




## RESEARCH ARTICLE

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# Employee Organisational Commitment and Corporate Environmental Sustainability Practices: Mediating Role of Organisation Innovation Culture

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## ABSTRACT

The growing concerns about climate change have seen global leaders and the international community launch diverse initiatives, deals and reforms in an attempt to combat its negative impact. In response to these initiatives, corporates are increasingly prioritising environmental sustainability practices, such as reducing resource use, recycling and redesigning products and services to transition to sustainable operations, as a means of promoting trust and credibility, increasing their reputation and protecting the planet. However, the extant literature does not provide a clear understanding of the determinants of promoting corporate environmental sustainability practices (CESPs). Thus, drawing upon both resource-based views (RBVs) of the firm and the economic views of neo-institutional theory (NIT), this study examined the role of employee organisational commitment (EOC) and organisation innovation culture (IC) in promoting CESP. This quantitative study collected the required data through a questionnaire survey of senior to mid-level managers of a total of 201 Dhaka Stock Exchange (DSE)-listed and non-listed firms. A two-step structural equation modelling (SEM) technique, employing SmartPLS, was followed to test the study's hypothesised associations. The findings provide evidence of a direct association between EOC and CESP and an indirect association through IC. Our findings are robust as alternative models were developed and tested based on different control and instrumental variables relating to organisational characteristics. The findings of the study contribute to the environmental sustainability literature by providing empirical evidence of the importance of EOC and IC in promoting CESP. Further, the findings inform managers, governments, foreign investors and other stakeholders on the importance of building EOC and developing suitable cultural practices within an organisation that promote CESP.

**Abbreviations:** BSEC, Bangladesh Securities and Exchange Commission; CESPs, corporate environmental sustainability practices; CG, corporate governance; CSRs, corporate social responsibilities; DSE, Dhaka Stock Exchange; EOC, employee organisational commitment; ETS, Emission Trading System; GHG, greenhouse gas; IC, organisation innovation culture; NIT, neo-institutional theory; RBV, resource-based view; SDGs, sustainable development goals; SEM, structural equation modelling; TDM, tailored design method; UN, United Nations; UNFCCC, United Nations Framework Convention on Climate Change.

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## 1 | Introduction

Global climate change resulting from greenhouse gas (GHG) emissions is a top concern for businesses, governments and other stakeholders (Orazalin, Ntim, and Malagila 2024; Alnafrh 2024; Adu et al. 2023c). Policymakers and several governments are paying increasingly greater attention to the risks of severe climate crises for the planet (Adu, Flynn, and Grey 2022; Haque and Ntim 2020), and it has taken centre stage on corporate, political and economic agendas (Orazalin, Ntim, and Malagila 2024). Climate change has had a negative impact on the environment, socioeconomic systems and ultimately human lives (Orazalin, Ntim, and Malagila 2024; Sun et al. 2020).

The growing concerns around the increasing levels of GHG emissions worldwide have led global leaders and the international community to institute several initiatives, deals and reforms to help combat the negative impact of climate change (Orazalin, Ntim, and Malagila 2024). For instance, within hours of taking office, Joe Biden, the president of the United States, moved to reinstate the United States into the Paris Climate Agreement.<sup>1</sup> Crucially, European leaders have been at the forefront of GHG emission reduction efforts and climate change agreements (Haque and Ntim 2020). As part of the Kyoto Protocol, the EU implemented various climate legislations on an important joint GHG reduction initiative—the EU Emission Trading System (ETS) (European Commission 2015, 2016). In compliance with the ETS, EU countries and the United Kingdom were among the first to ratify the Kyoto Protocol. In addition, a legislative agenda has been established in the United Kingdom to achieve a 100% reduction of net emissions of GHG by 2050. Other countries have also signed up for a net zero emissions target, for example, Australia by 2050, Denmark by 2050, China by 2060 and India by 2070 (Adu, Abedin, and Hasan 2023b).

To achieve the GHG reduction objectives of the Paris Agreement and the United Nations Sustainable Development Goals (SDGs), there are calls for organisations to minimise the negative impact of climate change by engaging in GHG reduction emissions. Crucially, pursuing a low GHG emission target for a more sustainable planet depends heavily on individual organisations' responsible behaviour, particularly regarding their environmental footprint (Crossley, Elmagrhi, and Ntim 2021). In support of this rationale, Moufty, Clark, and Al-Najjar (2021) argue that organisations can play a crucial role in the context of sustainable economic development, including protecting the planet.

In responding to this emerging global threat and pressure from stakeholders, firms are increasingly recognising corporate environmental sustainability practices (CESPs) as a means to promote trust and credibility, increase their reputation and protect the planet (Chiaramonte et al. 2022; Schultz, Castelló, and Morsing 2013). For instance, pro-environmental investors, who constitute one of the key stakeholders of firms, are pressuring firms that they have invested in to engage in CESP. This is forcing them to consider the negative impact of climate change and to put in place credible measures to address global warming to guarantee long-term value creation (Benlemlih, Arif, and Nadeem 2023).

Accordingly, firms are increasingly engaging in such CESP practices as reducing resource use, recycling, and redesigning products and services to transition to sustainable operations (Ramus 2001). Several firms have adopted CESP policies with the aim of reducing their negative impact on the planet (Bartolacci, Caputo, and Soverchia 2020; Ramus 2001). The adoption of CESP is driven by many different factors. Firm-level antecedents of CESP include gaining competitive advantage (Adu 2022; Ramus 2001), social expectations, organisational support and stakeholder pressure (Benlemlih, Arif, and Nadeem 2023; Lee, Kim, and Kim 2018). Employee commitment (Lee, Kim, and Kim 2018), legal, market and organisational innovative culture (Adu 2022; Hartmann and Uhlenbruck 2015) are further drivers.

Our focus on the relationships between employee organisational commitment (EOC), organisation innovation culture (IC) and CESP is motivated by three considerations. Firstly, prior studies have extensively examined the antecedents of CESP and green practices (Lee, Kim, and Kim 2018; Hartmann and Uhlenbruck 2015; Collier and Esteban 2007; Ramus 2001). For instance, Lee, Kim, and Kim (2018) examine the antecedents of adopting corporate environmental responsibility and green practices, whereas Hartmann and Uhlenbruck (2015) explore the antecedents of corporate environmental commitments. Evidently, these studies have been descriptive in nature, which limits the depth of our knowledge in the field.

Second, studies have been carried out on various aspects of organisational culture (Schein 1990; Uddin, Luva, and Hossian 2013; Srisathan, Ketkaew, and Naruetharadhol 2020). Organisational psychology (Schein 1990) concentrates on how culture affects employees' psychology and performance; organisational culture types (Tharp 2009) highlight the stages of culture throughout the organisation. There has been no empirical research on the effects of EOC on IC, particularly from the perspective of emerging countries like Bangladesh, even though EOC and IC have been studied over the past few decades and are thought to be an important topic for achieving organisational excellence (Srisathan, Ketkaew, and Naruetharadhol 2020; Uddin, Luva, and Hossian 2013). Given the growing presence of multinational firms in developing nations, it is imperative to investigate the impact of EOC on IC. Therefore, the primary goal of this study is to investigate, within the context of Bangladesh, how EOC affects IC in firms in Bangladesh.

Third, prior literature (e.g., Linnenluecke and Griffiths 2010; Brammer, Millington, and Rayton 2007; Daily and Huang 2001) is yet to explore the interrelationship between EOC, IC and CESP in a combined study. Brammer, Millington, and Rayton (2007) examine the relationship between organisational commitment and employee perceptions of CSR, while Linnenluecke and Griffiths (2010) investigate the effect between organisational culture and corporate sustainability. Noticeably, these prior studies have not explored how IC and EOC mechanisms may impact CESP. This has limited our understanding of how firms may contribute towards combating climate change through their internal governance structures, such as employees and innovations. By engaging in this

investigation, this study responds to recent calls for climate research to focus on key internal stakeholders, such as employees, in the drive to enhance CESP (e.g., Adu 2022; Collier and Esteban 2007).

Prompted by the growing debate on corporate environmental initiatives and with limited prior evidence on these issues in emerging countries, this study sheds light on the role that EOC and IC may have on CESP. First, we investigate the effect of EOC on CESP. Second, we examine the impact of EOC on IC. Third, the study investigates the relationship between IC and CESP. Finally, we explore whether IC has a mediating effect on the EOC-CESP nexus.

To explore these associations, we employ resource-based view (RBV) and neo-institutional theory (NIT) perspectives to form a unique multi-dimensional social and economic-based theoretical foundation. Though there are calls for investigators to employ a multi-theoretical framework in explaining the effect of governance structures on environmental sustainability, prior studies employ either a single theoretical framework or are largely descriptive (Jia and Zhang 2011; McGuiness, Vieito, and Wang 2017). Arguably, the use of a single theoretical framework may not adequately capture the impact of CG mechanisms on the SPS metric. In responding to the increasing calls for the adoption of multi-theoretical perspectives (Morrison, Adu, and Guo 2024), this study addresses the limitations of prior studies by adopting a multi-theoretical framework.

In this case, RBV argues that firms can enhance their environmental sustainability initiatives and sustain competitive advantage by undertaking planet-friendly strategies/initiatives that necessitate the combination of rare resources (e.g., human capital, finance, fixed assets and processes) and abilities (implementing green innovations and the design of eco-friendly services/processes/products (Orazalin, Ntim, and Malagila 2024; Hart and Dowell 2011; Barney 1991). Based on the NIT view, firms that have heightened exposure to powerful stakeholders may undertake environmental sustainability initiatives, such as green innovation culture, and establish strong EOC as a credible means of improving their CESP and thereby improving and protecting their legitimacy (Orazalin, Ntim, and Malagila 2024; Adu et al. 2024).

Our study makes several new contributions to the extant carbon performance literature. First, this study is one of the early studies examining the direct effect of EOC on CESP. Our findings suggest that EOC directly impacts CESP. Second, we contribute to the scarce literature on the direct impact of EOC on IC and IC on CESP. Our results show that EOC is positively associated with IC, while IC has a positive impact on CESP. Finally, our study is the first to examine the mediating role of IC on the association between EOC and CESP. Methodologically, despite increasing research on EOC, IC and CESP initiatives, there is limited empirical evidence on how IC impacts the EOC-CESP nexus (Guo, Wang, and Yang 2020).

The rest of this paper is organised as follows. Section 2 provides the study's background in the lens of contemporary global trends in GHG and climate change. Section 3 provides the theoretical

frameworks, followed by a review of previous research and hypotheses development in Section 4. Section 5 focuses on the research method. Section 6 provides the results, and Section 7 provides discussion. Section 8 concludes the study, providing the limitations of the study.

## 2 | Contemporary Global Trends in GHG and Climate Change

Climate experts continue to report escalating levels of GHG emissions throughout the world, which has prompted the international community to tackle global warming and climate change through a variety of agreements and reforms (Adu, Flynn, and Grey 2023a; Choi and Luo 2021; Gerged, Matthews, and Elheddad 2021; Haque and Ntim 2018). The first international effort to address global warming and climate change, dubbed 'The United Nations Framework Convention on Climate Change (UNFCCC)', was introduced in 1992 and operationalised in 1994 as a result of the Rio Earth Summit (Orazalin, Ntim, and Malagila 2024). Nonetheless, multiple reports indicate that the UNFCCC has contributed little towards lowering GHG emissions globally (Gills and Morgan 2020). This is evidenced by the increase of carbon dioxide in gigatonnes (GtCO<sub>2</sub>) from 21.3 GtCO<sub>2</sub> in 1995 to 22.1 GtCO<sub>2</sub> in 1997 when the Kyoto Protocol was introduced (IEA 2021). When the Paris Agreement was introduced in 2015, the GtCO<sub>2</sub> had further increased to 32.2 and subsequently attained a record high of 33.5 in 2018.

A formal comprehensive GHG emission reduction convention dubbed the Kyoto Protocol was then agreed upon in 1997 and has since become a legally binding global pact requiring participating nations to improve their energy efficiency in order to reduce GHG emissions and mitigate global climate disruption (Adu, Flynn, and Grey 2023a; Haque and Ntim 2020). As part of the protocol, European countries implemented several climate legislations on a key joint carbon reduction initiative to introduce the ETS (European Commission 2015).

Subsequently, the Paris Agreement was proposed in December 2015 to replace the Kyoto Protocol starting from 2016. The agreement calls on each country to develop, submit, and maintain contributions based on national criteria targeted at lowering emissions and assisting climate change adaptation. Despite the adoption of these initiatives by various countries, it appears that there has been insufficient success in creating and enforcing firm-specific guidelines and policies that can assist policymakers in monitoring GHG emission reduction at the firm level, as demonstrated at the recent UNFCCC 2021 Conference of Parties 26 (COP26) and the 2022 COP27 in Glasgow and Sharm el-Sheikh, respectively.

In addition to a strong commitment to climate change mitigation measures, international efforts have been made to implement a variety of initiatives to reform corporate governance (CG) mechanisms in firms. In particular, regulators in several countries (such as the United Kingdom) have issued guidelines on GHG emission reduction (Adu, Flynn, and Grey 2022). The main purpose of these reforms is to compel firms to develop a business understanding of their carbon footprint and to minimise their GHG emissions, thus mitigating global warming.

According to several academics, businesses are progressively responding to these issues by cutting GHG emissions by implementing different corporate environmental sustainability programmes (Adu, Flynn, and Grey 2023a; Haque and Ntim 2020). Green innovation, innovative culture and usage, recycling and energy consumption projects pertaining to water and biodiversity are some of the key environmental sustainability initiatives that have progressively been adopted by firms (Adu, Flynn, and Grey 2023a; Haque 2017). In this regard, scholars maintain that the commitment of the employees of firms will be crucial in achieving environmental sustainability initiatives (Adu 2022; Ntim and Soobaroyen 2013).

In particular, Bangladesh presents an intriguing case study for CG reform because the business sector in the country is governed by two different codes: a rule-based code and a comply-or-explain code (Islam, Rahman, and Saha 2022). Like other developing countries, Bangladesh's corporate sector suffers from inadequate protection for minority shareholders (Solaiman 2006), a lack of second-order entities (Siddiqui 2010), and subpar monitoring regulations (Khan, Muttakin, and Siddiqui 2015). Furthermore, academics who describe the CG practices in Bangladesh express concern that they may just exist in name but not in reality (e.g., Biswas 2012; Uddin and Choudhury 2008). Based on the 'comply or explain' strategy, the first CG code was introduced to Bangladesh's capital market in 2006 (Islam, Rahman, and Saha 2022). The Bangladesh Securities and Exchange Commission (BSEC), which oversees the country's capital market, revised the guidelines in 2012 and made the requirements mandatory because businesses do not intend to follow the soft rules, and their compliance level was minimal with some overstatements (Islam, Rahman, and Saha 2020). In 2018, 6 years later, the third edition of the code was reviewed and amended by BSEC. In particular, the revised code of CG in Bangladesh was issued to strengthen financial disclosure and reporting (Khan, Muttakin, and Siddiqui 2015; Islam, Rahman, and Saha 2022). It is noteworthy to state that the above revised governance codes were issued in Bangladesh to overcome the limitations of the earlier rules and included international best practices, including sustainability. For instance, the revised code is essentially concerned with encouraging corporate environmental responsibility (Islam, Rahman, and Saha 2022). In effect, the revised code includes comprehensive sections on corporate environmental responsibility and compliance with Bangladesh environmental standards. A core tenet of this revised code is the anticipation that efficient internal governance structures will ensure the highest levels of corporate social and environmental responsibility, which will lead to the participation of firms in climate change-related activities. For example, the revised code states that businesses should be transparent by disclosing how they are adhering to the following standards: workers' rights, gender equality, environmental responsibility (CESP), corporate social responsibilities (CSRs), and other industry-specific codes (such as consumer rights and quality control/safety standards). However, there are still critical policy questions about whether the revised code can enhance EOC, IC and CESP standards in the country. We believe that this provides a unique setting for investigating the interconnections between EOC, IC and CESP in Bangladesh. Consequently, this study seeks to explore how EOC and IC

can help firms to overcome the challenges associated with environmental initiatives and ultimately respond to climate change threats/risks through enhanced CESP.

### 3 | Theoretical Integration

As we explore the relationship between EOC, IC and CESP, we deem it appropriate to draw insights from RBV and NIT perspectives to inform our analysis. The RBV perspective posits that a firm's key competence originates from corporate resources that may be valuable, scarce, and non-substitutable (Barney 1991). The unique resources include information and knowledge, assets, capabilities and corporate culture (Orazalin, Ntim, and Malagila 2024; Barney 1991). In this case, RBV maintains that an innovative culture can be considered as a critical invisible resource for firms that seek to enhance their CESP (Guo, Wang, and Yang 2020). Organisational culture denotes an intricate set of assumptions, beliefs, values and symbols that define the way in which a firm conducts its operations (Lægreid, Roness, and Verhoest 2011). Innovation culture has been defined as the process of turning opportunities into practical use (Tidd and Bessant 2020). Within the RBV framework, firms that seek to improve their CESP may engage in IC initiatives such as developing eco-friendly services/products or processes and implementing green innovations to reduce GHG emissions (Hart and Dowell 2011; Barney 1991).

NIT explains the notion of 'institution' as economic and social practices, beliefs and norms concerning various aspects of society (law/politics/religion) that are universally accepted (Powell and DiMaggio 1991). In this context, 'economic institutions' can be classified into formal (statutes or rules) or informal (norms/conventions) (Haque and Ntim 2020). In support of these arguments, scholars maintain that the prime goal of economic institutions is to improve economic growth (Ntim and Soobaroyen 2013). The inference is that NIT can elucidate the actions of firms as economic institutions (Adu, Flynn, and Grey 2023a). In this regard, the economic NIT purview predominantly focuses on economic efficiency (Orazalin, Ntim, and Malagila 2024; Ntim and Soobaroyen 2013). Noticeably, NIT's economic viewpoint is consistent with resource dependence and agency theories that economic institutions (organisations/firms) should concentrate on enhancing their own interests at the expense of other groups by competing with them for scarce resources (Adu 2022; Pfeffer and Salancik 1978).

Further, Powell and DiMaggio (1991) extended NIT by concentrating on institutional forces that can compel firms to pursue economic efficiency and social legitimacy. The authors established (i) regulative or coercive, (ii) mimetic or educative, and (iii) normative forces as the three main pressures. Regulative or coercive institutional forces refer to the existence of institutions that can put pressure on firms to conform to conventional standards (regulations/government laws) (Powell and DiMaggio 1991). Mimetic or educative institutional forces refer to the inclination of firms to imitate the behaviour of their peers (the practice of willingly acquiring knowledge and sharing best practices) (Adu et al. 2023c; Powell and DiMaggio 1991). Normative forces refer to broadly expected and accepted



standards of environmental behaviour (international practices or norms) (Powell and DiMaggio 1991).

In this case, NIT proposes that firms set norms (e.g., innovation culture), rules and practices (e.g., environmental initiatives) for their employees to follow (Adu, Abedin, and Hasan 2023b). For instance, NIT contends that the differences in practices, rules, norms, and provisions may account for the differences in commitment to GHG emission reduction. Hence, NIT postulates that firms will align their business actions with the environmental values of the society in which the firm operates (Haque and Ntim 2020). Accordingly, this theoretical perspective maintains that firms gain legitimacy if their operations/activities are consistent with societal values (Adu 2022). When put together, the NIT perspective argues that firms that are exposed to environmental regulations and diverse stakeholder pressures can focus on building EOC and IC as channels for improving CESP that may (i) boost their reputation and maintain legitimacy (Orazalin, Ntim, and Malagila 2024; Adu, Flynn, and Grey 2022; Haque and Ntim 2020; Burke, Hoitash, and Hoitash 2019) and/or (ii) substantially reduce GHG emissions through a green innovation culture and reduced operating costs (Adu, Flynn, and Grey 2023a). In this context, the economic perspective of NIT stresses that because effective delivery of CESP is dependent on responsive employees, firms that seek to improve their operational efficiency will motivate and encourage their employees to increase their commitment towards IC and CESP (Adu 2022; Collier and Esteban 2007).

Based on the NIT perspective, employees' commitment can hugely affect innovative culture and environmental initiatives (Adu 2022). The inference is that the environmental initiative strategy direction and level of accountability that firms engage in are more in the control of their employees (Adu, Abedin, and Hasan 2023b). This highlights the power of employee commitment on the strategy and level of a firm's actions in GHG emission reduction (Adu 2022). For example, employees can help a firm to embark on economically efficient initiatives to combat climate change by embracing IC initiatives that may lead to enhanced CESP (Adu 2022). In this case, employee commitment can be expected to influence the CESP strategy of a firm's innovation culture (Adu 2022), suggesting that EOC may positively affect a firm's IC capabilities. Thus, within the NIT conception, the assumption of our study remains that IC will impact CESP. Additionally, NIT's conception is that IC will be associated with enhanced CESP. Taken together, the RBV and NIT theoretical perspectives suggest that building IC capabilities in a firm can strengthen the association between EOC and CESP. Thus, RBV and NIT expect that IC can moderate the EOC-CESP relationship. Accordingly, we apply RBV and NIT to explain the corporate environmental responsibility introduced by the Bangladesh government in The Code of Corporate Governance for Bangladesh and adopted by firms in Bangladesh. In particular, the Code specifies that an organisation must demonstrate the highest standards of corporate, social and environmental responsibility. When taken together, the RBV and NIT theoretical perspectives suggest that Bangladeshi firms exposed to different stakeholder pressures and environmental regulations through EOC can employ IC as a channel for enhancing CESP that may (i) enhance reputation and maintain legitimacy and/

or (ii) substantively reduce GHG emissions through improved efficiency and reduced operating costs.

## 4 | Literature Review and Hypothesis Development

### 4.1 | EOC and CESP

EOC refers to the comparative strength of an individual's identification with and contribution to a particular firm (Mowday, Steers, and Porter 1979). Indeed, several firms frame themselves as being environmentally responsible to a large degree (Gunningham, Kagan, and Thornton 2003). This raises a crucial question as to whether the environmental activities that the firm engages in matter to their employees (Tilleman 2012). Theoretically, the conceptual foundation of RBV can be traced to the pioneering work by Penrose (1959), which conceptualised organisational heterogeneity as the primary source of sustainable competitive advantage. This contrasts with the earlier emphasis on the field of strategic management, which placed more emphasis on firms' ability to adapt to their external environment (Martínez-Falcó et al. 2024). In this context, RBV is centred on figuring out how businesses can increase their profitability by acquiring valuable, uncommon, and unique resources (Martínez-Falcó et al. 2024; Adu et al. 2024). This approach is based on the general premise that having firm-specific resources can help gain a competitive advantage (Martínez-Falcó et al. 2024; Wernerfelt 1984; Barney 1991; Kraaijenbrink, Spender, and Groen 2010). According to Barney (1991), a firm's competitive advantage stems from valuable, scarce, unique, and difficult-to-substitute resources. Examples of such vital resources include human capital, organisational processes, financial resources and physical assets that can help establish unique abilities and capabilities that are crucial in terms of gaining a competitive edge (Morrison, Adu, and Guo 2024; Orazalin, Ntim, and Malagila 2024). In this case, the RBV notion tailored to environmental sustainability posits that firms may enhance their CESP performance and maintain a competitive edge by implementing proactive environmental strategies that necessitate unique abilities and resources (Haque and Ntim 2020; Hart 1995). For instance, implementing environmental-related EOC activities can improve economic efficiency, lower operational and litigation costs, lessen corporate risks, build stakeholder relations and create a competitive edge (Orazalin, Ntim, and Malagila 2024; Hart and Dowell 2011; Adu and Roni 2024).

In support, NIT maintains that the behaviour of businesses (institutions) is the direct consequence of pressures from diverse stakeholders, which is associated with the claim to legitimacy or dependence on power (Freeman 1984). The NIT is a multifaceted theory that draws on explicit and/or implicit links to traditional economic and social theories simultaneously (Haque and Ntim 2020). In this case, NIT can be viewed from two perspectives: economic efficiency and social legitimacy. The economic efficiency perspective focuses on firms engaging in cost-effective initiatives that can enhance CESP (Adu et al. 2024). In this case, firms with high levels of legitimacy can obtain better access to economic resources, attract and retain top talent and enhance relations with stakeholders (Pfeffer and Salancik 1978). Within this context, it can be argued that firms may, through

EOC, undertake CESP initiatives to improve and maintain their corporate image (legitimacy) (Adu, Flynn, and Grey 2022; Grey, Flynn, and Adu 2024; Morrison, Adu, and Guo 2024). Based on RBV, proactive corporate environmental sustainability initiatives are likely to lower GHG emissions through improved access to critical resources, effective energy savings and operational efficiency (Hart and Dowell 2011; Hart 1995). In this case, RBV suggests that such proactive environmental initiatives require substantive efforts from the employees (EOC) of the firm. At the same time, the economic perspective of NIT argues that delivery of superior CESP is largely dependent on responsive employees, and hence, firms that seek to improve their environmental initiatives should pay more attention to employee commitment (Adu 2022; Collier and Esteban 2007). For instance, it has been stated that increased EOC can motivate employees to become deeply involved and enthusiastic about their work in key areas such as contributing to environmental sustainability-related initiatives (Afsar et al. 2020; Adu and Roni 2024).

Meanwhile, scholars argue that environmental sustainability initiatives are substantially shaped/influenced by EOC (e.g., Lee, Kim, and Kim 2018; Hartmann and Uhlenbruck 2015; Tilleman 2012; Collier and Esteban 2007). This is particularly crucial for long-term and complex issues of GHG emission reduction, where firms face conflicting critiques and opposing demands from shareholders and stakeholders (Adu 2022). In support, scholars maintain that employees are more likely to be dedicated to their work when they feel that their firm is committed (EOC) to CESP (He, Zhang, and Morrison 2019; Martínez-Falcó et al. 2024). Others suggest that employees are more likely to stay with an environmentally aware firm and be proud of their work when EOC activities can contribute to a good environmental/climate change-related action (González-Rodríguez et al. 2019; Morrison, Adu, and Guo 2024). In this case, a greater willingness among employees to consider environmental factors when making decisions might arise from enhanced EOC brought about by employees' commitment to the environmental impact of their firms (Iqbal, Ahmad, and Ahmad 2021; Adu 2022). According to Rehman et al. (2021), EOC activities have the potential to enhance employees' awareness of the need to take positive actions that benefit society and the environment in which they work. This, in turn, may lead to an improvement in the organisation's environmental performance (Martínez-Falcó et al. 2024). In this case, adhering to the demand for high levels of corporate environmental responsibility outlined in the CG code in Bangladesh by employees of firms in the country may enhance legitimacy by improving the firms' reputation. Further, employees in the firms may comply with international best practices or learn from peers' best practices (Adu et al. 2024). For example, adhering to the Paris Agreement and the SDGs' reporting standards may increase firms' legitimacy by boosting their reputation and economic efficiency because of access to vital resources (NIT) (Adu and Roni 2024; Khurram et al. 2024; Jellason et al. 2024).

Prior empirical research investigating the impact of EOC on environmental sustainability activities is limited and has provided mixed results (e.g., Pellegrini, Rizzi, and Frey 2018; Dögl and Holtbrügge 2014; Tilleman 2012; Collier and Esteban 2007). For example, Tilleman (2012) finds that greater employee affective organisational commitment is positively associated with

employee perceptions of environmental management practices (EMPs). Similarly, Collier and Esteban (2007) find a positive relationship between EOC and CSR. Further, Pellegrini, Rizzi, and Frey (2018) demonstrate that when climate change initiatives are valued and promoted by firms' line managers, employees tend to internalise environmental sustainability, which can translate to a higher commitment to adopting environmental initiatives. By contrast, Tilleman (2012) documents that employee normative organisational commitment has no effect on more stringent EMP. The authors suggest that firms should disclose whether and how they are upholding social corporate responsibilities (CSR), environmental responsibilities, workers' rights, gender rights and other standards/codes appropriate to the industry (e.g., consumer rights, passing quality control/safety standards). In a closely related study in China, Cao et al. (2024) observe that EOC mediates the link between environmental concern and employee job satisfaction.

Overall, the RBV and NIT theoretical viewpoints propose that Bangladeshi firms exposed to diverse environmental regulations/guidelines (CG code) and stakeholder pressures may use EOC as a credible means to engage in environmental sustainability initiatives and thereby establish CESP strategies that can (a) improve the legitimacy of the firms (Haque and Ntim 2020; Adu and Roni 2024) and/or (b) substantially increase their environmental performance through enhanced operational efficiency and lowered operational costs (Orazalin, Ntim, and Malagila 2024; Morrison, Adu, and Guo 2024; Adu 2022). This is particularly important within the context of Bangladesh, as the revised CG code in the country described in Section 2 demands the highest levels of corporate social and environmental responsibility. Based on the RBV and NIT predictions, as well as the discussion above, the study develops the following hypothesis:

**Hypothesis 1.** *EOC promotes CESP.*

## 4.2 | EOC and Organisation Innovation Culture

Innovation refers to all scientific, technological, organisational, financial and commercial activities that lead to, or are intended to lead to, the implementation of technologically new or improved products or services (OECD/Eurostat 1997, 39). Innovation can also be described as the creation of new and productive ideas on an individual basis as well as the initiation, purposeful introduction, and implementation of valuable and original ideas, processes, and products that are beneficial to organisations (Janssen 2004; Amabile et al. 1996). According to RBV, innovation can enable firms to differentiate themselves from their rivals in key areas by way of new products, processes, costs or organisational improvements (Hashi and Stojčić 2013). In this context, RBV posits that a firm's efficiency can increase, and it can produce at a cheaper cost than its competitors, by adopting and implementing innovation in areas such as new technology, human capital and production organisation changes (Hashi and Stojčić 2013; Adu et al. 2024). In support, the benefit aspect of RBV stresses that employees play an important role in making choices and implementing significant decisions that can affect organisation innovation culture (IC) (Adu, Flynn, and Grey 2023a; Adu 2022). This theoretical perspective maintains that

increased employee commitment (EOC) to innovation initiatives can increase firms' engagement in innovation-related activities that can have a beneficial impact on innovation culture (e.g., Olekanma et al. 2024; Morrison, Adu, and Guo 2024). For example, it has been argued that the development of innovation culture requires the accumulation of knowledge among employees in an organisation (Adu 2022; Hashi and Stojčić 2013; Chen, Tee, and Chang 2022). Within this perspective, it can be reasoned that an appropriate organisational commitment (EOC) strategy can shift employees' attention towards cultivating innovation ideas and help contribute to establishing an innovation mindset (IC) in the firm (Olekanma et al. 2024; Haque and Ntim 2020). Crucially, this can lead to improved operational efficiency, effective energy savings and increased access to resources from diverse stakeholders (Adu, Abedin, and Hasan 2023b; Chen, Tee, and Chang 2022). Accordingly, it is anticipated that well-intentioned firms may use employee-related policies such as EOC to encourage employees to undertake corporate innovation culture activities (Adu, Abedin, and Hasan 2023b; Adu 2022). For instance, some scholars maintain that EOC-related policies can be regarded as crucial governance structures that can enhance IC (Adu 2022).

Based on the legitimacy view of NIT, firms may engage in environmental sustainability initiatives in order to attain specific goals, including protecting reputation, gaining support from powerful stakeholders, enhancing legitimacy and, in so doing, facilitating access to vital resources (Ashforth and Gibbs 1990). According to RBV, a firm's key competence originates from its unique resources, including information and knowledge, assets, capabilities and corporate culture (Orazalin, Ntim, and Malagila 2024; Barney 1991). Within this theoretical framework, scholars postulate that the key competencies of firms originate from their employees (Adu 2022; Haque and Ntim 2020). In this case, RBV maintains that EOC can be considered as a valuable resource for firms that seek to enhance their innovative culture (Guo, Wang, and Yang 2020). Several studies have also identified employee commitment as a key driver of firm innovation culture, competitiveness and organisational success (Nguyen et al. 2019; Lukes and Stephan 2017; France and Carney 2002). For instance, greater commitment from leaders and other employees can enhance innovation culture within a firm (France and Carney 2002).

Empirically, Nguyen et al. (2019) observe that organisational commitment is positively and significantly associated with employee innovation. Similarly, Rangus and Slavec (2017) report that the higher the employee involvement in an organisation, the greater its influence on firm innovation performance. In support, Yang and Konrad (2011) and David et al. (2024) document that organisational commitment has a positive impact on innovation, whereas Wallace et al. (2016) find an indirect effect of employee involvement on innovation. Further, Xerri and Brunetto (2013) show that organisational commitment has a beneficial impact on innovative behaviour. Sharma et al. (2021) report that employee commitment can improve innovation behaviour. By contrast, Hidalgo-Peñate, Nieves, and Padrón-Robaina (2022) show that human capital and affective commitment alone do not have a significant impact on innovation. In a closely related study, Nguyen et al. (2019) observe

that organisational commitment and organisational culture are positively and significantly related to employee innovation. Similarly, Anagha and Magesh (2016) document that organisational commitment has a partial mediation effect on the association of tangible resource management and intangible resource management on employee motivation to innovate. Further, Darvishmotevali, Altinay, and Köseoglu (2020) reveal that organisational agility moderates the negative effects of competitive and technological uncertainty on organisation innovation culture. Thus, based on the above discussion, which emphasises the importance of EOC in building and promoting an innovative culture in firms, we expect that EOC is likely to impact the IC in firms.

Consistent with the positive prediction of the multi-dimensional framework of RBV and NIT, firms in Bangladesh can respond to varying stakeholder requirements and environmental regulations for increased responsible business action as specified in the country's CG code by establishing EOC strategies that can improve their innovation culture. Within this regulatory environment, employees of firms that seek to operate efficiently and reduce their operational costs will explore channels of reducing their energy consumption by engaging in innovation activities. The adoption of these measures may substantively increase efficiency and lower operating costs and/or enhance the company's image and maintain legitimacy (Haque and Ntim 2020; Burke, Hoitash, and Hoitash 2019). Consistent with the positive prediction of the multi-dimensional framework and in line with the expectation of the corporate environmental responsibility reforms that have been pursued in Bangladesh, our second hypothesis is as follows:

**Hypothesis 2.** *EOC is positively associated with organisation innovation culture (IC).*

### 4.3 | Organisation Innovation Culture and CESPs

Because firms are among the biggest producers of industrial pollution, governments and other stakeholders are focussing their attention on how firms may help reduce pollution and preserve ecological balance (Gupta and Barua 2018). Firms, however, are unable to react swiftly to the shifting demands of the stakeholders because of their low resources (Adu, Abedin, and Hasan 2023b; Gupta and Barua 2018). In this case, firms—especially those in emerging economies such as Bangladesh—are becoming more and more in need of green innovation (Adu, Abedin, and Hasan 2023b). Their attempts to improve their engagement in environmental sustainability are eventually strengthened by innovation initiatives, which help them to optimise resource utilisation and switch to more energy-efficient operational procedures (Adu, Abedin, and Hasan 2023b; Morrison, Adu, and Guo 2024). According to the RBV framework, firms that seek to improve their environmental initiatives may promote an innovative culture, such as developing eco-friendly services/products or processes and implementing green innovations to reduce GHG emissions (Hart and Dowell 2011; Barney 1991). Within this framework, IC can be considered as a crucial resource for firms that seek to enhance their CESP (Guo, Wang, and Yang 2020). In this case, the legitimacy perspective of NIT proposes that firms



that seek to gain legitimacy and improve their operational efficiency may promote an innovative culture such as green innovation within the firm (Adu, Abedin, and Hasan 2023b). The legitimacy view of NIT posits that the engagement in innovation activities can enhance corporate transparency and a firm's image by way of signalling to the market participants that the firm is committed to engaging in actions that reduce GHG emissions (Morrison, Adu, and Guo 2024; Adu et al. 2024). Within this context, IC has become an effective means of GHG emission mitigation management strategy that can create shared value for stakeholders and stockholders (Adu, Abedin, and Hasan 2023b). This alignment of IC within the operation of a firm is predicated on the notion that firms seek to maintain legitimacy by demonstrating their commitment to environmental sustainability through effective GHG management. From this perspective, firms with higher IC initiatives (reflective of a strong integration of sustainability into their governance structures) are likely to influence the extent to which IC can be linked to the reduction of GHG emissions (improved CESP). This in turn reflects the firm's response to stockholders' and stakeholders' climate concerns and expectations (Orazalin, Ntim, and Malagila 2024). In brief, this perspective maintains that, through innovative practices, firms are able to align their business actions with the environmental values of the society in which the firm operates (Haque and Ntim 2020). In support, the efficiency view of NIT proposes that the adoption of green innovation strategies (such as IC) by businesses can be expected to raise CESP and enhance profitability through increased operational performance, effective energy savings, and improved resource accessibility (Haque and Ntim 2020; Chen, Tee, and Chang 2022). However, from a financial perspective, these environmental projects come with high costs and dangers, require a lot of work, and may deter businesses from taking them on (Orazalin, Ntim, and Malagila 2024; Morrison, Adu, and Guo 2024).

This suggests that innovation culture can help firms to maximise their resource utilisation and transition to more energy-efficient operational practices, thereby improving their CESP efforts (Adu, Abedin, and Hasan 2023b). According to Chen et al. (2024), green innovative culture involves the development and implementation of novel processes, products and materials that not only curtail the release of toxic substances into the environment but also minimise the consumption of natural resources. Innovation culture, therefore, holds the potential to address the burning challenge of improving CESP and lowering GHG emissions in firms (Adu, Flynn, and Grey 2023a). For instance, from a cost reduction perspective, IC may help limit firm costs by saving resources (such as saving raw materials and recycling waste), thus reducing resource use (Chen, Lai, and Wen 2006) and reducing pollution (Guo, Wang, and Yang 2020).

Empirically, Bhuiyan, Baird, and Munir (2020) document a positive association of organisation innovation culture with the 'accountability to external stakeholders' aspect of CSR practices. Similarly, Ooi, Ooi, and Memon (2020) find a positive relationship between eco-innovation culture and CSR. Similarly, Guo, Wang, and Yang (2020) observe that green innovation culture has a beneficial impact on corporate environmental ethics. Further, Al Doghan et al. (2022) report that organisational innovative culture has a positive and significant effect

on green human resource management. In addition, Arsawan et al. (2022) find that innovation culture enhances firm performance and builds sustainable competitive advantage.

Consistent with the expectation of the environmental sustainability reforms that have been pursued in Bangladesh, the study predicts that organisation innovation culture initiatives can enhance CESP. For instance, and as discussed in Section 2, the CG code in Bangladesh calls for firms to progressively explore a means of engaging in improved investment in climate action. In particular, the code stresses the need for firms to engage in corporate environmental responsibility and comply with Bangladesh environmental standards. This highlights the crucial role corporate innovation culture can play in promoting CESP in the country. Based on the RBV and NIT perspectives, as well as the discussion above, and taking these findings together, our third hypothesis (Hypothesis 3) is stated as follows:

**Hypothesis 3.** *Organisation innovation culture is positively associated with enhancing CESP.*

#### 4.4 | EOC, Organisation Innovation Culture (IC) and CESP

Based on the beneficial attribute of RBV, employees—especially corporate executives—play a pivotal role in making choices and implementing significant decisions that can affect EOC and IC (Chen, Tee, and Chang 2022; Morrison, Adu, and Guo 2024; Adu et al. 2024). In this case, it can be asserted that increased employee commitment to green innovation initiatives (IC) can increase firms' engagement in environmental activities that can have a beneficial impact on CESP (Olekanma et al. 2024; Adu, Flynn, and Grey 2023a). In this context, RBV assumes that an appropriate organisational commitment strategy (such as greater EOC) can shift firms' attention towards green initiatives aimed at improving energy efficiency and help contribute to a reduction in GHG emissions (CESP) (Adu 2022). While a firm's GHG emission abatement programmes may provide long-term value creation, such investments are generally regarded as expensive (Morrison, Adu, and Guo 2024). This is due to the likelihood that these projects might demand a large outflow of funds while yielding uncertain financial advantages in the short term (Adu, Abedin, and Hasan 2023b; Haque and Ntim 2020). Furthermore, scholars suggest that CESP-related initiatives, especially GHG emission abatement projects/initiatives, require a labour-thorough setting, with well-trained and committed employees (EOC), to plan and execute (Haque and Ntim 2020). Some of these investments include developing renewable energy, providing green products/services and reducing risks associated with global warming disasters (Adu et al. 2024). The result is that firms might need to use suitable strategies to attract and/or encourage these skilled employees with greater levels of competence and an innovative perspective (Adu 2022; Morrison, Adu, and Guo 2024). Arguably, undertaking these expensive investments would require the cooperation and commitment of a firm's existing employees, especially top managers (Adu et al. 2023c; Adu 2022; Orazalin, Ntim, and Malagila 2024).

From the NIT perspective, firms that are exposed to environmental regulations and diverse stakeholder pressures



can employ EOC and IC as channels for improving their CESP (Orazalin, Ntim, and Malagila 2024; Adu, Flynn, and Grey 2022; Haque and Ntim 2020). In this case, firms may limit their GHG emissions through a green innovation culture and EOC (Adu, Flynn, and Grey 2023a). For instance, NIT suggests that because effective delivery of CESP is dependent on committed employees, firms that seek to improve their operational efficiency will put in place mechanisms to motivate their employees so as to increase their commitment towards IC and CESP (Adu 2022; Collier and Esteban 2007). As a result, the combined RBV and NIT theoretical perspective proposes that firms should design their EOC so that it encourages employees to make greater commitments to green innovation initiatives, particularly GHG emission reduction activities (Adu et al. 2024; Morrison, Adu, and Guo 2024). Aside from increasing corporate legitimacy (as per the social legitimacy view of NIT), investing in IC and CESP initiatives has the potential to provide firms with economic benefits in key areas such as operational efficiency (Orazalin, Ntim, and Malagila 2024; Adu, Abedin, and Hasan 2023b).

Based on the theoretical arguments and the discussion above, we expect that innovation culture and innovative approaches can help firms to overcome barriers to the adoption of environmental sustainability practices with a beneficial impact on CESP. As stated, prior studies have not examined the interrelationship between EOC, IC and CESP, so this study will provide one of the earliest types of evidence as to this relationship. In our study, EOC and IC are expected to play a significant role in driving CESP in line with the expectations of the CG code of Bangladesh. For example, green innovation initiatives are more likely to serve as crucial channels for increased CESP in the sampled firms in Bangladesh. This is largely based on the notion that the CG Code in the country encourages corporate executives to focus on improving their environmental engagements (corporate environmental responsibility), which can have a beneficial impact on CESP. Hence, the final hypothesis to be investigated is as follows:

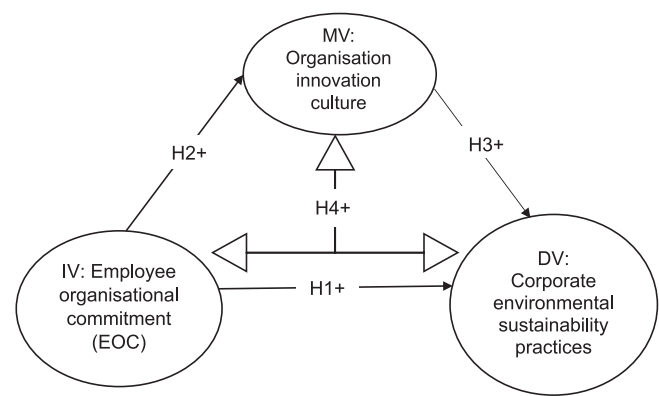
**Hypothesis 4.** *EOC promotes CESP through organisation innovation culture (IC).*

Figure 1 depicts the hypothesised relationships between the study's exogenous, mediating and endogenous variables.

## 5 | Method

### 5.1 | Sample and Sampling

This quantitative study is based on the survey data from Bangladeshi firms listed and non-listed on the Dhaka Stock Exchange. For the survey, target firms were identified from the Dun & Bradstreet (D&B) Hoovers database (One Source Information Services 2016). To make a list of the target firms, we controlled the database with two criteria: (i) whether a firm had a designation such as Chief Executive Officer (CEO), Chief Financial Officer (CFO), General Manager (GM) or similar title; and (ii) whether the firms had more than or equal to 50 full-time employees. This process produced a total of 522 firms. However, of these 522 firms, 62 were found not to have up-to-date contact



**FIGURE 1** | Conceptual model of the study.

information in the D&B Hoovers database, thus reducing the list to a total of 460 firms. We then surveyed one respondent from each of the 460 firms. During the 2 months of the survey, including a follow-up contact with non-respondents in the middle of the survey, we eventually got usable responses from a total of 201 respondents, including 53 responses from the follow-up contact. The total responses received represent a 43.70% success rate. Table 1a summarises the sampling process, while Table 1b provides the necessary statistics on the response rate and firm's profiles.

This sample size is adequate for SmartPLS structural equation modelling (SEM) as it meets both of the criteria suggested by researchers (e.g., Bhuiyan et al. 2023; Felix 2015). First, the sample size should be 10 times the number of items listed in the construct with the highest number of items (Bhuiyan et al. 2023; Pituch and Stevens 2016; Felix 2015; Chin and Newsted 1999). In our case, the construct 'CESP' contains nine items, which indicates a sample size of 90 respondents is adequate for the PLS analysis. Second, the sample size should be 10 times the number of paths directed to any endogenous variable in the model (Felix 2015; Chin and Newsted 1999). In this study, we have two paths directed to our endogenous variable, CESP, thereby rendering our sample size more than adequate to conduct PLS SEM analysis.

We followed Dillman, Smyth, and Christian's (2014) tailored design method (TDM) to design the survey questionnaire and to administer the survey. Following TDM, we then distributed survey instruments, including the questionnaire, to the sample respondents.

### 5.2 | Non-Response Bias Test

As our total responses came from two stages (initial and follow-up), there could be an issue of response and non-response bias in our study. However, to reduce the likelihood of non-response bias in our study, we took pre-post survey measures. As a part of the pre-survey measures, first, we strictly followed Dillman's (2011) TDM in designing our questionnaire and other survey instruments, including postcard and custom paid returned envelopes. Second, an assurance of anonymity was given through an accompanying letter that detailed that their information would be kept private and confidential. Finally, a pilot

**TABLE 1A** | Sampling process.

Initial list of target firms	: 522 firms
Missing sufficient and updated contact details	: 62 firms
Contactable sample firms	: 460 firms
Contactable respondents	:460 respondents (one from each firm)
Successful responses from initial survey	: 148 respondents
Successful responses from follow up	: 53 respondents
Total successful responses	: 201 respondents
Response rate	: 43.70%

**TABLE 1B** | A summary of response rates and firms' profiles.

Panel A: Response rate			
		No. of firms	Percentage
Total surveyed		460	—
Responses received		201	43.70
Early received (out of 201)		148	73.63
Late received (out of 201)		53	26.37
Panel B: Firms' profile ( <i>n</i> = 201)			
	Total surveyed	No. of firms responded	Percentage
Industry type			
Manufacturing	301	140	69.65
Service	137	57	28.36
Both	22	4	1.99
Total	= 460	= 201	= 100%
Firm type			
Domestic	386	176	87.60
Multinational	71	25	12.40
Total	= 460	= 201	= 100.0
Firm size (number of employees)			
50–249		71	35.30
250–499		26	12.90
500–999		21	10.40
1000 and above		48	23.90
Missing		35	17.40
Total		= 201	100.00

survey experiment was conducted among two academic experts and three industry professionals from the selected organisations, and the questionnaire was subsequently revised following

their observations to ensure that the questionnaire was easy to read and comprehend.

As a part of the post-survey measures, we followed the recommendations given by researchers (Podsakoff et al. 2003; Podsakoff, MacKenzie, and Podsakoff 2012; Armstrong and Overton 1977; and Roberts 1999) and conducted two tests. Firstly, we conducted Harman's one (single)-factor test. The exploratory factor analysis (EFA) statistics showed no factor exceeded a maximum cut-off of 50%. Secondly, we conducted an independent sample *t*-test between two groups of responses (initial and follow-up responses) employing SPSS (Version 25). The *t*-test statistics indicated no significant differences ( $p > 0.05$ ) between the responses of the initial and follow-up respondents on firm/respondent characteristics and variables of the study. Hence, we claim that non-response bias was not a concern in this study.

### 5.3 | Common Method Bias and Collinearity Test

As the same respondents gave their responses on both the exogenous and endogenous variables, the issue of common method bias and multicollinearity could have arisen. Hence, though we took steps before the survey to minimise the likelihood of these issues, we still calculated the collinearity statistics, in addition to Harman's one (single)-factor test that was discussed earlier (Section 5.2), as a post-survey measure. This showed that the variance inflation factor (VIF) scores ranged from 1.27 to 2.56 (see Table 2), thereby meeting the minimum threshold levels of no more than 4 (Hair et al. 2010; Ringle, Wende, and Becker 2015) and proving that multicollinearity issues and the common method bias were not likely to be a concern in this study.

### 5.4 | Variables Measurements and Their Reliability Tests

We utilised and adapted methods from the existing literature to measure all the constructs except for CESP.

#### 5.4.1 | Dependent Variable (DV)

The data for CESP,<sup>2</sup> an 8-item DV of the study, was developed following the 2011 OECD guidelines for responsible business. A 5-point Likert scale ranging from 1 (*Not at all*) to 5 (*To a great extent*) was given to the respondents to evaluate the extent to which each item reflected current practices in their organisations (see Appendix A for the construct's items). The PLS regression technique was applied to operationalise the measurement and structural models. The assessment of the reliability of the individual items of our study variables and their composite reliability (CR) and validity (convergent and discriminant) scores was produced from the measurement model statistics of the PLS regression analysis.

Individual item loading scores of the CESP variable range from 0.636 to 0.811 (see Tables 3 and 4). These scores exceed the minimum cutoff of 0.5, thus demonstrating adequate individual

**TABLE 2** | Collinearity statistics (VIF).

(Outer model—list):	VIF
EOC1	1.642
EOC5	1.590
EOC6	1.315
EOC8_R*	1.273
EOC9	1.837
CESP1	2.005
CESP2	2.000
CESP3	2.215
CESP4	2.510
CESP5	2.096
CESP6	2.562
CESP7	2.155
CESP8	2.317
CESP9	1.458
IC1	1.372
IC2	1.454
IC3	2.004
IC4	1.954
IC5	1.803

Abbreviations: CESP, corporate environmental sustainability practices; EOC, employee organisational commitment; IC, innovation culture; VIF, variance inflation factor.

item reliability (Hulland 1999). The construct reliability was obtained via Cronbach's alpha score ( $\alpha$ ) of 0.810 and CR of 0.912 (see Table 3) (Nunnally and Bernstein 1994). The validity (convergent and discriminant) of the variables is discussed in detail in Section 5.5.

#### 5.4.2 | Independent Variable (IV)

Our study used 'employee organisational commitment (EOC)', developed by Mowday, Steers, and Porter (1979), as an IV (see Appendix A for the construct's items). Respondents were asked to choose from 5-point Likert scale responses ranging from 1 (*Strongly disagree*) to 5 (*Strongly agree*) to indicate the extent to which they agreed with the nine different items of this variable, reflecting the extent to which their employees are committed to their organisation. Each individual item's loading scores to the construct is shown in Table 3. Out of the nine items, four were deleted because of low loading scores (lower than 0.5), but the remaining five items exceeded the minimum cutoff of 0.5 (see Tables 3 and 4) demonstrating adequate individual item reliability (Hulland 1999). As reported in Table 3, both the Cronbach's alpha ( $\alpha=0.750$ ) and CR (CR=0.835) scores of the construct are higher than the minimum cutoff of 0.70 (Nunnally and Bernstein 1994), indicating both the item and the construct's reliability.

#### 5.4.3 | Mediating Variable (MV)

The only MV of the study, 'Organisation Innovation Culture' (IC), was measured using five items adopted from Windsor and Ashkanasy (1996) (see Appendix A for the construct's items). The respondents were asked to assess the extent to which each item described their work environment on a 5-point Likert scale ranging from 1 (*Not at all*) to 5 (*To a great extent*). Individual item loading scores ranged from 0.641 to 0.833 (see Tables 3 and 4) and thus exceeded the minimum cutoff of 0.5, demonstrating adequate individual item reliability (Hulland 1999). Construct reliability was established via Cronbach's alpha score, achieving an ( $\alpha$ ) of 0.812 and CR of 0.865 (see Table 3) (Nunnally and Bernstein 1994).

#### 5.4.4 | Control Variables

Researchers posit that firm characteristics can influence corporate sustainability practices. For instance, sustainability practices may vary in accordance with firm size (Issah et al. 2024; Bhuiyan et al. 2023). Specifically, it is assumed that large firms are more likely to undertake sustainability practices compared with small enterprises. Furthermore, such practices can vary across different types of firms, i.e., domestic vs. multinational firms. Consequently, this study controlled for two variables (firm size and type) to reduce any endogeneity issues, to ensure a more comprehensive analysis and to increase the robustness of our statistical models (Issah et al. 2024; Appuhami 2019; Hall 2008). Firm size was measured in terms of the number of full-time employees. We considered them as 'small' firms with less than 250 full-time employees, medium-sized firms with 250–999 employees, and 'large' firms with or above 1000 employees.

#### 5.5 | Convergent and Discriminant Validity

Convergent validity of the constructs was tested using the item loading scores and the values of AVE. Our bootstrapping process provided item loading scores of 0.7 or more with some exceptions (see Table 4), while the AVE values on all constructs were more than 0.5 (see Table 3), which confirmed the convergent validity between the constructs (Fornell and Larcker 1981; Hair, Ringle, and Sarstedt 2011; Sharma et al. 2020).

With regard to checking the discriminant validity of the constructs, we employed both Cronbach's (1951) alpha scores for each construct and Fornell–Larcker's criterion (Hair, Ringle, and Sarstedt 2011). In our study, as reported in Table 5, Cronbach's (1951) alpha scores for each construct exceeded their correlations with other constructs, and the AVE of each latent construct was higher than the construct's highest squared correlation with any other latent construct (as required in Fornell–Larcker's criterion). Hence, discriminant validity was established.

#### 5.6 | Data Analysis

The survey data was analysed following PLS's two-stage evaluation procedures to validate the measurement models and test the hypothesised associations between the study variables. In



**TABLE 3** | Assessment of the measurement properties.

Constructs and references	Items	Loadings	Composite reliability (CR)	Cronbach's alpha (CA)	Average variance extracted (AVE)
EOC (IV)	EOC1	0.820	0.835	0.750	0.509
	EOC5	0.752			
	EOC6	0.560			
	EOC8 <sup>a</sup>	0.571			
	EOC9	0.819			
CESP (DV)	CESP1	0.755	0.912	0.810	0.588
	CESP2	0.756			
	CESP3	0.784			
	CESP4	0.811			
	CESP5	0.764			
	CESP6	0.817			
	CESP7	0.771			
	CESP8	0.792			
	CESP9	0.636			
IC (MV)	IC1	0.741	0.865	0.812	0.564
	IC2	0.641			
	IC3	0.833			
	IC4	0.810			
	IC5	0.715			

Abbreviations: CESP, corporate environmental sustainability practices; DV, dependent variable; EOC, employee organisational commitment; IC, innovation culture; IV, independent variable; MV, mediating variable.

<sup>a</sup>Item reverse coded.

doing so, we conducted bootstrapping of 5000 samples employing SmartPLS software (Version 4.0) and developed structural equation models across the variables of the study.

## 6 | Results

### 6.1 | Descriptive Statistics

Table 6 highlights our descriptive statistics constructs, including their inter-construct correlations. The constructs of the study are shown to be positively and significantly associated with one another. The mean values of the constructs 'corporate environmental sustainability practices (CESP) (3.9818)' and 'innovation culture (IC) (3.9222)' indicate the great extent to which environmental sustainability<sup>3</sup> and innovation culture practices<sup>4</sup> permeate the companies surveyed, while strong EOC was also observed (mean = 4.0261).

### 6.2 | Hypothesis Testing

To test the postulated hypothesised associations between the study variables, path coefficients, *t*-values and *p* values were calculated by employing the bootstrapping technique over 5000

subsamples. Table 7 shows the bootstrapping results of the resampling technique on the associations between EOC, IC and CESP. This table also records the influence of IC on the associations. Table 7 records the path coefficients, *t*-values and *p* values of our proposed hypotheses.

In respect to Hypothesis 1, the results (see Table 7 Panel A) show that EOC is positively associated with CESP, and the association is significant at a level of 0.01 ( $\beta = 0.410$ ,  $p = 0.000$ ). The *t*-value is more than 1.96, which supports our Hypothesis 1. This implies that employee commitment towards organisational environmental initiatives is crucial for promoting environmental sustainability practices within firms. This finding is in line with Tilleman's (2012) research: EOC (affective as opposed to normative) is positively associated with employee perceptions of EMPs and conforms with the findings of Pellegrini, Rizzi, and Frey (2018), who found that managers' value and support towards climate change initiatives influence employee commitment to environmental sustainability practices.

The results (see Table 7 Panel A) also show that EOC is positively and significantly associated with IC ( $\beta = 0.249$ ,  $t = 3.428$ ,  $p = 0.001$ ) and thus support our Hypothesis 2. This indicates that EOC is paramount in fostering an innovation culture within an organisation. Our findings here are similar to previous research,

which shows a positive association between EOC and innovation (Nguyen et al. 2019; Yang and Konrad 2011), innovative behaviour (Xerri and Brunetto 2013) and innovation performance (Rangus and Slavec 2017).

In respect to Hypothesis 3, as shown in Table 7 Panel A, our study documents similar findings, i.e., there is a positive association between IC and CESP, and the association is statistically

**TABLE 4** | Assessment of the measurement properties—cross-loadings (at the first-order level).

	EOC (IV)	CESP (DV)	IC (MV)
EOC1	<b>0.820</b>	0.479	0.224
EOC5	<b>0.752</b>	0.300	0.176
EOC6	<b>0.560</b>	0.255	0.170
EOC8_R <sup>a</sup>	<b>0.571</b>	0.286	0.200
EOC9	<b>0.819</b>	0.412	0.116
CESP1	0.401	<b>0.755</b>	0.332
CESP2	0.397	<b>0.756</b>	0.231
CESP3	0.343	<b>0.784</b>	0.346
CESP4	0.366	<b>0.811</b>	0.377
CESP5	0.411	<b>0.764</b>	0.419
CESP6	0.478	<b>0.817</b>	0.316
CESP7	0.484	<b>0.771</b>	0.324
CESP8	0.302	<b>0.792</b>	0.391
CESP9	0.257	<b>0.636</b>	0.522
IC1	0.370	0.414	<b>0.741</b>
IC2	0.023	0.279	<b>0.641</b>
IC3	0.198	0.353	<b>0.833</b>
IC4	0.168	0.398	<b>0.810</b>
IC5	−0.007	0.288	<b>0.715</b>

Note: The numbers highlighted as bold are considered the items under the variable named above in the same column.

Abbreviations: CESP, corporate environmental sustainability practices; DV, dependent variable; EOC, employee organisational commitment; IC, organisation innovation culture; IV, independent variable; MV, mediating variable.

<sup>a</sup>Item reverse coded.

significant at the level of 0.001 ( $\beta = 0.374$ ,  $p = 0.000$ ), with a  $t$ -value (6.501) of more than 1.96. This implies that the existence of an innovation culture in an organisation promotes environmental sustainability practice. This finding is consistent with previous studies. For instance, Bhuiyan, Baird, and Munir (2020) documented that organisation innovation culture is positively and significantly associated with the 'accountability to external stakeholders' dimension of corporate social practices, while Al Doghani et al. (2022) show a positive and significant association of organisation innovation culture with organisational green human resource management practices.

### 6.3 | Mediation Analysis

As shown in Table 7 Panel A and discussed above, EOC is positively and significantly associated with IC and IC with CESP; this study set out to analyse the mediation effect of IC in the association between EOC and CESP (Zhao, Lynch, and Chen 2010). As reported in Table 7 Panel B and Figure 2, we see that the association between EOC and CESP is indirect through IC and

**TABLE 6** | Descriptive statistics including the inter-construct correlations.

Variables	i. EOC	ii. CESP	iii. IC
Inter-correlations			
i. EOC (IV)	1		
ii. CESP (DV)	0.478**	1	
iii. IC (MV)	0.187**	0.450**	1
Descriptive statistics			
Mean	4.0261	3.9818	3.9222
Standard deviation	0.6418	0.6742	0.6743
Theoretical range	1–5	1–5	1–5
Minimum	2.20	1.11	2.00
Maximum	5.00	5.00	5.00

Note: ( $n = 199$ ).

Abbreviations: CESP, corporate environmental sustainability practices; DV, dependent variable; EOC, employee organisational commitment; IC, organisation innovation culture; IV, independent variable; MV, mediating variable.

\*\*Correlations are significant at the level of 0.01 (2-tailed test).

**TABLE 5** | Assessment of the measurement properties (for discriminant validity test).

Constructs	Fornell–Larcker discriminant validity					
	Cronbach's alpha score ( $\alpha$ )	CR	AVE	EOC	CESP	IC
EOC (independent variable)	0.750	0.835	0.509	<b>0.714</b>		
CESP (dependent variable)	0.810	0.912	0.588	0.503	<b>0.767</b>	
IC (mediating variable)	0.812	0.865	0.564	0.249	0.476	<b>0.751</b>

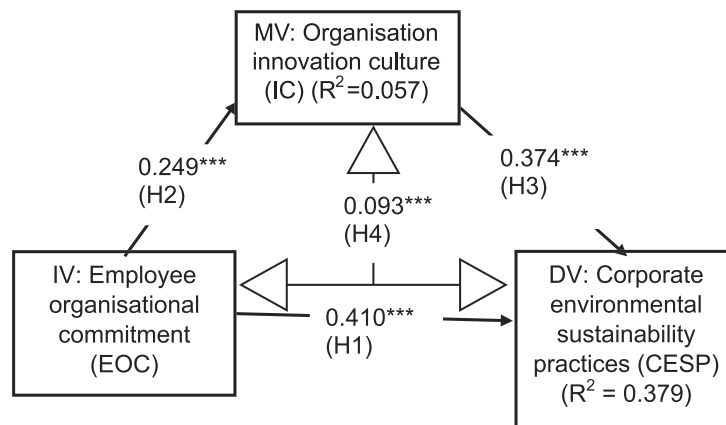
Note: Bold numbers have been used to compare those numbers with the Cronbach's alpha score.

Abbreviations: AVE, average variance extracted; CA, Cronbach's alpha; CESP, corporate environmental sustainability practices; CR, composite reliability; EOC, employee organisational commitment; IC, organisation innovation culture.

**TABLE 7** | Path analysis statistics.

	Path coefficient ( $\beta$ )	Standard deviation	T statistics	p values
Panel A: Direct effects				
EOC (IV) $\rightarrow$ CESP (DV)	0.410	0.051	8.012	0.000
EOC (IV) $\rightarrow$ IC (MV)	0.249	0.073	3.428	0.001
IC (MV) $\rightarrow$ CESP (DV)	0.374	0.058	6.501	0.000
Panel B: Indirect effect				
EOC (IV) $\rightarrow$ IC (MV) $\rightarrow$ CESP (DV)	0.093	0.028	3.357	0.001
			2.5%	97.5%
Confidence interval (bias corrected)			0.036	0.143
Panel C: Total effects				
EOC (IV) $\rightarrow$ CESP (DV)	0.503	0.050	10.041	0.000
EOC (IV) $\rightarrow$ IC (MV)	0.249	0.073	3.428	0.001
IC (MV) $\rightarrow$ CESP (DV)	0.374	0.058	6.501	0.000

Abbreviations: CESP, corporate environmental sustainability practices; DV, dependent variable; EOC, employee organisational commitment; IC, organisation innovation culture; IV, independent variable; MV, mediating variable.



\*\*\* Paths are significant at less than 1% or  $p < 0.01$

H1: Employee organisational commitment promotes corporate environmental sustainability practices.

H2: Employee organisational commitment is positively associated with organisational innovation culture.

H3: Organisational innovation culture is positively associated with enhancing corporate environmental sustainability practices.

H4: Employee organisational commitment promotes corporate environmental sustainability practices through organisational innovation culture.

IV stands for independent variable; DV for dependent variable; and MV for mediating variable.

**FIGURE 2** | Path analysis bootstrapping results for the SEM model.

that this indirect effect is significant at the level of 0.01 and the  $t$ -value (3.357) is more than 1.96. These figures thus establish the mediation effect of IC. This is a partial mediation<sup>5</sup> as the direct effect of EOC on CESP is positive and significant. In addition, the product of the three paths (EOC to IC, IC to CESP and EOC to CESP) is positive, making it thus a complementary mediation (Zhao, Lynch, and Chen 2010). Overall, our results support our Hypothesis 4 by providing evidence of the complementary partial mediation effect of IC in the association between EOC and CESP.

## 6.4 | Robustness Test and Endogeneity Check

Given that sustainability is a more likely practice within larger firms than small firms, it is reasonable to assume that environmental sustainability practices can be contingent on firm size (Bhuiyan et al. 2023). Consequently, to control for the endogeneity issue and to test the validity of the base SEM results (given in Table 7 and Figure 2), this study controlled for a firm's characteristics, i.e., firm size (measured in terms of the number of full-time employees; see details in Section 5.4.4) in the base SEM model.



Furthermore, following the prior study (Bhuiyan et al. 2023), we also controlled for an instrumental variable such as firm type (i.e., domestic or multinational) in our base SEM model and tested the model through the least squares regression technique to check whether endogeneity is likely to be an issue in our case or not.

As reported in Table 8 and Figure 3, the SEM results for the model, including the control and instrumental variables, indicate that the significant path coefficients for the hypothesised relationships remain the same as in the base SEM model reported in Table 7 and Figure 2, thereby indicating that the endogeneity issue is less likely to be a concern in this study. In addition, neither firm size nor firm type exhibits a significant association with either of the endogenous variables, i.e., IC and CESP. Accordingly, these additional validity tests with the control and instrumental variables provide evidence of the robustness of the SEM results found in the base SEM model reported in Table 7 and Figure 2.

The summary of the findings with respect to the postulated hypotheses is given in Table 9.

## 7 | Discussion

Business environments in Bangladesh are evolving towards greater sustainability commitment, with private and public sectors integrating environmental, social and governance principles. However, Bangladesh is still in the early stages of developing and implementing CG guidelines. It was in 2006 that Bangladesh first introduced CG rules, named

‘Corporate Governance Code-2006’, later updated to ‘Corporate Governance Code-2012’ and ‘Corporate Governance Code-2018’. The Bangladeshi business sector has experienced several corporate collapses and scams over the past two decades, including Adamjee Jute Mills Corporation Ltd’s collapse (2002), Hallmark’s scandal (2012) and The Share Market Downturn (2010) (Sarker and Hossain 2023). Among other factors, poor CG has contributed to many company failures, emphasising the need for enhancing and reshaping governance. It is worth mentioning that corporate environmental responsibility, as well as compliance with Bangladesh environmental standards, is covered extensively in the revised code. However, there are still critical policy questions as to whether the revised code can enhance EOC, IC and CESP standards in the country.

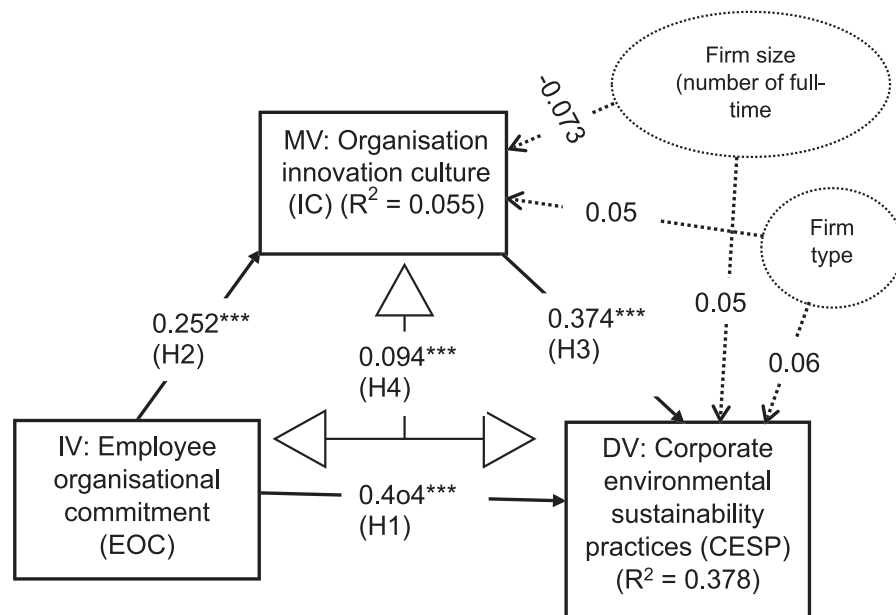
In this paper, we aimed to answer two fundamental environmental sustainability questions, specifically, whether (i) EOC is directly associated with CESP or (ii) if it is indirectly associated with CESP through IC. The findings of this quantitative study provided evidence that EOC does promote CESP. In particular, it proved that employees who are positively motivated towards a company, who are valued by the company, felt proud of the company and were thus inclined to make positive contributions to the betterment of the company, thus proving to be a positive force in enhancing CESP. This finding is in line with the discourse of RBV and the economic perspective of NIT. For instance, RBV holds that it is the efforts from the employees (EOC) of a firm that are required to instigate proactive environmental practices within the firm, while the economic perspective of NIT argues that the delivery of enhanced CESP is largely dependent

**TABLE 8** | Path analysis statistics with control variables (firm size and type).

	Path coefficient ( $\beta$ )	Standard deviation	T statistics	p values
Panel A: Direct effects				
EOC $\rightarrow$ CESP	0.404	0.052	7.768	0.000
EOC $\rightarrow$ IC	0.252	0.074	3.413	0.001
IC $\rightarrow$ CESP	0.374	0.058	6.477	0.000
NOE $\rightarrow$ CESP	0.052	0.050	1.022	<b>0.307</b>
NOE $\rightarrow$ IC	−0.073	0.070	1.042	<b>0.298</b>
TOO $\rightarrow$ CESP	0.066	0.054	1.224	<b>0.221</b>
TOO $\rightarrow$ IC	0.058	0.061	0.952	<b>0.341</b>
Panel B: Indirect effects				
EOC $\rightarrow$ IC $\rightarrow$ CESP	0.094	0.029	3.306	0.001
NOE $\rightarrow$ IC $\rightarrow$ CESP	−0.027	0.027	1.018	<b>0.309</b>
TOO $\rightarrow$ IC $\rightarrow$ CESP	0.022	0.024	0.916	<b>0.360</b>
Confidence interval (bias corrected)			2.5%	97.5%
EOC $\rightarrow$ IC $\rightarrow$ CESP			0.037	0.148
NOE $\rightarrow$ IC $\rightarrow$ CESP			−0.080	0.026
TOO $\rightarrow$ IC $\rightarrow$ CESP			−0.023	0.072

Note: Bold numbers highlight the non-significant paths.

Abbreviations: CESP, corporate environmental sustainability practices; EOC, employee organisational commitment; IC, organisation innovation culture; NOE, number of employees (as organisation size); TOO, type of organisation.



\*\*\* Paths are significant at less than 1% or  $p < 0.01$

H1: Employee organisational commitment promotes corporate environmental sustainability practices.

H2: Employee organisational commitment is positively associated with organisational innovation culture.

H3: Organisational innovation culture is positively associated with enhancing corporate environmental sustainability practices.

H4: Employee organisational commitment promotes corporate environmental sustainability practices through organisational innovation culture

IV stands for independent variable; DV for dependent variable; and MV for mediating variable

**FIGURE 3** | Path analysis bootstrapping results on variables including compounding (controlling and instrumental) variables.

**TABLE 9** | Summary of hypothesis testing.

Hypothesis	Decision
Hypothesis 1: Employee organisational commitment promotes corporate environmental sustainability practices.	Accepted
Hypothesis 2: Employee organisational commitment is positively associated with organisation innovation culture.	Accepted
Hypothesis 3: Organisation innovation culture is positively associated with enhancing corporate environmental sustainability practices.	Accepted
Hypothesis 4: Employee organisational commitment promotes corporate environmental sustainability practices through organisation innovation culture.	Accepted (complimentary partial mediation)

on responsive employees. Thus, firms seeking to improve their environmental initiatives should pay more attention to ensuring EOC (Adu 2022; Collier and Esteban 2007). The findings of this study coincide with the previous relevant literature that posits that environmental sustainability initiatives are substantially shaped/influenced by EOC (e.g., Lee, Kim, and Kim 2018; Hartmann and Uhlenbruck 2015; Tillemann 2012; Collier and Esteban 2007).

Regarding the impact of EOC on IC, our study highlights the importance of EOC in promoting innovation culture within an organisation. This finding indicates that committed employees are more likely to show willingness to welcome and embrace innovation within an organisation because of their strong motivation towards ensuring their organisation's success and growth. Innovation is one of the unescapable priorities of an organisation's success and growth. Our findings support the existing literature on innovation, proving that EOC fosters organisation innovation culture, competitiveness and success (Sharma et al. 2021; Nguyen et al. 2019; Lukes and Stephan 2017; Rangus and Slavec 2017; Yang and Konrad 2011; France and Carney 2002). However, our results do not agree with Hidalgo-Peñate, Nieves, and Padrón-Robaina (2022), who evidenced that, unless there is an organisational culture that promotes collective activities and looks after employees' well-being, human capital and affective commitment alone do not have a significant impact on innovativeness.

In relation to the impact of IC on enhancing CESP, our study highlights the importance of an organisation's innovation culture in promoting CESP. This implies that an organisation should adopt innovation culture practices to optimise their resource utilisation and transit to more energy-efficient operational practices, thereby improving their CESP efforts (Adu, Flynn, and Grey 2023a). For instance, practices such as developing eco-friendly products or processes and implementing green innovations can enhance CESP through reducing the amount of GHG emissions (Hart and Dowell 2011; Barney 1991). Our findings are in line with the existing literature on innovation culture and energy efficiency on the following: GHG emissions (Adu, Flynn, and Grey 2023a; Guo, Wang, and Yang 2020); the release of toxic substances and natural resources consumption (Chen et al. 2023); the 'accountability to external stakeholders' aspect of CSR practices (Bhuiyan, Baird, and Munir 2020); green human resource management (Al Doghan et al. 2022); and on firm performance and the building of sustainable competitive advantage (Arsawan et al. 2022).

Our unique study on the impact of EOC on CESP through IC also found the mediating role of IC on the positive relationship between EOC and CESP. Our results indicate that EOC is a positive driver that fosters an innovation culture within an organisation, while an innovation culture leads to higher engagement in environmental sustainability practices. These results coincide with the existing literature examining firms employing EOC and IC as channels for improving their CESP (Orazalin, Ntim, and Malagila 2024; Adu, Flynn, and Grey 2022; Haque and Ntim 2020). This existing research suggests that firms may limit their GHG emissions through green innovation culture and EOC (Adu, Flynn, and Grey 2023a). Also, firms that seek to improve their operational efficiency exert mechanisms to motivate employees to increase their commitment towards IC and CESP (Adu 2022; Collier and Esteban 2007).

## 8 | Conclusion

Our study provides evidence of the positive influence of EOC on enhancing CESP directly and also indirectly through organisation innovation culture and thus reinforces the importance of EOC and innovation culture in promoting CESP. These findings advise organisations to pay attention to building strong employee commitment and to fostering the culture of innovation within their company.

Our study contributed to the sustainability literature in a few different ways. First, in this study, EOC, IC and CESP are examined in a combined framework for the first time. As far as we know, this study is one of the earliest studies that examines and demonstrates the direct effects of EOC on CESP. Secondly, this research contributes to the scarce literature on the impact of EOC on IC. Third, more significantly, this paper enriches the emerging research on CESP. Specifically, our study is among the first to examine the direct and indirect (through innovation culture) effects of EOC on CESP.

The findings of the study anticipate one theoretical and three practical implications. Firstly, that the study would attract future studies on these aspects, especially relating to the direct

impact of EOC on IC and the mediating role of IC on the EOC–CESP nexus. Secondly, we found that EOC directly impacts CESP. This indicates that corporations may initiate various policies to improve EOC, be that via employee stock ownership or remuneration increases, to enhance CESP. Thirdly, we found that EOC has a positive impact on IC. The latter suggests, therefore, that corporations should initiate policies to improve EOC, possibly through offering employees more opportunities to experiment, the liberty to innovate or through employee risk management programmes to enhance IC and consequently to facilitate CESP. Finally, we found that IC positively moderates the EOC–CESP nexus; therefore, we expect that corporations will utilise the opportunities to IC to manage the EOC–CESP nexus. We believe that a corporation's additional focus on IC, especially in this era of innovations, will capitalise on and drive their commitment to better performance in both EOC and CESP.

Similar to other survey-based studies, this study is subject to the usual limitations of the survey method, including survey selection and causal relationship bias (Luft and Shields 2014). However, in order to control for sample selection bias, this study surveyed all the organisations listed in the D&B Hoovers database that fell within the selection criteria statements mentioned earlier in Section 4.1. Furthermore, given the tendency of organisations to be non-responsive to surveys, especially those organisations that may be performing poorly in protecting the overall environment, this study followed Dillman's (2011) total design method, designing and phrasing survey questions in a generic manner (Pedersen and Gwozdz 2014). Further studies may generate deeper insights into the research phenomenon by obtaining information from multiple informants within an organisation instead of from one informant only from each of the sample organisations in order to measure and validate the constructs and findings; following a mixed method of data collection (i.e., a combination of interview and archival or panel data); considering a broader context from economically and culturally similar nationalities; and examining the determinants of building employee commitment to organisations in order to promote CESP.

### Disclosure

We, the authors, declare that we have not used generative AI and AI-assisted technologies in the writing process of this manuscript.

### Conflicts of Interest

The authors declare no conflicts of interest.

### Endnotes

<sup>1</sup> <https://www.theguardian.com/environment/2021/jan/20/paris-climate-agreement-joe-biden-returns-us>.

<sup>2</sup> The term 'CESP' encompasses the environmental aspect of 'corporate social responsibility'.

<sup>3</sup> Mean scores of 4 and above indicate a high level of corporate environmental sustainability practice, while mean scores of 3 and below 4 are considered moderate.

<sup>4</sup> Mean scores of 4 and above indicate an organisation can be considered to have a strong focus on innovation culture, while a score of 3 would indicate moderate levels of innovation culture.



<sup>5</sup> Researchers define partial mediation as one in which both (i) indirect effect (the effect of independent variable on dependent variable through mediator) and (ii) direct effect (the effect of independent variable on dependent variable) are statistically significant (Zhao, Lynch, and Chen 2010; MacKinnon, Fairchild, and Fritz 2007). It means that a dependent variable is not only influenced by an independent variable through a mediating variable but that there is also a direct influence of an independent variable on the dependent variable.

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## Appendix A

### Construct's Items

1. Employee organisational commitment (EOC):
  - 1.1. I am quite proud to be able to tell people who it is I work for.
  - 1.2. I sometimes feel like leaving this company for good\*.
  - 1.3. I am not willing to put myself out just to help the company\*.
  - 1.4. Even if my company was not doing well financially, I would be reluctant to change to another employer\*.
  - 1.5. I feel that I am a part of the company.
  - 1.6. In my work, I like to feel I am applying some effort not just for myself but for the company as well.
  - 1.7. The offer of a small increase in remuneration by another employer would not seriously make me think of changing my job\*.
  - 1.8. I would not advise a close friend to join my company. Instigate
  - 1.9. I am determined to make a contribution for the good in my company.

\* indicate deleted items due to low loading score (less than 0.5).

2. Organisation Innovation culture (IC):
  - 2.1. A willingness to experiment.
  - 2.2. Not being constrained by many rules.
  - 2.3. Being quick to take advantage of opportunities.
  - 2.4. Being innovative.
  - 2.5. Risk taking.
8. Corporate environmental sustainability practices (CESP):
  - 3.1. Our company has established an environmental management system for the collection, monitoring, evaluation and verification of adequate and timely information regarding the environmental, health and safety impact of activities.
  - 3.2. Our company provides the public and workers with adequate, measurable, verifiable and timely information on the potential environment, health and safety impact of our activities.
  - 3.3. Our company communicates and consults in a timely manner with the community directly affected by its environmental, health and safety policies and executes these policies.
  - 3.4. Our company assesses and addresses the foreseeable environmental, health and safety-related impacts associated with the processes, goods and services of the enterprise over their full life cycle.
  - 3.5. Our company is aware of the scientific and technical understanding of the risks of serious damage to the environment, human health and safety.
  - 3.6. Our company maintains contingency plans for preventing, mitigating and controlling serious environmental and health damage in respect to operations.
  - 3.7. Our company continually seeks to improve its environmental performance.
  - 3.8. Our company provides adequate education and training to workers in environmental health and safety matters.
  - 3.9. Our company contributes to the development of environmentally meaningful and economically efficient public policy to enhance environmental awareness.