

Strategic Planning as a Mediator of Gender Differences in Environmental Responsibility

Emilia Kangas, Sanna Joensuu-Salo and Laura Könönen

Seinäjäki University of Applied Sciences, Finland

emilia.kangas@seamk.fi

sanna.joensuu-salo@seamk.fi

laura.kononen@seamk.fi

Abstract: This study examines whether strategic planning explains gender differences in environmental responsibility among owner-managers in small and medium-sized food sector enterprises. While prior research has produced mixed findings regarding gender and pro-environmental behavior, little is known about the managerial mechanisms through which such differences translate into firm-level sustainability practices. Drawing on survey data from 202 Finnish food sector SME owner-managers, the study employs hierarchical regression analysis and structural equation modelling with bias-corrected bootstrapping, controlling for firm size and entrepreneurial status. Initial regression results showed that men reported higher environmental responsibility than women ($M = 4.26$ vs. 3.72), but this effect became non-significant once strategic planning was included. In the SEM analysis, gender significantly predicted strategic planning ($B = -0.504$, $p = .011$), and strategic planning strongly predicted environmental responsibility ($B = 0.484$, $p < .001$). The indirect effect of gender on environmental responsibility through strategic planning was statistically significant (95% BC CI $[-0.475, -0.054]$), indicating full mediation. These findings suggest that gender differences in environmental responsibility are not primarily attitudinal but embedded in organizational decision-making systems. By identifying strategic planning as a mediating managerial capability, the study contributes to gender and sustainability research and highlights the importance of strengthening strategic capabilities to support environmentally responsible practices in SMEs.

Keywords: Environmental responsibility, Strategic planning, Gender, SME

1. Introduction

Entrepreneurship has long been embedded in a masculine discourse, emphasizing autonomy, competitiveness, and risk-taking as defining entrepreneurial traits (Ahl, 2006; Gupta et al., 2008). This gendered framing has shaped how entrepreneurship is perceived and practiced, often positioning men as the normative entrepreneurs and women as atypical or secondary actors (Jennings & Brush, 2013; Hamilton, 2014). Despite these biases, research increasingly highlights that women entrepreneurs demonstrate distinct orientations, particularly in relation to ethics, community engagement, and sustainability (Figueroa-Domecq et al., 2020; Barrachina Fernández et al., 2021; Kutlu & Ngoasong, 2023).

Prior research in environmental psychology and sustainability management has shown that gender may influence environmental attitudes and behaviors, with many studies suggesting that women exhibit stronger pro-environmental orientations (Zelezny et al., 2000; Hunter et al., 2004). However, findings remain mixed and context-dependent (Vicente-Molina et al., 2018). At the organizational level, these gendered orientations may manifest through managerial and strategic practices that shape how sustainability is enacted within firms.

In small and medium-sized enterprises (SMEs), environmental responsibility, defined as proactive efforts to manage and reduce environmental impacts, depends heavily on leadership orientation and managerial capabilities. One such capability is strategic planning (SP), a structured process through which firms set goals, allocate resources, and coordinate actions. Although the relevance of formal planning for small firms has been debated, a large body of research shows that SP enhances both financial and non-financial performance (George et al., 2019; Brinckmann et al., 2010), and supports systematic integration of sustainability goals into business strategy (Mazzarol et al., 2009; Smolka et al., 2018).

From this perspective, strategic planning may act as a mechanism linking individual-level attributes, such as gender, to organizational sustainability outcomes. Strategic orientation can drive proactive environmental practices (Aragón-Correa & Sharma, 2003; Engert et al., 2016), while firm characteristics, such as planning formality or size, can shape how strongly such values are translated into action (Hörisch et al., 2014). Thus, differences in environmental responsibility across genders may arise not only from attitudinal or value-based differences but also from variations in strategic management practices, suggesting that environmental responsibility is shaped not only by who entrepreneurs are but also by what they do.

Building on this literature, the present study integrates demographic and strategic variables into a unified framework to examine how gender and strategic planning jointly influence environmental responsibility among

Finnish SMEs in the food industry. Specifically, it explores whether gender differences in environmental responsibility are mediated or moderated by strategic planning. Unlike prior studies that focus primarily on gender differences in environmental attitudes, this study identifies a concrete managerial mechanism through which such differences are translated into organizational outcomes. By examining strategic planning as a mediating capability, it shifts the focus from individual values to managerial systems that structure sustainability-related decision-making. In doing so, the study adds value to gender and sustainability research by demonstrating how organizational processes can channel or neutralize gendered patterns in entrepreneurial behavior.

2. Theoretical Framework and Hypotheses Development

2.1 Entrepreneurship, Gender, and Sustainability

Entrepreneurs play a crucial role in advancing sustainability. Through their decisions, they influence not only economic growth but also environmental and social outcomes. Sustainable entrepreneurs are capable of integrating environmental considerations into their business strategies and of developing innovations that reduce ecological harm while maintaining competitiveness (Saari & Joensuu-Salo, 2019; Cohen & Winn, 2007; Shepherd & Patzelt, 2011). Thus, entrepreneurship has a significant potential to contribute to addressing pressing global challenges such as climate change and biodiversity loss (Stubbs, 2017).

Prior research on gender and entrepreneurship suggests that male and female leaders employ distinct managerial approaches, which in turn produce different outcomes (Wang et al., 2018). This is not surprising, given that entrepreneurship itself is not a gender-neutral activity. Decades of scholarship have shown that entrepreneurship has been historically framed within a masculine discourse, in which attributes such as aggressiveness, competitiveness, and risk-taking are valorized, while relational and community-oriented traits are undervalued (Gupta et al., 2008; Ahl, 2006; Hmieleski & Sheppard, 2019). Extending this line of inquiry, extensive research points to socialization processes as fundamental drivers of gender differences in leaders' backgrounds, managerial approaches, preferences, and behavioral tendencies (Ely & Padavic, 2007; Wood & Eagly, 2012; Fitzsimmons & Callan, 2016). These differences are not merely symbolic; they may shape how women and men allocate and manage human and financial resources in their firms and, consequently, the performance outcomes they realize (Hill, Upadhyay, & Beekun, 2015; Post & Byron, 2015; Wang et al., 2018). Such gendered expectations and patterns may therefore influence how men and women approach strategy, planning, and sustainability in their entrepreneurial activities.

Emerging studies on gender and sustainable entrepreneurship indicate that women entrepreneurs often express a higher concern for environmental and social issues (Barrachina Fernández et al., 2021) and utilize broader professional and social networks to address sustainability challenges (Ousios & Farooqi, 2017). This suggests that sustainable entrepreneurship might provide a space where traditional masculine norms are challenged. Yet, the empirical evidence remains limited, especially regarding how gender differences translate into concrete managerial processes such as strategic planning and their subsequent effects on firm-level sustainability performance.

2.2 Strategic Planning and its Broader Implications

Strategic planning (SP) has been a central topic in management research for decades (Wolf & Floyd, 2017). While earlier studies yielded mixed results regarding its effectiveness, most contemporary research provides strong support for its positive role in organizational performance (George et al., 2019; Brinckmann et al., 2010; Kraus et al., 2006). Meta-analytic findings indicate that SP enhances performance by providing structure, direction, and adaptability, rather than causing rigidity or inefficiency (George et al., 2019).

Recent scholarship also highlights that performance is a multidimensional construct, encompassing not only financial outcomes but also non-financial aspects such as innovation, employee well-being, and environmental responsibility (Amoo et al., 2023; Kennerley & Neely, 2003; Lämsiluoto et al., 2019). In dynamic environments, planning helps firms to anticipate change, coordinate actions, and allocate resources efficiently (Mazzarol et al., 2009; Meloche & Plank, 2006). Particularly in small and medium-sized enterprises (SMEs), where resources are limited, SP can strengthen learning and resilience by linking short-term actions with long-term goals (Smolka et al., 2018; Leitner & Guldenberg, 2010).

Although much of the SP literature has focused on financial performance, its potential influence extends to sustainability-oriented behavior. A well-developed planning process enables entrepreneurs to integrate environmental objectives into their business models, identify sustainability-related opportunities, and balance

economic and ecological priorities. Consequently, strategic planning can be seen as a managerial capability that facilitates proactive environmental responsibility.

2.3 Gender, Strategic Planning, and Environmental Responsibility

Drawing from the two literature streams above, gender differences in environmental responsibility may partly arise from underlying differences in strategic management orientation. If male entrepreneurs tend to adopt more formalized and systematic planning approaches than their female counterparts, this could explain why they report higher levels of environmental responsibility. At the same time, strategic planning may act as a mechanism that enables both men and women entrepreneurs to translate intentions into concrete, proactive sustainability actions.

Accordingly, this study proposes and tests the following hypotheses:

H1: Men report higher levels of environmental responsibility than women.

H2: Men report higher levels of strategic planning than women.

H3: Strategic planning is positively associated with environmental responsibility.

H4: Strategic planning mediates the relationship between gender and environmental responsibility, such that gender differences in environmental responsibility diminish when strategic planning is taken into account.

H5: The relationship between strategic planning and environmental responsibility is moderated by gender, such that the strength of the association differs between men and women.

Firm size and entrepreneurial status (solo entrepreneur vs. others) were included as control variables in all regression models to account for structural differences between firms.

3. Data and Method

3.1 Data Collection

The survey data was collected in 2024 from Finnish small and medium-sized enterprises (SMEs) operating in the food industry. An online questionnaire was distributed to all Finnish food industry firms identified through the Vainu database, which includes information on all limited liability companies in Finland. After data collection, large enterprises with at least 250 employees were excluded. The final response rate was around 10%, resulting in 202 responses from SME CEOs and owner-managers. Among the respondents, about 40% were women and 60% men. In terms of age, 22% were under 40 years old, 29% were aged 40–49, another 29% were between 50 and 59, and 21% were at least 60 years old. Regarding firm size, 35% were solo entrepreneurs, 24% employed 2–4 people, 15% had 5–9 employees, 9% employed 10–19 individuals, and 17% had at least 20 employees. Due to missing data on some variables, the structural equation modelling was conducted on 171 complete cases.

3.2 Variables

All measurement instruments were adapted from previously validated scales. Strategic planning (SP) was measured using four items from Posch and Garaus (2020), and environmental responsibility was measured using items from González-Benito and González-Benito (2005). A seven-point Likert scale was applied throughout (1 = strongly disagree or much worse than competitors; 7 = strongly agree or much better than competitors). The scale items were as follows:

Strategic planning

In our company we...

- ...have clear business goals.
- ...know what we need to do to reach our business goals.
- ...have a clear strategy for achieving our business goals
- ...have a clear plan how to implement our business model.

Environmental proactivity

Please evaluate to what extent the following statements related to environmental responsibility apply to your company's operations (1–7):

- We have clear goals and long-term plans for managing environmental impacts.
- We have established procedures for measuring and assessing our environmental impacts.
- We utilize environmental aspects in our marketing.
- We take environmental considerations into account when selecting subcontractors/suppliers.
- We replace environmentally harmful materials/components with environmentally friendly ones.
- We consider reusability and recyclability in our packaging design.
- We prefer environmentally friendly products/materials in our purchasing decisions.

Gender was coded as follows: woman = 0, man = 1, other = missing.

The reliability and dimensionality of the multi-item constructs were examined using Principal Axis Factoring (PAF) and Cronbach's alpha. Both the strategic planning (four items) and environmental responsibility (seven items) scales demonstrated a clear one-factor structure, supporting their unidimensionality. The extracted factors explained 76.9% and 64.2% of the total variance, respectively. All items loaded strongly on their respective factors (loadings ≥ 0.76), and the internal consistency of both scales was excellent, with Cronbach's alpha coefficients of 0.93 for each construct. These results confirm the strong reliability and construct validity of the measurement instruments.

4. Results

4.1 Linear Regression Analysis

As preliminary analyses, hierarchical linear regressions were conducted to examine the associations among gender, strategic planning, and environmental responsibility before estimating the structural mediation model. Descriptive statistics showed that men reported higher environmental responsibility ($M = 4.26$, $SD = 1.15$) than women ($M = 3.72$, $SD = 1.09$).

In the first regression model, gender significantly predicted environmental responsibility ($\beta = -0.182$, $p = .011$), indicating that men reported higher environmental responsibility than women. Adding entrepreneurial status (solo entrepreneur vs. others) did not improve model fit ($\Delta R^2 = 0.000$, $p = .797$). When strategic planning was entered in Model 3, the explanatory power increased substantially ($\Delta R^2 = .232$, $p < .001$). Strategic planning was a strong positive predictor of environmental responsibility ($\beta = 0.495$, $p < .001$), and the previously significant gender effect became nonsignificant ($\beta = -0.079$, $p = .226$), suggesting a potential mediating role of strategic planning. Finally, the interaction term between gender and strategic planning was tested, but it was not statistically significant ($\beta = -0.141$, $p = .521$), indicating that the strength of the relationship between strategic planning and environmental responsibility does not differ between men and women. The regression results are summarized in Table 1.

Table 1: Hierarchical Linear Regression Predicting Environmental Responsibility (SPSS results)

Predictor	Model 1 β (p)	Model 2 β (p)	Model 3 β (p)	Model 4 β (p)
Gender (0 = woman, 1 = man)	-0.182 (.011)*	-0.176 (.017)*	-0.079 (.226) ns	0.059 (.794) ns
Solo entrepreneur (0 = no, 1 = yes)	—	-0.019 (.797) ns	0.020 (.762) ns	0.019 (.763) ns
Strategic planning	—	—	0.495 (<.001)***	0.526 (<.001)***
Gender \times Strategic planning	—	—	—	-0.141 (.521) ns
R ²	.033	.033	.265	.267
ΔR^2	.033	.000	.232	.002
Adj. R ²	.028	.023	.254	.251
F	6.651 (*p = .011)	3.343 (ns)	23.201 (**p < .001)	17.451 (**p < .001)
F Change	—	0.066 (ns)	60.854 (**p < .001)	0.413 (ns)

Dependent variable: Environmental responsibility

Notes: Standardized β coefficients reported. Gender coded 0 = woman, 1 = man. ns = non-significant; * $p < .05$; *** $p < .001$.

4.2 Mediation Analysis

Using a structural equation model (n=171) estimated in AMOS with bias-corrected bootstrapping (5,000 resamples), we examined whether strategic planning mediates the relationship between gender and environmental responsibility while controlling for entrepreneurial status and firm size (ln). Gender significantly predicted strategic planning ($B = -0.504$, $SE = 0.198$, $p = .011$; $\beta = -.185$), indicating that women reported lower levels of strategic planning than men. Strategic planning, in turn, was a strong and significant predictor of environmental responsibility ($B = 0.484$, $SE = 0.074$, $p < .001$; $\beta = .451$).

When strategic planning was included in the model, the direct effect of gender on environmental responsibility became nonsignificant ($B = -0.159$, $SE = 0.194$, $p = .414$; $\beta = -.054$). The bias-corrected bootstrap confidence interval for the indirect effect of gender on environmental responsibility through strategic planning was statistically significant (indirect effect = -0.244 , 95% BC CI $[-0.475, -0.054]$), demonstrating that the relationship is fully mediated by strategic planning (see Table 2).

These findings support the theoretical model, suggesting that gender differences in environmental responsibility are explained by differential engagement in strategic planning.

Table 2: Mediation of the Gender and Environmental Responsibility Relationship via Strategic Planning (AMOS results)

Step	Regression Path	Std. β	B (SE)	CR / z	p	Bootstrap 95% BC CI	Interpretation
1	Gender → Strategic planning	-.185	-0.504 (0.198)	-2.546	.011	[-0.915, -0.108]	Gender predicts SP
2	Strategic planning → Environmental responsibility	.451	0.484 (0.074)	6.551	< .001	[0.309, 0.639]	SP significant predictor
3	Gender → Environmental responsibility (direct effect, SP included)	-.054	-0.159 (0.194)	-0.817	.414	[-0.552, 0.232]	Direct effect nonsignificant
4	Indirect effect: Gender → SP → Environmental responsibility	-.083	-0.244 (bootstrapped)	—	.010	[-0.475, -0.054]	Full mediation supported

The empirical results provided mixed support for the proposed hypotheses. H1, which predicted that men would report higher levels of environmental responsibility than women, received initial support only in the bivariate stage. However, in the structural equation model estimated in AMOS, gender did not significantly predict environmental responsibility once strategic planning and controls were included ($B = -0.159$, $SE = 0.194$, $p = .414$; $\beta = -.054$). This indicates that gender differences in environmental responsibility are not direct but instead operate through strategic planning.

H2 proposed that men would exhibit higher levels of strategic planning than women. This hypothesis was supported: gender significantly predicted strategic planning ($B = -0.504$, $SE = 0.198$, $p = .011$; $\beta = -.185$), showing that women reported lower levels of strategic planning.

H3 stated that strategic planning would positively predict environmental responsibility. This hypothesis received strong support. In the AMOS model, strategic planning was a robust and highly significant predictor of environmental responsibility ($B = 0.484$, $SE = 0.074$, $p < .001$; $\beta = .451$).

H4 posited that strategic planning mediates the relationship between gender and environmental responsibility. This hypothesis was supported. When strategic planning was included in the model, the direct effect of gender on environmental responsibility became nonsignificant, whereas the indirect effect was statistically significant (indirect effect = -0.244 ; 95% BC CI $[-0.475, -0.054]$). The use of bias-corrected bootstrapping with 5000 resamples confirmed that strategic planning functions as a full mediator: gender influences environmental responsibility only through its effect on strategic planning.

Finally, H5, which proposed that gender moderates the relationship between strategic planning and environmental responsibility, was not supported. The interaction term was nonsignificant ($\beta = -0.141$, $p = .521$),

indicating that the positive association between strategic planning and environmental responsibility is equally strong for men and women.

Overall, the findings indicate that gender differences in environmental responsibility operate indirectly through strategic planning rather than directly influencing sustainability behavior. Strategic planning thus emerges as a key managerial capability that promotes environmentally responsible behavior across genders rather than amplifying or diminishing gender-based differences.

5. Discussion

This study set out to examine how gender influences environmental responsibility among SME owner-managers and whether strategic planning mediates or moderates this relationship. The findings provide important theoretical and practical insights into the interplay between gendered entrepreneurial orientations and managerial practices shaping sustainability in SMEs.

The results confirm that gender initially relates to environmental responsibility, with men reporting higher levels of environmentally responsible practices. This pattern contrasts with earlier studies suggesting that women exhibit stronger pro-environmental attitudes (Zelezny et al., 2000; Hunter et al., 2004) yet aligns with more recent evidence that gender effects on sustainability behavior are context-dependent and shaped by organizational and structural factors (Vicente-Molina et al., 2018). Furthermore, our findings suggest that gender differences observed at the attitudinal level do not necessarily translate directly into firm-level practices. Within the SME context, where formalized management processes may vary significantly, sustainability engagement appears to depend less on gendered values and more on the managerial systems through which such values are operationalized. We interpret this to mean that environmental responsibility in SMEs is shaped primarily by strategic formalization rather than by gender per se.

Consistent with the strategic management literature, strategic planning emerged as a robust predictor of environmental responsibility. This supports prior research identifying strategic orientation and planning as critical drivers of sustainability performance (Aragón-Correa & Sharma, 2003; Engert et al., 2016) and reinforces the notion that structured, long-term planning helps SMEs anticipate, coordinate, and embed sustainability goals (Brinckmann et al., 2010; George et al., 2019). Importantly, the mediating role of strategic planning extends this literature by demonstrating that planning is not only associated with sustainability outcomes but also explains how demographic differences are translated into organizational behavior. Thus, while men may be more likely to adopt formalized strategic processes, these processes themselves appear to enable environmentally proactive behavior across both genders.

The absence of a moderation effect suggests that strategic planning benefits both male- and female-led firms similarly, strengthening the idea that effective management systems can neutralize gendered disparities in sustainability engagement. This finding contributes to the debate on whether structural practices can mitigate the influence of socially constructed gender norms within entrepreneurship (Ahl, 2006; Hmieleski & Sheppard, 2019). Rather than reinforcing gendered patterns, strategic planning appears to function as an equalizing managerial capability, providing a shared institutional framework for environmental responsibility regardless of the entrepreneur's gender.

5.1 Theoretical Contributions and Practical Implications

This study makes several contributions to research on sustainable entrepreneurship and strategic management.

First, it bridges individual-level gender research and firm-level strategic management by showing how strategic planning mediates the relationship between gender and sustainability outcomes. While previous studies have emphasized gender differences in attitudes or motivations, this study demonstrates that such differences translate into organizational behavior through specific managerial mechanisms.

Second, it extends the strategic planning–performance literature by identifying environmental responsibility as a key non-financial outcome of strategic management in SMEs. This complements prior meta-analytic evidence linking planning to financial performance (George et al., 2019) by showing that strategic planning also supports broader sustainability objectives.

Third, the study advances feminist and organizational perspectives on entrepreneurship by illustrating that gendered behavior in sustainability is not fixed but contingent upon organizational context. Strategic planning acts as an institutional process that can either reproduce or counteract gendered patterns of management, offering a new lens for examining equality in sustainable business practices.

For practitioners and policymakers, the findings underscore the value of embedding strategic planning capabilities within SME support and training programs. Encouraging formalized goal setting, long-term sustainability planning and environmental performance monitoring could strengthen SMEs' contributions to the green transition. Importantly, gender-sensitive entrepreneurship policies should not only target attitudinal change but also promote access to strategic tools and resources that empower all entrepreneurs to manage sustainability systematically.

For practitioners and policymakers, the findings underscore the value of embedding strategic planning capabilities within SME support and training programs. By identifying strategic planning as a mediating managerial capability, the study provides a concrete lever for enhancing environmental responsibility in small firms. Rather than focusing solely on gender-based differences in environmental attitudes, entrepreneurship policies and advisory services should promote structured goal setting, long-term sustainability planning, and systematic environmental performance monitoring. Strengthening strategic capability development can serve as a scalable intervention that supports environmentally responsible practices across diverse entrepreneurial profiles and contributes to the broader green transition.

5.2 Limitations and Future Studies

As with all survey-based studies, the findings are limited by their cross-sectional nature and reliance on self-reported data. Longitudinal or qualitative research could further clarify how gendered managerial practices evolve over time and how strategic planning routines are institutionalized within SMEs. Future studies could also investigate other contextual variables, such as industry dynamics, ownership structure, or leadership experience, that may interact with gender and strategy in shaping sustainability outcomes.

Overall, the study provides empirical evidence that strategic planning mediates the relationship between gender and environmental responsibility in SMEs. Gender differences in sustainability engagement are thus not merely individual or attitudinal but embedded in organizational decision-making systems. By identifying strategic planning as a key managerial capability that converts sustainability intentions into concrete action, this research highlights the importance of integrating gender-sensitive and strategic perspectives in both sustainability theory and SME policy.

Ethics declaration: Ethical approval was not required for this study, as it used anonymized survey data.

AI declaration: Artificial intelligence tools were employed only for linguistic refinement, such as grammar editing and improving wording. All analyses, interpretations, and substantive contributions to the manuscript were produced by the authors.

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