature. The study highlights that EO's influence on environmental performance is enhanced when translated into concrete GSCM practices. The adoption of such practices enables cost reduction, resource recycling, and eco-friendly production, improving economic performance while concurrently enhancing a firm's environmental stewardship.

In the specific context of SMEs in Ghana, the study bridges a critical gap in the literature by exploring sustainability issues in an African economy undergoing rapid development and facing escalating environmental challenges. By examining the intricate relationships among EO, GSCM practices, institutional pressures, and sustainability performance, the study contributes valuable insights that extend the boundaries of sustainability research. Ultimately, the findings of this study offer practical implications for SMEs aiming to enhance their sustainability performance. It underscores the strategic importance of EO in guiding the adoption of GSCM practices, which, when effectively managed, can lead to improved economic and environmental performance.

However, the study also cautions that institutional pressures, while prompting sustainability actions, can also dampen the unique advantages of GSCM practices in highly regulated environments. Instead, it

may be vital to explore other pressures such as mimetic as the framework within which such firms operate. As the global community grapples with pressing environmental challenges, this study adds to the discourse by shedding light on the complex interplay of factors that influence sustainability performance. By examining these dynamics within the context of SMEs in Ghana, the study contributes to a more holistic understanding of how businesses can navigate the path toward environmental responsibility and economic viability in a rapidly evolving world.

CRediT authorship contribution statement

Ahmed Agyapong: Conceptualization, Data curation, Writing – original draft, Validation, Software. **Suzzie Owiredua Aidoo:** Methodology, Software, Writing – original draft. **Moses Acquaah:** Supervision, Writing – review & editing. **Samuel Akomea:** Writing – review & editing, Visualization.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

Data will be made available on request.

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