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Managers' Values and the Adoption of Environmentally Sustainable Practices Among Small and Medium-Sized Enterprises: A Configurational Approach

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ABSTRACT

Small and medium-sized enterprises (SMEs) play a critical role in sustainability transitions, yet the mechanisms through which managers' values shape environmentally sustainable practices (ESP) remain insufficiently understood. Existing research often treats managerial values as independent predictors and pays limited attention to their interaction with organizational and contextual conditions. Drawing on values theory, paradox theory, institutional theory, and a configurational perspective, this study examines how combinations of managerial values, organizational capabilities, and organizational field conditions influence the adoption of ESP among SMEs. Using data from 409 Canadian SMEs and Qualitative Comparative Analysis (QCA), the study investigates the interplay between self-transcendence values (STV), self-enhancement values (SEV), entrepreneurial orientation, firm size, network participation, sector membership, and export activity. The findings identify four configurations associated with the adoption of ESP and four configurations linked to their absence, highlighting both equifinality and causal asymmetry. While STV frequently support environmental engagement, they are not necessary across all sustainability pathways. Likewise, SEV appear in both sustainability and non-sustainability configurations, indicating that their influence depends on broader organizational and contextual conditions. Notably, one sustainability pathway combines STV and SEV, suggesting that environmental responsibility and performance-oriented aspirations can be mutually reinforcing rather than contradictory. By uncovering multiple pathways to environmental sustainability, the study advances configurational understandings of SME sustainability and offers implications for managers and policymakers.

1 | Introduction

Climate change and biodiversity loss are among the most pressing challenges facing contemporary societies, with significant and far-reaching environmental, economic, and social consequences (IPCC 2023; OECD 2021; Tollefson 2022). Addressing these challenges requires systemic transformations in production systems, consumption patterns, and organizational practices. In this context, firms are increasingly expected to contribute to sustainability transitions through the adoption of environmentally sustainable practices (ESP) (Geels 2002; Hahn et al. 2015).

Small and medium-sized enterprises (SMEs) are particularly important in this transition, as they represent about 90% of firms globally and account for a substantial share of economic activity and environmental impact (OECD 2021; World Bank Group 2023). Despite their importance, the drivers of SMEs' environmental engagement remain insufficiently understood (Ahmadov et al. 2025).

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SMEs face multiple barriers to ESP adoption, including limited resources, short-term priorities, and insufficient expertise, while simultaneously facing growing pressures from regulators, customers, supply chains, and communities (Bansal and Roth 2000; Crick et al. 2018; Wiesner et al. 2018). These dynamics highlight the need for a multi-level understanding of environmental engagement in SMEs (Ahmadov et al. 2025; Wahga et al. 2018).

Among these drivers, managerial values constitute a critical determinant. In SMEs, where decision-making is highly centralized, owner-managers' values strongly influence strategic priorities and organizational practices (Hemingway 2005; Schaefer et al. 2020). Values shape how individuals interpret environmental issues and translate them into action. However, existing research often treats values as independent predictors and rarely examines how they operate within broader and increasingly complex systems of interacting conditions (Sagiv et al. 2017; Steg, Bolderdijk, et al. 2014). Moreover, limited evidence exists regarding how managers' value orientations influence environmental performance in SMEs (Fernández-Muñiz et al. 2024; Vianello et al. 2026).

These limitations point to two main research gaps. First, managerial values remain insufficiently integrated within multi-level configurational frameworks that account for interactions between individual, organizational, and contextual conditions. Second, there is limited understanding of how different value orientations—particularly self-transcendence and self-enhancement—combine, coexist, or conflict in shaping SMEs' environmental practices.

Addressing these gaps requires moving beyond linear approaches toward configurational perspectives (Fiss 2011; Greckhamer et al. 2018). While QCA has gained prominence in sustainability research, relatively few studies have examined managerial values within integrated multi-level configurations encompassing individual, organizational, and contextual conditions (Fernández-Muñiz et al. 2024; Rekik and Bergeron 2017; Silva et al. 2021).

At the individual level, this study draws on Schwartz's (1992) theory of basic human values, distinguishing between self-transcendence values (STV), reflecting concern for others and the environment, and self-enhancement values (SEV), emphasizing personal success and self-interest (Bouman et al. 2018; Dietz 2016). Rather than treating these value dimensions as strictly opposing, we adopt a configurational perspective that allows them to coexist within complex causal structures, consistent with paradox theory (Smith and Lewis 2011).

At the organizational level, this study considers firm size (SIZE) and entrepreneurial orientation (EO), capturing both resource availability and strategic posture. EO represents a key mechanism through which managerial values may be translated into organizational practices (Brammer et al. 2012; Silva et al. 2021; Torugsa et al. 2012).

At the contextual level, sector membership, network membership, and internationalization capture firms' exposure to institutional pressures and organizational fields (DiMaggio and Powell 1983; Scott 2001). This perspective highlights the interaction between institutional constraints and managerial agency (Hardy and Maguire 2017).

Accordingly, this study seeks to answer the following research question:

Under what configurations of individual, organizational, and contextual conditions do SMEs adopt—or fail to adopt—ESPs?

The contributions of this research are threefold. First, it enriches the sustainability management literature by integrating values theory (Schwartz 1992) into the study of SME environmental behavior, demonstrating how different managerial value orientations contribute to environmental engagement through distinct configurational pathways. Second, it offers a multi-level configurational perspective, revealing multiple pathways through which individual, organizational, and contextual conditions combine to support environmental engagement. Third, it provides actionable implications for policymakers and support organizations, emphasizing that effective sustainability strategies must be tailored to heterogeneous SME profiles rather than relying on one-size-fits-all approaches.

2 | Theoretical Background

2.1 | ESP

ESP refers to the set of proactive managerial actions and operational initiatives through which firms seek to prevent, reduce, or mitigate the negative environmental impacts of their activities, products, and processes (Gonzalez-Benito and Gonzalez-Benito 2005).

In SMEs, such practices include waste sorting, recycling, renewable energy use, and improvements in energy and material efficiency (Purwandani and Michaud 2021; Tyler et al. 2024). Advanced approaches such as eco-design and life-cycle thinking further integrate environmental considerations into products and processes (Knight and Jenkins 2009; Rekik and Bergeron 2017).

Although ESP can enhance competitiveness and legitimacy (Hoogendoorn et al. 2015; Namagembe et al. 2019), their implementation remains challenging for SMEs due to resource constraints, limited technical expertise, and the absence of formal environmental management systems (Testa et al. 2016). Consequently, environmental engagement in SMEs often depends heavily on managerial discretion and organizational dynamics (Blundel and Hampton 2021; Revell et al. 2010).

2.2 | Factors Influencing the Adoption of ESP

The adoption of ESP in SMEs results from dynamic interactions among individual agency (micro level), organizational capabilities (meso level), and broader institutional systems (macro level) (Ahmadov et al. 2025; Kühl et al. 2023). Across these levels, orientations refer to relatively stable tendencies that shape how

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actors and organizations interpret and respond to environmental issues.

At the micro level, orientations are reflected in managerial values and motivational priorities that shape environmental decision-making (Jansson et al. 2017; Madrid-Guijarro and Duréndez 2024; Yacob et al. 2019). At the meso level, they are reflected in organizational characteristics such as EO and firm size, which influence firms' ability to mobilize resources and capabilities for environmental action (Aragón-Correa et al. 2008; Kühl et al. 2023; Silva et al. 2021). At the macro level, orientations are embedded in institutional and relational structures, where regulations, market logics, sectoral norms, and stakeholder expectations shape opportunities and constraints for environmental engagement (Ahmadov et al. 2025; DiMaggio and Powell 1983; Geels 2002; North 1990; Scott 2001). Environmental engagement therefore depends not on isolated factors, but on the alignment or misalignment of orientations across levels.

Environmental engagement thus reflects the interplay of orientations across individual, organizational, and contextual levels (Aguinis and Glavas 2012; Hartley et al. 2022; Zhu et al. 2022). This complexity supports a configurational perspective in which ESP adoption results from combinations of conditions rather than isolated factors acting independently (Fiss 2011; Greckhamer et al. 2018; Misangyi et al. 2017).

2.2.1 | Individual Values

Individual values represent the micro-level foundations through which environmental issues are interpreted and prioritized by managers. Among these, managerial values play a central role in shaping environmental commitment and sustainability-oriented behavior in SMEs (Madrid-Guijarro and Duréndez 2024; Yacob et al. 2019). Research shows that SME owners' and managers' personal values strongly influence sustainability orientations and environmental decision-making (Lynch and Ferasso 2023; Shamil et al. 2024; Vacher 2024).

Although values are well-established predictors of pro-environmental behavior in environmental psychology, their role in SME sustainability research remains comparatively underdeveloped (Jansson et al. 2017; Schaefer et al. 2020). Within a multi-level perspective, values shape how managers interpret institutional expectations and mobilize organizational resources for environmental action (Aguinis and Glavas 2012; Hartley et al. 2022).

To conceptualize managerial values, this study draws on Schwartz's (1992) theory of basic human values, which defines values as guiding principles that influence judgment and behavior across situations. Among the 10 universal value types identified by Schwartz, two higher-order dimensions are particularly relevant to sustainability: STV and SEV (Schwartz 1994). STV encompasses altruistic and biospheric concerns and are generally associated with stronger pro-environmental orientations (Bouman et al. 2018). In contrast, SEV reflects egoistic and hedonic motivations centered on personal achievement, status, and self-interest, which may compete with environmental concerns (Dietz 2016).

Managers characterized by STV are more likely to view sustainability as an intrinsic responsibility, whereas those guided by SEV may support environmental initiatives when these align with strategic or economic objectives.

However, from a paradox perspective, these value dimensions should not be viewed as strictly opposing. Paradox theory conceptualizes such tensions as "contradictory yet interrelated elements that exist simultaneously and persist over time" (Smith and Lewis 2011, 382). Accordingly, STV and SEV may coexist within organizations, and their effects on environmental engagement depend on how they interact with organizational and contextual conditions (Schad et al. 2016).

From a configurational perspective, managerial values are treated as micro-level conditions whose influence depends on their combination with organizational and contextual factors rather than exerting uniform effects across firms.

2.2.2 | Organizational Characteristics

At the meso level, organizational characteristics influence firms' capacity to translate sustainability objectives into action. Whereas managerial values provide the motivational foundations of sustainability, organizational conditions determine firms' capacity to mobilize resources, routines, and strategies consistent with environmental objectives (Aguinis and Glavas 2012; Hartley et al. 2022).

Among these characteristics, SIZE and EO are particularly relevant, as they capture both firms' structural capabilities and strategic posture toward innovation (Aragón-Correa et al. 2008; Reyes-Rodríguez et al. 2016).

SIZE is one of the most frequently examined predictors of environmental engagement. Larger SMEs generally possess greater financial, technical, and managerial resources, facilitating investments in cleaner technologies and environmental innovations (Sáez-Martínez et al. 2016; Triguero et al. 2015). They are also more exposed to stakeholder scrutiny and institutional pressures for sustainable behavior (Tyler et al. 2020). Although studies often report a positive association between SIZE and environmental engagement (Armas-Cruz et al. 2017; Hoogendoorn et al. 2015), SIZE is better understood as an enabling condition whose effects depend on internal capabilities and managerial priorities (de Sousa Jabbour et al. 2018; Uhlaner et al. 2012).

EO reflects a strategic orientation characterized by innovativeness, risk-taking, and proactiveness (Covin and Slevin 1989; Miller 1983). It represents an important mechanism through which managerial values are translated into sustainability-oriented actions, including investments in eco-innovation and environmentally relevant strategic initiatives (Amankwah-Amoah et al. 2019; Jansson et al. 2017). Firms with strong EO are more likely to view sustainability as a source of differentiation and competitive advantage rather than merely a compliance requirement (Silva et al. 2021). However, its contribution to environmental outcomes depends on its interaction with other conditions, including managerial values and resource availability (Aragón-Correa et al. 2008; Hoogendoorn et al. 2015).

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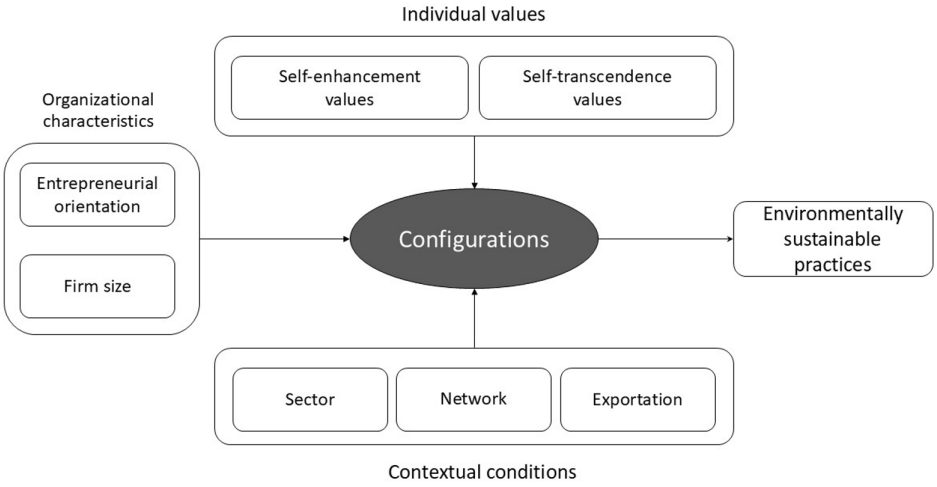


FIGURE 1 | Research model.

Together, SIZE and EO represent key meso-level conditions through which managerial values can be translated into environmental action.

2.2.3 | Contextual Factors

At the macro level, institutional and relational structures shape opportunities, expectations, and constraints surrounding SMEs' environmental behavior. In line with neo-institutional theory, firms are embedded in organizational fields structured by regulatory, normative, and cognitive institutions that define expectations regarding appropriate organizational behavior (DiMaggio and Powell 1983; Scott 2001).

Industry sector (SECTOR) represents one of the strongest manifestations of these field-level influences. Firms operating in resource-intensive or high-impact industries face greater scrutiny from regulators, NGOs, and the public, creating stronger pressures for environmental compliance and sustainability engagement (Baah et al. 2021; Leonidou et al. 2017). These firms often adopt sustainability initiatives to secure legitimacy and stakeholder approval (Gagné et al. 2022; Latip et al. 2022). Conversely, SMEs in low-impact sectors may rely more heavily on managerial values and organizational capabilities to pursue sustainability.

Network membership (NETWORK) embeds SMEs within organizational fields, providing access to information, legitimacy, and social capital. Business networks and professional associations facilitate knowledge diffusion, resource sharing, and environmental best practices (Holmlund and Törnroos 1997; Lewis et al. 2015). Participation in collaborative networks has been shown to enhance environmental awareness and the adoption of collective sustainability standards (Guo et al. 2020). Networks therefore act as channels through which institutional expectations are translated into organizational learning and environmental action.

However, firms do not respond uniformly to field-level pressures. Organizational responses vary according to how institutional demands are interpreted and enacted by organizational actors, reflecting the interplay between institutional constraints and managerial agency (Hardy and Maguire 2017; Oliver 1991; Scott 2001).

Internationalization (EXPORT) represents another important contextual driver. By entering international markets, SMEs are exposed to multiple organizational fields, including stricter environmental regulations and the sustainability standards of global partners (Ayuso and Navarrete-Báez 2018). At the same time, sustainable practices can enhance firms' competitiveness and reputation abroad (Colovic and Henneron 2018). This bidirectional relationship suggests that sustainability and internationalization may reinforce one another through institutional learning and cross-border exposure (Khojastehpour and Shams 2020).

Taken together, these contextual conditions interact with managerial values and organizational capabilities to generate heterogeneous sustainability pathways across firms.

2.3 | Research Model

Accordingly, the proposed model reflects a coherent multi-level framework. Managerial values capture individual orientations, while SIZE and EO represent organizational conditions that enable environmental action. At the contextual level, SECTOR, NETWORK, and EXPORT capture firms' exposure to institutional pressures and organizational fields.

As shown in Figure 1, the model integrates these three analytical levels to capture the complexity of sustainability behaviors in SMEs. Rather than examining factors independently, the model conceptualizes them as interrelated conditions whose combinations generate distinct environmental outcomes.

The model adopts a configurational perspective in which outcomes result from combinations of conditions rather than independent net effects (Ragin 2008). This perspective recognizes that causality is often conjunctural, equifinal, and

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asymmetric, meaning that multiple pathways may lead to similar sustainability outcomes (Fiss 2011). Such an approach is particularly appropriate for SMEs, whose heterogeneity in resources, capabilities, and strategic orientations generates diverse routes toward sustainability (de Marchi et al. 2022; Kraus et al. 2020).

Consequently, the model assumes that ESP emerge from specific configurations of individual, organizational, and contextual conditions rather than from the independent effects of any single factor.

3 | Methodology

3.1 | Measures

3.1.1 | ESP

ESP refers to the deliberate and systematic actions that SMEs undertake to minimize the environmental impact of their operations, products, and services. In this study, ESP were measured using a 14-item instrument adapted from prior research on SME environmental management (Cassells and Lewis 2019; Prieto-Sandoval et al. 2018). The full list of items is provided in Appendix A.

The scale captures a broad range of environmental practices, including waste management, energy efficiency, employee awareness, stakeholder consultation, the use of recycled inputs, cleaner transportation choices, and the formalization and communication of environmental objectives. Respondents were asked to indicate the frequency with which each practice had been implemented during the previous 3 years using a five-point Likert scale (1 = Never, 5 = Systematically).

An example item is: "Our company monitors and reports its waste and pollution levels." Responses were averaged across the 14 items to create a composite ESP index representing the firm's overall level of environmental engagement.

ESP were conceptualized as a formative construct because the items capture distinct dimensions of environmental engagement that are not assumed to be interchangeable or necessarily correlated. Following prior research on composite sustainability indices, item scores were aggregated into a composite index, and variance inflation factors confirmed the absence of problematic multicollinearity among indicators.

3.1.2 | Individual Values

To capture managers' value orientations, this study draws on Schwartz's (1992) theory of basic human values, which distinguishes between two higher-order motivational dimensions: SEV and STV. Both constructs were measured using the adapted Schwartz Value Survey developed by Bouman et al. (2018), which has demonstrated strong reliability and validity in sustainability research. Respondents were asked to indicate the extent to which a series of value statements described them on a six-point Likert scale (1 = *Not at all like me*, 6 = *Very much like me*).

SEV was measured using eight items covering hedonic and egoistic values, whereas STV was measured using nine items capturing biospheric and altruistic values. Mean scores were calculated for each dimension, with higher STV scores indicating stronger concern for others and the environment, and higher SEV scores reflecting greater emphasis on personal achievement, pleasure, and self-interest.

3.1.3 | Organizational Characteristics

SIZE was operationalized as a dichotomous variable following Hoogendoorn et al. (2015). SMEs employing 5–49 employees were coded as 0, whereas those employing 50–249 employees were coded as 1. This categorization aligns with the European Commission's SME definition and distinguishes between smaller and larger SMEs in terms of resource availability and organizational capacity. Given the predominance of smaller firms in the sample, a robustness check using a fuzzy-set calibration of SIZE was conducted. The results remained substantively unchanged, suggesting that the observed configurational patterns were not driven by the dichotomization.

EO was measured using the nine-item scale developed by Miller (1983) and refined by Covin and Slevin (1989). The instrument captures three dimensions of EO—innovativeness, proactiveness, and risk-taking. Respondents indicated their agreement with each statement on a five-point Likert scale (1 = *Strongly disagree*, 5 = *Strongly agree*). An example item is: "Our company is often the first to introduce new products, services, technologies, or production methods." Responses were averaged to create a composite EO index, with higher values indicating a more proactive, innovative, and risk-tolerant strategic posture. This measure has been widely validated in SME research (Lee et al. 2019).

3.1.4 | Contextual Conditions

NETWORK was measured as a dichotomous variable. Respondents were asked whether their company had ever been a member of a network, association, or group focused on environmental or social issues, or involved in sustainable development certification. Responses were coded as 0 = *No* and 1 = *Yes*. This variable captures access to interorganizational resources, environmental knowledge, and sustainability-related best practices.

SECTOR was classified following Uhlaner et al. (2012) who distinguish between firms producing tangible and intangible outputs. Firms operating in intangible service sectors were coded as 0, whereas firms producing tangible goods and services (e.g., manufacturing and construction) were coded as 1. This classification captures differences in the environmental visibility and material intensity of business activities.

EXPORT was operationalized based on export activity during the previous 3 years. Firms exporting products or services outside Canada were coded as 1, whereas firms operating exclusively in the domestic market were coded as 0. This variable captures firms' exposure to international markets and associated

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institutional demands, including environmental standards and global supply-chain requirements.

3.2 | Sampling and Data Collection

Data were collected through a survey administered to a random sample of 5000 for-profit SMEs operating in Canada, drawn from the InfoCanada business database. Eligible firms employed between 5 and 250 employees, operated independently rather than as subsidiaries, and were actively engaged in commercial activities.

The survey was conducted between December 13, 2019 and February 5, 2020. Respondents were principal managers or business owners responsible for strategic and operational decisions. A total of 438 questionnaires were returned, corresponding to a response rate of 8.8%. After data screening for completeness and consistency, 409 usable responses were retained for analysis.

To assess potential non-response bias, early and late respondents were compared using the procedure recommended by Armstrong and Overton (1977). No significant differences were observed across the main study variables, suggesting that non-response bias is unlikely to have materially affected the results.

The sample exhibited substantial diversity in both managerial and organizational characteristics. Most respondents were between 35 and 54 years old (59%), 57% held a university degree, and 71% reported more than 10 years of managerial experience. In terms of firm characteristics, 87.5% employed between 5 and 49 employees, 68.9% were located in urban areas, and firms operated across a variety of sectors. In addition, 17.8% reported membership in professional or sustainability-oriented networks, while 28% were engaged in export activities.

Given that all variables were collected from a single respondent at one point in time, common method variance (CMV) was assessed following Podsakoff et al. (2003). Harman's single-factor test indicated that the first factor accounted for 22.5% of the total variance, well below the commonly accepted threshold of 50%, suggesting that CMV is unlikely to pose a serious concern.

3.3 | Reliability and Validity of Variables

To assess the quality of the measurement model, reliability and validity were evaluated for all latent constructs. As reported in Appendix B, Cronbach's alpha and composite reliability values exceeded the recommended threshold of 0.70 (Hair et al. 2019), while average variance extracted (AVE) values exceeded 0.50 (Fornell and Larcker 1981), supporting both reliability and convergent validity. One item from the self-enhancement dimension was removed due to a standardized loading below the recommended threshold.

ESP was modeled as a formative construct. Consistent with formative measurement principles, internal consistency indicators were not assessed, and all indicators were retained to preserve the content domain of environmental engagement (Diamantopoulos and Winklhofer 2001). Multicollinearity diagnostics indicated no problematic overlap among indicators.

4 | Analysis and Results

This study employs QCA to examine how individual, organizational, and contextual conditions combine to shape SMEs' adoption of ESP. Rooted in set-theoretic logic, QCA enables the analysis of configurational causality, recognizing that outcomes result from combinations of conditions rather than independent net effects (Ragin 1987; Schneider and Wagemann 2012).

A key advantage of QCA is its ability to account for equifinality and causal asymmetry, whereby multiple configurations may lead to the same outcome and the conditions associated with the presence of an outcome may differ from those associated with its absence (Fiss 2011; Misangyi et al. 2017). These features make QCA particularly appropriate for studying SMEs, whose environmental engagement reflects diverse combinations of managerial values, organizational capabilities, and contextual pressures.

In this study, both crisp- and fuzzy-set calibrations were used, depending on the nature of the variables. This approach allows the analysis to capture both categorical distinctions and varying degrees of set membership while preserving the configurational logic of QCA.

4.1 | Calibration

Calibration transforms raw variables into set-membership scores ranging from full non-membership (0) to full membership (1), allowing cases to be positioned according to their degree of membership in a given set (Fiss 2007; Ragin and Fiss 2008).

SIZE, EXPORT, NETWORK, and SECTOR were retained as crisp sets because they represent theoretically meaningful binary distinctions. In contrast, STV, SEV, EO, and ESP were calibrated as fuzzy sets to capture varying degrees of membership.

The direct method of calibration was applied using three anchor points based on the sample distribution: full membership at the 75th percentile, the crossover point at the median, and full non-membership at the 25th percentile. This approach preserves variation in the data while ensuring consistency with the set-theoretic logic of QCA. Table 1 presents the descriptive statistics and calibration thresholds for all variables. This empirical calibration strategy was considered appropriate because no widely accepted substantive thresholds exist for constructs such as entrepreneurial orientation or managerial value orientations. In such situations, percentile-based calibration provides a transparent and theoretically defensible approach for distinguishing degrees of set membership while preserving meaningful variation across cases (Fiss 2011; Greckhamer et al. 2018; Ragin 2008).

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4.2 | Necessity

Necessity analysis assesses whether a condition must be present for an outcome to occur. Following established guidelines, a condition is considered necessary when its consistency exceeds 0.90 (Ragin 2008; Schneider and Wagemann 2012). Table 2 presents the necessity analysis for both the presence (ESP) and absence of ESP (~ESP).

For ESP, no condition reaches the 0.90 consistency threshold. Although industry sector (SECTOR) exhibits the highest consistency (0.819), it remains below the threshold required to be considered necessary. Similarly, STV displays moderate consistency (0.637), suggesting that pro-environmental managerial values may facilitate but do not guarantee the adoption of ESP.

For ~ESP, ~SIZE exceeds the recommended threshold (consistency = 0.943). However, this result should be interpreted with caution given the predominance of smaller firms in the sample, suggesting that the apparent necessity of ~SIZE may primarily reflect the distribution of cases rather than a substantive causal condition. ~NETWORK also approaches the threshold (consistency = 0.899), indicating a strong empirical association between organizational isolation and the absence of environmental practices.

The absence of necessary conditions is theoretically consistent with the configurational perspective adopted in this study. In QCA, individual conditions are not expected to exert universal effects across all cases. Rather, outcomes emerge from specific combinations of interdependent conditions, meaning that a condition may contribute to the outcome in some

TABLE 1 | Descriptive statistics and calibration ($n = 409$).

					Calibration		
	Mean	SD	Min	Max	Fully out	Crossover	Fully in
SIZE	0.12	0,33	0.00	1.00	0	—	1
EXPORT	0.28	0,45	0.00	1.00	0	—	1
NETWORK	0.18	0,38	0,00	1.00	0	—	1
SECTOR	0.76	0,43	0,00	1.00	0	—	1
EO	3.07	0,95	1.00	5.00	2.44	3.11	3.78
SEV	4.21	0,66	2.08	6.00	3.79	4.21	4.63
STV	5.07	0,63	2.75	6.00	4.725	5.00	5.50
ESP	2.37	0,80	1,00	4.43	1.71	2,36	2.92

TABLE 2 | Analysis of necessity.

	ESP		~ESP	
Condition	Consistency	Coverage	Consistency	Coverage
SIZE	0.195	0.771	0.059	0.235
~SIZE	0.806	0.457	0.943	0.544
EXPORT	0.322	0.565	0.244	0.437
~EXPORT	0.680	0.469	0.757	0.532
NETWORK	0.259	0.715	0.103	0.289
~NETWORK	0.743	0.448	0.899	0.553
SECTOR	0.819	0.534	0.703	0.467
~SECTOR	0.181	0.375	0.297	0.626
EO	0.633	0.622	0.468	0.469
~EO	0.460	0.459	0.623	0.634
SEV	0.550	0.543	0.550	0.553
~SEV	0.547	0.544	0.546	0.553
STV	0.637	0.604	0.508	0.490
~STV	0.462	0.480	0.589	0.623

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configurations while being absent in others. Consequently, ESP can be achieved through multiple alternative pathways in which different combinations of managerial values, organizational capabilities, and contextual conditions compensate for one another. This finding reinforces the principles of conjunctural causation and equifinality that underpin configurational theory. Accordingly, no condition was excluded from the subsequent sufficiency analysis, as the absence of necessity does not preclude a condition from contributing to one or more sufficient configurations.

4.3 | Truth Tables

The next step in the QCA procedure involves constructing the truth table, which organizes all possible combinations of causal conditions and their associated outcomes (Ragin 1987; Schneider and Wagemann 2012). With seven causal conditions, the analysis generated 128 logically possible configurations.

The truth table serves as the basis for the sufficiency analysis by identifying observed configurations associated with the presence and absence of ESP. Following established QCA procedures, configurations were evaluated according to their frequency and consistency before logical minimization was performed (Rihoux and Ragin 2009; Schneider and Wagemann 2012).

The resulting solutions were then examined to identify the combinations of individual, organizational, and contextual conditions associated with both the presence and absence of ESP among SMEs.

4.4 | Sufficiency

Sufficiency analysis identifies configurations of conditions associated with the outcome of interest. Following Ragin (2008), a frequency threshold of 3 and a consistency threshold of 0.80 were applied to retain empirically relevant and internally coherent configurations.

The truth table was then minimized using Boolean algebra to identify the simplest combinations of conditions associated with the outcome (Schneider and Wagemann 2012). Following Thiem (2022), interpretation focuses on the parsimonious solution, which provides a reduced and empirically grounded representation of causal configurations.

The resulting solutions are expressed as equifinal configurations representing alternative pathways leading to the same outcome. In the configurational tables, black circles (●) indicate the presence of a condition, crossed circles (⊗) indicate its absence, and blank spaces represent "do not care" conditions whose presence or absence is irrelevant to the outcome (Ragin and Fiss 2008).

4.4.1 | Configurations for the Presence of ESP

The QCA procedure produced three competing solution models explaining ESP in SMEs. As reported in Appendix C, all models exhibited similar levels of consistency and coverage. Model 2 was retained for interpretation because it provided the best balance between empirical fit (consistency = 0.862; PRI = 0.833; coverage = 0.287) and theoretical parsimony. Table 3 presents the four equifinal configurations (ESP1–ESP4) composing Model 2. Together, these configurations illustrate alternative pathways leading to the adoption of ESP among SMEs.

Configuration ESP1 (consistency = 0.870; raw coverage = 0.083) combines larger firm size, the absence of network participation, and the presence of SEV. This configuration suggests that larger SMEs characterized by SEV may adopt ESP even without network participation, highlighting the role of internal resources and managerial motivations.

Configuration ESP2 (consistency = 0.846; raw coverage = 0.087) combines network participation and EO with the absence of SEV. This pathway highlights the joint importance of network participation and entrepreneurial orientation in supporting ESP adoption.

Configuration ESP3 (consistency = 0.929; raw coverage = 0.089), the most consistent configuration, combines operation in a tangible goods sector, network participation, and the presence of both STV and SEV. This pathway suggests that environmental engagement may emerge from the coexistence of multiple value orientations within supportive organizational and contextual conditions.

Configuration ESP4 (consistency = 0.831; raw coverage = 0.063) characterizes smaller exporting SMEs combining EO and STV with the absence of SEV. It suggests that environmental engagement may be achieved despite limited structural resources when

TABLE 3 | Configurations for the presence of environmentally sustainable practices.

	Presence of environmentally sustainable practices			
Configurations	**ESP1**	**ESP2**	**ESP3**	**ESP4**
Conditions				
SIZE	●			⊗
EXPORT				●
NETWORK	⊗	●	●	
SECTOR			●	
EO		●		●
SEV	●	⊗	●	⊗
STV			●	●
Tested conditions				
Solution consistency	0.870	0.846	0.929	0.831
Raw coverage	0.083	0.087	0.089	0.063
Unique coverage	0.081	0.059	0.074	0.045
Overall consistency	0.862			
Overall coverage	0.287			

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supported by proactive strategic orientation and international exposure.

Taken together, the results indicate that no single condition is sufficient for ESP adoption. Instead, environmental engagement emerges from multiple configurations combining managerial values, organizational characteristics, and contextual conditions. EO and network participation appear in several pathways, while STV and SEV contribute under different combinations of conditions, supporting the equifinal nature of sustainability adoption among SMEs.

To assess the robustness of the aggregation of value constructs, we re-estimated the QCA model by replacing the aggregated SEV and STV indices with their underlying sub-dimensions. The results remained substantively consistent in terms of overall solution quality and core configurational patterns. In particular, the central role of network participation, EO, and value-related conditions was preserved across specifications. This suggests that aggregating hedonic and egoistic values into SEV, and altruistic and biospheric values into STV, does not materially affect the configurational results.

4.4.2 | Configurations for the Absence of ESP

Consistent with the principle of causal asymmetry, the conditions associated with ~ESP differ from those explaining its presence (Fiss 2011). The QCA identified one solution model for ~ESP, with an overall consistency of 0.809 and coverage of 0.370. Table 4 presents the four equifinal configurations (~ESP1–~ESP4) associated with the absence of ESP among SMEs.

TABLE 4 | Configurations for the absence of environmentally sustainable practices.

	Absence of environmentally sustainable practices			
Configurations	**~ESP1**	**~ESP2**	**~ESP3**	**~ESP4**
Conditions				
SIZE			⊗	
EXPORT			●	
NETWORK				⊗
SECTOR	⊗	⊗		
EO		⊗		⊗
SEV		⊗	●	●
STV	⊗		⊗	⊗
Tested conditions				
Solution consistency	0.806	0.814	0.808	0.872
Raw coverage	0.157	0.130	0.075	0.169
Unique coverage	0.045	0.053	0.043	0.092
Overall consistency	0.809			
Overall coverage	0.370			

Configuration ~ESP1 (consistency = 0.806; raw coverage = 0.157) combines operation in a service sector and the absence of STV. This pathway suggests that environmental disengagement is more likely when pro-environmental and altruistic values are absent.

Configuration ~ESP2 (consistency = 0.814; raw coverage = 0.130) combines operation in a service sector, the absence of EO, and the absence of SEV. This configuration highlights the role of weak strategic orientation in explaining non-adoption of ESP.

Configuration ~ESP3 (consistency = 0.808; raw coverage = 0.075) characterizes small exporting SMEs combining the presence of SEV with the absence of STV. This pathway suggests that international exposure alone is insufficient to promote environmental engagement when pro-environmental values are lacking.

Configuration ~ESP4 (consistency = 0.872; raw coverage = 0.169), the most consistent pathway, combines the absence of network participation and EO with the presence of SEV and the absence of STV. This configuration characterizes SMEs that are simultaneously disconnected from relational support mechanisms and lacking strategic orientation toward sustainability.

Taken together, the results indicate that ~ESP results from multiple configurations combining contextual, organizational, and value-related conditions. The absence of STV appears in three of the four configurations, while SEV is present in two. Similarly, the absence of EO characterizes two pathways, and lack of network participation appears in the most consistent configuration. These findings highlight the central role of managerial values, strategic orientation, and network participation in explaining environmental disengagement among SMEs.

5 | Discussion

5.1 | Key Findings

This study examines how managerial values, organizational capabilities, and contextual conditions shape ESP among SMEs. Consistent with configurational theory, the results reveal multiple pathways leading to both ESP and ~ESP, highlighting equifinality and causal asymmetry (Fiss 2011; Greckhamer et al. 2018; Ragin 2008).

Four main findings emerge from the analysis. First, sustainability adoption follows heterogeneous pathways. The four configurations associated with ESP differ substantially in their composition, indicating that environmental engagement can emerge through different combinations of individual, organizational, and contextual conditions.

Second, managerial values exert contingent rather than uniform effects. STV appears in some sustainability configurations and are absent from several non-sustainability pathways, whereas SEV are associated with both sustainability and non-sustainability

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outcomes. This suggests that the influence of managerial values depends on their interaction with other conditions.

Third, sustainability engagement reflects a multi-level phenomenon. Several configurations simultaneously combine individual, organizational, and contextual conditions, supporting the view that environmental behavior emerges from interactions across analytical levels.

Finally, the configurations associated with ESP differ from those explaining its absence. This finding confirms the asymmetric nature of sustainability processes, whereby environmental engagement and disengagement emerge through distinct causal pathways.

The following sections discuss the theoretical and practical implications of these findings.

5.2 | Interpretation of Results

5.2.1 | Values as Sustainability Micro-Foundations

The findings support prior research on values and sustainability while providing a more nuanced understanding of their role in SMEs. Building on Schwartz's theory of basic human values (Schwartz 1992; Schwartz et al. 2012), environmental research has consistently shown that biospheric and altruistic values are important antecedents of pro-environmental behavior (de Groot and Steg 2008; de Groot and Thøgersen 2018; Steg, Bolderdijk, et al. 2014).

The results broadly support this perspective. The presence of STV in ESP3 and ESP4, combined with their absence from several non-sustainability pathways, suggests that biospheric and altruistic concerns often facilitate environmental engagement among SMEs. Managers characterized by stronger STV may be more inclined to recognize environmental responsibilities and integrate them into strategic decision-making, consistent with Jansson et al. (2017) and Schaefer et al. (2020).

However, STV are absent from ESP1 and ESP2, indicating that ESP may emerge even without strong pro-environmental value orientations. This finding suggests that sustainability cannot be explained by managerial values alone but depends on their interaction with organizational and contextual conditions.

The role of SEV further illustrates this complexity. Although egoistic and hedonic values are often associated with weaker environmental commitment (Bouman et al. 2018; Steg, Perlaviciute, et al. 2014), SEV appear in both sustainability (ESP1 and ESP3) and non-sustainability (~ESP3 and ~ESP4) configurations. Their influence therefore appears neither uniformly positive nor uniformly negative, but contingent on the broader context in which they operate.

Consistent with Cieciuch (2017) and Yacob et al. (2019), these findings suggest that managerial values constitute important micro-foundations of sustainability. However, their influence depends on how they combine with organizational capabilities and contextual conditions, reinforcing the configurational nature of environmental engagement among SMEs.

5.2.2 | Sustainability as a Paradoxical Reconciliation of Value Orientations

Configuration ESP3 provides a particularly revealing illustration of how seemingly contradictory value orientations may coexist within the same sustainability pathway. ESP3 combines STV, SEV, network participation, and membership in a tangible goods sector. This finding is noteworthy because values theory generally portrays STV and SEV as opposing motivational domains (Schwartz et al. 2012). Whereas STV emphasizes concern for others and the natural environment, SEV prioritizes personal achievement and self-interest. Accordingly, environmental engagement has often been associated with stronger STV and weaker SEV (Bouman et al. 2018; de Groot and Steg 2008; Jansson et al. 2017).

The coexistence of STV and SEV in ESP3 challenges this interpretation. Rather than reflecting a simple opposition between environmental concern and self-interest, the findings suggest that both orientations may contribute to the same sustainability trajectory. This observation resonates with paradox theory, which conceptualizes paradoxes as persistent tensions between contradictory yet interdependent elements that must be managed simultaneously rather than resolved permanently (Schad et al. 2016; Smith and Lewis 2011). In the sustainability domain, Hahn et al. (2015) similarly argue that firms must accommodate environmental, social, and economic objectives despite the tensions that may arise among them.

The findings therefore suggest that environmental responsibility and performance-oriented aspirations can be pursued concurrently. This extends paradox theory by indicating that sustainability tensions may be embedded not only in organizational strategies and stakeholder demands but also in managerial value systems.

Importantly, this reconciliation appears to be facilitated by contextual conditions. Alongside STV and SEV, ESP3 includes network participation and membership in a tangible goods sector. Networks provide access to information, legitimacy, and learning opportunities that support sustainability engagement (Guo et al. 2020), while firms operating in tangible goods sectors are often more exposed to environmental impacts, stakeholder scrutiny, and sustainability-related expectations. Together, these conditions may make environmental initiatives more salient and facilitate their integration into organizational objectives and economic priorities.

This interpretation is consistent with Aragón-Correa et al. (2008), who argue that environmental strategies can generate competitive advantages when supported by appropriate organizational and contextual conditions. It also aligns with Graafland (2018) and Hoogendoorn et al. (2015), who show that sustainability-oriented SMEs often pursue environmental, social, and economic objectives simultaneously. Sustainability therefore appears less as a trade-off than as a reconciliation of these objectives within specific organizational configurations.

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5.2.3 | Organizational Capabilities as Translators of Sustainability Intentions

Beyond managerial values, the findings highlight the role of organizational capabilities in translating sustainability intentions into environmental practices. While values shape how environmental issues are perceived and prioritized, their effects depend on firms' ability to mobilize resources and opportunities. EO and firm size therefore emerge as important organizational conditions influencing sustainability.

EO appears in both ESP2 and ESP4, suggesting that a proactive and opportunity-oriented strategic posture facilitates environmental engagement under specific conditions. Entrepreneurship research characterizes EO through innovativeness, proactiveness, and risk-taking and highlights its role in enabling firms to identify opportunities and adapt to changing environments (Covin and Slevin 1989; Covin and Wales 2019; Lumpkin and Dess 1996). Within the sustainability domain, EO may encourage firms to view environmental challenges as opportunities for innovation and competitive advantage.

The configurational results indicate that EO does not operate independently. In ESP2, environmental engagement emerges through the combination of EO and network participation despite the absence of both STV and SEV, whereas in ESP4, EO combines with STV and export activity. These findings support Silva et al. (2021) and Amankwah-Amoah et al. (2019), who emphasize the importance of entrepreneurial capabilities when combined with complementary organizational conditions. EO therefore appears as an enabling rather than a determining condition.

Firm size provides additional insight into the organizational foundations of sustainability. Although larger firms generally possess greater financial, human, and organizational resources (Armas-Cruz et al. 2017; Hoogendoorn et al. 2015), previous research suggests that size should be viewed as an enabling rather than a determining condition (de Sousa Jabbour et al. 2018; Uhlaner et al. 2012).

The findings support this interpretation. While size is present in ESP1, its absence characterizes ESP4. Consistent with Sáez-Martínez et al. (2016) and Triguero et al. (2015), resource availability may facilitate environmental engagement but is not essential. Smaller firms can achieve sustainability through alternative combinations of managerial values, entrepreneurial orientation, and contextual opportunities. Organizational capabilities therefore shape how environmental intentions are translated into concrete sustainability practices.

5.2.4 | Organizational Fields as Conditional Contexts of Sustainability

The findings highlight the role of organizational fields in shaping ESP among SMEs. Neo-institutional theory suggests that organizations are embedded within systems of norms, expectations, and relationships that influence organizational behavior (DiMaggio and Powell 1983; North 1990; Scott 2001). However, the configurational results indicate that these influences do not exert uniform effects on environmental engagement. Rather, their impact depends on how they interact with managerial values and organizational capabilities.

Network participation emerges as a particularly important contextual condition. Present in both ESP2 and ESP3 and absent from ~ESP4, networks appear to facilitate access to information, legitimacy, and learning opportunities that support environmental engagement. This interpretation is consistent with Guo et al. (2020) and with Geels' (2002) socio-technical perspective, which emphasizes the role of interactions among actors in sustainability transitions.

Membership in a tangible goods sector also contributes to sustainability. The presence of sector in ESP3 suggests that industry-specific norms, stakeholder expectations, and environmental challenges may reinforce sustainability-oriented behavior. Consistent with previous research (Reyes-Rodríguez et al. 2016; Tyler et al. 2020), firms operating in tangible goods sectors are often more exposed to environmental impacts and sustainability-related pressures. As a result, these sectoral conditions may increase the perceived relevance and legitimacy of environmental practices without directly determining organizational behavior.

Export activity provides a more nuanced picture. While internationalization contributes to ESP4, it also appears in ~ESP3. Consistent with research on internationalization and sustainability (Ayuso and Navarrete-Báez 2018; Colovic and Henneron 2018; Khojastehpour and Shams 2020), this finding suggests that exposure to international markets creates opportunities and pressures whose effects depend on the broader configuration in which they are embedded.

These findings further support the view that organizational fields influence sustainability through conditional rather than deterministic mechanisms. Networks, sectors, and export markets create opportunities, constraints, and expectations, but their effects depend on how managers interpret and mobilize them through their value orientations and organizational capabilities (Hardy and Maguire 2017). More broadly, the results support recent calls for systemic and multi-level perspectives on sustainability (Ahmadov et al. 2025; Kühl et al. 2023), showing that environmental engagement emerges from the interaction of individual, organizational, and contextual conditions rather than from any single level alone.

The configurational role of these organizational fields should also be interpreted in light of the national institutional context in which SMEs operate. Because the empirical data were collected exclusively from Canadian SMEs, the observed configurations reflect institutional conditions specific to Canada. Compared with many emerging economies, Canada offers a relatively stringent environmental regulatory framework, increasing stakeholder expectations regarding sustainability, and a well-developed ecosystem of public programs and intermediary organizations supporting SMEs' environmental transition (Environment and Climate Change Canada 2025, May 26; OECD 2026). These institutional conditions may have influenced how managerial values, organizational capabilities, and

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contextual factors combined to produce the observed configurations. Consequently, different configurational pathways may emerge in countries operating under different institutional environments, regulatory frameworks, and stakeholder expectations, as recent configurational research has also demonstrated (Juntunen et al. 2026).

5.2.5 | Equifinality and Causal Asymmetry in SME Sustainability

A final insight concerns the configurational nature of ESP and the asymmetry of their causal antecedents. The presence of four sustainability configurations (ESP1–ESP4) and four non-sustainability configurations (~ESP1–~ESP4) illustrates the principles of equifinality and causal asymmetry that underpin configurational theory (Fiss 2011; Misangyi et al. 2017).

The sustainability and non-sustainability pathways differ substantially in their composition, reinforcing the view that environmental engagement among SMEs cannot be explained through linear relationships or the independent effects of individual variables. Some sustainability configurations rely more heavily on managerial values (ESP3 and ESP4), whereas others emphasize organizational capabilities and contextual conditions (ESP1 and ESP2). Similarly, the configurations associated with ~ESP are not simple inverses of those associated with its presence.

Consistent with configurational research, these findings suggest that sustainability outcomes emerge from conjunctural causation rather than isolated drivers (Fiss 2011; Pappas and Woodside 2021). Environmental engagement is therefore best understood as the outcome of interacting individual, organizational, and contextual conditions.

5.3 | Theoretical Contributions

This study makes three main contributions to the literature on managerial values and sustainability in SMEs.

First, it extends values theory by adopting a configurational perspective on the relationship between managerial values and ESP. Previous research generally associates STV with stronger environmental engagement and SEV with weaker environmental commitment (Bouman et al. 2018; de Groot and Steg 2008; Steg, Bolderdijk, et al. 2014). The findings suggest a more nuanced reality. While STV frequently supports environmental engagement, neither STV nor SEV exerts uniform effects across configurations. Instead, their influence depends on how they combine with organizational and contextual conditions. By showing that sustainability outcomes emerge from configurations of interdependent conditions rather than isolated value orientations, the study responds to calls by Sagiv et al. (2017) and Yacob et al. (2019) to better understand values as elements of broader motivational systems.

Second, the study contributes to sustainability research by integrating values theory and paradox theory. The coexistence of STV and SEV within ESP3 suggests that environmental engagement may emerge from the reconciliation rather than the elimination of competing aspirations. Extending the work of Smith and Lewis (2011), Schad et al. (2016), and Hahn et al. (2015), the findings indicate that paradoxical tensions may be embedded not only in organizational objectives and stakeholder demands but also within managerial value systems.

Third, the study advances multi-level and configurational understandings of sustainability. Several sustainability and non-sustainability pathways combine individual, organizational, and contextual conditions, supporting calls for more integrated perspectives on sustainability (Aguinis and Glavas 2012; Hartley et al. 2022; Kühl et al. 2023; Zhu et al. 2022). The findings further illustrate the principles of equifinality and causal asymmetry emphasized by configurational research (Fiss 2011; Ragin 2008), showing that multiple combinations of conditions can lead to both sustainability and non-sustainability outcomes among SMEs.

5.4 | Practical Implications

The findings provide several implications for SME managers, support organizations, and policymakers seeking to promote ESP. Consistent with the configurational nature of the results, sustainability initiatives should be tailored to different SME profiles rather than based on one-size-fits-all approaches.

First, the findings suggest that sustainability can be aligned with both environmental and business objectives. For some SMEs, environmental engagement appears compatible with competitiveness, legitimacy, and long-term value creation. Managers may therefore benefit from framing sustainability not only as an ethical commitment but also as a strategic opportunity. Support organizations can reinforce such trajectories through peer-learning initiatives, collaborative platforms, and sectoral networks that facilitate the diffusion of sustainability-related knowledge and practices.

Second, the results highlight the importance of entrepreneurial capabilities and innovation-oriented strategies. For SMEs characterized by strong entrepreneurial orientation, sustainability may serve as a source of innovation, differentiation, and market development. Policymakers and support agencies can facilitate these trajectories through green innovation programs, environmental certification schemes, and sustainability-oriented export initiatives.

Third, the findings indicate that awareness alone is unlikely to be sufficient to stimulate environmental engagement. SMEs lacking entrepreneurial capabilities or network participation may require more targeted forms of support, including mentoring, advisory services, and facilitated access to professional networks. Such interventions can strengthen organizational capabilities while increasing exposure to sustainability-related knowledge and opportunities.

More broadly, the results suggest that sustainability policies should recognize the heterogeneity of SMEs. Because managerial values, organizational capabilities, and contextual conditions interact in different ways across firms, interventions are

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likely to be more effective when they simultaneously address individual, organizational, and contextual dimensions of environmental engagement.

Beyond implications for SME owner-managers, the findings also provide guidance for policymakers and organizations supporting SME sustainability. Rather than promoting standardized environmental programs, policymakers and SME support organizations should recognize that ESP can be achieved through multiple pathways. This suggests that support initiatives should be tailored to firms' specific profiles, taking into account differences in managerial value orientations, organizational capabilities, and contextual conditions. Industry associations and business networks can also play an important role by facilitating knowledge exchange, peer learning, and collaborations that help SMEs develop the complementary capabilities needed to adopt ESP. Such differentiated support strategies are likely to be more effective than one-size-fits-all approaches because they acknowledge the configurational nature of sustainability adoption.

5.5 | Limitations, Future Research, and Conclusion

Despite its contributions, this study has several limitations that create opportunities for future research. First, the data were collected before the COVID-19 pandemic, which substantially altered SMEs' priorities, resilience strategies, and sustainability practices. Future studies could examine whether the configurations identified here remain stable under conditions of heightened uncertainty and organizational disruption.

Second, the study relies on cross-sectional data, limiting the ability to capture how sustainability trajectories evolve over time. While the configurational approach identifies multiple pathways associated with the presence and absence of ESP, it does not reveal how firms move between configurations. Longitudinal research could provide valuable insights into the emergence, stability, and transformation of sustainability trajectories.

Third, as with any configurational analysis, the findings are influenced by calibration decisions. Although the empirical calibration adopted in this study follows established recommendations and the robustness analyses supported the stability of the solutions, alternative calibration thresholds may lead to partially different configurations. Moreover, QCA is designed to identify combinations of conditions associated with an outcome rather than to estimate the independent net effects of individual conditions. Future research could therefore combine configurational approaches with variance-based methods to generate complementary insights into both causal complexity and the relative contribution of individual factors.

Fourth, the findings are derived from SMEs operating within the Canadian institutional context. Because institutional environments vary across countries in terms of regulatory frameworks, stakeholder expectations, and support mechanisms, future cross-country studies should examine whether the configurations identified in this study are transferable across different institutional settings or whether alternative pathways emerge under different institutional trajectories.

Future studies could also incorporate additional organizational and contextual conditions, such as leadership styles, organizational culture, stakeholder salience, environmental capabilities, and the evolution of organizational fields over time. Combining configurational approaches with qualitative methods would further enhance understanding of the mechanisms underlying sustainability trajectories.

Overall, the findings demonstrate that ESP among SMEs emerge from specific combinations of managerial values, organizational capabilities, and contextual conditions rather than from isolated drivers. By identifying multiple sustainability and non-sustainability pathways, this study highlights the value of configurational and multi-level perspectives for understanding the complexity and diversity of environmental engagement among SMEs. The results further suggest that sustainability is shaped not only by what managers value but also by how these values interact with organizational capabilities and the broader contexts in which firms operate.

Author Contributions

Marie Romuald Bernard Pouka Pouka: writing – original draft, investigation, writing – review and editing, validation, conceptualization. **François Labelle:** conceptualization, funding acquisition, investigation, writing – review and editing, supervision, project administration. **François L'Écuyer:** writing – original draft, methodology, validation, writing – review and editing, software, data curation, formal analysis.

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Appendix A: Measurement of Environmentally Sustainable Practices

Respondents were asked:

"Over the past three years, to what extent has your firm implemented the following practices?"

(1 = *Never*; 5 = *Systematically*)

Measurement items	VIF
Formalized environmental practices into policies and action plans	2.675
Regularly consulted stakeholders on environmental decisions	2.322
Established environmental performance indicators	2.319
Communicated environmental actions to stakeholders	2.218
Integrated environmental criteria into purchasing decisions	1.909
Implemented awareness and training initiatives for employees on environmental practices	1.742
Controlled the quantity of waste and pollution generated by operations	1.493
Used reusable, recycled, or second-hand materials as inputs	1.435
Adopted less polluting transport modes and/or optimized distribution networks	1.422
Encouraged and supported employees to use alternatives to single-occupancy car commuting	1.405
Valorized or commercialized waste	1.380
Used recovered and/or renewable energy sources	1.281
Recovered products no longer used by customers	1.251
Reduced the use of raw materials per unit produced or sold	1.249

Note: Variance inflation factors (VIF) were calculated to assess multicollinearity among formative indicators. All values are below 3 (max = 2.675), well under the recommended threshold of 5, indicating no multicollinearity concerns and supporting the validity of the formative ESP construct.

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Appendix B: Measurement Model

Constructs	Factors	Items		Components					α[a]	p[b]	AVE[c]
				EOλ	$SEV_{Hedo}\lambda$	$SEV_{Ego}\lambda$	$STV_{Bios}\lambda$	$STV_{Altr}\lambda$			
Entrepreneurial orientation		OE1	My firm places strong emphasis on research and development (R&D), technological change, and innovation.	0.611					0.88	0.90	0.51
		OE2	My firm has introduced several new product/service lines over the past five years.	0.732							
		OE3	My firm has made significant modifications to its existing products/services over the past five years.	0.728							
		OE4	My firm is typically the one that initiates actions to which competitors respond.	0.775							
		OE5	My firm is often the first to introduce innovations (new products/services, new techniques/technologies, production methods, etc.).	0.761							
		OE6	My firm generally adopts a highly competitive posture aimed at outperforming competitors.	0.664							
		OE7	My firm strongly favors high-risk projects with the potential for high returns.	0.755							
		OE8	When faced with high uncertainty, my firm adopts an aggressive posture to maximize the likelihood of exploiting opportunities.	0.668							
		OE9	Due to the environment in which it operates, my firm engages in bold and risky actions to achieve its objectives.	0.697							
Self-enhancement values	Hedonic	SEV1	It is important for this person to have pleasure.		0.889				0.71	0.82	0.54
		SEV2	It is important for this person to enjoy the pleasures of life.		0.880						
		SEV3	It is important for this person to do things that they enjoy.		0.878						
	Egoistic	SEV4	It is important for this person to have control over others.			0.833			0.86	0.91	0.78
		SEV5	It is important for this person to have authority over others.			0.868					
		SEV6	It is important for this person to have influence.			0.632					
		SEV7	It is important for this person to have a lot of money and possessions.			0.551					
		SEV8	It is important for this person to work hard and be ambitious.		*0.254*	*0.408*					

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Constructs	Factors	Items		Components					α[a]	*p*[b]	AVE[c]
				EOλ	SEV_{Hedo}λ	SEV_{Ego}λ	STV_{Bios}λ	STV_{Altr}λ			
Self-transcendence values	Biospheric	STV1	It is important for this person to prevent environmental pollution.				0.871		0.82	0.86	0.56
		STV2	It is important for this person to protect the environment.				0.907				
		STV3	It is important for this person to respect nature.				0.779				
		STV4	It is important for this person to live in harmony with nature.				0.753				
	Altruistic	STV5	It is important for this person that everyone has equal opportunities.					0.631	0.86	0.90	0.69
		STV6	It is important for this person to care for those who are disadvantaged.					0.588			
		STV7	It is important for this person that everyone is treated fairly.					0.762			
		STV8	It is important for this person that there is no war or conflict.					0.830			
		STV9	It is important for this person to be helpful to others.					0.880			

[a] Cronbach's alpha.
[b] Composite Reliability.
[c] Average Variance Extracted.

Appendix C: Parsimonious Solution Models

M1: isEMPNUMOVER50*~isRESEAU*VSE+isRESEAU*isTANGIBLESECTOR*VSE*VST+(isRESEAU*OE*~VSE+~isEMPNUMOVER50*isEXPORT*isTANGIBLESECTOR*~VSE*VST) -> PENV

M2: isEMPNUMOVER50*~isRESEAU*VSE+isRESEAU*isTANGIBLESECTOR*VSE*VST+(isRESEAU*OE*~VSE+~isEMPNUMOVER50*isEXPORT*OE*~VSE*VST) -> PENV

M3: isEMPNUMOVER50*~isRESEAU*VSE+isRESEAU*isTANGIBLESECTOR*VSE*VST+(~isEMPNUMOVER50*isRESEAU*isTANGIBLESECTOR*OE+~isEMPNUMOVER50*isEXPORT*OE*~VSE*VST) -> PENV

Configuration	inclS	PRI	covS	covU	M1	M2	M3
isEMPNUMOVER50*~isRESEAU*VSE	0.870	0.848	0.083	0.081	0.081	0.081	0.081
isRESEAU*isTANGIBLESECTOR*VSE*VST	0.929	0.916	0.089	0.034	0.074	0.074	0.035
isRESEAU*OE*~VSE	0.846	0.812	0.087	0.019	0.068	0.059	
~isEMPNUMOVER50*isRESEAU*isTANGIBLESECTOR*OE	0.836	0.810	0.107	0.010			0.050
~isEMPNUMOVER50*isEXPORT*isTANGIBLESECTOR*~VSE*VST	0.826	0.734	0.057	0.007	0.048		
~isEMPNUMOVER50*isEXPORT*OE*~VSE*VST	0.831	0.740	0.063	0.003		0.045	0.054
M1	0.861	0.832	0.290				
M2	0.862	0.833	0.287				
M3	0.844	0.811	0.278				

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