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## Article

# A resource orchestration perspective of the link between environmental orientation and green purchasing: Empirical evidence from an emerging economy

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## OPERATIONS MANAGEMENT | RESEARCH ARTICLE

# A resource orchestration perspective of the link between environmental orientation and green purchasing: Empirical evidence from an emerging economy

Emmanuel Kwabena Anin<sup>1</sup>, Henry Ataburo<sup>2\*</sup>, Getrude Effah Ampong<sup>2</sup> and Nana Dwomoh Osei Bempah<sup>3</sup>

**Abstract:** Although environmental orientation (EO) has gained surging recent scholarly attention, why, how, and when EO influences green purchasing adoption among firms is inchoate, lacking adequate theorisation and empirical analysis. This study draws on resource orchestration theory (ROT) to test the arguments that the influence of EO on green purchasing is a function of the transformative mechanism of green purchasing capability at differing levels of financial resource. The proposed model is tested on a sample of 165 small and medium-sized enterprises from a sub-Saharan African economy using structural equation modelling (Mplus v7.4) and Hayes' PROCESS for IBM-SPSS. Findings from the study indicate that green purchasing capability mediates the effect of EO on green purchasing. The study further finds that the effect of EO on green purchasing, via green purchasing capability, is strengthened under the condition of greater financial resource. The findings contribute to the advancement of green purchasing research and the ROT by addressing the green purchasing attitude-behaviour gap from the supply chain perspective. Overall, the study informs supply chain practitioners that bundling EO

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with green purchasing capability and financial resource is critical for achieving environmental goals.

**Subjects:** Corporate Social Responsibility & Business Ethics; Production, Operations & Information Management; Strategic Management

**Keywords:** environmental orientation; green purchasing capability; green purchasing; financial resource; supply chain; developing economy

## 1. Introduction

Increasing environmental challenges such as resource exhaustion, global warming, decrease in biodiversity, etc., confer an important responsibility on organisations (Khan, Yu, Umar, et al., 2022; Yang et al., 2022; Yee et al., 2021) to support the sustainable development agenda (Van Zanten & Van Tulder, 2018). Additionally, corporate green investment is said to foster economic performance (Song et al., 2017) and generate competitive advantage (Yook et al., 2017). For example, Accor Hotels saved 72 million kWh of electricity in a year after buying energy-efficient light bulbs, while Wal-Mart and Nokia saved US\$3.4 billion and €100 million, respectively, through reduced packaging materials (Lefevre et al., 2010). Over the years, the dominant logic for green management in the supply chain context has been that organisational outputs crucially depend on the nature of input materials. Thus, purchasing being an input phase function can act as a gatekeeper to effectively engender environmental management (Liu et al., 2020; Yang et al., 2022). To this end, green purchasing—the degree to which firms achieve environmentally-friendly purchasing objectives (Yasir et al., 2020)—has become an important concern to both industry and academia (Keszey, 2020; Khan et al., 2021; Khan, Yu, Umar, et al., 2022). However, the determinants and mechanisms explaining green purchasing behaviour remain a grey area in literature.

The green purchasing literature is brimming with studies on consumers' attitudes towards green products and their actual green purchasing behaviour (e.g., Palmero & Montemayor, 2020; Sharma et al., 2020, 2022). On the other hand, current research on the determinants of green purchasing behaviour among firms and their supply chain is relatively underdeveloped (Khan, Yu, Umar, et al., 2022; Yang et al., 2022). Prior authors have examined antecedents of green purchasing mainly from the perspective of institutional pressures (e.g., Ramakrishnan et al., 2015; Yang et al., 2022), and dynamic capability view (e.g., Khan, Yu, & Farooq, 2022; Khan, Yu, Umar, et al., 2022). While there are contrasting views on the cost-benefit analysis of adopting green purchasing in firms' supply chains (Schaper, 2002; Yang et al., 2022), there is little, if any, on the theorisation and empirical analysis of the green attitude-behaviour gap at the firm level. Ignoring this paucity in this stream of literature (from the fabrication side) will make it practically impossible to completely bridge the green attitude-behaviour gap.

While the resource-based literature suggests that environmental orientation (EO) is a valuable intangible resource that could inspire firms to enhance environmental performance (Chan et al., 2012; Yasir et al., 2020), EO has not received paralleled attention in the green purchasing literature. EO is a belief and value-based, or attitudinal construct (Gabler et al., 2015; Yasir et al., 2020) in that it captures the degree of firms' recognition of the importance of and their proclivity towards environmental protection (Chan et al., 2012). However, prior empirical evidence suggests that environmental consciousness may not necessary guarantee green purchasing behaviour (Barbarossa & Pastore, 2015; Chaihanchai & Anantachart, 2022).

Firms normally face challenges in addressing environmental issues, particularly under conditions of low green capability (Liu et al., 2020; Liu et al., 2017) and financial resource (Boso et al., 2017; Zhang et al., 2018). The lack or insufficiency of resources and the necessary capabilities implies that EO may remain a mere cognitive capacity that may never materialise into behaviour. Accordingly, this study draws inferences from the resource orchestration theory (ROT) to argue that green purchasing capability and financial resource (as one of many mechanisms and

conditions, respectively) underpin the EO-green purchasing relationship. Green purchasing capability refers to the extent to which a firm has a stock of green purchasing-specific knowledge-base and skills (Khan, Yu, & Farooq, 2022; Yook et al., 2017). On other hand, financial resource is the extent to which a firm has access to adequate funds to support its activities (Essuman et al., 2022; Story et al., 2015). Following resource-based literature (Lado et al., 1992), we specify EO and financial resource as input-based resources while green purchasing capability is modelled as a transformational resource. From the ROT standpoint (Sirmon et al., 2011), we contend that, while EO is essential, it could become dormant when firms fail to or lack what it takes to *deploy* or *act on* it, thereby limiting green purchasing. We specifically propose that the influence of EO on green purchasing behaviour will be more pronounced when channelled through green purchasing capability, particularly under conditions of high financial resource. Thus, firms' efficacy and success in pursuing green purchasing is a function of EO through the transformative mechanism of green purchasing capability, at varying levels of financial resource (He et al., 2021). Along with this proposition, the study aims to address two critical questions:

*Q1. Does green purchasing mediate the link between EO and green purchasing?*

*Q2. Does financial resource condition the indirect effect of EO on green purchasing, via green purchasing capability?*

In addressing these questions, the study advances knowledge in the green purchasing literature and practice as follows. First, prior studies have identified disparately EO (e.g., Chan et al., 2012), green purchasing capability (e.g., J. Liu et al., 2020), and financial resource (e.g., Zhang et al., 2018) as important enablers of environmental sustainability behaviours and outcomes. This study contributes to research on the determinants of green purchasing by integrating these factors to show how, after controlling for their individual effects, they interface to enhance green purchasing. Second, we contribute to research on EO by responding to calls on scholars to detail the mechanisms and conditions that underlie the environmental outcomes of EO (Keszey, 2020). More specifically, in extending the resource-based perspective of the implications of EO (Chan & Ma, 2020; Chan et al., 2012; Gabler et al., 2015), we use ROT to open the “black box” characterising the relationship between EO and green purchasing. We achieve this by identifying and demonstrating an important transformational resource—green purchasing capability—via which EO may foster green purchasing. Additionally, our analysis of the indirect effect of EO as a function of changing financial resource circumstances sheds new light on when the deployment of EO might more or less benefit green purchasing. Ultimately, insights from this article contribute to resolving the green purchasing attitude-behaviour gap (He et al., 2020). We achieve this by bringing the green purchasing attitude-behaviour analysis to the fabrication level, that is, firms and their supply chains. Therefore, we extend this literature stream by departing from the consumer-level analyses that dominate the existing literature. For managers, this article offers practical guidelines on how EO can be orchestrated alongside other organisational resources to boost environmental outcomes.

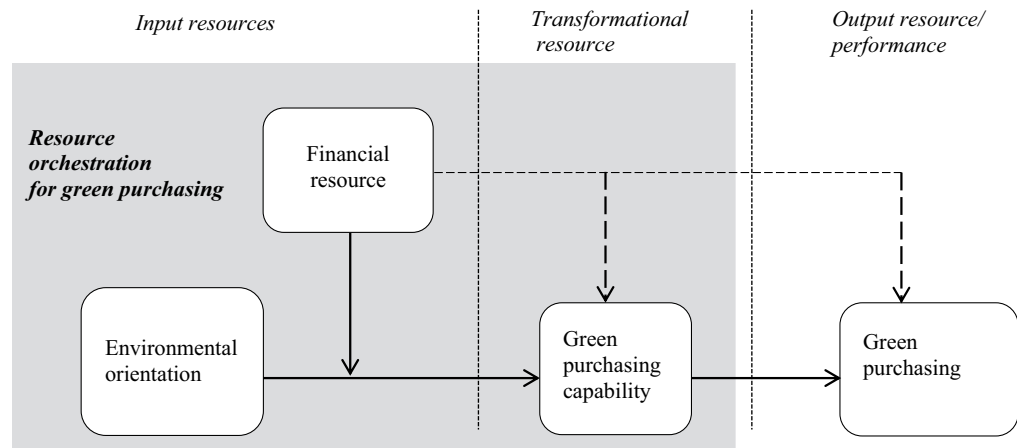
The remaining sections of the article are organised as follows: the theoretical background and hypotheses development on environmental orientation, financial resource, and green purchasing from the perspective of the ROT are discussed in Section 2. Next, we present the study context and research methodology employed in obtaining the study's data and validating measurement model analysis in Section 3. The structural model's results are presented in Section 4, and, lastly, a discussion of research findings and implications is presented as well as the conclusion and limitations in Section 5.

## **2. Theoretical background and hypothesis development**

According to the resource-based literature, firm resources facilitate the conception and implementation of strategies that underpin competitive advantage and superior performance (Barney, 1991; Lado et al., 1992). The resource orchestration perspective (ROT) extends the resource-based

**Figure 1. Conceptual model.**

**Notes:** Control paths are indicated with broken lines; Firm size, firm age, and industry type are included as covariates in models of green purchasing capability and green purchasing.



literature by arguing that possessing and controlling some stock of resources is a necessary but insufficient condition for competitive advantage (Sirmon et al., 2011). Instead, a sufficient condition of resources for generating competitive advantage and superior performance is captured by the notion of how well the firm organises and deploys such stock of resources (Sirmon et al., 2011). The resource orchestration framework describes resource management as encompassing structuring the portfolio of resources (i.e., acquiring, accumulating, and divesting), bundling resources to build capabilities (i.e., stabilising, enriching, and pioneering), and leveraging capabilities in the marketplace (i.e., mobilising, coordinating, and deploying) to create value (Sirmon et al., 2011). Resources here refer to all the tangible and intangible valuable assets, skills, knowledge, information, processes, etc., which enable a firm to create and deliver value (Barney, 1991). The asset orchestration aspect is composed of searching the operating environment for cues that will inform the selection and configuration of resources and capabilities that fit in the dynamic competitive context (Teece et al., 1997). Firms’ resources are also said to engender the development and acquisition of capabilities—that is, the set of competencies that determine the efficiency and effectiveness of transforming input resources into valuable outputs (Grawe et al., 2009).

Adopting environmental management practices is usually a difficult task, especially in developing economies where firms face greater levels of financial resource and environmental management-specific capability constraints (Boso et al., 2017; Zhang et al., 2018). To overcome this, firms need to build diverse but complementary resources and capabilities in their quest to go green (Y. Liu et al., 2017). From the ROT perspective of resource-based theory, we reason that, beyond their unique roles, it is possible to structure EO with green purchasing capability and financial resource to drive green purchasing (Sirmon et al., 2011). Therefore, as specified in Figure 1, we suggest that EO, when deployed through or matched with complementary resources including green purchasing capability and financial resource, helps firms increase their success in pursuing green purchasing practices. The current study recognises EO (Chan et al., 2012) as an intangible resource, green purchasing capability (J. Liu et al., 2020; Yook et al., 2017) as a transformative resource/mechanism, and financial resource (Boso et al., 2017; Zhang et al., 2018) as a boundary conditioning resource, which individually and collectively foster green purchasing practices.

### 2.1. Environmental orientation, green purchasing capability, and green purchasing

EO depicts a corporate firm’s beliefs in environmental responsibilities and the willingness to integrate environmental concerns into its strategic planning (Chan et al., 2012; Shou et al., 2019). A firm’s EO typically reflects its attitudes towards environmental stewardship and commitment to developing its capacity to actualise environmental goals (Miles & Munilla, 1993). Although the performance outcome of EO has received significant attention in environmental research, the empirical evidence is mixed (Yang et al., 2022). For example, while most empirical studies have established positive relationships (e.g., Chavez et al., 2021; Liboni et al., 2022; Zameer et al., 2022),

others established indirect (e.g., Bu et al., 2020; Keszey, 2020; Moussa et al., 2020), non-significant (Hörisch, 2015), or negative (Linder et al., 2014) relationships (see Table 1). Thus, such inconsistency calls for a theoretical specification and empirical examination of relevant mechanisms that explain the EO-performance outcome.

Scholars argue that green-specific capabilities, consisting of skills, expertise, knowledge, and organisational routines (Khan, Yu, & Farooq, 2022; Yee et al., 2021), could exist within the purchasing function. Firms are likely to possess and control varying levels of such capabilities, which explains why they perform differently in attaining environmental management goals (Large & Thomsen, 2011; Yook et al., 2017). Green purchasing practices might be new to firms, particularly in developing markets. Such practices may further be dynamic with respect to changing market and non-market forces (Ramakrishnan et al., 2015; Yang et al., 2022). Thus, green purchasing capability should be built, protected, and extended through investment in the training and acquisition of new environmental technologies (Khan, Yu, & Farooq, 2022; Yook et al., 2017). However, not every firm may have relevant input resources (e.g., EO) for developing green purchasing capability, thus, accounting for differences in green purchasing capability among firms (Andersén et al., 2020). This suggests that green purchasing capability is a valuable, rare, and difficult-to-acquire resource in a given industry; therefore, it constitutes an important source of competitive advantage in the pursuit of environmental management (Barney, 1991). By implication, firms that fall short of green purchasing capability may lack the motivation and confidence to initiate green purchasing.

Drawing on the lens of ROT, we propose that the influence of EO on green purchasing may be explained by green purchasing capability. While EO stimulates managers' consciousness of their environmental responsibility (Liboni et al., 2022; Chavez et al., 2021), successful implementation of environmental practices such as green purchasing requires green technical skills and expertise (Andersén et al., 2020; Khan, Yu, & Farooq, 2022). Since green purchasing capability increases firms' capacity to achieve green purchasing goals (J. Liu et al., 2020; Khan, Yu, & Farooq, 2022), firms with strong EO are more likely to recognise and seize opportunities to build their green purchasing capability threshold (Chan & Ma, 2020; Chan et al., 2012; Large & Thomsen, 2011). Thus, deploying EO through green purchasing capability can boost and sustains a firm's perceived behavioural control (Sharma et al., 2022) and success in green purchasing activities. Importantly, green purchasing practices involve not only identifying green and eco-friendly products but also developing green specifications, green supplier selection criteria, and monitoring green activities of suppliers (Yang et al., 2022). Such practices require technical skills and expertise in green acquisition. Green purchasing capability thus becomes instrumental as it allows environmentally oriented firms to leverage the embedded resources (i.e., internally and externally) to actualise green purchasing (Bu et al., 2020). Accordingly, we argue that firms with strong EO are expected to develop their green purchasing capability, which in turn drives green purchasing practices. This proposition is consistent with Liu et al. (2020) assertion that green training mediates the link between top management support for environmental issues and green procurement. Prior research has also established the link between EO and other green capabilities (Bu et al., 2020; Liboni et al., 2022; Zameer et al., 2022) as well as green-related capabilities to environmental practices (Andersén et al., 2020; Khan, Yu, Umar, et al., 2022; Yook et al., 2017). We therefore test the following hypothesis:

**H1.** *Green purchasing capability mediates the EO-green purchasing relationship.*

## **2.2. The boundary conditioning effect of financial resource**

Recent studies suggest that the benefits of EO might be context-dependent (Chan & Ma, 2020; Yasir et al., 2020). Thus, notwithstanding H1, we draw on ROT tenets to suggest further that firm motivation to, and efficacy in, leveraging EO through green purchasing capability to achieve green

**Table 1. Empirical studies**

Study	Level of analysis	EO	GPC	Other Capabilities studied	Moderator(s) studied	GP	Other outcome(s) studied	Findings
(Khan, Yu, Umar, et al., 2022)	Firm		√			√		Green capabilities to drive green purchasing practices, which in turn drive economic and environmental performance.
(Yang et al., 2022)	Firm					√		Coercive pressure, environmental focus and socio-cultural responsibility to drive a firm to more successful implementation of green purchasing, which in turn results in improved operational and environmental performance.
(Andersén et al., 2020)	Firm		√					Positive association between green purchasing capabilities and firm growth, and is moderated positively by CEO's environmental orientation.
(Yook et al., 2017)	Firm		√					Both operational and dynamic green purchasing capabilities positively related to both environmental and economic performance.
(Ramakrishnan et al., 2015)	Firm					√		Government regulations, customer pressures, and perceived benefits were significant in determining green purchasing adoption among SMEs.
(Hsu et al., 2014)	Firm					√		Pressures from headquarters and the local environment do not affect subsidiaries' green purchasing directly; rather, they exert indirect influence through local tailoring.

(Continued)



**Table 1. (Continued)**

Study	Level of analysis	EO	GPC	Other Capabilities studied	Moderator(s) studied	GP	Other outcome(s) studied	Findings
(Yen & Yen, 2012)	Firm					✓		Green purchasing is influenced by environmental collaboration with suppliers, top-management commitment, and customer pressure.
(ElTayeb et al., 2010)	Firm					✓		Green purchasing is directly influenced by regulatory pressure, customer pressures, expected business benefits, but not social responsibility.
(Schaper, 2002)	Firm	✓					Environmental performance	Found no link between green attitude of owners and firm's environmental performance. However, firm's green performance was influenced by the level of environmental information available to the business owners, and the amount of time available for owners to undertake discretionary business activities.
(Liboni et al., 2022)	Firm	✓		Sustainable dynamic capability			Green innovation; Environmental adaptability; green competitive advantage	EO has a significant direct effect on green innovation (GI), green competitive advantage (GCA), environmental adaptability (EA), as well as sustainable dynamic capabilities (SDC). SDC mediates between EO influence on GI and GCA only.
(Zameer et al., 2022)	Firm	✓		Green innovation			Green competitive advantage	Green orientation influences both GI and GCA, but its influence is weaker in the latter.
(Ardito et al., 2021)	Firms	✓			Digital orientation		Product and process innovation	Digital orientation and EO both drive product and process innovation performance, but their complementary effect is negative on process, and insignificant for product innovation.

(Continued)

**Table 1. (Continued)**

<b>Study</b>	<b>Level of analysis</b>	<b>EO</b>	<b>GPC</b>	<b>Other Capabilities studied</b>	<b>Moderator(s) studied</b>	<b>GP</b>	<b>Other outcome(s) studied</b>	<b>Findings</b>
(Saleem et al., 2021)	Firm	✓		Business environmental commitment			Proactive and reactive environmental strategies	EO has a profound impact on both reactive and proactive environmental strategies, and business environmental commitment is a relevant mediator.
(Chavez et al., 2021)	Firm	✓		External environmental information exchange			Environmental performance	External environmental information exchange partially mediates EO-environmental performance link.
(Chan & Ma, 2020)	Firm	✓		Green supplier development			Green product strategies	EO drives green supplier development which in turn drives green product strategies.
(Moussa et al., 2020)	Firm	✓		Carbon strategy			Carbon performance	Found carbon strategy to mediate EO and carbon performance: fully for low carbon-intensive industries and partially for high carbon-intensive industries.
(Keszey, 2020)	Firm	✓		Environmental marketing	Legal environment; competitor's EO		Firm performance	Environmental marketing (EM) mediates the EO-performance link; EO-EM links is weakened by legal environment; EO-performance link is enhanced by competitor's EO and legal environment.
(Bu et al., 2020)	Firm	✓	✓	Green supply chain management			Firm performance	Green supply chain management mediates the EO-firm performance link.
(Yasir, Majid, & Quadratullah, 2020)	Firm	✓		Green business strategy	Top management environmental awareness		Environmental performance	EO has a direct effect on Green Business Strategies (GBS) and Environmental performance (EP); GBS positively mediates the EO-EP link, and that EO-GBS link is strengthened by top management environmental awareness.

(Continued)

**Table 1. (Continued)**

<b>Study</b>	<b>Level of analysis</b>	<b>EO</b>	<b>GPC</b>	<b>Other Capabilities studied</b>	<b>Moderator(s) studied</b>	<b>GP</b>	<b>Other outcome(s) studied</b>	<b>Findings</b>
(Salvador & Burciaga, 2020)	Cross-analysis	✓			Managerial status		Employee's green behaviour	Internal EO drives all forms of employee green behaviour (GB); whereas external EO drives significantly only energy-saving and environmental in-role behaviour; EO-GB (recycling & energy-saving) link is enhanced more among managers than non-managers.
(Shevchenko et al., 2020)	Firm	✓					Financing decision	EO necessitates business to require a higher level of financial capital and ask for a longer time to pay it back; EO also increases the odds of businesses paying back the borrowed capital.
(Danso et al., 2019)	Firm	✓		Competitive strategy			Financial performance	EO drives financial performance regardless of strategy, except for non-differentiated strategy.
(Yu & Huo, 2019)	Firm	✓		Green management	Relational capital		Financial performance	Supplier green management fully mediates EO-financial performance link; EO-green management link is enhanced by relational capital.
(AboelMaged, 2018)	Firm	✓		Eco-innovation; environmental supplier collaboration			Firm performance	EO drives both EI and ESC; EO drives performance directly and indirectly via only EI.
(Dickel et al., 2018)	Firm	✓					Networking frequency; Networking size	Internal EO significantly drives networking size negatively; external EO drives both networking frequency and size positively.
(Coşkun et al., 2017)	Consumer	✓		Internal and external Locus of control		✓		EO drives purchase intention; whereas external locus of control negatively affects purchase intention.

(Continued)

**Table 1. (Continued)**

Study	Level of analysis	EO	GPC	Other Capabilities studied	Moderator(s) studied	GP	Other outcome(s) studied	Findings
(Chan & Ma, 2016)	Firm	✓					Environmental strategies	CEO's environmental beliefs and SME's effort in scanning developed markets contribute to developing their internal and external EO; both EOs drive environmental strategies.
(Gabler et al., 2015)	Firm	✓		Organizational innovativeness (OI)			Eco-capability	EO and OI drive eco-capability, as well as their interaction.
(Hörisch, 2015)	Firm	✓					Crowdfunding success	No positive connection between EO and crowdfunding success.
(Linder et al., 2014)	Firm	✓					Economic performance	EO-Economic performance link was found to be negative.
(Polonsky et al., 2014)	Consumer	✓				✓		Both past and future orientation drive EO, EO drives pro-environmental consumption behaviour.
(Chan et al., 2012)	Firm	✓				✓	Corporate performance	EO drives GSCM which in turn drives corporate performance.
(Menguc & Ozanne, 2005)	Firm	✓					Firm performance	EO is significantly positively related to profit after tax, and market share; but negatively related to sales growth.

**Notes:** EO—"environmental orientation"; GPC—"green purchasing capability"; and GP—"green purchasing"

purchasing would be strengthened when EO is bundled simultaneously with a strong financial resource base. Liquid assets are vital input resources in conceiving and implementing resource-intensive activities such as environmental management (Singh et al., 2019; Zhang et al., 2018). Limited financial resources can be prohibitive to strategic options open to firms. Thus, firms' strategies and action plans are either dependent on or constrained by financial resources (Story et al., 2015; Zhang et al., 2018).

Additionally, firms with access to financial resources can better nurture EO (Zhang et al., 2018). In particular, high levels of financial resource make it possible for firms to translate EO (a cognitive capacity) into green purchasing capability through building and upgrading infrastructure, skills, and knowledge assets appropriate for supporting green practices (Zhang et al., 2018). Therefore, under conditions of a high-level financial resource, the influence of EO on green purchasing capability is more likely to be strengthened. Thus, financial resource availability increases firms' willingness and readiness to act on EO to facilitate green purchasing capability and consequently achieve green purchasing. In support of these arguments, previous empirical research reveals that not only does financial slack boost top management support for energy saving but also reinforces the positive effect of top management support on energy-saving behaviour (Zhang et al., 2018). Furthermore, firms with sufficient financial resource are more likely to be concerned about their reputation (Wang et al., 2018). As Wang et al. (2018) indicate, a bad environmental reputation can undermine firms' relationships with stakeholders, which can further impair their ability to access resources for sustainability practices. Therefore, high levels of financial resource might intensify firms' motivation to lever on EO to develop green purchasing capability to improve green purchasing.

Conversely, firms with scarce financial resource may be limited in their deployment of EO, reducing its relevance and benefits. Such firms might find the costs of putting EO into action prohibitively high with doubtful payback in a reasonable timeframe (Yang et al., 2022). To these firms, survival and profitability are paramount; therefore, they tend to focus on utilising their scarce financial resources to meet immediate needs and maximise profits (Wang et al., 2018). This may further obscure or divert their orientation towards green initiatives. Thus, firms with limited financial resource are more inclined to respond to environmental protection needs in a ceremonial way (Wang et al., 2018). Accordingly, we expect that firms' potency to use EO to increase green purchasing capability and consequently enhance green purchasing may be weakened under conditions of low financial resource. Taken together, we hypothesise that:

**H2.** *The interaction between EO and financial resource has a positive indirect effect, via green purchasing capability, on green purchasing, such that, under high conditions of financial resource, the positive effect of EO, through green purchasing capability, on green purchasing is amplified.*

### 3. Methods

#### 3.1. Data and sample

We tested our conceptual model on questionnaire-based survey data (Danso et al., 2019; Y. Liu et al., 2017; Yasir et al., 2020) from firms in Ghana for the following reasons. Ghana remains a major economic force in the sub-Saharan African region and is recognised as one of the top 10 fastest-growing economies in the world, owing, in part, to increases in production and consumption activities (Africa Development Bank Group, 2020). Recognising the implication of the growing economic activities on the environment, the government of Ghana has recently initiated market and industrial reforms aimed at encouraging firms to adopt environmentally friendly initiatives in their supply chains (Amankwah-Amoah et al., 2019). Nonetheless, financial resource is a rare and difficult-to-acquire organisational resource in Ghana as the financial and capital markets in the country are underdeveloped (Africa Development Bank Group, 2018). Again, as in most

developing economies (Chan & Ma, 2020), most firms in Ghana are small and medium enterprises, which struggle to develop relevant internal capabilities. By implication, financial resource and green purchasing capability are critical sources of competitive advantage for firms in Ghana to pursue environmental management practices.

We relied on Ghana Yellow and Ghana Business Directory databases to construct a sample of firms that meet the following inclusion criteria: that the firm (1) operates in key industrialised/commercialised cities in Ghana (i.e., Accra and Kumasi), (2) is an autonomous business entity, owned and controlled by private individuals; (3) has been operating for at least two years; (4) employs a minimum of five full-time staff; (5) has a senior manager (e.g., CEO, purchasing/supply chain manager) who agreed to participate in the study (Amankwah-Amoah et al., 2019). We started the fieldwork in 2020 after the COVID-19 pandemic restrictions in Ghana were lifted. While in the face of the COVID-19 pandemic, mail and online surveys are ideal, such survey approaches, compared to a face-to-face approach, are less suitable in Ghana. Using a professional data collection agency, which worked closely with and under the direct supervision of the authors, 503 questionnaires were hand-delivered to senior managers (e.g., CEOs, purchasing managers) from firms that meet the inclusion criteria indicated above (Amankwah-Amoah et al., 2019; Zhang et al., 2018).

In all, a total of 181 complete responses were received after three follow-ups. Out of this, 165 (corresponding to a 32.8% effective response rate) which had complete responses or met the study's sample inclusion criteria were retained for analysis. Overall, 72.7%, 15.8%, and 11.5% of the sample operate in the service sector, manufacturing sector, mining/extraction sector, and agribusiness sector respectively. An average firm had operated for 13.67 years (standard deviation = 8.97). Also, an average firm had 26.13 full-time employees (standard deviation = 42.41), suggesting that most of them are small and medium-sized enterprises. Respondents holding top management positions (CEOs/owner-managers) comprised 30.9% of the sample. The remaining percentage were senior managers in purchasing/supply chain management/operations units. A total of 67.8% of the respondents had either a bachelor's or post-graduate degree while the remaining had either diploma or college qualifications. On average, the respondents had 8.53 years of managerial experience.

### 3.2. Measurement items

Existing items were used to measure the study's constructs. Pre-testing was conducted to help revise (where necessary) and retain items that are deemed applicable in the research setting. A full description of the items is shown in Table 2. Five items were adapted from Chan et al. (2012) to measure EO using a seven-point scale (1 = strongly disagree; 7 = strongly agree). Green purchasing capability was measured with five items, which were adapted from Yook et al. (2017). Each item was anchored on a seven-point ranging from "not at all" (= 1) to "to a great extent" (= 7). Five items were adapted from Carter and Jennings (2004) and Chan et al. (2012) to measure green purchasing using a seven-point scale ranging from "not at all" (= 1) to "to an extreme extent" (= 7). Four items were adopted from Story et al. (2015) to measure financial resource. Each item was rated on a seven-point scale ranging from "strongly disagree" (= 1) to "strongly agree" (= 7). Consistent with prior research, we included firm size, firm age, and industry type as control variables in our analysis (Adomako et al., 2019; Y. Liu et al., 2017). Firm size and firm age were operationalised as the natural logarithm of full-time employees and the number of years a firm has been in operation, respectively. A dummy variable was created for industry type: service firms = 1, other firms = 0.

### 3.3. Measurement validity and reliability

We examined unidimensionality, reliability, convergent validity, and discriminant validity using covariance-based confirmatory factor analysis in Mplus 7.4. As shown in Table 2, to ensure a simultaneous evaluation of these aspects of reliability and validity, we conducted CFA on all the measures for the four latent variables in the study. Our four-factor CFA model fits the data

**Table 2. Measures and validity and reliability results**

<b>Measures (Cronbach's alpha/composite reliability/average variance extracted)</b>	<b>Loading (t-value)</b>
<b>Environmental orientation1</b> (.88/.88/.60). <i>To what extent do you disagree or agree with the following statements?</i>	
Our firm has clear policy statements urging environmental awareness in every area of operations	.69(fixed)
Environmental preservation is highly valued by our top management	.83(9.46)
Environmental preservation is a central corporate value of our firm	.84(9.55)
Top management believes it is important to adopt environment protection criteria for supplier selection process	.72(8.25)
Top management believes it is important to be environmentally responsible	.78(8.98)
<b>Green purchasing capability2</b> (.90/.90/.65). <i>Please indicate the extent to which the following items describe your organisation:</i>	
Knowledge and/or know-how related to green purchasing are accumulated in a systematic way	.79(fixed)
Purchasing technologies are continuously improved by training and education	.75(10.12)
Environmental/technical advice is provided to suppliers and contractors	.85(12.03)
Human resources are available for green purchasing activities	.82(11.46)
Jobs of the people involved in green purchasing with suppliers are clearly defined and organised	.80(12.05)
<b>Green purchasing3</b> (.91/.92/.61). <i>In relation to your company's sustainability goals, to what extent does your company practise the following?</i>	
Life-cycle analysis to evaluate the environmental friendliness of products and packaging	.86(fixed)
Buying products designed for disassembly	.87(14.62)
Asking suppliers to commit to waste reduction goals	.74(11.22)
Buying products designed for recycling or reuse	.86(14.14)
Ensuring effective disposal of materials/products	.81(12.63)
Purchasing environmentally friendly products	.56(7.63)
Dealing with environment-friendly suppliers	.75(11.11)
<b>Financial resource1</b> (.93/.93/.78).	
Our company has easy access to financial capital to support its business operations	.89(fixed)
If we need more financial assistance for our business operations, we could easily get it	.86(15.30)
We have substantial financial resources at the discretion of managers for funding business initiatives	.87(15.71)
We are able to obtain financial resources at short notice to support business operations	.90(17.01)

**Note:** 1Items were anchored on a 7-point scale ranging from “strongly disagree” (= 1) to “strongly agree” (= 7); 2items were anchored on a 7-point scale ranging from “not at all” (= 1) to “to a great extent” (= 7); 3items were anchored on a 7-point scale ranging from “not at all” (= 1) to “to an extreme extent” (= 7).

satisfactorily:  $\chi^2 = 242.71$ ,  $df = 183$ ,  $\chi^2/df = 1.33$ , RMSEA = .05, NNFI = .97, CFI = .97, SRMR = .04 (Bagozzi & Yi, 2012; Hair et al., 2014). Additionally, the factor loadings were all positive and greater than .50 and significant at 1.00%. The results further show that composite reliability and average variance extracted values for each measurement set are larger than the recommended minimum thresholds of .60 and .50 respectively (Bagozzi & Yi, 2012; Hair et al., 2014). Together, these results demonstrate that the measures are reliable and exhibit unidimensionality and convergent validity. Following Hair et al. (2014) recommendation, we assessed discriminant validity by comparing the average variance extracted values with the shared variances between each pair of the measures (see Table 3). The highest shared variance in the study is .24, which is far below the lowest average variance extracted value of .61, indicating that the measures exhibit discriminant validity (Hair et al., 2014).

### 3.4. Respondent competence and survey bias assessment

As indicated earlier, to minimise measurement error, we collected the data from CEOs/owner-managers and purchasing/supply chain managers who are educated and have adequate managerial experience. Following prior research, we specifically examined their competence level further using a four-item measure anchored on a seven-point scale (1 = strongly disagree; 7 = strongly agree) (Boso et al., 2013). Results indicate that the respondents are generally competent, given that an average respondent's score for each item was above the median point of the scale (Boso et al., 2013): "I have adequate knowledge on the issues I provided responses on" (mean = 5.53, standard deviation = .91); "I clearly understood all the items I provided responses on" (mean = 5.52, standard deviation = 1.05); "I am very confident in the responses I provided" (mean = 5.58, standard deviation = 1.05); "I am sure that the responses I provided represent the situation in my company" (mean = 5.59, standard deviation = .92).

To assess the likelihood of nonresponse bias in the study, we performed t-test to compare the data provided by early respondents ( $n = 107$ ) and late respondents ( $n = 58$ ): green purchasing capability (mean difference = .07,  $t = .28$ ), green purchasing (mean difference = -.27,  $t = -1.35$ ), EO (mean difference = -.37,  $t = -1.81$ ), firm size log (mean difference = .04,  $t = .27$ ), firm age log (mean difference = -.19,  $t = -1.88$ ). The results reveal no significant difference between the two groups, suggesting that nonresponse bias does not characterise the data (Armstrong & Overton 1977).

Although we followed key recommended procedural measures to minimise common method bias (CMB), it became necessary to statistically examine the extent to which it might characterise the data (Podsakoff et al., 2012). Specifically, we used Lindell and Whitney's marker variable (MV) approach (Williams et al., 2010). We used our four-item scale respondent competence scale described above as an MV as it meets the conditions of a marker variable: it is theoretically and empirically (see Table 3) unrelated to the substantive variables of interest and has good internal consistency ( $\alpha = .78$ ). We used the lowest positive correlation between the MV and the substantive variables ( $r = .03$ ) to compute the MV adjusted correlations (Podsakoff et al., 2012). The results (Table 3) show that the zero-order correlations and the MV-adjusted correlations are largely similar in terms of direction, magnitude, and statistical significance, further suggesting that CMB is unlikely to be a concern in the study (Podsakoff et al., 2012). Indeed, research evidence suggests that theoretically specified conditional effect models, as in the case of our conceptual model, are less likely to be biased by common method variance (Podsakoff et al., 2012). Moreover, the variance inflation factor (VIF) values reported in Table 3 are all less than 2, suggesting that the variables in the study are not excessively intercorrelated to warrant that multicollinearity is a problem (Hair et al., 2014). This is further corroborated by the moderate pairwise correlation among the substantive variables of the study.



**Table 3. Descriptive statistics, correlations, and average variance extracted values**

Variables	1	2	3	4	5	6	7	8	9
1. Environmental orientation	.61	.27**	.24**	.47**	.15*	.03	-.10	.08	.11
2. Green purchasing capability	.29**	.63	.27**	.38**	.03	-.04	.09	.00	-.05
3. Financial resource	.26**	.29**	.80	.34**	-.02	-.05	.02	.00	.05
4. Green purchasing	.49** <sup>a</sup>	.40**	.36**	.66	.14	.11	.03	.07	.08
5. Firm age (log)	.18*	.06	.01	.17*	-	.19*	-.12	.03	.12
6. Firm size (log)	.06	-.01	-.02	.14	.21**	-	.20*	.11	-.05
7. Service firms	-.07	.12	.05	-.00	-.09	.22**	-	-.03	.08
8. Marker variable	.11	.03	.03	.10	.06	.14	-.00	-	-.07
9. Early response	.14	-.02	.08	.11	.15	-.02	.11	-.04	-
Minimum	1.00	1.00	1.00	1.43	.69	1.61	.00	4.00	.00
Maximum	6.40	6.80	7.00	6.86	4.01	5.95	1.00	7.00	1.00
Mean	3.99	3.72	4.51	4.23	2.43	2.74	.27	5.55	.65
Standard deviation	1.26	1.49	1.52	1.24	.62	.89	.45	.78	.48
Skewness	-.25	.30	-.61	-.27	-.13	1.09	1.03	-.24	-.63
Kurtosis	-.88	-1.14	-.47	-.73	.14	.93	-.95	-.52	-1.63
Variance inflation factor <sup>b</sup>	1.187	1.180	1.138	n/a	1.101	1.121	1.104	n/a	n/a

**Note:** Zero-order correlations, average variance extracted values, and marker variable adjusted correlations are reported below, on, and above the principal diagonal respectively. AVE values are reported in the principal diagonal for the substantive constructs. Highest shared variance of .239. b Dependent variable in the model is green purchasing. \*\* $p < .05$ ; \* $p < .01$ .

**Table 4. Structural equation modelling results**

	Model 1: Direct and indirect		Model 2: Conditional direct and indirect	
	Green purchasing capability	Green purchasing	Green purchasing capability	Green purchasing
Direct effect:				
Firm size	-.09(-.71)	.13(1.26)	-.12(-.94)	.13(1.25)
Firm age	.09(.47)	.13(.87)	.09(.52)	.13(0.87)
Firm industry (service = 1)	.35(1.49)	.01(.07)	.32(1.37)	.01(.07)
Environmental orientation (EO)	.38(3.01)	.54(4.69)	.37(2.94)	.54(4.69)
Financial resource (FR)	.21(2.66)	.20(3.04)	.26(3.22)	.20(3.03)
Green purchasing capability		.22(2.96)		.22(2.96)
Conditional direct effect:				
EO × FR			.15(2.80)	
Model fit indices:				
$\chi^2$	349.33		341.39	
df	261		260	
Normed $\chi^2$	1.34		1.31	
RMSEA	.05		.04	
TLI	.96		.96	
CFI	.96		.97	
SRMR	.06		.06	
$R^2$	17.3%	42.4%	23.8%	42.8%
	Effect	95% bootstrapping confidence interval <sup>†</sup>	Effect	95% bootstrapping confidence interval <sup>†</sup>
Indirect effect: H1: EO → Green purchasing capability → Green purchasing	.08	.03 to .15		
Conditional indirect effect H2: (EO×FR) → GPC → Green purchasing			.03	.01 to .07

Notes: Unstandardised estimates are reported. Values in parentheses are t-values. All direct and conditional direct effect paths are evaluated at  $t \geq 1.96$ ; <sup>†</sup>Number of bootstrap samples for bias-corrected bootstrap confidence intervals = 5000.

## 4. Results

### 4.1. Hypothesis testing

Table 3 shows the descriptive statistics for, and correlations between, the study variables. We estimated our conceptual model (Figure 1) using a covariance-based structural equation modelling (SEM) in Mplus 7.4, given its capacity to control for measurement errors and analysing mediation and moderation models (Bagozzi & Yi, 2012). We specifically used bootstrapping procedures in Mplus 7.4 to test our indirect (H1) and conditional indirect (H2) hypotheses (Aguinis et al., 2017). We included firm size, firm age, firm industry, and financial resource as controls in models of green purchasing capability and green purchasing. Table 4 shows the results for the direct and indirect

effects model (Model 1) and conditional direct and indirect effects model (Model 2) from the analyses. Results show that Model 2 is superior to Model 1:  $\Delta \chi^2 = 7.94$ ,  $\Delta df = 1$ ,  $p < .01$ . Accordingly, we evaluated all estimated effects based on Model 2 results (Aguinis et al., 2017).

Results indicate that EO has significant positive effects on green purchasing capability ( $\beta = .37$ ,  $t = 2.94$ ) and green purchasing ( $\beta = .54$ ,  $t = 4.69$ ), and that green purchasing capability has a significant positive effect on green purchasing ( $\beta = .22$ ,  $t = 2.96$ ). Additional results reveal that, over the main effects of EO and financial resource, the interaction between these variables has a significant positive effect on green purchasing ( $\beta = .15$ ,  $t = 2.80$ ). Of particular interest, the results support H1: EO has a significant positive indirect effect, via green purchasing capability, on green purchasing, given an indirect effect = .08 and associated 95% bootstrapping confidence interval ranging from .03 to .15. Further results are in support of H2: the interaction between EO and financial resource has a positive indirect effect, via green purchasing capability, on green purchasing, given an indirect effect = .03 and associated 95% bootstrapping confidence interval ranging from .01 to .07.

To assess the robustness of these results and generate further insights, we relied on PROCESS for SPSS. PROCESS provides researchers with one-stop resources (e.g., bootstrapping procedures) for directly testing the statistical significance and visualising mediation and moderated-mediation effects models (Hayes, 2018), which is relatively easier compared to the SEM platforms. The PROCESS analysis yielded results that are consistent with the SEM results. As shown in Figure 2, it additionally revealed that the effect of EO on green purchasing capability strengthens at increasing levels of financial resource. In contrast, at lower levels of financial resource, the link between EO and green purchasing capability tends to be negative. Further analysis shows that a significant conditional indirect effect of EO via green purchasing capability on green purchasing occurs for the 50<sup>th</sup> and above percentile values of financial resource. Specifically, as plotted in Figure 3, the indirect effect of EO, through green purchasing capability, on green purchasing amplifies when EO is deployed under high conditions of financial resource, supporting H2.

## 5. Discussions

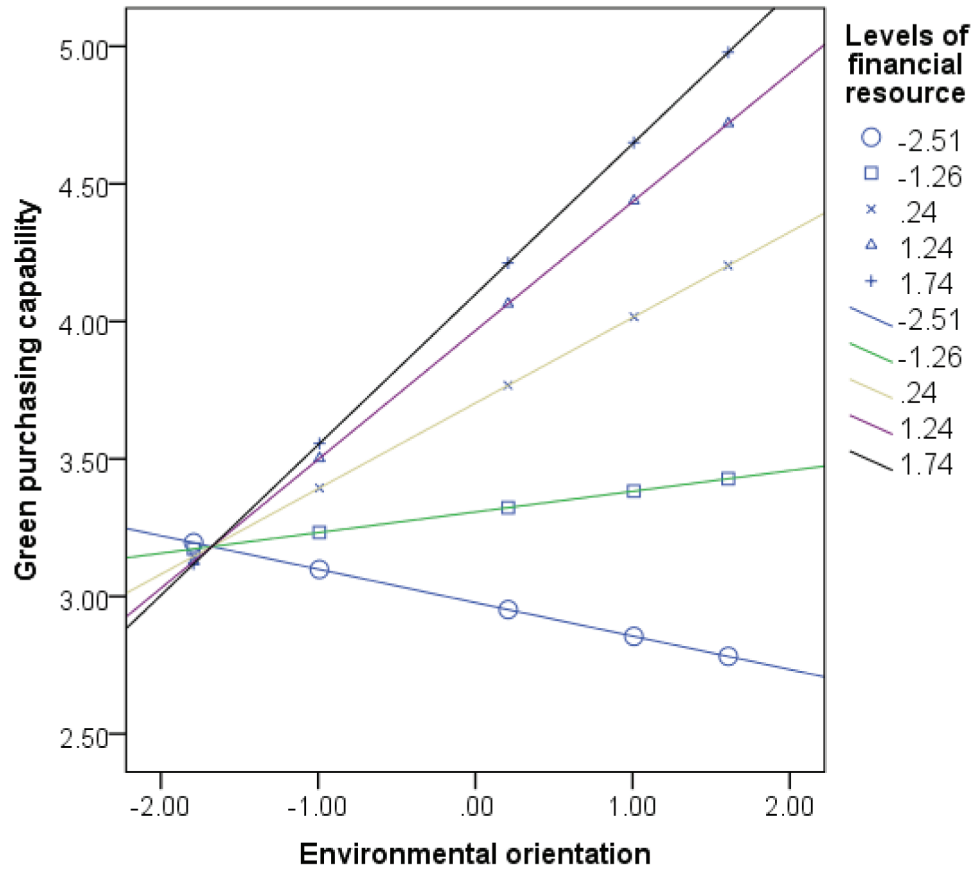
### 5.1. Theoretical implications

Green purchasing is central to the environmental management agenda. There is a growing belief that increased EO will improve a firm's strategic responses towards green purchasing (Chan et al., 2012; Shou et al., 2019). However, not only is this belief yet to be fully validated but also the nuances regarding the EO-environmental outcomes such as green purchasing relationships are underexplored (Keszey, 2020). In this research, we used ROT to develop a model that suggests that considering just the direct associations between EO and environmental management behaviours provides an incomplete account. Instead, we suggest that the green attitude-behaviour link is quite complex (He et al., 2020); therefore, improper theoretical and empirical specifications of EO and environment management behaviours may lead to wrong nomological conclusions and recommendations. Accordingly, and following calls for researchers to clarify how and when EO is beneficial (Keszey, 2020), we theorise and empirically assess the intervening role of green purchasing capability—a rarely studied capability (Khan, Yu, & Farooq, 2022)—in the EO-green purchasing relationship. Also, while environmental initiatives may be cost-intensive (Yang et al., 2022), prior environmental research on the antecedents of green purchasing seems to assume that the availability and access to funding are homogeneous across firms. We extend the green purchasing-attitude behaviour literature by examining how financial resource combines simultaneously with EO to determine green purchasing via green purchasing capability. Our empirical results are consistent with our theoretical predictions.

First, our empirical analysis reveals that the relationship between EO and green purchasing is mediated by green purchasing capability. This confirms our thesis that green purchasing capability

**Figure 2. Surface of the effect of EO on green purchasing capability at changing conditions of financial resource.**

**Note:** Values for the moderator are 10th, 25th, 50th, 75th, and 90 percentiles.

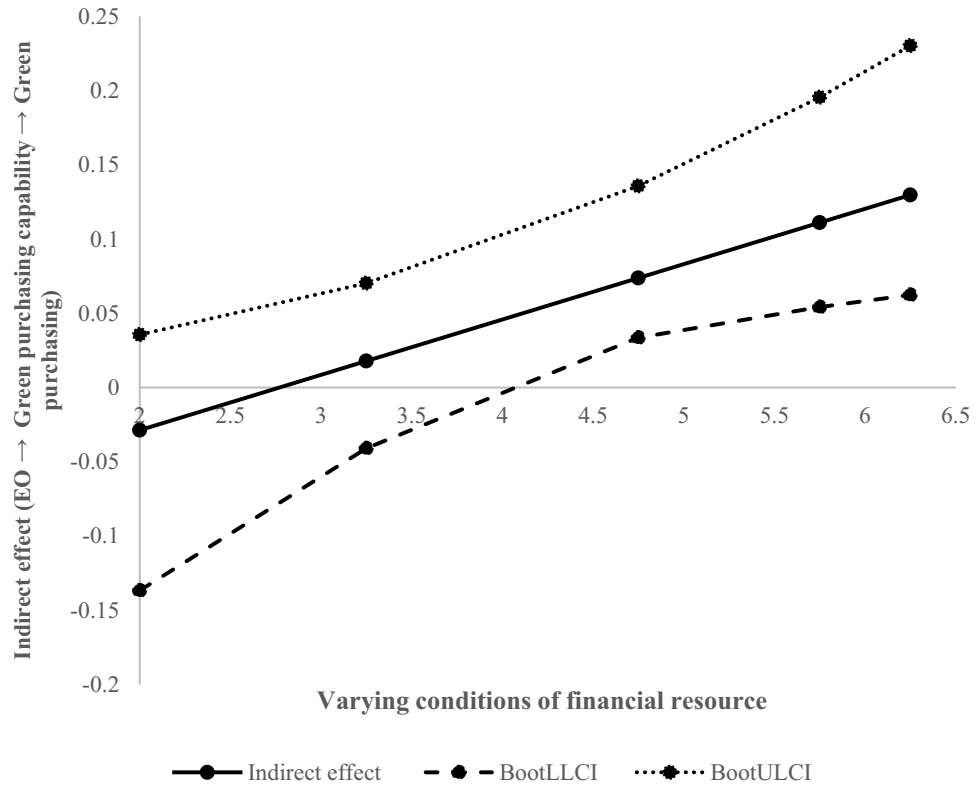


is one of several transformative capabilities that bridge the EO-green purchasing link (He et al., 2020), and thus the ROT's *input-transformation-output* resources framework (Sirmon et al., 2011). This finding provides credence to prior empirical studies that found a positive association between EO and environmental innovations and capabilities (Liboni et al., 2022; Yasir et al., 2020), between EO and environmental performance (Liboni et al., 2022; Moussa et al., 2020; Zameer et al., 2022; Zhang et al., 2018), and between green purchasing capability and green purchasing practice (Khan, Yu, & Farooq, 2022; Khan, Yu, Umar, et al., 2022). This finding further reinforces the literature that purchasing capability is a critical factor in explaining environmental management behaviours and a significant intervening force in explicating how EO may be beneficial (J. Liu et al., 2020; Singh et al., 2019). Further, our study integrates the existing literature to provide a single snapshot of why and how EO influences green purchasing at the firm and supply chain level. By so doing, we contribute to addressing the green purchasing attitude-behaviour gap by bringing the discussion to the firm level and reconciling inconsistencies in prior studies on the EO-performance link.

Second, our findings show that financial resource interacts with EO to drive green purchasing via green purchasing capability. This finding reinforces our ROT argument that EO, as an organisational resource, could be configured with other resources such as green purchasing capability and financial resource to improve green purchasing (Sirmon et al., 2011). This finding is consistent with the assertion that firms' strategies and action plans are either dependent on or constrained by financial resource (Story et al., 2015; Zhang et al., 2018). For instance, Zhang et al. (2018) find that financial slack not only drives top management support for energy-saving measures but also amplifies the potency of this variable in enhancing energy saving. Especially, given the study's context as a developing economy where firms usually face difficulty in accessing funding and, if they can, it is at a high cost (Boso et al., 2017), greater levels of financial resource could boost firms' efficacy regarding environmental management. Such conditions have the potential to

**Figure 3. Surface of the indirect effect of EO, via green purchasing capability, on green purchasing at changing conditions of financial resource.**

Note: Values for the moderator are 10th, 25th, 50th, 75th, and 90 percentiles.



amplify and sustain firms’ motivation and commitment to act on EO to achieve greater levels of green purchasing via green purchasing capability. A major theoretical implication from this finding is that the resources do not operate in isolation to drive performance, but ought to be carefully bundled, and then orchestrated to achieve a specific performance outcome (Sirmon et al., 2011). Again, this finding challenges the popular adage that *necessity is the mother of inventions*, to add that it (in this case, green purchasing) depends on the availability and level of the necessary support resources and capabilities. Broadly, this finding suggests that conditional process models could play useful roles in helping resolve attitude-behaviour gaps in environmental management. More specifically, the study extends the green purchasing literature by providing a nuanced picture of the link between EO and green purchasing.

**5.2. Managerial implications**

Our study has some practical implications. First, the study reminds managers of the importance of nurturing a corporate environmental culture and improving their sensitivity to the global environmental demands for greener business practices. In particular, the findings inform industrial practice and senior executives about the essential role of EO in promoting green purchasing. To this end, and as Chan et al. (2012) suggest, senior executives are encouraged to leverage their influence to facilitate the infusion of environmental consciousness, which entails changing habits and making pro-environmental choices as a matter of daily routine within their organisations.

The findings also provide insight for logistics and supply chain executives in their quest to demonstrate environmental responsibilities. The research shows that the green purchasing consequence of EO may be salient when firms develop green purchasing capability. Therefore, allocating significant effort to build, extend, and safeguard a firm’s green purchasing capability is critical for transforming EO into green purchasing. Thus, logistics operations managers need to organise frequent workshops, seminars and green training to build green culture and mentality among employees to actualise their environmental stewardship mindset. Also, the development of

logistics capabilities building programmes should incorporate an environmental mindset to groom a cadre of logistics professionals whose capabilities will be congruent with environmental goals.

Moreover, supply chain practitioners should note that green purchasing capability may require substantial financial resource commitment. Thus, when the financial resource is low, top executives would have little motivation to act on EO to drive green purchasing capability. Following this, top executives should not assume that increasing EO alone without a corresponding increment in financial resource and green purchasing capability will result in high levels of green purchasing. Instead, in their quest to adopt green purchasing, practitioners should endeavour to build and allocate the necessary financial resource for support. This will ensure that firms amplify their efficacy in the operationalisation of EO to achieve green purchasing objectives.

### **5.3. Conclusion**

The green purchasing perspective holds significant promises for advancing sustainable development goals; therefore, understanding its critical determinants is imperative. This research builds on the EO literature and ROT logic to develop a framework to describe how EO combines with green purchasing capability and financial resource to enhance green purchasing in a developing economy. A novel insight from this research is that, over and above the individual environmental value of EO, green purchasing capability, and financial resource, leveraging EO under high financial resource conditions through green purchasing capability amplifies green purchasing. A key contribution of the study lies in its ability to account for a mechanism and a condition under which firms' EO impacts green purchasing. Thus, the study extends the environmental management research domain by integrating resource orchestration theory with environmental sustainability literature to empirically examine how EO drives green purchasing practices, via green purchasing capability under varying levels of financial resource. Significantly, while firms are encouraged to develop EO (responsible attitude and mindset towards the environment), it may not be enough to result in sustainable green behaviour. Rather, firms need to bundle their EO with financial resource to help build green purchasing (technical expertise) capability to better translate their environmental attitude into actual behaviour.

### **5.4. Limitations and future research directions**

Despite the theoretical and practical insight, the study's findings, as with any study, should be evaluated in light of certain theoretical and methodological limitations that can stimulate further theorisation and empirical analyses. First, while cross validating the present model in different contexts (e.g., countries, industry, and firm size) and or using different methods (e.g., longitudinal survey, multiple sources of data) is necessary, future research may test the model in relation to other environmental outcomes such as green manufacturing and green marketing to generate additional insights (see Yasir et al., 2020). Second, consistent with resource-based literature, many scholars may agree that financial resource and green capabilities are important organisational resources for facilitating strategy implementation (Khan, Yu, & Farooq, 2022). However, among other things, the capacity of financial resource or green capabilities to create competitive advantage is a function of the extent to which these resources are scarce in a given industry, or how difficult it is for firms to raise and control such resources, relative to competitors. Therefore, it can be expected that the predictive power and accuracy of our model would vary across developing, emerging, and advanced markets as access to finance and training on green issues could vary significantly across these markets. In effect, datasets from developing markets limits the generalisation of the model developed in this study. Therefore, future research should consider emerging and developed markets. Finally, it is shown in this research that conditional process models of EO could generate more insightful findings. Further research should explore additional relevant conditional processes that link EO to green purchasing or other environmental outcomes.

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