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Examining the influence of customers, suppliers, and regulators on environmental practices of SMEs: Evidence from the United Arab Emirates

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Abstract

This study explores which stakeholders have more substantial influence than others and which combinations of stakeholders will have the greatest impact on small- and medium-sized enterprises' environmental practices. A quantitative survey of 150 manager-owners of SMEs found that while customers and suppliers significantly influence SMEs' sustainability behaviors, the demands and expectations set by regulatory bodies have a more substantial impact on how SMEs shape their environmental practices. Further, the presence of regulatory pressures does more than directly influence SMEs. Pressure from regulatory bodies also amplifies the effect of other forces on SMEs' environmental practices. In other words, when regulatory pressures exist, the impact of customer and supplier pressures on SMEs' sustainability behaviors becomes even more substantial. This synergistic effect underscores the pivotal role of regulatory pressures in shaping and enhancing SMEs' commitment to environmental sustainability.

KEYWORDS
environmental sustainability, institutional theory, regulatory, SMEs, stakeholder pressure

1 | INTRODUCTION

Environmental sustainability is crucial in today's business environment, with stakeholder pressures often steering firms toward adopting eco-friendly practices. While stakeholders encompass a wide array of groups, including internal (employees, managers, owners) and external entities (customers, suppliers, regulators, investors, and local communities), their influence varies based on their relationships, interests, and resources (Kivits & Sawang, 2021). Stakeholder pressure, the force exerted by these groups on organizational decisions and actions (Nguyen & Adomako, 2022), manifests through demands for transparency, requests for operational changes, expectations of social responsibility, and adherence to regulatory mandates.

However, the power dynamics among these stakeholders, especially within small- and medium-sized enterprises (SMEs), remain inadequately explored. While customers, regulatory bodies, employees, and investors can all drive environmental initiatives within firms, their relative influence is unclear. Yet, SMEs play a significant role in environmental impact, collectively emitting 50% of greenhouse gases

Abbreviations: AVE, average variance extracted; CR, composite reliability; GDP, gross domestic product; HTMT, heterotrait-monotrait; NGOs, non-governmental organizations; PLS, partial least squares; SMEs, small and medium-sized enterprises; UAE, United Arab Emirates; VIF, variance inflation factor.

in the business sector (Organisation for Economic Co-operation and Development [OECD], 2022), despite often taking only basic environmental action.

To address this gap, our study aims to investigate the pressures exerted by stakeholders, and their interactions, and identify which groups hold the most significant sway over firms' environmental practices. By understanding the primary influencers, SMEs can allocate resources effectively, focusing efforts where they yield the most significant environmental impact. Ultimately, this research seeks to advance our understanding of stakeholder dynamics in driving environmental sustainability within SMEs, aiding in developing targeted strategies for greener business practices.

This study contributes in two significant ways. First, it enriches existing literature by providing a deeper understanding of stakeholder dynamics and their impact on SMEs' environmental practices. While prior research has explored the influence of individual stakeholder groups, such as customers (e.g. Kivits, 2011; Raza & Woxenius, 2023), regulators (e.g. García-Marco et al., 2020; Zhu et al., 2017), or suppliers (e.g. Liu et al., 2018; Qiao et al., 2022) often through qualitative case studies, this study uniquely examines multiple stakeholders concurrently, empirically identifying the most influential parties in driving environmental sustainability practices.

Second, this research explores the potential for regulatory pressures to enhance the influence of other stakeholder pressures, a perspective not extensively explored in existing literature. While previous studies have examined various stakeholders' impact on SMEs' environmental practices, they have not specifically investigated regulatory pressures as a moderating factor. Given the extensive environmental regulations in the study context (the United Arab Emirates-UAE), it is plausible to suggest that regulatory pressures may significantly influence entities operating within the UAE, potentially surpassing other stakeholders.

The study is structured as follows: Next, we examine environmental practices in SMEs, with a focus on the UAE. This is followed by a literature review of institutional theory and stakeholder engagement, from which hypotheses are derived. The methodology and analysis procedures are detailed in subsequent sections, along with the presentation of results. The discussion then delves into implications, practical recommendations, and study limitations.

2 | SMES AND ENVIRONMENTAL PRACTICES: THE UAE CONTEXT

The SME sector is a cornerstone of the UAE's economy, employing over 86% of the private sector workforce and contributing more than 60% to the nation's Gross Domestic Product (GDP) (UAE Government, 2023). Given the country's commitment to sustainability, it is imperative to evaluate the environmental practices of SMEs. The UAE has emerged as a regional leader in sustainability, recognizing it as a national priority (Ministry of Energy and Industry, 2017). Driven by economic diversification, environmental conservation, and alignment with global sustainability targets, the UAE has implemented policies and initiatives to promote sustainable practices across sectors (Ministry of Climate Change and Environment, 2023).

Specifically, the UAE has enacted several regulations to enhance environmental sustainability in SMEs. For example, Federal Law No. 24 of 1999 for the Protection and Development of the Environment outlines general provisions for protecting and enhancing the environment in the UAE. These regulations reflect the government's dedication to fostering a sustainable business environment and align with broader national strategies, such as the National Energy Strategy 2050 and the UAE National Climate Change Plan 2017–2050 (Ministry of Climate Change and Environment, 2017; Ministry of Energy and Industry, 2017).

Despite these efforts, existing research predominantly focuses on the environmental performance of large corporations (e.g. Al Sarrah et al., 2021; Gerged, 2021; Gölgeci et al., 2019), neglecting SMEs' significant environmental impact. SMEs collectively contribute a substantial portion of environmental impact due to their sheer numbers and diverse business activities (Delmas & Toffel, 2008). Their sustainability practices impact the environment and affect economic growth, social welfare, and long-term sustainability. Neglecting their environmental practices can lead to underestimating the overall environmental impact and hinder efforts to achieve sustainability goals. Effective policymaking and intervention design require a thorough understanding of the factors influencing SMEs' environmental practices. Therefore, this study aims to fill this gap by examining the potential impact of regulatory measures on driving SMEs' environmental practices. By identifying and analyzing specific regulations to enhance environmental sustainability in SMEs, this research aims to inform policymakers and facilitate the design of effective interventions to promote sustainability in the country.

3 | THEORETICAL FRAMEWORK AND HYPOTHESES

Institutional theory and stakeholder theory are two prominent frameworks in organizational studies that help to explain and understand how organizations adopt and implement sustainability practices. The stakeholder theory highlights the intricate relationships between a business and various parties invested in its success, including customers, suppliers, employees, investors, communities, and other relevant stakeholders (Freeman, 2010). These stakeholders exert pressure on organizations to address environmental issues, whether it is through consumer preferences for eco-friendly products, investor expectations for sustainable investments, employee demands for environmentally conscious workplace practices, or community concerns about environmental impact. Therefore, organizations seek to respond to environmental concerns by implementing sustainable practices to legitimize their activities with stakeholders (Deegan, 2014; Deegan et al., 2002). Institutional theory is a sociological theory that suggests that organizations are influenced by broader social norms, beliefs, and expectations (DiMaggio & Powell, 1983; Powell & DiMaggio, 2012). Within the theory, it is argued that organizations

not only respond to market forces but also conform to institutional pressures imposed by the society in which they operate. Institutions are defined as the formal and informal rules, norms, and practices that govern the behavior of individuals and organizations within a social system (Clemens & Douglas, 2005).

In organizations, the phenomenon of becoming increasingly similar to one another is termed institutional isomorphism in the seminal work of DiMaggio and Powell (1983). Organizational change can be driven by institutional pressures, i.e. coercive, mimetic, and normative. For example, environmental regulations may compel companies to adopt certain sustainability practices. Further, mimetic pressures result from organizations imitating successful or prestigious peers' behaviors, structures, or strategies. In situations characterized by uncertainty or complexity, organizations may feel compelled to adopt the practices of others they perceive as successful, assuming they are effective. Organizations may experience normative pressures from professional norms, values, and beliefs in an industry or society. These pressures compel organizations to adopt practices deemed appropriate or legitimate by their peers, professional associations, or broader societal expectations. For example, businesses may adopt corporate social responsibility initiatives to align with societal expectations regarding ethical behavior. Organizations may conform to these pressures to avoid sanctions, legal repercussions, or loss of legitimacy (Nadeem, 2021).

The current study focuses on customers, suppliers, and regulators as key stakeholders in this research and is grounded in several justifications. First, stakeholder salience, or the degree to which managers prioritize competing stakeholder claims, is determined by power, legitimacy, and urgency (Freeman, 2010). Customers, suppliers, and regulators often possess high salience due to their power to influence firm operations, the legitimacy of their claims, and the urgency of their demands (Herold et al., 2019; Mitchell et al., 1997). Second, transaction costs can influence a firm's decision to make or buy, and this extends to stakeholder relationships. Engaging with a multitude of stakeholders can increase coordination costs, so focusing on crucial stakeholders like customers, suppliers, and regulators can help manage these costs (Jakhar, 2017; Williamson, 1981). Third, organizations depend on resources controlled by external entities. Customers (revenue), suppliers (materials), and regulators (market access) represent vital sources of these resources (Pfeffer & Salancik, 2015).

3.1 | Hypothesis development

The development of the hypothesis stems from institutional theory and the pressures exerted by institutions (DiMaggio & Powell, 1983, 2000). Institutional theory is a prominent perspective in organizational studies that focuses on how organizations are influenced by their institutional environments. It posits that organizations are not only shaped by market forces and internal dynamics but also by the broader social, political, and cultural contexts in which they operate. Institutional theory suggests that organizations strive for legitimacy and survival by conforming to institutional norms, rules, and expectations. Organizations are motivated to maintain legitimacy because it enhances their ability to attract resources, gain stakeholder support, and achieve their objectives (Thomas & Lamm, 2012).

Institutional theory provides a lens through which we can understand how organizations respond to institutional pressures, including those related to adopting environmentally sustainable practices. According to institutional theory, organizations are influenced by external forces, such as regulations, societal expectations, and industry norms, which shape their behavior and structure. For example, organizations may implement specific practices to reduce their environmental impact, such as recycling programs, energy efficiency initiatives, or sustainable sourcing policies. By adopting these practices, organizations contribute to environmental conservation and enhance their reputation and legitimacy in the eyes of stakeholders (Nguyen & Adomako, 2022). Moreover, institutional theory suggests organizations may engage in isomorphic processes to maintain legitimacy and reduce uncertainty. Isomorphism refers to the tendency of organizations within the same institutional environment to become increasingly similar in structure, practices, and values over time (DiMaggio & Powell, 1991). In the context of customer pressure, the influence exerted by this stakeholder primarily aligns with normative isomorphism within institutional theory. Normative isomorphism occurs when organizations adopt appropriate or legitimate practices within their industry or societal context.

Customers hold a significant and influential position among all stakeholders as they can possess substantial leverage in promoting environmentally friendly and sustainable practices (Lin & Ho, 2011). Customer pressure is the degree to which customers compel companies to enhance their environmental performance (Guoyou et al., 2013). As customers become more environmentally conscious, their preferences and demands for sustainable products and services drive businesses to adapt and incorporate sustainability into their strategies (Cho & Yoo, 2021; Zameer et al., 2021). Customers often possess significant power to influence firm operations, as their purchasing decisions directly impact revenue. Their legitimacy stems from their role as critical stakeholders vested in the organization's products or services. Additionally, customers' demands for sustainable products may create a sense of urgency for organizations to respond to these preferences to maintain market share and competitive advantage (Kumar et al., 2013).

Customer pressure can manifest through various channels, influencing companies to improve their environmental performance. One of the most direct ways customers exert pressure is by setting expectations for environmentally responsible products and practices. Customers communicate their values and priorities to firms through purchasing decisions and preferences. When a significant portion of customers prioritize sustainability, it creates a normative expectation within the industry for firms to adopt similar practices to remain competitive and maintain legitimacy (Crossley et al., 2021; Delmas & Toffel, 2004).

As customers demonstrate a preference for sustainable products and practices, their behavior can influence broader social norms regarding environmental responsibility. When sustainability becomes

a social norm, firms may feel compelled to conform to these expectations to avoid reputational damage or social sanctions (Delmas & Burbano, 2011). Moreover, a growing segment of consumers prioritize environmental considerations in their purchasing decisions (White et al., 2019). These green consumers can drive businesses to implement eco-friendly practices to attract this market segment. This pressure to align with prevailing social norms reflects normative isomorphism, as firms internalize societal values and adopt similar practices to gain acceptance.

The UAE's customer base is notably diverse, with expatriates making up a significant portion of the population (De Bel-Air, 2015). This diversity necessitates a nuanced understanding of consumer preferences and expectations, making customer pressure especially critical (Mahajan, 2013). A diverse customer base allows companies to differentiate themselves in the market by offering environmentally friendly products or services. This can push them to innovate and develop new sustainable practices. Consequently, the following hypothesis is proposed in this study:

Hypothesis 1a. Customer pressure will positively influence environmental sustainability practices.

Supplier pressure refers to the influence exerted by suppliers on their customers, typically businesses, to adopt specific practices or meet certain requirements. Supplier pressures can also align with normative isomorphism, particularly when suppliers impose sustainability requirements or expectations on their business partners (Srivastava et al., 2021). For example, if suppliers prioritize environmentally sustainable sourcing practices, they may require their partners to adhere to similar standards. It would create a normative expectation within the supply chain for environmentally responsible practices. Additionally, organizations may imitate the practices of their suppliers to maintain competitiveness, reflecting mimetic isomorphism. Legitimacy is derived from the perceived appropriateness or validity of stakeholders' claims or interests (Suddaby et al., 2017); thus, suppliers are considered legitimate stakeholders because they provide essential inputs to the organization. Suppliers' contributions to the organization's value chain make them essential stakeholders whose interests must be considered in strategic decision-making.

Moreover, the UAE's geographical location means many SMEs rely heavily on imported goods, making them vulnerable to international supply chain disruptions and fluctuations in exchange rates. In environmental sustainability, suppliers can encourage or require their customers to adopt environmentally friendly practices, such as waste reduction, energy efficiency, and responsible sourcing (Chan & Ma, 2021). This pressure can motivate businesses to enhance their environmental performance and incorporate sustainability into their operations and supply chain management (Dubey et al., 2019). For instance, a study on green supply chain management implementation among Chinese manufacturers found that supplier pressure was critical in driving green supply chain adoption and improving environmental performance (Zhu et al., 2007). Research on green practices within the supply chain has also demonstrated that supplier pressure fosters eco-friendly methods, mainly when there is robust integration of upstream[1] and downstream[2] processes (Vachon & Klassen, 2006). Similarly, an investigation into the factors and enablers that promote environmental management capabilities in SMEs concluded that supplier pressure significantly inspires SMEs to develop their environmental management capabilities (Lee & Klassen, 2008). Therefore, this study proposes the following hypothesis:

Hypothesis 1b. Supplier pressure will positively influence environmental sustainability practices.

Regulatory pressures typically align with coercive isomorphism within institutional theory (Burdon & Sorour, 2020). Regulatory pressure refers to the influence exerted by government regulations and policies on businesses to adopt environmentally friendly practices and comply with environmental standards. Regulatory bodies impose legal requirements and standards on organizations, compelling them to comply with specific environmental regulations (Gunningham & Sinclair, 2019). Regulatory agencies possess significant power to enforce compliance with environmental regulations through penalties or sanctions (Kivits & Charles, 2015). Their legitimacy is derived from their authority to establish and enforce legal standards. The urgency of regulatory pressures stems from the need for organizations to avoid legal non-compliance and associated consequences (Benlemlih et al., 2023; Malesky & Taussig, 2017).

Several studies emphasize the substantial impact of regulatory pressure on influencing organizational reactions to environmental requirements. For example, heightened regulatory pressure increases the likelihood of organizations opting for proactive or reactive strategies instead of merely symbolic ones (Aragòn-Correa et al., 2020; Delmas et al., 2013). This implies that strict regulations can propel businesses to enhance their environmental practices and overall performance. Likewise, Bansal and Hunter (2003) observed that companies voluntarily adopt ISO 14001 certification, often under the influence of regulatory pressures to improve their environmental performance. Subsequently, these firms are inclined to proactively engage in environmental management practices, such as implementing green supply chain management initiatives by strategically responding to regulatory demands and stakeholder expectations. This aligns with the findings of Arimura et al. (2011), who similarly discovered that ISO 14001 certification drives companies to adopt more advanced environmental management practices. Although ISO 14001 is a voluntary standard for environmental management systems, ISO 14001 requires organizations to identify and comply with relevant environmental legal requirements and regulations (Delmas & Toffel, 2008). By implementing ISO 14001, companies systematically assess and address their compliance obligations, reducing the risk of non-compliance and associated penalties or sanctions from regulatory authorities.

[1]The initial stages of the supply chain, which involve sourcing raw materials, components, or services from suppliers.

[2]The later stages of the supply chain, which involve distributing finished products to customers.

These pressures are particularly intense in the UAE, where the regulatory environment is dynamic and evolving. Several rules and regulations related to sustainability can impact SMEs in the UAE. These policies aim to promote sustainable development, reduce environmental impacts, and encourage businesses to adopt environmentally friendly practices. For instance, The UAE's Vision 2021, UAE's Federal Law No. 24 of 1999 for the Protection and Development of the Environment, outlines various business requirements to minimize pollution, manage waste, and protect air and water quality. SMEs must comply with these regulations to ensure their operations do not negatively impact the environment (Ministry of Climate Change and Environment, 1999). Besides the compliance of SMEs with rules and regulations to evade substantial fines, the notion of Eco-Islam could potentially amplify the importance of regulatory pressures. Eco-Islam emphasizes the ethical responsibility of Muslims, as per their faith, to care for the environment (Abdelzaher & Abdelzaher, 2017). The concept is rooted in the belief that the environment is a gift from God, so individuals and societies must protect and sustain it. These principles can influence laws and regulations in countries where Islamic law, or Sharia, is part of the legal system. Therefore, this study proposes the following hypothesis:

> **Hypothesis 1c.** Regulatory pressure will positively influence environmental sustainability practices.

SMEs in Arab nations, including the UAE, may prioritize compliance with laws and regulations over catering to customer or supplier demands. Compliance with laws and regulations is often linked to the long-term sustainability of a business (Gunningham & Sinclair, 2019; Vormedal & Ruud, 2009). By adhering to laws and regulations, companies can demonstrate their commitment to sustainable practices, enhancing their reputation and fostering stakeholder trust. Moreover, the UAE has a robust regulatory framework that governs business operations across various sectors (e.g. Almatrooshi et al., 2018; Udemba, 2021). For example, UAE Cabinet Decision No. 22 of 2018, Regarding the Regulation of the Use of Plastic Bags, aims to reduce plastic waste and promote environmental sustainability by regulating the use of plastic bags in commercial establishments. Prioritizing compliance with these regulations is essential for businesses to avoid penalties, such as fines, license suspension, or even imprisonment. The severity of penalties in the UAE and the solid regulatory framework make regulatory pressures particularly salient for SMEs. While pressures from customers and suppliers are essential, they do not carry the same immediate or potentially catastrophic consequences of non-compliance with regulatory pressures.

The strong regulatory environment in the UAE can moderate the relationship between customer pressure and supplier pressure on environmental sustainability practices. When regulatory pressure is high, businesses may be more inclined to adopt sustainable practices, irrespective of customer or supplier pressure intensity. For example, the UAE's Ministry of Climate Change and Environment has implemented bans that directly affect companies, prohibiting certain production, manufacturing, and importing activities (The United Arab Emirates' Government Portal, 2023). This regulatory pressure can drive companies to adopt more environmentally friendly practices, regardless of whether their customers or suppliers demand it. Additionally, the COP28 summit (2023), which the UAE hosts, will likely increase regulatory pressure on businesses to adopt sustainable practices, further diminishing the relative impact of customer and supplier pressure. Consequently, the following hypothesis is proposed in this study:

> **Hypothesis 2.** Regulatory pressure will moderate the relationship between (a) customer pressure and (b) supplier pressure on environmental sustainability practices.

This suggests that when regulatory pressure is high, businesses might be more inclined to adopt sustainable practices, irrespective of customer or supplier pressure intensity.

A research framework (Figure 1) has been developed to conceptualize the theoretical discussion.

4 | RESEARCH METHOD

4.1 | Data collection and sample

A questionnaire was administered through an electronic survey hosted by a university using the Qualtrics platform. The research team checked the face validity of the questionnaire and pre-tested it with four SME business owners from the UAE. The targeted companies are in Dubai and Abu Dhabi, as both are business capitals in the UAE. An email invitation to participate in the survey was sent to 418 manager-owners of SMEs in a network of authors' institutions. The key informants have good knowledge of external pressures the company faces and are likely to be involved in environmental practices in the organization. A total of 186 questionnaires were returned. Of these, 36 were not completed correctly and were excluded from the analysis. Therefore, the final sample comprised 150 responses, representing a response rate of 35.9%. Most respondents identified themselves as executive managers or managers (56.7%); the remainder were owners/founders (43.3%). Among the samples collected, 63.3% of the responses are from the service sector, 22.7% from the manufacturing

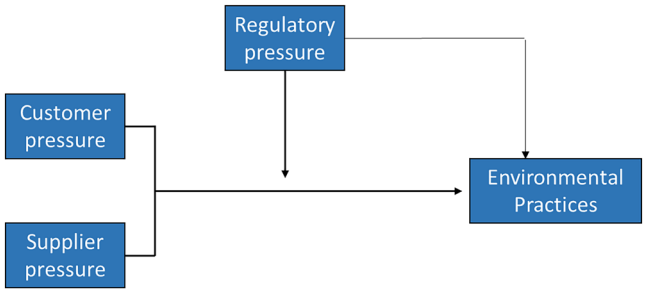

FIGURE 1 A proposed model of Environmental Practices Adoption and the Influence of Stakeholders.

sector, 13.3% from the retail and wholesale sector, and 0.7% from 'other'. The sample distribution is similar to SME composition in reports published by the UAE government (Central Bank of the UAE, 2019; Dubai SME, 2019). About 50% of the companies started their operation in the last 10 years, with 27.3% in the 11–20 years range and 22.7% operating for more than 20 years in the UAE. Regarding firm size, 32.7% of the sample employ less than 10 employees, 34.7% have employees ranging from 11 to 49, and 32.6% employ 50–250 employees.

To test the sample representatives, the Kolmogorov–Smirnov Goodness of Fit Test (K-S test) is used to compare the distribution of a continuous variable in our sample to a known distribution (e.g., normal distribution). If the distributions are similar, it suggests that the sample is representative of the population in terms of that variable. The results show that none of the variables has a higher than 0.05 value, indicating the data is not normally distributed. The skewness and kurtosis of all variables are also tested to measure the extent of departures from normality. Results show that all values are within the range of −1 to 1 (skewness ranges from −0.064 to 0.102; kurtosis ranges from −0.881 to −0.578), which denotes approximate normality (Hair et al., 2021).

The participants were not asked to disclose their names when completing the online survey to protect the privacy of the research participants and reduce the chances of social desirability biases (Spector, 2006). A comprehensive invitation statement was provided in the survey, guaranteeing complete confidentiality and emphasizing the objective of analyzing aggregate data patterns. Participants were also informed that their participation was entirely voluntary and that they could withdraw from the study at any time. On top of the survey questions, participants were advised that there were no right or wrong answers and that they should answer as honestly as possible. This follows the procedures proposed by Podsakoff et al. (2012) to reduce the causes of common method bias in addition to the statistical remedies explained in the results section.

Due to the nature of self-administered surveys, detecting potential nonresponse bias in the study data was crucial. Following the well-accepted argument that late respondents share similarities with non-respondents (Armstrong & Overton, 1977), an independent group *t*-test was conducted between 10% of early (first 15 respondents) and late respondents (last 15 respondents). The result shows no significant ($p > 0.05$) variance in the mean values of either subgroup, confirming that nonresponse bias was not a concern in the dataset.

4.2 | Measures

The survey design adopts established scales derived from prior research, a method chosen to ensure measurement robustness, validity, and reliability. All questions used in this study are listed in Table 1. The five-point Likert-type anchors for each scale range from 1 ('strongly disagree') to 5 ('strongly agree') was adopted. The dependent variable is the environmental practice, which uses seven items

TABLE 1 Reliability and validity test for the complete data.

Constructs	Indicators	Outer loadings	VIF	α	CR	AVE
Customer pressure (CP)	CP1. Environmental issues critically affect the buying decisions of my customers	0.90	2.66	0.90	0.91	0.83
	CP2. My customers often mention environmental factors when making choices	0.92	3.07			
	CP3.Customer demands motivate us in our environmental efforts	0.92	2.89			
Supplier pressure (SP)	SP1.My suppliers' environmental concerns have impacted on my business	0.92	2.37	0.86	0.90	0.88
	SP2.My suppliers consider environmental issues to be very important	0.95	2.39			
Regulatory pressure (RP)	RP1.Environmental legislative requirements impact on my business	0.94	2.52	0.87	0.88	0.89
	RP2.Environmental legislation is relevant to my business	0.95	2.52			
Environmental practices (EP)	EP1.Our core values include respect for the natural environment	0.65	2.27	0.89	0.89	0.60
	EP2.We have clear measures of success for our green initiatives	0.80	2.69			
	EP3.We audit pollution/waste of our processes in the firm	0.80	2.75			
	EP4.We have dedicated personnel that manage our green initiatives	0.85	2.60			
	EP5.We have dedicated personnel that manage our green initiatives	0.81	2.52			
	EP6.We have a sizable budget for our green initiatives	0.74	2.54			
	EP7.We audit pollution/waste of our processes along our supply chain	0.74	2.83			

adapted from Arend (2014) that measure the firm's commitments toward its environmental policies. Two sample items were 'We have clear measures of success for our green initiatives' and 'We have dedicated personnel that manage our green initiatives'. The items were factored cleanly and demonstrated acceptable reliability with a Cronbach alpha of 0.89. The independent variables were made up of three external pressures coming from customers, suppliers, and regulators. Measurement scales are adopted from Gadenne et al. (2009). Customer pressure evaluates the extent to which environmental issues critically affect customers' buying decisions, whether customers often mention environmental factors, and whether environmental efforts are motivated by customer demands. The three-item scales produced a Cronbach alpha of 0.90. Supplier pressure was measured with two items that assessed the impact and importance of suppliers' environmental concerns on the business and showed a Cronbach alpha of 0.86. Finally, regulatory pressure, which also serves as a moderator, was measured through an aggregate response to two items that questioned the extent to which environmental legislative requirements imposed by regulators are relevant and impact their business, demonstrating reliability with a Cronbach alpha of 0.87.

Consistent with other environmental and SME studies, we used several control variables. Prior studies have used firm-level control variables such as the age and size of the firm and sector-related variables such as industry type (Annunziata et al., 2018; Jackson & Apostolakou, 2010; Tyler et al., 2020). Thus, the controls used in this study were as follows: (1) firm age, calculated as the number of years since a firm's foundation; (2) firm size, based on the number of employees; (3) industry, based on their main line of business (manufacturing, retailing, services, and others are categorized as a nominal variable).

4.3 | Data analysis

This study used Smart PLS 4.0 structural equation modeling (PLS-SEM) to validate the measurement model and test the hypothesized relationships in the structural model. It can estimate complex predictive path models when the sample size is small relative to the number of indicators (Chin et al., 2003; Sarstedt & Cheah, 2019). PLS-SEM is a vigorous and developed second-generation SEM technique, also referred to as a variance-based approach (Hair et al., 2017). It is also commonly used in empirical business research, including sustainability and the environmental field, with a similar sample size (e.g., Asiaei et al., 2022; Baah et al., 2021; Gunarathne et al., 2021).

5 | RESULTS

5.1 | Measurement model

In PLS-SEM, assessing the measurement model in four steps is vital before testing hypotheses with the structural model. First, individual item reliability was evaluated by looking at the item loadings. As shown in Table 1, all particular item loading except EP1 (0.641) exceeds the threshold of 0.7 required in item loading. However, EP1 was not removed to ensure the content validity of the construct (Hair et al., 2017). Second, construct reliability, which refers to the internal consistency of items, is measured by composite reliability (CR) and Cronbach α coefficients (Chin & Gopal, 1995). The Cronbach α and CR values in this study ranged from 0.86 to 0.91, exceeding the recommended level of 0.7 or higher (Nunnally, 1978). Hence, all constructs achieved satisfactory internal consistency. Third, convergent validity can be evaluated using the average variance extracted (AVE). The AVE values for every construct were above the recommended threshold value of 0.5 (Chin, 2010), ranging from 0.60 to 0.89. This indicates that the measures used in this study had an acceptable degree of convergent validity.

Fornell–Larcker criterion and heterotrait-monotrait (HTMT) ratio were used to evaluate the discriminant validity of the constructs (Table 2). The Fornell–Larcker criterion results demonstrated that the square roots of all AVE (in bold) are greater than the correlations between the latent variables; therefore, discriminant validity is supported. As reported in Table 2, all HTMT values are smaller than 0.85, indicating that discriminant validity was established (Henseler et al., 2014).

Due to the cross-sectional nature of this survey, where one participant in each company assessed the dependent and independent variables, common method bias may be present. As noted above, respondents were managers or owners with sufficient knowledge of business operations, which suggests a low likelihood of deceitful answers. Nevertheless, we followed the recommendations of Podsakoff et al. (2003) by applying Harman's one-factor test. The results from exploratory factor analysis with all 14 items were extracted into four factors (i.e., customer influence, supplier influence and regulatory pressures, and environmental practices). The highest proportion of variance explained by a single factor was 41.9%, below the threshold of 50%. Following Kock (2015), a full collinearity assessment was conducted employing the partial least squares method. The VIFs for all variables ranged between 2.27 and 3.07, below the 3.3 threshold. Therefore, the probability of common method bias was low in the dataset.

5.2 | Structural model

After checking the quality of the measurement model, the hypotheses developed are to be tested with the structural model. Following the procedure recommended by Hair et al. (2011), we used bootstrapping with a resampling rate of 5,000 to obtain the standardized beta (β), *t*-values, and *p*-values to establish the path coefficients and determine the R^2 value for the endogenous variable, i.e., environmental practice. The proposed structural model had 48% ($R2 = 0.480$) explanatory power on environmental practices, which is highly compatible with prior environmental research in the SME sector (Baah et al., 2021). The standardized root mean square residual ($SRMR = 0.055$) was below the threshold of 0.08, thus suggesting the model fit the data

TABLE 2 Discriminant validity.

	1	2	3	4	5	6	7
Fornell-Larcker criterion							
1. Years of operation	**1**						
2. Size	0.446	**1**					
3. Industry	0.082	0.265	**1**				
4. Environmental practices	0.08	0.145	−0.092	**0.772**			
5. Customer pressure	0.147	0.076	−0.027	0.574	**0.913**		
6. Supplier pressure	0.039	0.074	−0.093	0.52	0.66	**0.938**	
7. Regulatory pressure	0.101	0.147	−0.171	0.562	0.574	0.516	**0.943**
Heterotrait-monotrait ratio (HTMT)							
1. Years of operation							
2. Size	0.446						
3. Industry	0.082	0.265					
4. Environmental practices	0.088	0.146	0.097				
5. Customer pressure	0.157	0.08	0.034	0.612			
6. Supplier pressure	0.04	0.08	0.096	0.586	0.742		
7. Regulatory pressure	0.109	0.157	0.183	0.623	0.641	0.591	

TABLE 3 Hypotheses assessment.

Hypotheses	Standard Beta (β)	T-statistics (*t*-value)	Decision
Direct effects: H1a, b, c			
Customer pressures → environmental practices	0.249	2.776**	H1a-c supported
Supplier pressures → environmental practices	0.204	2.079*	
Regulatory pressures → environmental practices	0.299	2.868**	
Moderating effects: H2			
Customer pressures * regulatory pressure → environmental practices	0.205	2.677**	H2 supported
Supplier pressures * regulatory pressure → environmental practices	0.189	2.299*	
Control variables			
Years of operations → environmental practices	0.021	0.293	
Size → environmental practices	0.005	0.062	
Industry → environmental practices	0.041	0.562	

***Critical *t*-values 3.29 ($p < .001$). **Critical *t*-values 2.58 ($p < .01$). *Critical *t*-values 1.96 ($p < .05$).

(Henseler et al., 2014). We also used blindfolding with the cross-validated redundancy approach to examine the Q-squared value for predictive relevance. The Q-squared value for the environmental practices is 0.403, larger than zero, indicating predictive relevance. The results confirm that the structural model has satisfactory predictive relevance and explanatory power. The standardized beta (β), *t*-values, and *p*-values are used to determine whether the paths examined are significant, including the moderating effects.

As shown in Table 3, the analyzed results of the direct effects show that customer, supplier, and regulatory pressures significantly and positively influenced environmental practices ($\beta = 0.249$, $p < 0.01$; $\beta = 0.204$, $p < 0.05$; $\beta = 0.299$, $p < 0.01$, respectively). Therefore, H1a, H1b, and H1c were confirmed. Among the three stakeholders, the regulator had the highest β value. H2 hypothesized regulatory pressure as the moderator in the main relationship.

Results indicated that the interaction of regulatory pressure*customer pressure and regulatory pressure*supplier pressure positively and significantly influenced environmental practices ($\beta = 0.205$, $p < 0.01$; $\beta = 0.189$, $p < 0.05$). This suggests that the positive relationship between customer pressure and environmental practices is strengthened (weakened) when the regulatory pressure is larger (smaller). Similarly, the positive relationship between supplier pressure

and environmental practices is strengthened (weakened) when the regulatory pressure is larger (smaller). Following the method of Aiken and West (1991), the plots of the two significant interactions of regulatory pressure with customer pressure and supplier pressure are presented in Figures 2 and 3. When regulatory pressure is present, customer and supplier pressures substantially increase the implementation of environmental practices. Concerning the control variables (years of operation, size, and industry, none had a significant impact on environmental practices ($\beta = 0.021$, $p > 0.05$; $\beta = 0.005$, $p > 0.05$; $\beta = 0.041$, $p > 0.05$, respectively; Table 3). The results suggest that firms' characteristics do not influence their environmental practices.

5.3 | Robustness test

As illustrated, the results of the structural model are derived from bootstrapping. Bootstrapping is a resampling technique that can assess the stability and reliability of the estimated coefficients in PLS models. By repeatedly sampling from the dataset with replacement and estimating the model, bootstrapping provides information about the variability of the coefficients and the precision of parameter estimates. Following the suggestion of Vaithilingam et al. (2024), a robustness test was performed before the model estimation with the normality test (explained in Section 4.1). After model estimation, the Gaussian copula approach is the most common endogeneity check used in PLS-SEM to assess the correlation between explanatory or predictor constructs and the error terms of dependent ones (Hair et al., 2023). Results show that none of the Gaussian copula paths is significant ($p > 0.1$), suggesting that endogeneity is not a concern in the model.

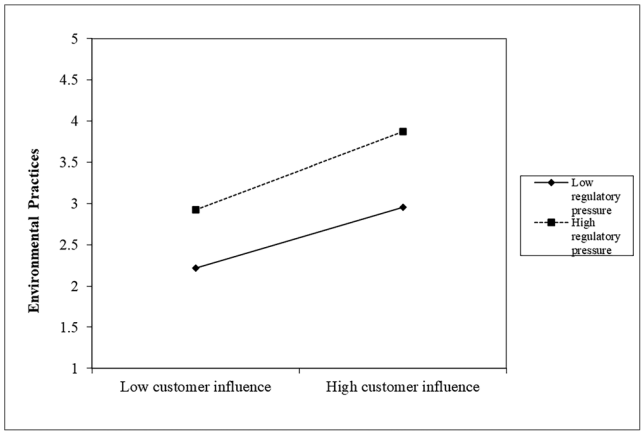

FIGURE 2 Moderating effects of regulatory pressure on customer influence and environmental practices.

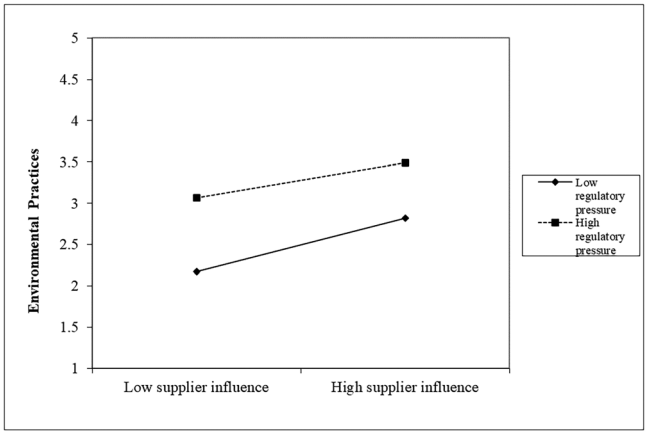

FIGURE 3 Moderating effects of regulatory pressure on supplier influence and environmental practices.

6 | DISCUSSION AND CONCLUSION

This study primarily seeks to determine, within the context of the UAE, which form of pressure most significantly affects SMEs' uptake of environmental practices. The current study contributes to the field by expanding the application of institutional and stakeholder frameworks within environmental studies, specifically focusing on the context. The data suggests that pressures from customers, suppliers, and regulatory bodies significantly and positively impact SMEs' environmental practices, supporting prior works conducted globally (Aragòn-Correa et al., 2020; Chan & Ma, 2021; Kumar et al., 2013). Among these pressures, regulatory pressure appears to exert the most influence over customer and supplier pressures. In the context of global sustainability practices, regulatory pressure plays a crucial role in driving companies to adopt environmentally responsible behaviors. Government regulations related to environmental protection, emissions reduction, waste management, and resource conservation can create a legal obligation for businesses to comply with specific sustainability standards (Hille et al., 2020). Failure to meet these standards may result in fines, penalties, or legal consequences, motivating companies to prioritize sustainability initiatives.

On further investigation, the data shows that these pressures do not operate in isolation but interact with each other in a complex manner. The data shows that when regulatory pressure is high, the pressures from customers and suppliers have a more substantial positive impact on a firm's environmental practices. Conversely, when regulatory pressure is low, the effects of customer and supplier pressure on environmental practices are less pronounced. The findings demonstrate the high-level importance of regulatory pressure on SME adoption of sustainable practices. Hence, the study builds upon the work of Hoogendoorn et al. (2015) and Gunarathne et al. (2021) by isolating and evaluating the individual effects and combined impacts of various stakeholder groups on SMEs' environmental practices. It also offers a novel understanding of how different stakeholder groups influence environmental issues within SMEs.

The findings align closely with the concepts of isomorphism, as discussed in the literature review. Regulatory pressures instigate a coercive form of isomorphism, compelling SMEs to adhere to external regulatory mandates to uphold legitimacy and evade penalties.

Regulatory bodies' influence motivates SMEs to integrate environmental practices consistent with established norms and criteria set by regulatory authorities. This conformity fosters a level of resemblance or isomorphism among SMEs regarding their environmental conduct, propelled by the shared imperative to meet regulatory obligations, extending the work of Malesky and Taussig (2017) by showing the critical role of regulators in the UAE context. Regulatory pressures also validate the environmental practices embraced by SMEs. Abiding by environmental regulations bolsters the perceived credibility of SMEs among stakeholders such as customers, suppliers, investors, and regulatory bodies. Through compliance with regulatory mandates, SMEs showcase their dedication to environmental stewardship, affirming their adherence to societal norms and legal requisites. This validation stemming from regulatory conformity underscores the significance of environmental practices and motivates SMEs to prioritize sustainability endeavors in their business operations.

6.1 | Implications

The finding that regulatory pressure significantly influences SMEs' environmental practices in the UAE presents an opportunity for government bodies to intervene strategically. To capitalize on this opportunity, the government could consider enacting stricter environmental regulations and implementing regular audits applicable to SMEs. These regulations could include tighter standards on emissions, waste disposal, energy efficiency, and sustainable materials. However, it is crucial to acknowledge that stricter regulations may increase operational and administrative costs for SMEs, potentially placing them at a competitive disadvantage.

The government can implement various support strategies to address SMEs' challenges in adopting sustainable practices. Financial assistance programs can be established to provide subsidies, low-interest loans, or tax incentives to support SMEs in adopting green practices. These initiatives would encourage SMEs to invest in sustainable initiatives by alleviating the financial burden associated with compliance costs. Further, a phased approach to implementing new environmental regulations can also be adopted, giving SMEs sufficient time to adapt their operations and processes. Gradual implementation allows SMEs to manage compliance more effectively, reducing the risk of non-compliance and financial strain. Additionally, comprehensive education and training programs tailored to SMEs can be introduced, including workshops, webinars, and online resources focused on environmental regulations and sustainable practices. This would empower SMEs with the knowledge and skills to understand and comply with regulatory requirements.

Moreover, simplified regulatory compliance processes and clear guidelines can further minimize administrative burdens for SMEs, facilitating smoother compliance procedures and reducing operational complexities. Collaboration between SMEs, larger corporations, government agencies, and NGOs can also be promoted to facilitate knowledge sharing and resource pooling (Sawang et al., 2016). Initiatives such as mentorship programs, partnerships, and shared initiatives can help SMEs access valuable expertise and support meeting environmental standards.

Incentives for SMEs to develop and implement innovative solutions to environmental challenges can stimulate creativity and encourage the adoption of cost-effective compliance methods. Furthermore, working with international partners to align regulatory standards can ensure consistency across borders and prevent UAE-based SMEs from facing competitive disadvantages in global markets. Finally, capacity-building programs tailored to the needs of SMEs, including training initiatives, access to financial resources, and guidance on regulatory compliance, can support SMEs in adopting sustainable practices. Targeted financial support mechanisms, such as grants, loans, or subsidies, can assist SMEs in implementing sustainable initiatives by offsetting initial costs and encouraging investment in eco-friendly technologies and processes. Additionally, offering SMEs guidance and support in navigating regulatory requirements related to environmental sustainability can help ensure compliance without undue administrative burden.

6.2 | Study limitation and future directions

Some limitations should be noted in this study. First, the present study provides a snapshot of a specific point in time. They may not accurately reflect changes in environmental practices or stakeholder pressures over time. It is advisable to conduct longitudinal studies to track changes over time. Future research could explore the influence of various stakeholders' pressures, such as employees and investors, on sustainable practices within different study contexts. This could provide valuable insights into the broader stakeholder landscape and its impact on organizational sustainability initiatives. Second, while quantitative surveys provide valuable data, they might not delve into the subtleties and intricate details in the same way as qualitative methods such as interviews or case studies can. Considering that the present study highlighted the significant moderating effect of regulatory pressures, conducting additional interviews or focus groups with relevant stakeholders and SMEs could be beneficial for a more in-depth exploration of these findings. Lastly, the present study is conducted in the context of the UAE. Therefore, these findings may not directly apply to Western countries due to significant differences in cultural norms, business practices, and regulatory frameworks.

Given the dynamic nature of societal expectations, organizations must continually adapt to changes in their operating environment. While organizations may strive to align their conduct with evolving societal norms, failing to keep pace with these changes can lead to legitimacy gaps (Deegan, 2014). Therefore, further research could explore questions including "How do organizations address legitimacy gaps in their environmental sustainability practices once they emerge, and what are the potential consequences of failing to bridge these gaps?" and "How can organizations proactively engage with stakeholders to co-create and shape societal expectations regarding environmental sustainability, rather than simply reacting to external pressures?"

Nonetheless, the present results may apply to other Arab countries due to shared cultural, social, and economic characteristics (Mahajan, 2013). The Arab world is often characterized by similar business practices, regulatory environments, and societal values, such as the significance of personal relationships in business, respect for hierarchy, and the importance of honor and reputation (Al-Omari, 2008). Therefore, insights derived from studying SMEs in the UAE, such as their response to environmental regulations or stakeholder pressures, could potentially be relevant to SMEs in other Arab nations facing similar contexts.

7 | CONCLUSION

The current study contributes to the field by expanding the application of institutional and stakeholder frameworks within environmental studies, specifically focusing on SMEs in the UAE. SMEs' responses to stakeholder pressures vary across different contexts, and this study sheds light on the distinct drivers influencing SMEs' environmental practices in the UAE. By identifying the most influential stakeholder group in the research context, the study advances stakeholder theory literature and uncovers the cumulative impact of stakeholder pressures. Notably, the study reveals that regulatory pressure can act as a moderating force, amplifying the influence of supplier and customer pressures on businesses' environmental practices.

Author's Declaration

This manuscript has not been published or presented elsewhere in part or in entirety and is not under consideration by another journal. All study participants provided informed consent, and the study design was approved by the appropriate ethics review board. We have read and understood your journal's policies, and we believe that neither the manuscript nor the study violates any of these. There are no conflicts of interest to declare.

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