



Do environmental management practices mediate institutional pressures-environmental performance relationship? Evidence from Vietnamese SMEs

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ABSTRACT

Although SMEs contribute much to Vietnamese economic growth, they cause significant negative impacts on the environment. In environmental literature, the institutional theory is suggested to be used as a theoretical lens to examine the pressure driving an organization to improve environmental performance and indirectly through strategic response. Despite that, this theory needs more application to predict SMEs' environmentally friendly outcomes. Hence, this study draws upon institutional theory to examine that three institutional pressures, coercive, normative, and mimetic pressures have a direct impact on environmental performance as well as an indirect impact through the adoption of environmental management practices. Data were collected by surveying 253 manufacturing SMEs operating in Vietnam. Partial least-squared structural equation modeling was executed to assess data. The results suggest that three institutional pressures, coercive, mimetic, and normative pressure, indirectly improve environmental performance by adopting environmental management practices. At the same time, there is no direct effect of these pressures on environmental performance. These findings shed light on how institutional pressures affect environmental management practice adoption and environmental performance in the SME context. These findings also contribute the theoretical development of institutional theory by showing that adopting environmental management practices is a strategic response to institutional pressures to gain environmental performance. Lastly, due to mixed results on the relationship between institutional pressures and its outcomes (e.g., environmental management practice adoption, environmental performance), this study cast light on those relationships in Vietnam.

1. Introduction

Due to rising public concerns and government emphasis on environmental preservation, environmental management challenges have become crucial for enterprises nowadays [1–3]. As a result, enterprises are under the pressure to exert environmentally friendly behaviors to address public concerns and meet environmental regulations [4]. Environmental scholars consider institutional theory the theoretical lens for studying the pressures driving organizations to exert environmentally friendly behaviors [5–9]. According to DiMaggio and Powell [10], institutional pressures are constituted by three distinct types of pressure: coercive, mimetic, and normative pressure. Environmental scholars suggest that three types of institutional pressure have effect on the adoption of environmental

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management practices [11–14] and environmental performance [15–18].

However, those mentioned studies focus on large enterprises. There is limited knowledge of relationship between institutional theory and environmental performance in the SME context. It is a requirement that more attention should be paid to manufacturing SMEs. According to the literature, small and medium enterprises (SMEs) operating in manufacturing sectors are mostly accused for the world's resource consumption, air and water pollution, and waste production because it is argued that even though manufacturing SMEs have relatively small individual environmental footprints, the overall environmental harm, which they inflict, outweighs larger counterparts in some sectors [19]. Besides, compared with large enterprises, SMEs need more capability, resources, and environmental awareness, limitation in accessing information and support to perform environmentally friendly actions [20] as well as limited time, financial resources and technical expertise [21]. In a similar vein, SMEs are argued to have a weak environmental culture due to limited capital, information, technology, and weak support from the government and networks when executing environmentally friendly behaviors [22]. Therefore, these barriers challenge the predictability of institutional theory in SME contexts.

Besides, according to Woo and Jin [23], each country has conditions such as culture, economic development, or social freedom, and as a result, institutional studies should focus on a single country to shed light on whether or not coercive, normative, and mimetic pressures have effects on the sustainable outcomes. According to data from General Statistical Office [24], SMEs account for almost 98% of all registered enterprises in Vietnam. SMEs' growth is regarded as a crucial priority and a key component of Vietnam's economic development process [173]. Since the central planning system began to be phased out in the early 1990s, the private sector in Vietnam, where SMEs are the most prevalent and dynamic component in creating jobs, has contributed a growing portion of economic growth and employment [25]. However, due to this contribution, there is a concern that the growth of SMEs poses threats to the environment [26]. In such regard, more research is required to gain insight into the impact of institutional pressure in Vietnam SME's adoption of environmental management and environmental performance.

Last but not least, empirical evidence of the relationship between institutional pressure and environmental performance is mixed. The mixed results are due to the limitation of conventional institutional theory. According to Oliver [27], the conventional institutional theory focuses on the determination impact of institutional pressure without considering strategic responses to cope with those pressures. The neo-institutional theory is evolving version of institutional theory. It provides a dynamic view of how organizations are rewarded when they accept and respond to institutional pressure [28,29]. In this regard, examining the role of strategic response is crucial in order to shed light on how enterprises accept institutional pressures to find performance effects resulting from the strategic response.

According to prior studies [30–32], organizations must adopt environmental management practices to reduce the impact of their operations on the environment, which allows the translation into high environmental performance. In addition, institutional perspective in environmental management suggests that institutional pressure influence the adoption of environmental management practices. In such regards, from the perspective of neo-institutional theory, this study expects that the adoption of environmental management practices is the strategic response of an enterprises in order to cope with institutional pressures. And the results of this strategic response are that this enterprise to improve environmental performance. This expectation is similar to Zailani, et al. [33], who examined the mediating effects of eco-design, a strategic response, on the association between institutional pressure and environmental performance outcomes. Similarly, Lin and Ho [34] indicated that organizational ambidexterity is a strategic response that mediates the link between institutional pressure and environmental performance.

Hence, this study's purpose is to draw upon institutional theory and neo-institutional theory to examine the following two research questions.

RQ1. Whether institutional pressures directly and positively impact the environmental performance of SMEs operating in Vietnam?

RQ2. Whether in Vietnam, institutional pressures indirectly and positively impact environmental performance through the SME's adoption of environmental management practices.

The format of this essay is as follows. The hypotheses' theoretical background and development are provided in the next section. The methods in this paper are described in the following section. Results are then presented, followed by a discussion. The study's conclusion and limitations are discussed in the final section.

2. Theoretical background, hypothesis development and research context

2.1. Theoretical background

2.1.1. Environmental management practices

Environmental management practices, or green practices, are methods businesses use to lessen or stop adverse environmental effects [35,36]. Waste reduction, voluntary eco-certification (e.g., ISO 140001 standard), energy conservation, eco-design, environmental management systems, recycling, environmental performance indicators, and other practices are considered environmental management practices [37,38].

According to Montabon, et al. [39], environmental management practices are organizational actions to monitor and control the harmful effects of its operations on the environment. A broader approach to environmental management practices suggests that organizations should not focus on operations alone but also minimize the environmental impact of their goods and services [38]. These distinctions result from various interpretations of which practices are considered to be environmental management practices. Additionally, some practices overlap. For instance, ISO 14001 standard, a voluntary eco-certification, is one of the environmental management practices [40].

Three categories of environmental practices are suggested by González-Benito and González-Benito [41]. The first group includes planning and organizational practices, which typically reflect the development and implementation of environmental management systems. The second group consists of operational practices, often known as green operational practices, which suggest modifying processes and production to improve environmentally friendly operations. The third category is made up of communicational practices, the main goal of which is to tell the public about the environmental performance of a company and the steps it has taken to lessen its influence on the environment. Environmental accountability is strongly related to these actions [42].

The literature strongly focuses on communication practices [43], while planning and organizational practices and operational practices are rarely discussed [44]. In addition, according to Tomomi [45], communicational practices (e.g., disclosure of environmental information) is relevant in larger enterprises than in smaller enterprises as SMEs. In this regard, this study focuses on the first two groups of environmental management practices of manufacturing SMEs.

2.2. Environmental management practices in SME context

Prior studies reveal that the adoption of environmental management practices is sufficient for SMEs. First, some studies shed light on the antecedent of the adoption. For instance, Veselova and Sidorenko [44] found that SMEs' size, age, innovations, and foreign ownership as well as customer and legislative pressure influence the adoption. Uhlner, et al. [46] demonstrated that SMEs' size, tangibility, family influence, innovation orientation, and the perceived financial benefits of energy and natural resource conservation have positive effect on the adoption. Latip, et al. [47] found that environmental attitude, relative advantages, compatibility, and complexity have positive impact on the intention to adopt environmental management practices. Latip and Sharkawi [48] indicated that three factors such as attitude, subjective norm, and perceived behavioral control have an impact on the intention to adopt environmental management practices of SMEs.

Second, relating to the consequences of the adoption, prior studies indicate the positive effects of some practices on performance as well as capabilities of SMEs. For instance, Shah, et al. [49] indicated that some components of integrated quality environmental management practices as leadership, strategic planning, customer focus have positive impact on environmental performance. Ahinful and Tauringana [50] examined the individual effects of each practice within environmental management practices as well as composite effects of those practices on financial performance. They found that energy efficiency, water management, and material management positively affect ROA. They also indicated that the composite effects of environmental management practices (e.g., energy efficiency, water management, waste management, material management, emission to air, water and land and biodiversity management) increases ROA. Reyes-Rodríguez [51] indicated that the indirect adoption permits SMEs to improve capabilities for environmental communication, which results in high reputation and lower cost advantages. However, when comparing the adopters and non-adopters, Sarkis and Dijkshoorn [52] revealed that SMEs, which adopt environmental policies, the monitoring of waste expenditures, waste auditing, environmental management systems, and becoming involved in environmental support groups, environmentally perform worse in term of solid waste management activities than ones, which do not adopt.

In such regards, examining the antecedents and consequences permits this study to extend current knowledges on pressures and consequences of environmental management practices adoption of manufacturing SMEs in Vietnam.

2.2.1. Institutional theory and neo-institutional theory

Institutional theory is a widely used theory to explain organizational behaviors, particularly environmentally friendly behaviors like energy conservation [53], ecological responsiveness [8], and adoption of environmentally friendly practices like environmental management accounting [54], green lean six sigma [55], and sustainable practice [56]. According to institutional theory, laws, values, cultures, common perceptions, conventions, and social expectations significantly impact organizational behaviors and practices [10, 57]. In order to conform to the institutional and external environment, it is expected that organizations may modify their structures and adopt prevalent practices [58]. According to Suchman [59], a generalized view or presumption that an activity is desirable, proper, or appropriate within a set of socially established standards, values, beliefs, and meanings is known as legitimacy. Therefore, organizations that are not in line with the institutional and external environment fail to uphold their legitimacy, reducing societal support [60,61].

DiMaggio and Powell [10] state that institutional pressures force organizations to acquire shared beliefs and practices. According to these authors, these pressures from three sources, coercive, mimetic, and normative pressure, cause organizations to act similarly. The formal and informal pressure, known as coercive pressure, arose from written laws, rules, and policies [6,10]. Organizations must follow stringent environmental protection laws and regulations or risk paying for breaches [62]. Government policies are crucial in escalating this pressure, which is one factor in the firm being lawful. To establish legitimacy, the company often conforms to the law and rules.

Consumers' and societies' norms and values, the professional working conditions, and procedures formed by a particular industry are the primary sources of normative pressure [10]. Each organization's activity is constrained by the expectations of external stakeholders, who set standards and norms as one method of societal legalization [63]. Nevertheless, normative pressure impacts a firm's social concerns, even in the absence of the mandatory and punitive functions of laws and institutions. The firm risks losing future trading prospects, being out of the industry organization, or being banned from doing business by commercial clients if it defies the normative pressure from its surroundings.

Mimetic pressure emerges when an organization's top rivals successfully implement strategies [10,61,64]. Organizations imitate or compare themselves to rival organizations that have dealt with similar problems when high uncertainty and outcomes are difficult to predict [65]. Uncertainty results from inadequate technological knowledge, unclear objectives, or environmental uncertainty with

symbolic meaning [10]. As a result, organizations navigate complex problems and look for low-cost, effective solutions [10]. According to Liu, et al. [66], organizations mimic leading organization’s best practices in the sector to gain the comparative competences. By mimicking the same strategies, organizations successfully copy the success of their rivals [67].

Scholars criticize institutional theory because of much focus on environmental determinism [68] and the need for more attention to strategic responses [27]. From this perspective, an organization is passively affected by institutional pressures, and it ignores the role of organizational response to cope with those pressures to find rewards. The neo-institutional theory is evolving version of institutional theory. It provides a dynamic view of how organizations are rewarded when they accept and respond to institutional pressure [28,29]. In this regard, examining the role of organizational response is crucial to shed light on how an organization accepts institutional pressures to find beneficial effects resulting from the strategic response.

Hence, this study draws upon institutional theory and neo-institutional theory to propose the research framework as shown in Fig. 1. From the perspective of institutional theory, three pressures namely coercive, normative, and mimetic pressure determine environmental performance in the context of manufacturing SMEs operating in Vietnam. One reason is that manufacturing SMEs is required to improve environmental performance to gain legitimacy according to institutional theory. This proposal is in line with prior studies, which rely on institutional theory to predict the impact of these three pressures on environmental performance [15–18]. Furthermore, due to the limitation of institutional theory, from the perspective of neo institutional theory, this study also expects that the adoption of environmental management practices is the strategic response of manufacturing SMEs operating in Vietnam to cope with three institutional pressures. Manufacturing SMEs, which successfully adopt environmental management practices, find rewards. The rewards refer to the improvement of their environmental performance thanks to the successful adoption. Taken together, based on this perspective, it is expected that in the context of manufacturing SMEs operating in Vietnam, coercive, normative, and mimetic pressure increases the adoption of environmental management practices, which results in high environmental performance.

According to Fig. 1, there are ten hypotheses. The first three hypotheses allow this study to address the first research question, which examines the direct impact of three institutional pressure as coercive, normative and mimetic pressure on environmental performance (e.g., H₁, H₂, H₃). The second research question aims to address the mediating effects of environmental management practices on the relationship between coercive, normative, mimetic pressure and environmental performance. Following Baron and Kenny [69], firstly, this study assesses the direct impact of three institutional pressure on environmental management practices (e.g., H₄, H₅, H₆) as well as the direct relationship between environmental management practices and environmental performance (e.g., H₇). Next, since those above paths are sufficiently established, the last three hypotheses expect the mediating effects of environmental management practices on the relationship between institutional pressure and environmental performance (e.g., H₈, H₉, H₁₀).

2.3. Hypothesis development

2.3.1. The direct impact of institutional pressure on environmental performance

Prior studies revealed mixed results on the association between coercive, normative, and mimetic pressure and environmental performance. For instance, Chaudhry and Amir [16] found that coercive, normative, and mimetic pressure drives manufacturing firms in Pakistan to improve environmental performance. Lee, et al. [17] indicated that coercive, normative, and mimetic pressure affects construction firms in China to gain environmental performance. However, Peng, et al. [18] demonstrated the insignificant link

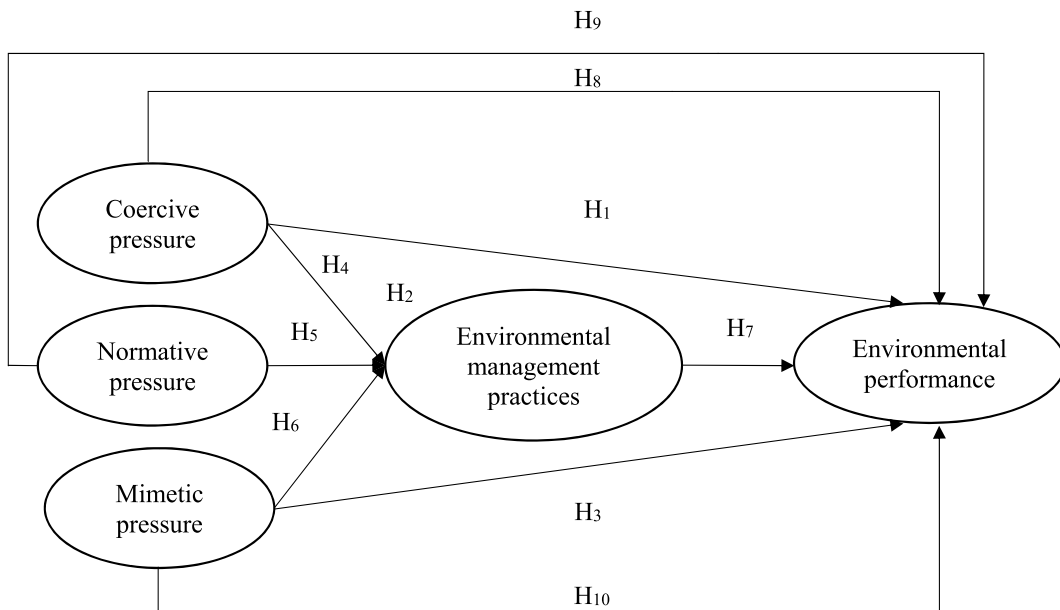


Fig. 1. Proposed research model.

between coercive and normative pressure and the environmental performance of multinational corporations operating in China and Japan, as well as the insignificant link between mimetic pressure and this performance of multinational corporations in the U.K. In addition, Bananuka, et al. [15] found that normative and mimetic pressure does not affect the environmental performance of manufacturing firms, while coercive pressure has.

In the SME context, there needs to be more research on the relationship between institutional pressure and environmental performance. This study is in line with institution theory to propose the direct relationship between coercive, normative, and mimetic pressure and the environmental performance of SMEs as follows.

2.3.1.1. The direct impact of coercive pressure on environmental performance. Regulation is the most common form of coercive pressure. Stringent environmental regulations are the primary pressure for organizations to conduct pro-environmental behaviors [70]. Under the pressure of environmental regulation requires, organizations have to comply with the government's environmental rules and policies, and, thus, they have to undertake environmental responsibilities [71]. Environmental regulation is revealed to be a major driver for SMEs to behave friendly with the environment because non-compliance may increase the threats of penalties and fines [72]. As a result, the literature documents that various coercive pressure induces SMEs' environmental performance. For instance, Graafland and Smid [175] found that high regulatory pressure leads to SMEs' improvement in environmental performance. Similarly, Graafland and Bovenberg [73] revealed that government regulation improves SMEs' environmental performance. Therefore, in line with institutional theory, it is expected that in Vietnam, manufacturing SMEs improve environmental performance when there is a high degree of coercive pressure. The first hypothesis is as follows.

H1. There is a positive association between coercive pressure and environmental performance.

2.3.1.2. The direct impact of normative pressure on environmental performance. Normative pressure is suggested to be mainly from customers because they have high power over the evaluation of the legitimacy or reputation of the organization [74]. Customers, who are environmentally committed, may use environmental protection as a significant criterion for product selection [75]. Organizations are more likely to improve their environmental performance to satisfy those requirements to gain high profits [76]. In addition, normative pressure is also from suppliers [54]. Environmental pressures from suppliers drive manufacturing organizations to adopt green purchasing [77]. Green purchasing guarantees the acquirement of ecologically friendly products and items that decrease waste, promote recycling, and minimize the use of natural resources through material substitutes [78]. In this regard, pressure from customers and suppliers is expected to drive SMEs to address environmental concerns when developing products as well as purchasing raw materials from suppliers. As a result, it improves environmental performance. Thus, in line with institutional theory, this study expects the second hypothesis.

H2. There is a positive association between normative pressure and environmental performance.

2.3.1.3. The direct impact of mimetic pressure on environmental performance. Organizations pay more attention to their competitors than to legal or regulatory requirements, and they are influenced by pressures from competitors [79]. According to institutional theory, in case of uncertainty or difficulties in predictions, mimetic pressure drives organizations to imitate the practices successfully implemented by the leading competitors in the market. Organizations perform imitating behaviors to remain competitive and maintain their market share [80]. Because environmental concerns are rising, competitors' pro-environmental behaviors pressure organizations to imitate [30]. Environmental behaviors are more favored because they reduce cost and efficiency through the reduction of energy and raw material consumption [74]. Morrow and Rondinelli [81] suggested that smaller organizations exert environmental behaviors (e.g., adoption of ISO 14001) because of the improvement of internal efficiencies. Therefore, Liu, et al. [82] found that mimetic pressure drives SMEs to perform as well as their competitors in energy management because they are afraid to lose their competitive advantages. Because energy management aims to save energy consumption, SMEs are expected to be more likely to gain environmental performance when mimetic pressure increases. Thus, in line with institutional theory, the third hypothesis follows.

H3. There is a positive association between mimetic pressure and environmental performance.

2.3.2. The direct impact of institutional pressures on environmental management practices

Organizations can exert certain environmentally friendly behaviors, such as adopting environmental management practices when there is high institutional pressure. The literature suggests the mixed results between institutional pressure and this adopting behavior. For instance, Sinha and Aloorie [14] demonstrated that coercive pressure has no impact on adopting environmental management practices, normative pressure has a partial impact, and mimetic pressure has a full impact. Daddi, et al [11] found that normative and mimetic pressure induces adopting the environmental management system, while coercive pressure does not. Ouyang, et al. [13] indicated that normative pressure improves the adoption of environmental management, while coercive pressure (e.g., regulatory environment) has a partial influence, and mimetic pressure (e.g., cognitive environment) has no impact at all. Famiyeh and Kwarteng [12] showed that both coercive and mimetic pressures enhance the implementation of environmental management practices, while normative pressure does not. In this regard, there is more research to shed light on the impact of institutional pressure on the adoption of environmental management practices.

In the SME context, researchers pay less attention to the impact of institutional pressure on the SMEs' adoption of environmental management practices. Drawing upon institutional theory, this study posits that institutional pressure drives SMEs to adopt environmental management practices.

2.3.2.1. The direct impact of coercive pressure on the adoption of environmental management practices. The government typically uses coercive pressure to reduce the negative impact of an organization's operations on the environment [83]. Governments are influential stakeholders who apply coercive pressures on organizations to force them to adhere to specific environmental norms and rules [84]. The enforcement of governmental standards, laws, and regulations typically constitutes coercive pressures [6]. Organizations, therefore, must unconditionally adhere to standards, rules, and regulations under the imposition mechanism [10]. If not, the government may penalize and scold these groups and even refuse to recognize their presence within their jurisdiction [6,85]. In addition, some incentives, such as tax breaks and assessing limited and necessary resources, motivate organizations to adhere to environmental rules and regulations [86]. A specific example of coercive pressure as regulation is considered a strong drive of SMEs' implementation of environmental management [87]. In this regard, in line with institutional theory, coercive pressure is expected to affect SMEs' adoption of environmental management practices positively. This study expects the next hypothesis as follows.

H4. There is a positive association between coercive pressure and adopting environmental management practices.

2.3.2.2. The direct impact of normative pressure on the adoption of environmental management practices. Normative pressure is from the customers and other actors within industrial communities, such as suppliers. First, customer pressure is indicated to improve manufacturing organizations' friendly behavior toward the environment [88]. Satisfying environmental demands allows an organization to attract and retain customers [89]. In this regard, the rise in customers' knowledge of environmental concerns and their subsequent demand stimulates organizations to consider adopting environmental management practices [90]. For instance, Huang, et al. [91] found that customer pressure drives manufacturing organizations' adoption of environmental management systems. In addition, suppliers were argued also to cast pressure on organizations to manufacture products with high environmental quality, prioritize environmental protections, and deliver new solutions for addressing environmental issues [92]. According to Sorooshian and Ting [93], supplier pressure is one of the reasons organizations implement an environmental management system. Therefore, in line with institutional theory, this study expects normative pressure positively affects SMEs' adoption of environmental management practices. The next hypothesis is proposed as follows.

H5. There is a positive association between normative pressure and adopting environmental management practices.

2.3.2.3. The direct impact of mimetic pressure on the adoption of environmental management practices. Organizations frequently copy the successful actions of other organizations in their sector, especially the leading ones [64]. When dealing with unknown issues, organizations may assess the strategies or methods used by benchmarked competitors to improve their effectiveness [67]. In this regard, a focal organization is expected to be under mimetic pressure when a competitor successfully adopts environmental management practices. Adopting environmental management practices allows efficiency improvement by reducing raw materials and energy used, which results in more competitive advantages. Under mimetic pressure, focal organizations try to imitate their successful competitors through the adoption of environmental management practices in order to gain the same competitive advantages [30]. The literature suggests that competitive pressure is the main reason organizations engage in environmentally friendly behaviors [94]. Thus, in line with institutional theory, this study expects that mimetic pressure drives SMEs' adoption of environmental management practices.

H6. A positive association exists between mimetic pressure and the adoption of environmental management practices.

2.3.3. The direct impact of environmental management practices on environmental performance

Prior studies suggest mixed association between environmental management practices and environmental performance. For instance, Yu and Ramanathan [95] found that manufacturing firms in the U.K. adopting environmental management practices find the improvement in environmental performance directly. Similarly, Daddi, et al. [96] revealed that Italian companies improve environmental performance in the short term by adopting environmental management systems. Hertin, et al. [97] found no evidence which indicates environmental management practices consistently and significantly improve the environmental performance of European companies. In the SME context, prior studies suggest the same mixed results. For example, Afum, et al. [98] demonstrated a significant positive and direct relationship. Hussey and Eagan [99] found no relationship. Moreover, Rasi, et al. [100] partially confirmed this relationship. In this regard, there is more research on this relationship in the context of SMEs.

Despite the mixed results, this study aligns with Johnstone and Hallberg [101], who proposed a framework showing that adopting environmental management practices is a reason for SMEs to improve environmental performance. One reason driving this expectation is that adopting environmental management practices reduces the negative impact on the environment, which translates into high environmental performance. For instance, King, et al. [102] found that adopting environmental management practices through ISO 14001 certification improves environmental performance measured by the waste generation given a facility's size or industry. Potoski and Prakash [103] indicated that firms adopting environmental management practices by ISO 14001 certification successfully improve environmental performance by reducing pollution emissions. In addition, Comoglio and Botta [40] demonstrated that implementing environmental management practices induce environmental performance measured by following criteria such as emissions to air, releases to water, waste management, uses and contaminations of land, uses of resources, local issues, and the number of environmental accidents. In this regard, this study expects the seventh hypothesis as follows.

H7. A positive association exists between adopting environmental management practices and environmental performance.

2.3.4. *The indirect impact of institutional pressure on environmental performance through the adoption of environmental management practices*

This study expected that environmental management practices mediate the association between institutional pressure and environmental performance because these practices determine how SMEs respond to institutional pressure to gain environmental performance. According to institutional theory, institutional pressure relating to environmental requirements comes from various sources, such as regulation compliance with government regulation [83], social expectations of customers [74], and suppliers [54], as well as the pressures to imitate competitors to maintain comparative competitive advantages [94]. These pressures may influence SMEs' policies and actions towards the environment, such as adopting environmental management practices. The adoption of environmental management practices permits SMEs to effectively respond to and meet the requirements of institutional actors such as governments [87], customers [90] and suppliers [93], as well as maintain their comparative advantages with their competitors [30]. Adopting environmental management practices reduces waste generation [102], pollution emissions [103], land contaminations, the use of resources, local environmental issues, and the number of environmental accidents [40], which are the indicators of environmental performance. Therefore, environmental management practice mediates institutional pressure and environmental performance, as it determines the actions and outcomes of the response to these pressures. Several researchers are supporting this argument. For instance, Majid, et al. [104] found that an environmentally friendly business strategy mediates the relationship between institutional pressure and environmental performance. Similarly, Chaudhry and Amir [16] indicated that environmental management accounting implementation mediates the relationship between institutional pressure and environmental performance. Therefore, this study expects the last three hypotheses as follows.

H8. Environmental management practices mediate the relationship between coercive pressure and environmental performance.

H9. Environmental management practices mediate the relationship between normative pressure and environmental performance.

H10. Environmental management practices mediate the relationship between mimetic pressure and environmental performance.

2.4. *Research context*

Vietnam, situated in Southeast Asia, is an emerging nation within one of the world's most dynamic regions. It has experienced rapid economic growth, making it one of the fastest-growing economies globally [105]. Prior to the Covid-19 pandemic, Vietnam's GDP had been growing steadily at an annual rate of approximately 6% for over two decades [106]. It has consistently been recognized as a major investment destination [107].

The stable and robust economic growth can be attributed to the implementation of market-oriented economic reforms known as Doi Moi, which were introduced in the 1980s [108]. These economic reforms were enacted by the Vietnamese government to facilitate the transition from a centrally planned to a market economy [109]. Furthermore, Doi Moi has fostered a shift in Vietnam's economic landscape from a lack of entrepreneurial activity to a pro-entrepreneurship stance [110]. The adoption of a pro-entrepreneurship approach has played a pivotal role in propelling the development of the Vietnamese economy [111]. Since the implementation of Doi Moi, the growth and impact of SMEs in Vietnam have undergone significant transformations, leading to noteworthy implications for the country's ecological conditions.

2.4.1. *Manufacturing SMEs in Vietnam*

Prior to the implementation of Doi Moi, state-owned enterprises dominated the Vietnamese economy. However, following the implementation, private enterprises have become significant contributors to the economy due to the recognition of the private sector's role. For instance, in 1997, non-state enterprises accounted for 7.22% of the GDP [108], whereas in 2016, their contribution increased to 38.6% of the GDP [112].

The government has acknowledged the importance of small and medium-sized enterprises (SMEs) since the release of Decree 90/2001/ND-CP [113]. Since this recognition, SMEs have experienced dramatic growth and development. According to Hansen, et al. [114], approximately 95% of registered private enterprises are SMEs. Similarly, as indicated by Hoang [115], at the end of 2014, SMEs accounted for about 97.5% of the total operational enterprises. Le [116] suggests that SMEs have consistently maintained a growth rate exceeding 20%. By the end of 2019, the number of SMEs reached approximately 661,075 enterprises [24], compared to around 59,831 SMEs in 2002. In comparison to larger enterprises, SMEs have exhibited higher growth rates. For instance, between 2012 and 2017, the number of SMEs increased by 8.8% on average, surpassing the average growth rate of large enterprises at 5.4% [117].

Among SMEs, manufacturing SMEs have shown the most significant growth. For instance, during the period of 2005–2015, the number of private manufacturing SMEs grew more than threefold [118]. As of the end of 2019, approximately 105,771 manufacturing SMEs were operating profitably [24]. One reason for this growth is that Vietnam's economy is export-oriented, and many SMEs are involved in export value chains [119]. Consequently, manufacturing SMEs play a crucial role in contributing to the development of the Vietnamese economy and generating employment opportunities in Vietnam [120].

2.4.2. *Environmental conditions in Vietnam*

In Vietnam, the ecological environment has experienced significant degradation with various forms of pollution intensifying. Concerning water pollution, research by Nguyen, et al. [121] reveals a substantial increase in total suspended solids, rising from 345,000 tonnes in 2000 to 1,199,000 tonnes in 2011. Additionally, the level of biological oxygen demand has escalated from 43,400 tonnes in 2000 to 123,000 tonnes in 2011. Air pollution is also a significant issue, with Vietnam being ranked as the fifth-highest emitter of

black carbon globally from 2000 to 2008 [122]. Furthermore, the population-weighted average concentration of particulate matter (PM_{2.5}) has risen from below 20 to approximately 25 mg/m³ between 1990 and 2013 [123]. In the 2018 Environmental Performance Index, Vietnam was ranked 161th out of 180 countries in the air pollution category [124]. Compared to other Southeast Asian countries, Vietnam is projected to be the most affected by air pollution caused by coal plant emissions, with an estimated 188.8 excess deaths per million people by 2030 [125].

Deforestation is another significant concern in Vietnam. Van Khuc, et al. [126] report that between 2000 and 2010, the total area of forest loss and degradation in Vietnam amounted to nearly 2.4 million hectares. On average, 62,000 ha of forest were lost annually between 2002 and 2009 [127]. Scholars focusing on environmental issues in Vietnam [128–130] assert that environmental degradation is closely linked to economic activities following the implementation of the Doi Moi economic reform. As a result, environmental concerns have gained widespread attention in Vietnam recently [131], leading to institutional pressures on manufacturing SMEs. Manufacturing SMEs are now required to prioritize environmental considerations by adopting environmental management practices to enhance their environmental performance.

3. Methods

3.1. Data collection

This study employed online survey methods (e.g., internet-based survey). It offers various advantages over conventional survey approaches, including (1) a shorter collecting period; and (2) a simpler implementation [132]. This study implies an internet-based surveying approach because target respondents can be reached via email only. It is sufficient because [133] suggested that researchers can survey target respondents by using one of the following internet-based methods such as e-mail, Internet, and other electronic survey methods. However, a concern is that internet-based methods may subject to non-coverage bias [134]. According to Toepoel [135], this type of bias has no significant impact on results when the internet penetration rate of the surveying country is high. In 2022, the internet penetration rate in Vietnam is about 73.2% [136]. Hence, this type of bias does any concern for this study.

To obtain representative of the sample, prior researchers [137–140] randomly selected enterprises from Yellow Pages. Yellow Pages is a directory of businesses categorized by industry. Due to widespread internet access, Yellow Pages has primarily shifted online and provides contact information as phone numbers and email addresses. Researchers have used Yellow Pages to gather information on all known enterprises in a country when other databases were not available [141]. This study also follows the same approach. Particularly, similar to prior authors, this study employs the sampling pool based on Yellow Pages to survey SMEs and access their email addresses. The data collection process for this study relies on database from the website of Vietnam Yellow Pages [142], which offers more than 250,000 email addresses of enterprises currently operating in Vietnam. There are 2000 addresses of manufacturing SMEs randomly drawn from this database. The sampling pool consisting of 2000 manufacturing SMEs is sufficient because it is higher than prior studies [137,139,140,143], which rely on Yellow Pages to get sampling pools of target enterprises.

When gathering data, there are several conditions. First, responders are SMEs' owners or managers. Second, enterprises are classified as manufacturing SMEs if fewer than 300 people are working. Third, SMEs that have been in business for more than three years are the subject of this study. Lastly, this study excludes enterprises that employ less than ten people because they are categorized as micro-enterprises.

The process of the collection began in January 2022. The email was sent to 2000 addresses. In February 2022, a reminder was dispatched. At the start of March 2022, 253 respondents had completed the questionnaire. Hence, the sample size consists of 253 observations. The response rate is 12.65%.

3.2. Measure

Because the data collection method used in this study was a survey, it used standards from earlier research. Vietnamese translations were made of the measure's original English statements because that is the language of the intended respondents. Additionally, before distributing the post-translated questionnaire to the intended responders, it was reviewed by two SME managers. Each of the following variables, which range from 1 (strongly disagree) to 5 (strongly agree), was given a score on a 5-point Likert scale.

3.2.1. Institutional pressures

Institutional pressures consist of three different pressures such as coercive (CP), normative (NP), and mimetic pressures (MP). This study relies on three measures from Wang, et al. [144] to measure the degree of these mentioned pressures. In particular, these measures ask respondents to indicate how each type of pressure forces their SME to adopt environmental management practices. Four items are measuring each institutional pressure.

3.2.2. Environmental management practices

The measure of environmental management practices (EMP) was adopted by Roxas and Chadee [145]. This measure asks respondents to indicate the degree to which their SMEs adopt various environmental management practices. There are nine items in this measure. This measure was used in the context of SMEs and poses a high degree of reliability.

3.2.3. Environmental performance

This study adopts an instrument from Jorge, et al [146] to measure SMEs' environmental performance (EP). One reason is that the

Table 1
Loadings and cross-loadings.

Statements	Items	SME's age	Coercive pressure	Environmental management practices	Environmental performance	Mimetic pressure	Normative Pressure	SME's size
		AGE	CP	EMP	EP	MP	NP	SIZE
1. Age of SMEs	AGE	1.000	-0.045	-0.093	-0.032	-0.025	-0.110	-0.020
1. Our company tries to reduce the threat from the environmental regulations by adopting environmental management practices.	CP_1	-0.049	0.868	0.584	0.427	0.262	0.387	0.137
2. Environmental regulations are important for our company to adopt environmental management practices.	CP_2	-0.060	0.848	0.559	0.412	0.264	0.413	0.093
3. The local government has set strict environmental standards, which our company needs to comply with.	CP_3	-0.006	0.835	0.596	0.402	0.268	0.405	0.012
4. Several penalties have been imposed on companies that violate environmental standards and regulations.	CP_4	-0.036	0.830	0.570	0.410	0.310	0.380	0.080
1. Our company implements waste management and pollution control.	EMP_1	0.009	0.543	0.786	0.567	0.405	0.556	0.010
2. Our company focuses on water and electricity conservation.	EMP_2	-0.025	0.538	0.806	0.586	0.442	0.579	0.003
3. Our company has training programs to improve environmental awareness.	EMP_3	-0.075	0.535	0.797	0.535	0.417	0.590	-0.033
4. Our company participates in environmental programs.	EMP_4	-0.117	0.585	0.785	0.472	0.420	0.597	-0.020
5. Our company adopts manufacturing technology, which has low impact on the environments.	EMP_5	-0.064	0.508	0.783	0.494	0.449	0.567	0.047
6. Our company frequently communicate with customers and buyers about the environmental protections.	EMP_6	-0.065	0.529	0.794	0.541	0.420	0.566	-0.057
7. In our company, sustainability is an integral part of our business plans and operations.	EMP_7	-0.079	0.579	0.807	0.564	0.486	0.610	0.034
8. In our company, environmental protection plays a major role in our business.	EMP_8	-0.134	0.504	0.805	0.534	0.406	0.672	-0.035
9. Environmental management practices are good for our business.	EMP_9	-0.114	0.564	0.784	0.525	0.417	0.582	-0.045
1. Our company minimizes the environmental impact of its activities.	EP_1	-0.063	0.408	0.546	0.845	0.347	0.432	-0.014
2. Our company designs products and packaging that can be reused, repaired or recycled.	EP_2	0.012	0.428	0.553	0.850	0.353	0.398	0.004
3. Our company voluntarily exceeds legal environmental regulations.	EP_3	-0.032	0.422	0.589	0.838	0.374	0.456	0.004
4. Our company makes investments to save energy.	EP_4	-0.042	0.438	0.597	0.862	0.392	0.436	0.030
5. Our company reuses and recycles materials.	EP_5	-0.074	0.373	0.507	0.822	0.266	0.405	-0.067
6. Our company adopts measures for ecological design in products/ services.	EP_6	-0.048	0.411	0.587	0.846	0.341	0.401	0.042
7. Our company implements programs to use alternative energy.	EP_7	0.056	0.424	0.558	0.851	0.328	0.404	-0.025

(continued on next page)

Table 1 (continued)

Statements	Items	SME's age	Coercive pressure	Environmental management practices	Environmental performance	Mimetic pressure	Normative Pressure	SME's size
		AGE	CP	EMP	EP	MP	NP	SIZE
8. Our company implements programs to reduce water consumption.	EP_8	-0.008	0.431	0.623	0.862	0.343	0.480	-0.009
9. Our company regularly conducts environmental audits.	EP_9	-0.056	0.222	0.371	0.553	0.190	0.294	0.034
1. The leading companies in our industry set an example in the field of environmental management practice adoption.	MP_1	-0.027	0.270	0.446	0.330	0.836	0.325	-0.056
2. The leading companies in our industry are well-known for adopting environmental management practices.	MP_2	-0.066	0.319	0.475	0.373	0.842	0.345	-0.028
3. The leading companies in our industry are intending to reduce their impacts on the environment by adopting environmental management practices.	MP_3	-0.014	0.271	0.454	0.319	0.861	0.312	-0.039
4. The leading companies in our industry have obtained competitive advantages by adopting environmental management practices.	MP_4	0.026	0.238	0.446	0.337	0.836	0.283	0.010
1. The increasing environmental consciousness of consumers have spurred our company to adopt environmental management practices.	NP_1	-0.099	0.386	0.620	0.467	0.379	0.840	-0.048
2. Being environmentally responsible is a basic requirement for our company to be part of this industry.	NP_2	-0.073	0.377	0.613	0.413	0.292	0.831	-0.083
3. Nongovernmental organizations around our company expect all companies in the industry to adopt environmental management practices.	NP_3	-0.051	0.377	0.546	0.359	0.230	0.799	-0.050
4. Nongovernmental stakeholders may not support our company if our company does not adopt environmental management practices.	NP_4	-0.132	0.394	0.648	0.409	0.315	0.802	-0.041
1. Number of employees in SMEs	SIZE	-0.020	0.095	-0.013	0.000	-0.033	-0.068	1.000

instrument was used to assess SMEs' environmental performance, which poses high reliability. There are nine items in this instrument.

3.2.4. Control variables

Two control variables are used in this investigation. The SME's age (AGE) is the first variable. It was measured by the year since SMEs were found. The SME's size (SIZE) is the second variable. The number of employees is used for measuring this variable.

3.3. Assessment of common method bias

To evaluate this bias using SPSS, this study applies Harman's single-factor test [147]. According to these authors, common method bias should be a concern if one factor accounts for more than most of the total variance. According to the findings, one component is responsible for 44.8648% of the total variance. Therefore, common method bias is fine for this study.

3.4. Assessment of non-response bias

Low response rates may result in non-response bias. Non-response bias may call into question the survey results, as respondents who did not complete the survey may have considerably different opinions than those who did [148]. To address this bias, this study used a *t*-test to compare early and late respondents who completed the survey [149]. The results reveal no statistically significant difference between the two groups. Consequently, this bias does not pose a concern for the results.

4. Results

The research model is evaluated in this study using partial least square structural equation modeling (PLS-SEM). It maximizes the variance the endogenous variables explain when assessing the complex cause-and-effect relationship between latent variables [150]. Two stages in this examination must be evaluated [151]. First, the measurement model's assessment includes the validation of indicator loadings, evaluation of internal consistency reliability, and convergent and discriminant validity [152]. Second, the structural model's assessment includes the evaluation of the model's explanatory capacity, predictive power, and collinearity [152]. SmartPLS 3.2.8 was employed to perform those stages.

4.1. Measurement model

According to Hair, et al. [152], indicator loadings must first exceed the threshold value of 0.708. Otherwise, this indicator needs to be removed and re-run the analysis. Table 1 indicates that it is sufficient to carry out the remaining steps when removing EP_9. After removing this indicator, the results show the validity of indicator loadings.

Table 2 shows that Cronbach's Alpha is higher than the cutoff value of 0.7 [150]. Besides, the composite reliability of the constructs are greater than the suggested levels of 0.7 [150]. As a result, the reliability of internal consistency is established.

Examining the average variance extracted (AVE) is necessary for determining convergent validity. For this assessment to be satisfied, AVE must be greater than 0.5 [152]. The fulfillment of this criterion is indicated in Table 2.

The heterotrait-monotrait (HTMT) ratio of the correlation was employed to assess discriminant validity. This value must be less than 0.85 [152]. These values are all less than 0.85, as shown in Table 3, demonstrating the establishment of discriminant validity.

4.2. Structural model

This study first assesses collinearity, the model's explanatory power, and the predicted accuracy. To accomplish this, a bootstrapping method with 5000 replacements was conducted using SmartPLS. First, the VIF of latent variables must be less than 5 for the lack of collinearity [152]. Second, the model's explanatory power is sufficient if R2 is more than 0.25 [150]. Thirdly, Q2 values greater than zero imply a sufficient level of prediction accuracy [152]. Hence, the satisfaction of that assessment is adequate, according to Table 4.

Next, this study assesses the strengths and magnitude of the hypothesized paths. Fig. 2 shows the findings of the hypotheses. The findings show a strong correlation between coercive pressure ($\beta = 0.382$, $p < 0.001$), normative ($\beta = 0.237$, $p < 0.001$), as well as mimetic pressure ($\beta = 0.476$, $p < 0.001$) and environmental management practice adoption. In addition, the findings suggest a positive association between environmental management practice adoption and environmental performance ($\beta = 0.586$, $p < 0.001$). However, the findings suggest an insignificant relationship between coercive pressure ($\beta = 0.064$, $p = 0.461$), normative ($\beta = 0.062$, $p = 0.147$), as well as mimetic pressure ($\beta = 0.017$, $p = 0.760$), and environmental performance.

Because there is a significant relationship between the independent variables and mediator, as well as between the mediator and dependent variable, this study follows [153] to examine the mediating effects of environmental management. This approach establishes mediating effects when the p-value is less than 0.05, and their confidence limit's range excludes zero. Table 5 shows that environmental management practices significantly mediate the relationship between coercive, normative, and mimetic pressures and environmental performance.

In this regard, the analysis supports the last seven hypotheses while rejecting the first three hypotheses. Three institutional pressures, coercive, mimetic, and normative pressure, have no direct effects on environmental management performance, while they indirectly affect environmental performance through adopting environmental management practices.

5. Discussion

5.1. Practical implications

Drawing upon institutional theory, this paper examines the mediating role of adopting environmental management practices on the link between coercive, mimetic, and normative pressure and the environmental performance of manufacturing SMEs operating in Vietnam. The results provide practical implications for manufacturing SMEs operating in Vietnam as follows.

Table 2
Cronbach's Alpha, composite reliability, and AVE.

	Cronbach's Alpha	Composite Reliability	AVE
AGE	1.000	1.000	1.000
CP	0.867	0.909	0.715
EMP	0.927	0.939	0.631
EP	0.945	0.954	0.722
MP	0.865	0.908	0.712
NP	0.836	0.890	0.669
SIZE	1.000	1.000	1.000

Table 3
HTMT ratio of the correlation.

	AGE	CP	EMP	EP	MP	NP	SIZE
AGE							
CP	0.048						
EMP	0.099	0.762					
EP	0.051	0.542	0.716				
MP	0.043	0.376	0.603	0.445			
NP	0.118	0.551	0.843	0.562	0.436		
SIZE	0.020	0.102	0.041	0.029	0.042	0.074	

Table 4
R2, Q2, and VIF values.

	R2	Q ²	VIF value						
			AGE	CP	EMP	EP	MP	NP	SIZE
AGE									
CP									1.015
EMP	0.744	0.464							1.934
EP	0.459	0.326			1.327				3.909
MP									1.205
NP									1.425
SIZE									1.380
									2.287
									1.028

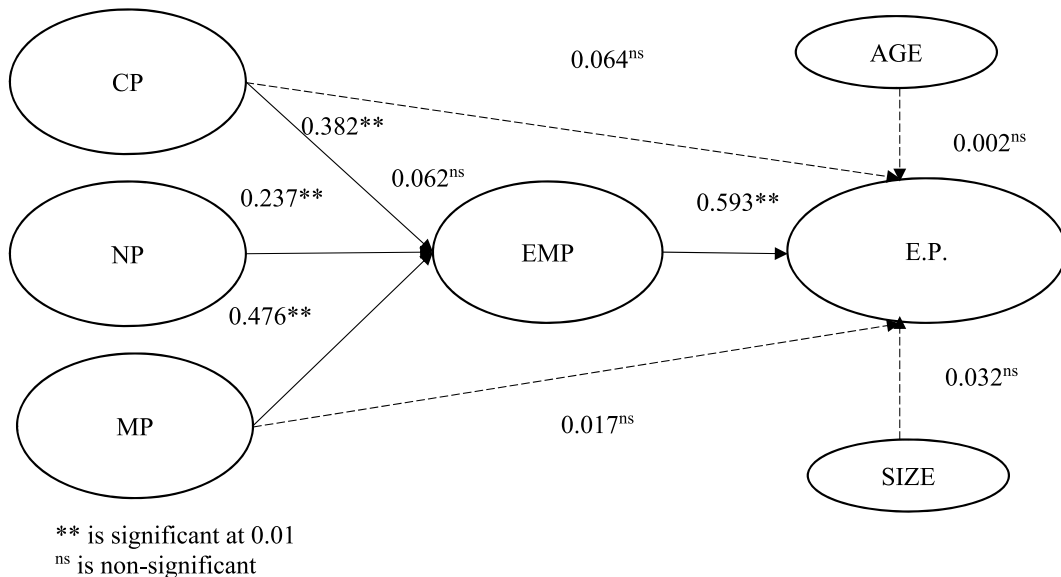


Fig. 2. Results of the hypothesis testing.

Table 5
Mediating assessment.

Path	Estimated	T statistic	p-value	Lower confidence limit	Upper confidence limit
CP ->EMP ->EP	0.224	4.880	0.000	0.139	0.318
MP ->EMP ->EP	0.139	4.231	0.000	0.080	0.206
NP ->EMP ->EP	0.279	5.432	0.000	0.179	0.381

5.1.1. The insignificant direct impact of institutional pressure on environmental performance

The first three hypotheses predict the positive and direct relationship between each institutional pressure, such as coercive, normative, and mimetic pressure, and environmental performance. However, the results from the analysis fail to support these hypotheses. It implies that SMEs face challenges in finding environmental performance directly when there is high coercive, normative,

and mimetic pressure in an emerging country such as Vietnam.

One major challenge that SMEs operating in emerging countries face is the low development of infrastructure, which results in a low degree of environmental performance. According to Jayaraman, et al. [154], in comparison to developed countries, emerging countries have a low degree of infrastructure development. Infrastructure development plays a crucial role in the improvement of energy efficiency [155], and as such, directly improves environmental performance. Besides, the other characteristics of an emerging country and the unique characteristics of SMEs may provide more sufficient explanations for those insignificant results. First, according to Massoud, et al. [156], two significant challenges are observable in emerging countries. One issue is that in these countries, enforcement could be more efficient due to the low fines due to outdated legislation, bribery, and corruption. Another issue is that in these countries, governmental entities responsible for environmental protection and resource management need more coordination in supporting environmental improvement. These two issues cause an insignificant relationship between coercive pressure and improved environmental performance.

Second, customers in emerging countries are price sensitive due to low income [157]. When customers are highly influenced by price sensitivity, they do not commit much to environmental responsibility [158]. Besides, in emerging countries, local customers have low environmental awareness [159], which causes a low degree of environmental concern. Therefore, low pressure from customers, a significant source of normative pressure, adequately explains the insignificant link between normative pressure and environmental performance.

Third, although rivals pose mimetic pressure on SMEs, they are less likely to improve environmental performance because of the following reason. According to Pimenova and Van Der Vorst [20], two significant obstacles for SMEs in both developed and emerging countries to gain environmental improvement are the need for more finance and knowledge. More financial capabilities are needed to ensure the investment in environmentally friendly technologies to improve environmental performance because it may harm short-term economic performance. Environmental knowledge challenges the improvement of environmental performance. In this regard, mimetic pressure is less likely to impact the environmental performance of SMEs operating in Vietnam.

5.1.2. *The significant direct impact of institutional pressure on the adoption of environmental management practices*

The fourth hypothesis states that a significant and positive relationship exists between coercive pressure and adopting environmental management practices. The result supports this hypothesis. This result aligns with prior studies examining the effect of coercive pressure on environmental management initiatives in SME contexts. For instance, Masocha and Fatoki [160] found that coercive pressures significantly impact the sustainable development of SMEs operating in South Africa. Similarly, [161] found that coercive pressure drives Malaysian manufacturing SMEs to adopt environmental management accounting practices.

Furthermore, Gao and Yang [162] showed that Chinese SMEs adopt corporate environmental responsibility practices due to coercive pressure. Hence, it implies that manufacturing SMEs operating in Vietnam adopt environmental management practices under coercive pressure. It is quite accurate in the condition of Vietnam. At the COP26 climate conference, the Vietnamese government recently declared the roadmap to achieve net-zero greenhouse gas emissions in Vietnam in 2050 [163]. In this regard, the Vietnamese government promulgates stricter environmental protective regulations, which force manufacturing SMEs to adopt environmental management practices. This result reflects this situation.

The fifth hypothesis predicts a significant and positive relationship between normative pressure and adopting environmental management practices. The analysis supports this hypothesis. This finding is similar to prior studies on the association between normative pressure and SMEs' environmentally friendly behavior. First, [164] indicated that normative forces impact the SME's participation in sustainability practices such as social, environmental, and economic sustainability. Second, [162] demonstrated that normative pressure drives Chinese SMEs to adopt corporate environmental responsibility practices. This result can be interpreted as that in Vietnam, manufacturing SMEs adopt environmental management practices because of normative pressure. It is quite accurate in Vietnam. Currently, Vietnamese people concern more on environmental issues. In this sense, they commit to paying for environmentally friendly products and services. Therefore, to cope with the behavioral changes, manufacturing SMEs must produce environmentally friendly products to survive. It is an example of normative pressure having an impact on the adoption.

The sixth hypothesis expects a significant and positive relationship between mimetic pressure and adopting environmental management practices. The finding confirms this hypothesis. This finding is consistent with prior studies, which suggest the impact of mimetic pressure on the adoption of SMEs' environmental behaviors. First, Masocha and Fatoki [165] found that mimetic pressure drives South African SMEs to adopt sustainable development practices. Second, Baah, et al. [166] demonstrated that mimetic orientation contributes to the SMEs' adoption of three environmental orientations such as proactive environmental strategy, corporate environmental responsibility, and traditional environmental strategy. This finding suggests that SMEs adopt environmental management practices because of mimetic pressure. In Vietnam, since the participation in World Trade Organizations, the number of multinational companies entering Vietnam is increasing. These companies come from developed countries that have a strong culture of environmental protection. According to Kyriakopoulos and Solovev [167], in emerging economies, SMEs could learn and innovate by imitating and reverse engineering successful products. In this regard, according to institutional theory, these companies are more likely to implement their environmental management practices in Vietnam because they expect to gain similar competitive advantages through imitating and reverse engineering successful products of multinational companies.

5.1.3. *The significant direct impact of the adoption of environmental management practices on environmental performance*

The seventh hypothesis expects a positive link between adopting environmental management practices and environmental performance. The result supports this expectation. This result is consistent with [98], who demonstrated a significant positive and direct relationship between environmental management practice adoption and the environmental performance of manufacturing SMEs

operating in an emerging country. However, this result conflicts with [99], who found no relationship when examining SMEs operating in the U.S. The differences between emerging and developed countries may explain this finding sufficiently. It is revealed that organizations operating in developed countries are under higher pressure from environmental regulation than organizations operating in emerging countries [168]. SMEs operating in developed countries must comply with those strict environmental regulations to gain environmental performance to a certain degree, while SMEs operating in emerging countries lack reinforcement from environmental regulation. As a result, they are less likely to take environmental performance into account. SMEs operating in emerging countries find more space to improve environmental performance than those operating in developed countries because SMEs operating in developed countries act optimally toward the environment. As such, they cannot improve further. In addition, it is suggested that people from developed countries are more concerned about the environment than people from emerging countries [169]. In this regard, SMEs adopting environmental management practices in emerging countries have more space to improve environmental performance than those from developed countries because the concern for the environment in developed countries is more significant than in emerging countries. As a result, SMEs operating in developed economies cannot find further improvement in environmental performance. These two arguments provide sufficient explanation for the positive association between the adoption of environmental management practices and the environmental performance of manufacturing SMEs operating in an emerging country such as Vietnam.

5.1.4. The indirect impact of institutional pressure on environmental performance through the adoption of environmental management practices

The three last hypotheses propose that environmental management practices fully mediate the relationship between coercive, normative, and mimetic pressures and the environmental performance of manufacturing SMEs operating in Vietnam. These findings align with prior studies examining the mediating effects of environmentally friendly strategy implementations [104] and environmental management accounting adoption [16] on the link between institutional pressures and environmental pressure performance. These findings imply that in Vietnam, manufacturing SMEs cannot directly improve environmental performance because there are high coercive, normative, and mimetic pressures. These pressures motivate SMEs to adopt environmental management practices, which indirectly results in high environmental performance. When there is high coercive pressure, such as regulations and policies promoting environmentally friendly behaviors, manufacturing SMEs find adopting environmental management practices beneficial to comply with these regulations because it allows them to avoid penalties. While the primary drivers for these actions may be compliance, the impact of the adoption can also have a positive impact on the SMEs' environmental performance. In addition, when there is high normative pressure, such as customers' and suppliers' expectations, that promote environmentally friendly behaviors, manufacturing SMEs adopt environmental management practices to align their actions with these expectations. This adoption is perceived to be compelling because it allows their products to meet customers' and suppliers' environmental demands. While the primary motivation for these actions may be to be perceived as socially responsible and meet the expectations of their customers and suppliers, adopting environmental management practices positively impacts environmental performance. Lastly, when there is high mimetic pressure, meaning that manufacturing SMEs observe and imitate their competitors' actions, they are pressured to adopt green practices to keep up with their competitors and remain competitive in the market. While the primary motivation for these actions may be to maintain a competitive edge, the adoption leads to improving environmental performance.

5.2. Theoretical contributions

First, in the environmental literature, researchers draw upon institutional perspective to explain that institutional pressures cause large enterprises to exert environmental friendly behaviors as adopting environmental management practices [11–14] as well as improvement of environmental performance [15–18]. A lack of attention has been paid to smaller enterprises as SMEs. According to Pimenova and Van Der Vorst [20], SMEs need more capability, resources, and environmental awareness, as well as limitations in accessing information and support to perform environmentally friendly actions. Besides, SMEs are argued to have a weak environmental culture due to limited capital, information, technology, and weak support from the government and networks when executing environmentally friendly behaviors [22]. Therefore, these differences question the impact in the SME context. This study shows that coercive, normative, and mimetic pressures have significant effects on environmental management practice adoption in this context. This study extends existing knowledge by shedding lights on the impact of institutional pressure on SMEs' adoption of environmental management practices.

Second, according to Woo and Jin [23], each country has conditions such as culture, economic development, or social freedom. As a result, institutional studies should focus on a single country to shed light on whether coercive, normative, and mimetic pressures affect the outcomes. To the best knowledge, there is a limited understanding on how institutional pressure has effects on the adoption of environmental management practices as well as environmental performance. The institutional environment in Vietnam is different to prior related studies because the Vietnamese economy was previously acknowledged as a centrally planned economy [108]. After the implementation of Doi Moi economic reforms, the Vietnamese economy has been in a transitional stage in to market economy [109]. This study contributes to the literature on environmental management by empirically showing the impact of those pressures on adopting environmental management practices and environmental performance in a transitional economy as Vietnam.

Last but not least, in environmental management literature, the institutional theory is a compelling theory, which is a theoretical lens to explain how an organization performs environmentally friendly behaviors and gains environmental performance under different institutional pressures. Institutional theorists posit that institutional pressures drive an organization to perform a particular behavior to comply with institutional regulation and social expectations and to cope with uncertainty to gain comparative advantages with competitors. In this regard, institutional theorists suggest that these three pressures affect the adoption of environmental

management practices. However, the conventional institutional theory has been criticized due to too much focus on environmental determinism [68] and a need for more attention to strategic responses [27]. In the environmental literature, empirical evidence seems to support this criticism because of mixed results of the relationship between institutional pressure and environmental performance (e. g., Refs. [15–18]). The neo-institutional theory is evolving version of institutional theory. It provides a dynamic view of how organizations are rewarded when they accept and respond to institutional pressure [28,29]. Due to novelty of this theory, there is a lack of environmental researchers' attention on the execution of this theory to predict enterprise's reactions and their consequences in under the institutional pressures resulted from environmental concerns. According to de la Luz Fernández-Alles and Valle-Cabrera [170], researchers should address the following aspect to contribute to neo-institutional theory. First, it is required more empirical evidence. Second, studies should examine the relationship between institutional contexts and performance, considering the role of strategic changes. Following these suggestions, this study contributes to the theoretical development by empirically showing that under three institutional pressures as coercive, normative, and mimetic pressure, manufacturing SMEs accept those pressure and response by adopting environmental management practices. And thanks to this adoption, these SMEs gain rewards through improvement of environmental performance.

6. Conclusions and limitations

This study aims to draw upon institutional theory to predict the direct impact of coercive, normative, and mimetic pressure on manufacturing SMEs' environmental performance and the indirect effect of this impact through adopting environmental management practices. 253 manufacturing SMEs operating in Vietnam are included in the sample of this study. The findings suggest that three institutional pressures, coercive, mimetic, and normative pressure, have no significant effects on environmental management performance. In comparison, adopting environmental management practices mediates the relationship between these three mentioned pressures and environmental performance.

The findings are subject to several limitations, so future studies should address those limitations. First, manufacturing SMEs operating in Vietnam is under this study's scope. The generalization of these results to other countries should be cautious. Therefore, replicating this study's research model with data collected from other emerging countries allows future studies to shed more light on the appropriateness of the research model. Second, this research is limited by its cross-sectional design, and the collected data only permit one-time evaluations of the responses. In order to analyze changes in responses over time and determine the causal relationships between variables, longitudinal research is employed. Next, even if the research indicates that non-response bias is not a problem, this study's response rate is low. [133] provided a step-by-step approach used in survey methods to gain high response rates. The integration of this approach allows future studies to be beneficial because it addresses the limitation of a low response rate. In addition, according to Aldaas, et al. [171] revealed that green human resource management practices have positive impact on green supply chain management practices of SMEs operating service sectors. Because green supply chain management practices share similarity with environmental management practices, future study should address whether green human resource management practices have the same effects environmental management practices of SMEs operating in manufacturing sectors. Lastly, Polas, et al. [172] argued that knowledge management significantly affects all management practices in SMEs, and found that this type of management significantly induces green innovation. In such regard, this study proposes a question of whether knowledge management increases the adoption of environmental management practices of SMEs.

Author contribution statement

Quang-Huy Ngo: Conceived and designed the experiments; Performed the experiments; Analyzed and interpreted the data; Contributed reagents, materials, analysis tools or data; Wrote the paper.

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Data availability statement

Data will be made available on request.

Declaration of competing interest

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

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