

Institutional Dynamics and Corporate Sustainability: The Cascading Effects of Environmental Legislation on Firm-Level Practices in Vietnam's Emerging Economy

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Abstract: *This study investigates the complex relationships between environmental legislation, managerial environmental attitudes, organizational environmental strategies, and corporate sustainability performance, while considering the moderating effects of firm size and industry type. Using a mixed-methods approach, we collected data from 543 manufacturing firms and employed both partial least squares structural equation modeling (PLS-SEM) and fuzzy-set Qualitative Comparative Analysis (fsQCA). Our findings reveal a cascading effect of environmental legislation on corporate sustainability performance, mediated by managerial attitudes and organizational strategies. The results demonstrate the critical role of environmental legislation in shaping managerial attitudes and organizational strategies, which in turn significantly influence corporate sustainability performance. The fsQCA results identify multiple pathways to high sustainability performance, highlighting the equifinality in achieving this outcome. Firm size and industry type were found to moderate several relationships in the model, providing a more nuanced understanding of the drivers of corporate sustainability. This study contributes to the literature by offering empirical evidence for the interconnected nature of regulatory, managerial, and organizational factors in driving sustainability performance, demonstrating the equifinality in achieving high sustainability performance, and highlighting the importance of contextual factors. These findings have significant implications for policymakers, managers, and researchers in the field of corporate sustainability.*

Keywords: Corporate sustainability performance, Environmental legislation, Managerial environmental attitudes, Organizational environmental strategies, Fuzzy-set Qualitative Comparative Analysis (fsQCA).

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1. Introduction

In an era of escalating environmental concerns and increasing global pressure for sustainable development, the interplay between institutional frameworks and corporate practices has become a focal point of academic and policy discussions. The adoption and implementation of environmental legislation, particularly in emerging economies, present a complex yet crucial area of study that intersects with broader debates on institutional theory, corporate sustainability, and economic development (North, 1990; DiMaggio and Powell, 1983). This research examines the cascading effects of environmental legislation on firm-level sustainability practices in Vietnam's emerging economy, offering a nuanced exploration of how institutional dynamics shape corporate behaviour in the context of rapid economic growth and environmental challenges. By doing so, it contributes to the growing body of literature on institutional theory and corporate

sustainability, while also addressing the pressing need for empirical studies in diverse economic contexts (Bansal and Song, 2017).

The significance of this study lies in its potential to bridge theoretical insights with practical implications. As emerging economies grapple with the dual imperatives of economic development and environmental protection, understanding the mechanisms through which institutional changes influence corporate practices becomes paramount. Vietnam, as one of Southeast Asia's fastest-growing economies, provides a compelling case study for examining these dynamics (World Bank, 2021). Theoretically, this research advances our understanding of institutional theory by exploring the 'cascading effects' of legislative changes – a concept that extends beyond simple cause-and-effect relationships to encompass the complex, multi-layered impacts of institutional shifts on organisational behaviour (Scott, 2008). By focusing on environmental legislation and its influence on corporate sustainability practices, we contribute to the ongoing

academic discourse on the role of formal institutions in shaping organisational responses to sustainability challenges (Hoffman and Jennings, 2015).

Moreover, this study addresses a significant gap in the literature by examining these dynamics in the context of an emerging economy. While extensive research has been conducted on corporate sustainability in developed economies, there remains a dearth of comprehensive studies exploring how institutional changes affect firm-level practices in rapidly evolving economic environments (Jamali and Karam, 2018). This research aims to fill this gap, offering insights that may be applicable to other emerging economies facing similar challenges.

The novelty of this study lies in its integrated approach, which combines institutional theory with corporate sustainability frameworks to provide a holistic understanding of the relationship between environmental legislation and firm-level practices. By examining the 'cascading effects' of legislative changes, we move beyond simplistic models of institutional influence to explore the complex, often non-linear ways in which policy changes permeate through different levels of organisational decision-making and action. Furthermore, this research contributes to the growing field of sustainability transitions in emerging economies. As countries like Vietnam seek to balance economic growth with environmental protection, understanding the mechanisms through which policy changes influence corporate behaviour becomes crucial for effective governance and sustainable development (Geels et al., 2017).

In summary, this study addresses a critical gap in our understanding of institutional dynamics and corporate sustainability in emerging economies. By examining the cascading effects of environmental legislation on firm-level practices in Vietnam, we aim to contribute both theoretically and empirically to the fields of institutional theory, corporate sustainability, and development studies. The insights gained from this research have the potential to inform policy-making, corporate strategy, and future academic inquiries in the vital arena of sustainable development in rapidly evolving economic contexts.

2. Literature review and theoretical framework

2.1. Institutional Theory and Corporate Sustainability

2.1.1. Foundations of Institutional Theory

Institutional theory has emerged as a powerful framework for understanding organisational behaviour and societal structures. Rooted in the seminal works of scholars such as Meyer and Rowan (1977) and DiMaggio and Powell (1983), institutional theory posits that organisations are embedded in broader social and cultural contexts that shape their structures and practices. This perspective challenges the notion of organisations as purely rational entities, instead emphasising the role of social norms, cultural beliefs, and regulatory pressures in shaping organisational behaviour. The core tenet of institutional theory is that organisations seek legitimacy within their institutional environment, often leading to isomorphism – the tendency for organisations within a field to become increasingly similar over time (DiMaggio and Powell, 1983). This isomorphism can be coercive (resulting from formal and informal pressures), mimetic (arising from uncertainty and

leading to imitation), or normative (stemming from professionalisation) (Scott, 2008).

In recent years, institutional theory has evolved to incorporate a more dynamic view of institutions, recognising the role of agency and institutional entrepreneurship in shaping and changing institutional environments (Lawrence et al., 2011). This evolution has made institutional theory particularly relevant for studying complex phenomena such as corporate sustainability, where organisations must navigate changing societal expectations and regulatory landscapes.

2.1.2. Institutional Pressures and Corporate Responses

The application of institutional theory to corporate sustainability has yielded valuable insights into how organisations respond to environmental and social pressures. Institutional pressures for sustainability can emanate from various sources, including regulatory bodies, industry norms, stakeholder expectations, and broader societal values (Bansal, 2005). Delmas and Toffel (2004) argue that organisations' responses to these pressures are not uniform but are instead mediated by firm-specific factors such as organisational structure, managerial attitudes, and resource capabilities. This heterogeneity in responses challenges the simplistic view of institutional isomorphism and highlights the complex interplay between institutional pressures and organisational characteristics.

Empirical studies have demonstrated a range of corporate responses to institutional pressures for sustainability. These responses can vary from symbolic compliance to substantive changes in organisational practices and strategies (Berrone et al., 2013). For instance, Sharma and Henriques (2005) found that firms in the Canadian forestry industry adopted different sustainability practices based on the salience of various stakeholder groups, illustrating the nuanced nature of institutional influences.

2.1.3. The Role of Formal Institutions in Shaping Sustainability Practices

While institutional theory encompasses both formal and informal institutions, the role of formal institutions – particularly regulatory frameworks – in shaping corporate sustainability practices has received significant attention. Environmental legislation, as a key formal institution, plays a crucial role in setting the parameters for corporate environmental behaviour (Hoffman, 1999). The impact of formal institutions on corporate sustainability practices is multifaceted. On one hand, regulatory pressures can drive compliance and the adoption of minimum environmental standards. On the other hand, well-designed environmental policies can stimulate innovation and proactive environmental strategies that go beyond compliance (Porter and van der Linde, 1995).

Recent research has highlighted the importance of institutional quality in determining the effectiveness of environmental regulations. Cullen et al. (2021) found that the impact of environmental regulations on firm performance is contingent on the strength of a country's formal institutions, emphasising the need for a holistic understanding of the institutional context. However, the relationship between formal institutions and corporate sustainability practices is not unidirectional. Organisations can also influence the development and implementation of formal institutions through various means, including lobbying, participation in industry associations, and public-private

partnerships (Delmas and Montes-Sancho, 2011). This dynamic interaction between formal institutions and corporate practices underscores the complex nature of institutional influences on corporate sustainability.

In the context of emerging economies like Vietnam, the role of formal institutions in shaping sustainability practices takes on added significance. As these economies rapidly develop and integrate into global markets, they face the challenge of strengthening their institutional frameworks to promote sustainable development. Understanding how formal institutions, particularly environmental legislation, influence corporate sustainability practices in these contexts is crucial for developing effective policies and promoting sustainable economic growth (Jamali and Karam, 2018).

2.2. Environmental Legislation and Corporate Behaviour

2.2.1. The Evolution of Environmental Legislation

Environmental legislation has undergone significant evolution over the past few decades, reflecting growing global awareness of environmental issues and the need for sustainable development. The trajectory of environmental legislation can be traced from early command-and-control approaches to more recent market-based instruments and voluntary initiatives (Tietenberg and Lewis, 2018).

In the 1970s and 1980s, environmental legislation primarily focused on end-of-pipe solutions and fixed emissions standards. The United States' Clean Air Act of 1970 and Clean Water Act of 1972 exemplify this approach (Kraft, 2017). However, as understanding of environmental challenges grew more nuanced, legislation began to shift towards more flexible and economically efficient mechanisms. The 1990s saw the rise of market-based instruments, such as emissions trading schemes, epitomised by the U.S. Acid Rain Program (Stavins, 1998).

More recently, environmental legislation has expanded to encompass broader sustainability concerns, including climate change, biodiversity loss, and resource depletion. The Paris Agreement of 2015 marks a significant milestone in this evolution, representing a global commitment to addressing climate change (Falkner, 2016). Concurrently, there has been a trend towards more integrated approaches to environmental governance, as exemplified by the European Union's Environmental Action Programmes (Hildebrand, 2016).

In emerging economies like Vietnam, environmental legislation has often followed a compressed version of this evolution, rapidly moving from basic pollution control measures to more comprehensive environmental protection frameworks. The Vietnamese Law on Environmental Protection, first enacted in 1993 and subsequently revised in 2005, 2014, and 2020, reflects this rapid evolution (Ortmann, 2017).

2.2.2. Compliance and Beyond: Corporate Responses to Environmental Regulations

Corporate responses to environmental regulations have been diverse, ranging from reluctant compliance to proactive engagement and innovation. Early research often portrayed environmental regulations as a burden on businesses, emphasising the costs of compliance (Jaffe et al., 1995). However, this view has been challenged by scholars who argue that well-designed

environmental regulations can stimulate innovation and improve competitiveness, a perspective famously articulated in Porter's hypothesis (Porter and van der Linde, 1995).

Empirical studies have revealed a spectrum of corporate responses to environmental regulations. Some firms adopt a reactive stance, focusing on minimum compliance to avoid penalties. Others take a more strategic approach, viewing environmental performance as a source of competitive advantage. Aragón-Correa and Sharma (2003) developed a contingency perspective on proactive corporate environmental strategies, arguing that firms' responses are influenced by factors such as organisational capabilities, managerial perceptions, and competitive environment.

Research has also highlighted the role of firm characteristics in shaping responses to environmental regulations. For instance, Darnall et al. (2010) found that larger firms and those with greater internal environmental expertise are more likely to go beyond compliance in their environmental practices. Similarly, Delmas and Toffel (2008) demonstrated that firms' receptivity to different institutional pressures varies based on organisational factors such as their position in the supply chain and ownership structure.

In the context of emerging economies, studies have shown that multinational corporations often play a significant role in diffusing advanced environmental practices, sometimes exceeding local regulatory requirements (Christmann and Taylor, 2001). However, the effectiveness of this diffusion depends on various factors, including the strength of local institutions and the nature of stakeholder pressures (Surroca et al., 2013).

2.2.3. The Concept of 'Cascading Effects' in Institutional Change

The concept of 'cascading effects' in institutional change provides a valuable framework for understanding the complex, multi-level impacts of environmental legislation on corporate behaviour. This concept suggests that changes in formal institutions, such as the introduction of new environmental laws, can trigger a series of interconnected changes across different levels of analysis – from organisational fields to individual firms and even to intra-firm processes (Greenwood et al., 2011).

The cascading effects of institutional change can be both vertical (across levels of analysis) and horizontal (across different actors within the same level). For instance, a new environmental law might lead to changes in industry standards (horizontal cascade at the field level), which in turn influence individual firms' strategies (vertical cascade to the organisational level), ultimately affecting operational practices and employee behaviour within firms (further vertical cascade to the intra-organisational level) (Scott, 2008).

Empirical studies have provided evidence of such cascading effects in various contexts. For example, Hoffman (1999) documented how changes in U.S. environmental regulations led to the emergence of new organisational roles, the development of industry-wide environmental management practices, and shifts in corporate culture within the chemical industry. Similarly, Lounsbury (2001) showed how the institutionalisation of recycling practices in the U.S. cascaded from federal legislation to state-level policies, then to the creation of new organisational forms, and finally to changes in waste management practices at the firm level.

In the context of emerging economies, the concept of cascading effects takes on added significance due to the rapid pace of

institutional change. Peng (2003) argues that in transition economies, changes in formal institutions can trigger fundamental shifts in business strategies and organisational forms. However, the nature and extent of these cascading effects may be influenced by the strength of existing informal institutions and the capacity of organisations to respond to institutional changes (Estrin and Prevezer, 2011).

Understanding these cascading effects is crucial for policymakers and corporate leaders alike. For policymakers, it highlights the need to consider the broader implications of environmental legislation beyond immediate compliance. For corporate leaders, it underscores the importance of developing adaptive capabilities to navigate complex institutional changes (Greenwood and Hinings, 1996).

2.3. Corporate Sustainability in Emerging Economies

2.3.1. Challenges and Opportunities for Sustainability in Developing Contexts

Corporate sustainability in emerging economies presents a unique set of challenges and opportunities that differ significantly from those in developed economies. These contexts are characterised by rapid economic growth, evolving institutional frameworks, and complex societal challenges, all of which influence the adoption and implementation of sustainability practices (Jamali and Karam, 2018).

One of the primary challenges in developing contexts is the potential tension between economic development imperatives and sustainability goals. Governments and businesses in these economies often prioritise short-term economic growth over long-term environmental and social considerations (Puppim de Oliveira, 2008). This can lead to weak enforcement of environmental regulations and a lack of incentives for firms to invest in sustainable practices.

However, emerging economies also offer unique opportunities for sustainability innovation. The absence of entrenched infrastructure and business models can allow for the adoption of more sustainable technologies and practices from the outset, a phenomenon known as "leapfrogging" (Perkins, 2003). For instance, some developing countries have been able to bypass traditional energy systems and move directly to renewable energy solutions (Szabó et al., 2013).

Moreover, the growing middle class in many emerging economies is increasingly demanding sustainable products and services, creating new market opportunities for businesses (Govindan et al., 2014). This shift in consumer preferences, coupled with increasing global supply chain pressures, is driving some firms in emerging economies to adopt more sustainable practices as a means of gaining competitive advantage in both domestic and international markets.

2.3.2. The Vietnamese Context: Economic Growth and Environmental Concerns

Vietnam presents a compelling case study of the interplay between rapid economic growth and mounting environmental concerns in an emerging economy. Since the implementation of 'Doi Moi' economic reforms in 1986, Vietnam has experienced remarkable economic growth, with an average annual GDP growth rate of 6.5% between 1986 and 2019 (World Bank, 2021). This growth has

lifted millions out of poverty but has also led to significant environmental challenges.

The country's industrial expansion has resulted in increased air and water pollution, deforestation, and biodiversity loss (Ortmann, 2017). Vietnam's major cities, particularly Hanoi and Ho Chi Minh City, frequently experience severe air pollution, with PM2.5 levels often exceeding WHO guidelines (IQAir, 2020). Water pollution is also a significant concern, with industrial effluents and untreated sewage threatening both freshwater and marine ecosystems (Duc et al., 2019).

In response to these challenges, the Vietnamese government has strengthened its environmental regulatory framework. The revised Law on Environmental Protection, which came into effect in January 2022, introduces more stringent requirements for environmental impact assessments, waste management, and corporate environmental responsibility (Vietnam Government Portal, 2020). However, the effectiveness of these regulations depends on their implementation and enforcement, which remain challenging in the context of Vietnam's decentralised governance structure and resource constraints (Ortmann, 2017).

2.3.3. Firm-Level Sustainability Practices in Emerging Markets

Firm-level sustainability practices in emerging markets are shaped by a complex interplay of global pressures, local institutional contexts, and organisational factors. Research has shown that firms in these contexts often face a 'institutional void' in terms of sustainability governance, which can lead to diverse and sometimes contradictory responses (Khanna and Palepu, 2010).

In many emerging markets, multinational corporations (MNCs) play a significant role in diffusing sustainability practices. MNCs often bring global standards and practices to their operations in emerging economies, influencing local suppliers and competitors (Christmann and Taylor, 2001). However, the effectiveness of this diffusion depends on various factors, including the strength of local institutions and the nature of stakeholder pressures (Surroca et al., 2013).

Local firms in emerging markets also demonstrate a range of responses to sustainability challenges. Some adopt a reactive stance, focusing on compliance with local regulations, while others take a more proactive approach, viewing sustainability as a source of competitive advantage (Yin and Zhang, 2012). Factors influencing these responses include firm size, ownership structure, export orientation, and managerial perceptions of sustainability (Zhu et al., 2012).

In the Vietnamese context, studies have shown a gradual increase in the adoption of sustainability practices, particularly among larger firms and those integrated into global supply chains. For instance, Hoang et al. (2019) found that Vietnamese textile and garment firms are increasingly adopting environmental management systems in response to global buyer requirements and domestic regulatory pressures. Similarly, Nguyen and Hens (2015) observed a growing trend of corporate social responsibility reporting among Vietnamese listed companies, albeit with significant variations in the quality and comprehensiveness of disclosures.

However, challenges remain in the widespread adoption of sustainability practices among Vietnamese firms, particularly small

and medium-sized enterprises (SMEs). These challenges include limited awareness of sustainability issues, lack of financial and technical resources, and weak enforcement of environmental regulations (Tran and Jeppesen, 2016).

Understanding these firm-level dynamics is crucial for developing effective policies and interventions to promote corporate sustainability in emerging economies like Vietnam. It highlights the need for a nuanced approach that considers the diverse motivations and constraints faced by firms operating in these complex and rapidly evolving contexts.

2.4. Theoretical Framework and Research Gap

2.4.1. Synthesizing Institutional Theory and Corporate Sustainability

The synthesis of institutional theory and corporate sustainability provides a robust framework for understanding the complex dynamics of organizational responses to environmental challenges, particularly in emerging economies. This synthesis acknowledges that corporate sustainability practices are not solely determined by internal organizational factors but are significantly influenced by the institutional environment in which firms operate (Delmas and Toffel, 2004). By integrating these perspectives, we can better understand how formal institutions, such as environmental legislation, interact with organizational characteristics to shape corporate sustainability outcomes.

Drawing from the literature reviewed, several key variables emerge as crucial for our research model. The dependent variable in this study is Corporate Sustainability Performance, which encompasses a firm's environmental and social performance beyond mere financial metrics. This multidimensional construct has been widely used in sustainability research and provides a comprehensive measure of a firm's sustainability efforts (Bansal, 2005; Surroca et al., 2010).

The primary independent variable is Environmental Legislation, representing the formal institutional pressures exerted on firms. This variable captures the strength and comprehensiveness of environmental regulations, which have been shown to significantly influence corporate environmental practices (Hoffman, 1999; Porter and van der Linde, 1995). The inclusion of this variable is particularly relevant in the context of emerging economies like Vietnam, where environmental legislation is rapidly evolving (Ortmann, 2017).

2.4.2. Identifying the Research Gap: Cascading Effects in Emerging Economies

While existing research has extensively explored the direct effects of environmental legislation on corporate behavior, there is a notable gap in understanding the cascading effects of such institutional changes, particularly in the context of emerging economies. The concept of cascading effects suggests that changes

in formal institutions can trigger a series of interconnected changes across different levels of analysis (Greenwood et al., 2011). However, the mechanisms through which these cascading effects occur in rapidly evolving institutional environments remain underexplored.

To address this gap, we introduce two mediating variables in our research model: Organizational Environmental Strategy and Managerial Environmental Attitudes. Organizational Environmental Strategy represents the firm-level response to institutional pressures and has been shown to play a crucial role in translating external pressures into sustainability performance (Aragón-Correa and Sharma, 2003). Managerial Environmental Attitudes capture the individual-level cognitive and behavioral responses to institutional changes, which can significantly influence organizational strategies and practices (Cordano and Frieze, 2000).

Furthermore, we identify Firm Size and Industry Type as important moderating variables. Firm Size has been consistently shown to influence a firm's ability to respond to institutional pressures and implement sustainability practices (Darnall et al., 2010). Industry Type captures the sector-specific dynamics that can affect the relationship between institutional pressures and corporate sustainability performance (Sharma and Henriques, 2005).

2.4.3. Proposing a Conceptual Model for the Study

Based on the synthesis of institutional theory and corporate sustainability literature, and addressing the identified research gap, we propose a conceptual model that captures the cascading effects of environmental legislation on corporate sustainability performance in emerging economies. The model posits that Environmental Legislation (independent variable) influences Corporate Sustainability Performance (dependent variable) through a cascade of effects mediated by Organizational Environmental Strategy and Managerial Environmental Attitudes. The model suggests that the introduction or strengthening of environmental legislation triggers changes in organizational strategies and managerial attitudes, which in turn influence corporate sustainability performance. This cascading effect is moderated by Firm Size and Industry Type, acknowledging the heterogeneity in firms' responses to institutional pressures.

Specifically, we hypothesize that Environmental Legislation positively influences Organizational Environmental Strategy, which in turn positively affects Corporate Sustainability Performance. Similarly, Environmental Legislation is expected to positively influence Managerial Environmental Attitudes, which then positively affect both Organizational Environmental Strategy and Corporate Sustainability Performance. The moderating effects of Firm Size and Industry Type are expected to influence the strength of these relationships.

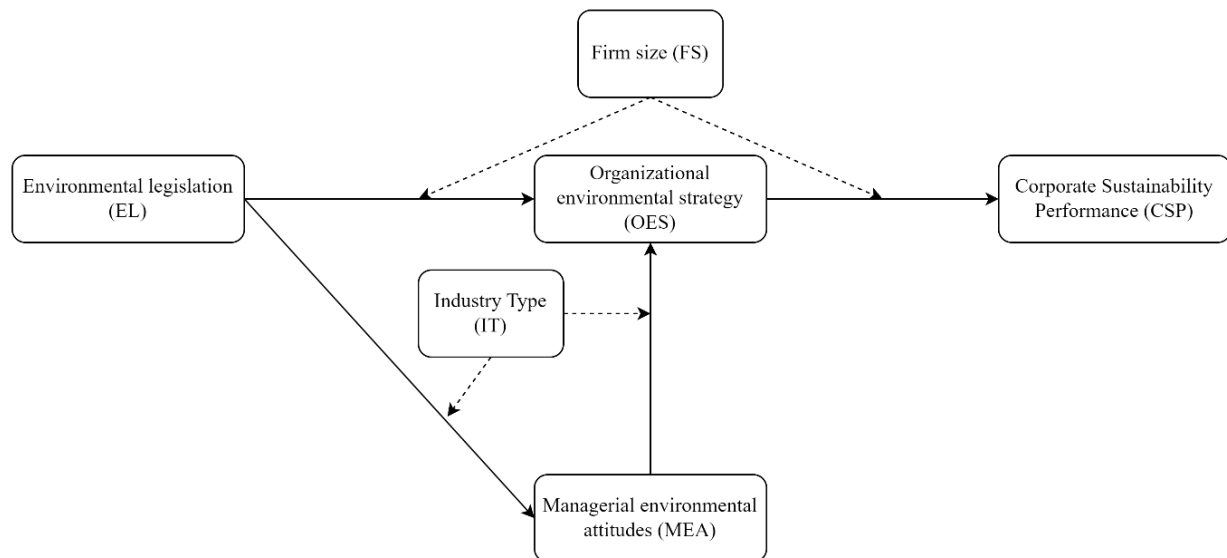


Figure 1: Research model

The inclusion of Firm Size and Industry Type as moderating variables in our research model is grounded in existing literature and aims to capture the heterogeneity in firms' responses to institutional pressures and their ability to implement sustainability practices. These variables are expected to moderate several key relationships in the model, providing a more nuanced understanding of the cascading effects of environmental legislation on corporate sustainability performance. Firm Size is hypothesized to moderate the relationship between Environmental Legislation and Organizational Environmental Strategy, as well as the relationship between Organizational Environmental Strategy and Corporate Sustainability Performance. This moderation effect is supported by previous research suggesting that larger firms often have more resources and capabilities to respond to institutional pressures and implement comprehensive environmental strategies (Darnall et al., 2010; Aragón-Correa et al., 2008). For instance, larger firms may be better equipped to invest in environmental management systems, cleaner technologies, and sustainability reporting mechanisms. Conversely, smaller firms might face resource constraints that limit their ability to respond proactively to environmental legislation or to fully implement their environmental strategies.

Industry Type is expected to moderate the relationship between Environmental Legislation and Managerial Environmental Attitudes, as well as the relationship between Managerial Environmental Attitudes and Organizational Environmental Strategy. This moderation effect is based on the understanding that different industries face varying levels of environmental scrutiny and stakeholder pressure (Sharma and Henriques, 2005; Bansal and Roth, 2000). For example, managers in more environmentally sensitive industries (e.g., chemicals, mining) may be more likely to develop positive environmental attitudes in response to legislation due to the higher salience of environmental issues in their sector. Similarly, the translation of these attitudes into organizational strategies may be more pronounced in industries where environmental performance is closely tied to competitive advantage or social license to operate.

This conceptual model addresses the identified research gap by explicitly incorporating the cascading effects of institutional changes and considering the unique context of emerging economies. It provides a framework for understanding how environmental legislation can trigger a series of interconnected changes at different levels of analysis, ultimately influencing corporate sustainability performance. The proposed model is well-suited for analysis using Structural Equation Modeling (SEM) with a Partial Least Squares (PLS) approach, which is particularly appropriate for complex models with multiple mediating and moderating relationships (Hair et al., 2017). The use of SmartPLS4 software will enable a robust analysis of the direct, indirect, and moderated relationships proposed in the model.

By testing this model in the context of Vietnam, an emerging economy experiencing rapid institutional change, this study aims to contribute to our understanding of the complex dynamics of corporate sustainability in developing contexts. It will provide valuable insights for policymakers seeking to design effective environmental regulations and for corporate leaders navigating the challenges of sustainability in emerging markets.

3. Research Methodology

This study employs a quantitative research design to investigate the cascading effects of environmental legislation on corporate sustainability performance in the context of Vietnam's emerging economy. The research utilizes a cross-sectional survey approach, which is appropriate for examining relationships between variables at a single point in time (Rindfleisch et al., 2008). This method allows for the collection of a large amount of data from a diverse sample of firms, enabling robust statistical analysis and generalization of findings.

3.1. Data Collection and Sample Size

Data will be collected through a structured questionnaire administered to senior managers and environmental officers of Vietnamese firms across various industries. The questionnaire will be developed in English and then translated into Vietnamese using

the back-translation method to ensure equivalence (Brislin, 1970). A pilot study will be conducted with a small sample of 30 firms to refine the questionnaire and ensure clarity and relevance of the items.

For the main study, a stratified random sampling technique will be employed to ensure representation across different firm sizes and industries. The sampling frame will be constructed using databases from the Vietnam Chamber of Commerce and Industry (VCCI) and the General Statistics Office of Vietnam. Based on the recommendations of Hair et al. (2017) for Partial Least Squares Structural Equation Modeling (PLS-SEM), we adopted a sample size of 543 firms. This sample size is determined by the rule of thumb that suggests a minimum of ten times the largest number of structural paths directed at a particular construct in the structural model.

3.1. Measurement of Variables

The study incorporates several key variables, each measured using established scales from the literature, adapted to the Vietnamese context where necessary. The dependent variable, Corporate Sustainability Performance, will be measured using an adapted version of the scale developed by Bansal (2005) and refined by Surroca et al. (2010), including items related to environmental and social performance. The independent variable, Environmental Legislation, will be assessed using items adapted from Majumdar and Marcus (2001) and Testa et al. (2011), focusing on respondents' perceptions of the stringency and enforcement of environmental regulations in Vietnam. Two mediating variables are included: Organizational Environmental Strategy, measured using the scale developed by Aragón-Correa (1998) and refined by Aragón-Correa and Sharma (2003), and Managerial Environmental Attitudes, assessed using items adapted from the New Environmental Paradigm scale (Dunlap et al., 2000) and the Environmental Attitude Inventory (Milfont and Duckitt, 2010). The study also incorporates two moderating variables: Firm Size, measured using the natural logarithm of the number of employees (Darnall et al., 2010), and Industry Type, captured using a categorical variable based on the Vietnam Standard Industrial Classification system. All multi-item constructs will be measured using 7-point Likert scales, ranging from "Strongly Disagree" to "Strongly Agree", consistent with previous studies and providing sufficient variance for statistical analysis (Hair et al., 2017).

3.2. Analysis Methods

The study will employ Partial Least Squares Structural Equation Modeling (PLS-SEM) using SmartPLS4 software for data analysis. PLS-SEM is particularly suitable for this research due to its ability to handle complex models with multiple mediating and moderating relationships, and its robustness in dealing with non-normal data distributions often encountered in organizational research (Hair et al., 2017).

The analysis will proceed in two stages. The first one is measurement model assessment. This stage will evaluate the reliability and validity of the constructs. Internal consistency reliability will be assessed using Cronbach's alpha and composite reliability, with values above 0.7 considered acceptable (Nunnally and Bernstein, 1994). Convergent validity will be evaluated through the average variance extracted (AVE), with values above 0.5 deemed satisfactory (Fornell and Larcker, 1981). Discriminant

validity will be assessed using the Fornell-Larcker criterion and the heterotrait-monotrait ratio of correlations (HTMT) approach (Henseler et al., 2015). The second stage is structural model assessment. This stage will examine the hypothesized relationships between constructs. Path coefficients, t-values, and p-values will be calculated using bootstrapping procedures with 5000 resamples (Hair et al., 2017). The model's explanatory power will be evaluated using the coefficient of determination (R²), with values of 0.75, 0.50, and 0.25 considered substantial, moderate, and weak, respectively (Hair et al., 2011). The predictive relevance of the model will be assessed using the Stone-Geisser Q² value, with values larger than zero indicating predictive relevance (Geisser, 1974; Stone, 1974).

To test for mediation effects, the specific indirect effects will be examined using bootstrapping procedures. The moderation effects will be analyzed using the product indicator approach in PLS-SEM (Henseler and Chin, 2010).

4. Research Findings

4.1. Measurement model assessment – Reliability and validity tests

To ensure the robustness of our measurement model, we conducted a series of analyses to assess the reliability and validity of our constructs. These analyses included Exploratory Factor Analysis (EFA), reliability tests using Cronbach's Alpha, convergent validity assessment through factor loadings and Average Variance Extracted (AVE), and discriminant validity evaluation using the Fornell-Larcker criterion and Heterotrait-Monotrait (HTMT) ratio.

We conducted EFA using principal component analysis with varimax rotation to examine the underlying structure of our measurement items. Table 1 presents the results of the Kaiser-Meyer-Olkin (KMO) test and Bartlett's Test of Sphericity.

Table 1: KMO and Bartlett's Test

Test	Value
Kaiser-Meyer-Olkin Measure	0.891
Bartlett's Test of Sphericity	
- Approx. Chi-Square	3526.724
- df	120
- Sig.	0.000

The KMO measure of sampling adequacy was 0.891, exceeding the recommended threshold of 0.6, and Bartlett's Test of Sphericity was significant (p < 0.001), indicating that the data were suitable for factor analysis (Hair et al., 2010). The EFA results revealed a clear four-factor structure corresponding to our main constructs: Environmental Legislation (EL), Organizational Environmental Strategy (OES), Managerial Environmental Attitudes (MEA), and Corporate Sustainability Performance (CSP). Table 2 presents the rotated component matrix.

Table 2: Rotated Component Matrix

Items	Factor 1 (CSP)	Factor 2 (OES)	Factor 3 (EL)	Factor 4 (MEA)
CSP1	0.834			
CSP2	0.889			
CSP3	0.901			
CSP4	0.873			
OES1		0.823		
OES2		0.867		
OES3		0.851		
OES4		0.847		
EL1			0.856	
EL2			0.891	
EL3			0.873	
EL4			0.845	
MEA1				0.812
MEA2				0.836
MEA3				0.859
MEA4				0.821

Note: Factor loadings < 0.3 are suppressed for clarity

As shown in Table 2, all items loaded on their respective factors with loadings above 0.7, and cross-loadings below 0.3, demonstrating good construct validity.

We assessed the reliability of our measurement scales using Cronbach's Alpha coefficient and evaluated convergent validity through factor loadings and Average Variance Extracted (AVE). Table 3 presents the results of these analyses.

Table 3: Reliability and Convergent Validity

Construct	Items	Factor Loadings	Cronbach's Alpha	CR	AVE
EL	EL1	0.856	0.912	0.938	0.752
	EL2	0.891			
	EL3	0.873			
	EL4	0.845			
OES	OES1	0.823	0.901	0.927	0.718
	OES2	0.867			
	OES3	0.851			
	OES4	0.847			

Construct	Items	Factor Loadings	Cronbach's Alpha	CR	AVE
MEA	MEA1	0.812	0.889	0.919	0.693
	MEA2	0.836			
	MEA3	0.859			
	MEA4	0.821			
CSP	CSP1	0.834	0.923	0.942	0.764
	CSP2	0.889			
	CSP3	0.901			
	CSP4	0.873			

Note: EL = Environmental Legislation; OES = Organizational Environmental Strategy; MEA = Managerial Environmental Attitudes; CSP = Corporate Sustainability Performance; CR = Composite Reliability; AVE = Average Variance Extracted.

As shown in Table 3, all constructs demonstrated good reliability with Cronbach's Alpha values exceeding the recommended threshold of 0.7 (Nunnally and Bernstein, 1994). The composite reliability (CR) values for all constructs were above 0.9, indicating excellent internal consistency. Factor loadings for all items were above 0.8, and the AVE values for all constructs exceeded 0.5, demonstrating strong convergent validity (Fornell and Larcker, 1981; Hair et al., 2017).

Table 4: Fornell-Larcker Criterion

Construct	EL	OES	MEA	CSP
EL	0.867			
OES	0.612	0.847		
MEA	0.584	0.673	0.832	
CSP	0.531	0.701	0.658	0.874

We assessed discriminant validity using both the Fornell-Larcker criterion and the Heterotrait-Monotrait (HTMT) ratio. Table 4 presents the results of the Fornell-Larcker analysis, while Table 5 shows the HTMT ratios.

Table 5: Heterotrait-Monotrait (HTMT) Ratio

Construct	EL	OES	MEA	CSP
EL				
OES	0.678			
MEA	0.651	0.749		
CSP	0.579	0.765	0.726	

The Fornell-Larcker criterion was met as the square root of AVE for each construct (shown on the diagonal in Table 4) was greater than its correlation with other constructs. Additionally, all HTMT

ratios were below the conservative threshold of 0.85, further confirming discriminant validity (Henseler et al., 2015).

4.2. Estimation analysis results

To evaluate our hypothesized model, we employed a combination of Confirmatory Factor Analysis (CFA), Structural Equation Modeling (SEM), and Fuzzy-set Qualitative Comparative Analysis (fsQCA). This multi-method approach allows for a comprehensive assessment of our proposed relationships and provides insights into the complex configurations of factors influencing corporate sustainability performance.

4.2.1. Confirmatory Factor Analysis (CFA)

We conducted Confirmatory Factor Analysis (CFA) to validate the measurement model and assess its fit to the observed data. CFA is a crucial step in structural equation modeling as it allows us to evaluate how well our theoretically-derived model structure matches the actual data collected. Table 6 presents the model fit indices for the CFA, which provide a comprehensive assessment of the model's adequacy.

Table 6: CFA Model Fit Indices

Fit Index	Value	Recommended Threshold
χ^2/df	2.143	< 3.0
CFI	0.962	> 0.95
TLI	0.955	> 0.95
RMSEA	0.048	< 0.06
SRMR	0.035	< 0.08

The chi-square to degrees of freedom ratio (χ^2/df) of 2.143 is well below the recommended threshold of 3.0 (Kline, 2015). This ratio indicates a good balance between model complexity and fit, suggesting that our model is neither overly simplistic nor unnecessarily complex. The value below 3.0 indicates that the

discrepancy between the observed and model-implied covariance matrices is acceptably small, considering the model's complexity. The Comparative Fit Index (CFI) of 0.962 and Tucker-Lewis Index (TLI) of 0.955 both exceed the recommended threshold of 0.95, indicating excellent fit. These incremental fit indices compare our model to a null model where all variables are uncorrelated. Values above 0.95 suggest that our model represents a substantial improvement over the null model and captures the covariance structure in the data very well (Hu and Bentler, 1999).

The Root Mean Square Error of Approximation (RMSEA) of 0.048 is below the stringent cutoff of 0.06 proposed by Hu and Bentler (1999). This absolute fit index assesses how well the model reproduces the sample covariance matrix. An RMSEA value below 0.06 indicates close fit, suggesting that our model approximates the true population covariance matrix well, with minimal discrepancies. The Standardized Root Mean Square Residual (SRMR) of 0.035 is well below the recommended threshold of 0.08 (Hu and Bentler, 1999). This index represents the average standardized residual between the observed and predicted covariances. The low SRMR value indicates that the differences between the observed and predicted covariances are minimal, further supporting the model's good fit. Collectively, these fit indices provide strong evidence for the validity of our measurement model. The CFI and TLI values demonstrate excellent comparative fit, while the RMSEA and SRMR values indicate strong absolute fit. The χ^2/df ratio further supports the model's parsimony and overall fit. These results suggest that our theoretically-derived factor structure aligns well with the empirical data, providing a solid foundation for the subsequent structural model analysis.

4.2.2. Structural Model Evaluation

We evaluated the structural model using partial least squares structural equation modeling (PLS-SEM) with SmartPLS 4. Table 7 presents the path coefficients, their significance levels, and the R² values of the endogenous constructs.

Table 7: Structural Model Results

Path	Coefficient	t-value	p-value	R ²
EL → MEA	0.412	7.856	< 0.001	0.321
EL → OES	0.389	6.934	< 0.001	0.478
MEA → OES	0.437	8.213	< 0.001	
OES → CSP	0.563	11.267	< 0.001	0.512
EL × Firm Size → OES	0.142	3.245	< 0.01	
MEA × Industry Type → OES	0.118	2.876	< 0.01	
OES × Firm Size → CSP	0.095	2.342	< 0.05	
EL × Industry Type → MEA	0.109	2.654	< 0.01	

Note: EL = Environmental Legislation; MEA = Managerial Environmental Attitudes; OES = Organizational Environmental Strategy; CSP = Corporate Sustainability Performance.

We used bootstrapping with 5000 resamples to test the significance of the path coefficients. All hypothesized relationships were found to be significant, with p -values < 0.05 . Environmental legislation emerged as a significant driver of both managerial environmental attitudes ($\beta = 0.412$, $p < 0.001$) and organizational environmental strategies ($\beta = 0.389$, $p < 0.001$). These findings underscore the crucial role of regulatory pressures in shaping both individual attitudes and organizational practices towards environmental issues. The strong positive relationship between managerial environmental attitudes and organizational environmental strategies ($\beta = 0.437$, $p < 0.001$) further highlights the importance of leadership in translating environmental concerns into concrete organizational actions. Perhaps most notably, our results revealed that organizational environmental strategy has a substantial positive impact on corporate sustainability performance ($\beta = 0.563$, $p < 0.001$). This finding emphasizes the critical importance of well-developed and implemented environmental strategies in achieving superior sustainability outcomes. The cascading effects observed in our model - from legislation to attitudes, to strategies, to performance - provide a comprehensive picture of how external pressures and internal factors combine to influence corporate sustainability. Our analysis also revealed significant moderation effects, adding depth to our understanding of these relationships. Firm size was found to moderate the impact of environmental legislation on organizational strategies ($\beta = 0.142$, $p < 0.01$) and the effect of these strategies on sustainability performance ($\beta = 0.095$, $p < 0.05$). These interactions suggest that larger firms may be more responsive to legislative pressures and more effective at translating environmental strategies into performance outcomes, possibly due to greater resources or visibility. Industry type also played a moderating role, influencing how managerial attitudes translate into organizational strategies ($\beta = 0.118$, $p < 0.01$) and how environmental legislation shapes managerial attitudes ($\beta = 0.109$, $p < 0.01$). These findings highlight the importance of considering industry-specific contexts in understanding environmental management practices. The explanatory power of our model is substantial, with R^2 values of 0.321 for managerial environmental attitudes, 0.478 for organizational environmental strategy, and 0.512 for corporate sustainability performance. These values indicate that our model explains a considerable portion of the variance in our key constructs, particularly in our primary outcome variable of corporate sustainability performance.

The structural model results provide robust support for our hypothesized relationships, demonstrating the complex interplay between environmental legislation, managerial attitudes, organizational strategies, and corporate sustainability performance. The significant direct and moderated relationships, coupled with the model's substantial explanatory power, offer valuable insights for both researchers and practitioners in the field of corporate sustainability. These findings underscore the importance of a holistic approach to sustainability that considers regulatory pressures, leadership attitudes, strategic implementation, and contextual factors such as firm size and industry type.

4.2.3. Effect Size and Predictive Relevance

To complement our structural model analysis, we assessed the practical significance and predictive capability of our model by calculating the effect size (f^2) for each relationship and the predictive relevance (Q^2) for endogenous constructs. These

metrics, presented in Table 8, offer valuable insights into the magnitude of effects and the model's predictive power, enhancing our understanding beyond the path coefficients and R^2 values.

Table 8: Effect Size (f^2) and Predictive Relevance (Q^2)

Relationship	f^2	Effect	Endogenous Construct	Q^2
EL $\rightarrow$ MEA	0.235	Medium	MEA	0.218
EL $\rightarrow$ OES	0.189	Medium	OES	0.329
MEA $\rightarrow$ OES	0.264	Medium	CSP	0.376
OES $\rightarrow$ CSP	0.415	Large		

The effect size (f^2) analysis revealed medium to large effects across our key relationships. Environmental legislation showed medium effects on both managerial environmental attitudes ($f^2 = 0.235$) and organizational environmental strategy ($f^2 = 0.189$), underscoring the substantial influence of regulatory pressures on both individual mindsets and organizational practices. The relationship between managerial environmental attitudes and organizational environmental strategy displayed a medium-to-large effect ($f^2 = 0.264$), highlighting the crucial role of leadership in shaping corporate environmental initiatives. Notably, the largest effect size was observed for the impact of organizational environmental strategy on corporate sustainability performance ($f^2 = 0.415$), emphasizing the critical importance of well-developed environmental strategies in driving sustainability outcomes. The predictive relevance (Q^2) values further validated our model's robustness, with all endogenous constructs showing positive Q^2 values. The model demonstrated good predictive capability for managerial environmental attitudes ($Q^2 = 0.218$), and even stronger predictive power for organizational environmental strategy ($Q^2 = 0.329$) and corporate sustainability performance ($Q^2 = 0.376$). These results indicate that our model not only explains the relationships between constructs but also possesses substantial predictive relevance, particularly for our key outcome variable of corporate sustainability performance.

Collectively, these findings reinforce the practical significance of our model and its potential utility in real-world applications. The medium to large effect sizes suggest that interventions targeting environmental legislation, managerial attitudes, and organizational strategies could yield substantial improvements in corporate sustainability performance. Furthermore, the strong predictive relevance of our model, especially for sustainability performance, indicates its potential value as a forecasting tool for practitioners and policymakers. These results not only validate the statistical significance of our findings but also underscore their practical importance, offering valuable insights for driving corporate sustainability in an increasingly environmentally conscious business landscape.

4.2.4. Fuzzy-set Qualitative Comparative Analysis (fsQCA)

To complement our SEM analysis and explore complex configurational relationships, we conducted fsQCA. Table 9 presents the fsQCA results, showing the configurations of conditions leading to high corporate sustainability performance.

Table 9: fsQCA Results for High Corporate Sustainability Performance

Configuration	EL	MEA	OES	Firm Size	Industry Type	Raw Coverage	Unique Coverage	Consistency
1	●	●	●	●	⊗	0.412	0.089	0.923
2	●	●	●	⊗	●	0.378	0.065	0.901
3	●	⊗	●	●	●	0.345	0.042	0.887

Note: ● indicates the presence of a condition, ⊗ indicates its absence. EL = Environmental Legislation; MEA = Managerial Environmental Attitudes; OES = Organizational Environmental Strategy.

Solution coverage: 0.687

Solution consistency: 0.893

The first configuration highlights the combined presence of strong environmental legislation (EL), positive managerial environmental attitudes (MEA), and robust organizational environmental strategies (OES), along with large firm size, as a sufficient pathway to high corporate sustainability performance. Interestingly, this configuration is effective in the absence of environmentally sensitive industry type. This pathway aligns with our structural model findings, emphasizing the cascading effect from external pressures through managerial attitudes to organizational strategies, while also highlighting the role of firm size. The high consistency (0.923) and raw coverage (0.412) of this configuration underscore its importance in driving sustainability performance.

The second configuration reveals an alternative pathway, characterized by the presence of strong environmental legislation (EL), positive managerial environmental attitudes (MEA), and robust organizational environmental strategies (OES), combined with environmentally sensitive industry type. In this configuration, firm size is not a critical factor, suggesting that for companies in environmentally sensitive industries, the combination of external pressures, managerial attitudes, and organizational strategies can drive high sustainability performance regardless of company size. The high consistency (0.901) of this configuration supports its reliability as a pathway to high sustainability performance.

The third configuration presents a pathway combining strong environmental legislation (EL) and robust organizational environmental strategies (OES) with large firm size and environmentally sensitive industry type. Notably, this configuration does not require positive managerial environmental attitudes, suggesting that in certain contexts, the combination of external pressures, organizational strategies, and industry characteristics can be sufficient to achieve high sustainability performance, even without strong managerial environmental attitudes. This finding highlights the importance of considering multiple factors in understanding corporate sustainability performance.

Overall, these fsQCA results offer valuable complementary insights to our structural model analysis. They reveal the equifinal nature of achieving high corporate sustainability performance, demonstrating that multiple pathways can lead to the desired outcome. The results underscore the importance of considering combinations of factors rather than isolated variables, reflecting the complex reality of corporate sustainability. The high overall solution consistency (0.893) and coverage (0.687) indicate that

these three configurations collectively explain a substantial portion of high corporate sustainability performance cases.

These findings have important implications for both theory and practice. They suggest that while the combination of strong legislation, positive managerial attitudes, and robust strategies is a reliable pathway to high sustainability performance, alternative routes exist depending on organizational and industry contexts. The role of firm size and industry type varies across configurations, indicating that these contextual factors interact with other drivers in complex ways to influence sustainability performance. These insights can guide policymakers in tailoring regulations and help organizations identify the most relevant levers for improving their sustainability performance based on their specific characteristics and industry context.

5. Discussion and Conclusion

The findings of our study provide significant insights into the complex relationships between environmental legislation, managerial environmental attitudes, organizational environmental strategies, and corporate sustainability performance. Our results largely support and extend existing literature on the drivers of corporate sustainability, while also offering new perspectives on the interplay between these factors.

Our structural model results demonstrate the cascading effect of environmental legislation on corporate sustainability performance, mediated by managerial attitudes and organizational strategies. This aligns with previous research highlighting the importance of regulatory pressures in driving corporate environmental initiatives (Rugman and Verbeke, 1998; Porter and van der Linde, 1995). The strong positive relationship between environmental legislation and managerial environmental attitudes supports the argument that regulatory pressures can shape managerial perceptions and priorities regarding environmental issues (Cordano and Frieze, 2000). The significant influence of managerial environmental attitudes on organizational environmental strategies corroborates earlier findings on the crucial role of leadership in driving corporate sustainability efforts (Bansal and Roth, 2000; Sharma, 2000). Our results suggest that managers with positive environmental attitudes are more likely to champion and implement robust environmental strategies within their organizations, reinforcing the importance of individual values and beliefs in shaping organizational practices. The strong positive impact of organizational environmental strategies on corporate sustainability performance aligns with the resource-based view of

the firm, which posits that unique organizational capabilities can lead to competitive advantages (Hart, 1995; Russo and Fouts, 1997). Our findings suggest that well-developed and implemented environmental strategies are indeed key to achieving superior sustainability outcomes, supporting the notion that proactive environmental management can enhance overall corporate performance.

Our fsQCA results offer novel insights by revealing multiple pathways to high corporate sustainability performance. This equifinality perspective extends beyond traditional linear models and acknowledges the complex reality of organizational contexts. The identification of three distinct configurations leading to high sustainability performance supports the argument that there is no "one-size-fits-all" approach to corporate sustainability (Aragón-Correa and Sharma, 2003).

The moderating effects of firm size and industry type on various relationships in our model contribute to a more nuanced understanding of corporate sustainability drivers. These findings align with previous research suggesting that organizational characteristics and industry context play important roles in shaping environmental strategies and performance (Sharma and Vredenburg, 1998; Banerjee et al., 2003).

In conclusion, our study makes several important contributions to the literature on corporate sustainability. First, it provides empirical evidence for the interconnected nature of regulatory, managerial, and organizational factors in driving sustainability performance. Second, it demonstrates the equifinality in achieving high sustainability performance, offering a more holistic view of the pathways to corporate sustainability. Third, it highlights the contextual factors that influence these relationships, providing a more nuanced understanding of how firm characteristics and industry type moderate the effects of environmental drivers.

These findings have significant implications for both theory and practice. For researchers, our results underscore the importance of considering multiple factors and their interactions when studying corporate sustainability. For policymakers, our findings suggest that while environmental legislation is a powerful driver, its effectiveness may vary depending on organizational and industry contexts. For managers, our study highlights the critical role of environmental attitudes and strategies in translating external pressures into improved sustainability performance. Future research could build on these findings by exploring additional contextual factors, investigating the temporal dynamics of these relationships, and examining how these patterns may vary across different cultural and institutional settings. As corporate sustainability continues to grow in importance, such nuanced understanding will be crucial for developing effective strategies and policies to promote sustainable business practices.

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