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Venturing green: the impact of sustainable business model innovation on corporate environmental performance in social enterprises

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Abstract

Purpose – This study aims to explore the potential of social enterprises (SEs) in promoting sustainable practices, focusing on their role in reshaping corporate environmental performance (CEP) through sustainable business model innovation (SBMI). Specifically, it examines the impact of SBMI on CEP and the moderating effect of external collaboration (EC).

Design/methodology/approach – This study analyses the influence of SBMI on the CEP of 500 Canadian SEs. Chi-square tests, structural equation modelling, correlation analysis and regression analysis were used to assess the relationships between SBMI, CEP and EC.

Findings – Results reveal that SBMI positively influences CEP by enabling SEs to offer environmentally sustainable products and services. In addition, collaboration with diverse stakeholders significantly enhances the effectiveness of SBMI in achieving environmental objectives.

Originality/value – By incorporating ecological modernization theory and institutional theory, this study provides fresh insights into the environmental impact of SEs. It underscores the importance of SEs addressing regulatory, social and cultural factors to support their sustainability and legitimacy.

Keywords Social enterprises, Venture, Environmental performance, Sustainable business model innovation, External collaboration

Paper type Research paper



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1. Introduction

Social enterprises (SEs) are ventures that operate with a distinct focus on social objectives, generating economic value and quantifiable forms of value such as social and natural environmental value (Chell, 2007; Battilana and Lee, 2014; Murphy *et al.*, 2022; Bhatt, 2022). SEs usually transform traditional business models by incorporating collaborative management practices to ensure shared value for all stakeholders and enhance the quality of life within communities (Klarin and Suseno, 2023; Hagedoorn *et al.*, 2023; Weerakoon, 2024). In today's venture landscape, where companies are re-evaluating their operational and innovative strategies in response to pressing environmental challenges, SEs find themselves at the intersection of social and environmental responsibility (McInerney, 2012). A pragmatic approach to sustainability involves focusing on the interplay between organizations and the environment in the context of their business model (Pham *et al.*, 2020). The ability to transition to new business models quickly and successfully – called *sustainable business model innovation* (SBMI) – is a strategic way to achieve significant positive outcomes and effectively address environmental and social impacts (Geissdoerfer *et al.*, 2018; Manninen *et al.*, 2024). In response to climate change, management objectives must shift towards maximizing social and environmental benefits over short-term economic gains. However, the financial benefits of SBMI may take time to materialize, so a long-term perspective and sustainability-focused strategy are essential (Utaminingsih *et al.*, 2024).

Recent attention within SEs has been directed towards improving their corporate environmental performance (CEP), reflecting the organization's responsibility to manage interactions with the natural environment (Aragón-Correa and Sharma, 2003). This shift highlights the evolving nature of SEs, emphasizing the importance of balancing social and environmental objectives within their operational frameworks and necessitating restructuring their business models to align with sustainable innovation strategies (Boons and Lüdeke-Freund, 2013).

Existing studies mainly explore the fusion of economic and social objectives in SE business models and examine how value is created, captured and shared in the SE context (Scuotto *et al.*, 2023). Efforts have been made to identify the essence of SE business models, define their components and recognize their roots in business model innovation (Bashir *et al.*, 2022; Shakeel *et al.*, 2020). Nevertheless, limited research has specifically addressed the development of SBMI for emerging SEs and its impact on CEP (e.g. Prihadyanti, 2023). In addition, given that SEs often face resource limitations, external collaboration (EC) with other organizations and stakeholders can amplify SBMI's impact, foster resilience and create synergistic value, further enhancing SEs' ability to achieve their sustainability goals. Therefore, the role of EC remains underexplored as a potential moderating factor in the SBMI–CEP relationship.

The above gaps represent a missed opportunity for SEs to realize their full potential in promoting positive environmental change, resulting in inefficient resource allocation, limited strategic guidance, reduced competitiveness and potential policy risks. To answer the mentioned research gaps, this study addresses these research questions:

RQ1. How does sustainable business model innovation impact the corporate environmental performance of social enterprises?

RQ2. How does external collaboration act as a moderating factor in this relationship?

This study draws on ecological modernization theory (EMT) and institutional theory (INT) to address these questions. EMT suggests that ecological sustainability can be achieved by embedding progressive environmental technologies and practices within business models,

positioning SEs as drivers of sustainable innovation that actively raise environmental standards (Mol and Spaargaren, 2000). Complementing this, INT examines how SEs gain legitimacy by aligning their goals with institutional norms and pressures, establishing themselves as credible actors within both social and business spheres. This dual alignment allows SEs to implement meaningful, long-term changes that resonate with stakeholders and foster shifts towards broader sustainable practices (Scott, 2017).

Data were collected and analysed through a structured survey, targeting a representative sample of 500 social entrepreneurs across Canada. This study reveals that SBMI in SEs significantly enhances CEP. By aligning economic and environmental goals, SEs exemplify ecological modernization and actively drive institutional change, influencing regulatory and social norms. The findings underscore the role of SBMI as a catalyst for both environmental and institutional transformation, with EC amplifying its impact, offering valuable insights for policymakers and positioning SEs as key agents of sustainable development.

This study has theoretical and managerial implications. The integration of EMT and INT provides a comprehensive framework that promotes sustainable practices and strengthens institutional resilience to long-term environmental and societal challenges. EMT drives SEs towards ecological innovation, grounding their strategies in environmental imperatives that prioritize sustainable practices and green technologies. Meanwhile, INT emphasizes the importance of aligning these strategies within institutional structures, enabling SEs to gain legitimacy and influence by operating within, yet reshaping, established norms and expectations. This theoretical synergy positions SEs as pivotal agents of transformation, bridging the gap between ecological goals and institutional standards. By embodying both progressive environmental objectives and institutional legitimacy, SEs champion a path to sustainability that goes beyond compliance, encouraging systemic change across the business ecosystem. This study underscores how SEs can leverage this dual alignment to foster sustainable innovation, catalyse industry-wide shifts and accelerate the diffusion of green practices, setting new benchmarks for environmental responsibility within the broader economy. Moreover, the findings highlight the capacity of SBMI to improve CEP, especially when supported by EC. This underlines the importance of strategic partnerships in amplifying the impact of SBMI and positions SE as a key actor in advancing sustainability efforts across sectors.

Practically, integrating EMT and INT empowers SEs to address sustainability challenges with both innovative and credible approaches. By embedding green technologies (as emphasized by EMT) and aligning with institutional norms (as emphasized by INT), SEs can strengthen stakeholder trust and broaden their influence. This dual approach not only enhances SEs' capacity to implement sustainable practices effectively but also positions them as leaders in driving industry standards towards environmental responsibility. As a result, SEs gain a competitive edge while contributing to a resilient and sustainable business ecosystem, inspiring other enterprises to adopt similar strategies.

2. Theoretical background and hypotheses development

2.1 Brief premises on ecological modernization theory and institutional theory

EMT is based on fundamental assumptions that underpin its perspective on achieving environmental sustainability. One is that societies can transform their economic structures and technological systems to meet ecological imperatives (Mol and Spaargaren, 2000). This requires a belief in the adaptability and innovativeness of societal structures in response to environmental challenges. EMT also posits a positive correlation between economic development and environmental protection, arguing that economies naturally tend towards greener practices as they develop (York *et al.*, 2010). This theoretical framework finds

resonance in the strategies adopted by SEs to improve their environmental performance. As SEs embrace cutting-edge technologies and integrate sustainable business practices into their operations, they embody the fundamental principles embodied in EMT. Their unwavering commitment to seamlessly integrate green solutions into their operational fabric reflects a forward-looking ethos and a proactive stance in addressing and mitigating today's environmental challenges (Jänicke, 2008). However, EMTs also have challenges, as expressed by York and Rosa (2003). The first challenge is to go beyond simply demonstrating that societies adapt their institutions in response to environmental problems and establish a link between these changes and ecological improvements. In addition, EMT needs to show that the later stages of modernization often lead to ecological transformation of production and consumption. The second aspect to be addressed is the need for EMT to demonstrate that industries or enterprises, while reducing their direct environmental impacts, do not inadvertently exacerbate negative impacts by other industries or enterprises. In addition, EMT needs to go beyond demonstrating that economies are becoming more resource-efficient; it needs to demonstrate that the efficiency improvement exceeds the rate of overall production growth.

On a parallel trajectory, INT highlights the pervasive role of institutions in shaping organizational behaviour and strategic orientations (Scott, 2017). In the realm of SEs, the intricate dance with institutional pressures and norms becomes a central force shaping their approach to environmental performance. These pressures, which emanate from diverse sources such as stringent government regulations, industry standards and societal expectations (Dart, 2004), catalyse SEs to align their strategies with institutional norms. This alignment serves as a pragmatic response to external pressures and becomes a strategic imperative for SEs seeking to enhance their legitimacy and gain broader social acceptance (Iskandar *et al.*, 2022). By seamlessly weaving sustainable practices into their operational fabric, SEs manage external pressures and proactively contribute to shaping the institutional landscape, setting pioneering standards and inspiring a cascading effect within their sector (Spanuth and Urbano, 2024). There are also some relevant challenges for INT to address, as expressed by Suddaby (2010). The limitations identified in institutional theory revolve around the theoretical homogenization dilemma and the monitoring of individual agency and institutional work. The former warns against adopting a single theoretical framework, especially institutional theory, as it may oversimplify the complex reality of organizational phenomena. While seemingly convenient, pursuing a common paradigm risks reducing the diversity of perspectives, thereby hindering a comprehensive understanding of organizational dynamics. The latter limitation highlights the crucial role of individual agency in institutional processes, emphasizing that existing approaches tend to neglect the impact of entrepreneurs on the institutionalization, creation, maintenance and destruction of institutions. By failing to account for individual agency, the current paradigm misses valuable insights into the nuanced operation of institutions within organizations, highlighting the need for a more comprehensive analytical approach.

2.2 Ecological modernization theory, institutional theory and sustainable practices

EMT and INT acknowledge the interconnected nature of economic, social and environmental issues, offering complementary approaches to fostering sustainable practices (Table 1).

Each theory brings unique insights to the sustainability debate. EMT focuses on integrating environmental concerns into economic and technological progress, pushing for innovations such as green technologies as key drivers of sustainable development (Pushpakumara *et al.*, 2018; York *et al.*, 2010; Pataki, 2009). On the other hand, INT examines how social institutions – through their established rules, norms and routines – shape

Table 1. EMT and institutional theory

Aspect	Ecological modernization theory (EMT)	Institutional theory	Interconnections
Core concept	Integrates environmental concerns into economic and technological development	Examines how institutions (rules, norms and routines) shape social behaviour	EMT norms can become embedded within institutional frameworks
Strengths	Promotes sustainable innovations and green technologies	Provides insights into how institutions influence behaviour and societal change	Sustainable norms from EMT can drive institutional change
Limitations	May overlook social inequalities and power dynamics	Can be slow to explain rapid environmental changes or innovations	Integration of EMT norms into institutions can address these limitations
Examples of norms	Adoption of green technologies, sustainable production methods	Regulatory frameworks, organizational practices, cultural norms	Sustainable practices from EMT get institutionalized
Application	Used in policymaking, corporate strategies and environmental governance	Applied in analysing organizational behaviour, policy implementation and social practices	EMT policies and strategies influence institutional structures

Source: Authors' elaboration

behaviour and provide legitimacy to environmental practices (Jennings and Zandbergen, 1995; Thomas and Lamm, 2012).

As shown in Table 1, EMT's focus on technological and economic progress can trigger institutional change by embedding environmental norms within existing structures. INT, on the other hand, highlights how social frameworks gradually normalize and institutionalize sustainable practices over time. This complementary relationship addresses the weaknesses of each theory: while EMT can sometimes miss the nuances of social inequalities and power dynamics, INT offers a more grounded, contextual perspective. At the same time, EMT's proactive stance on green innovation compensates for INT's often slower adaptation to environmental change. In combination, EMT and INT provide a holistic framework that promotes sustainable practices and enhances institutions' ability to respond to long-term environmental and societal challenges.

2.3 Social enterprises, sustainable business model innovation and environmental performance

In the context of SEs, the simultaneous pursuit of social and commercial goals often leads to challenges related to mission drift and commercial failure (Tykkyläinen and Ritala, 2021). These enterprises operate in multiple domains, focusing on economic, social and environmental values (Murphy et al., 2022). SEs have explored SBMI, a strategic way to achieve significant positive outcomes and effectively address harmful environmental and social impacts (Geissdoerfer et al., 2018), to address these challenges and effectively align their goals. According to Ciulli et al. (2022), sustainable business models (SBMs) are the result of a process of innovation, labelled by some as “business model innovation for sustainability” (Bocken et al., 2014), i.e. the designed, novel and non-trivial changes to the key elements of a business model and/or the architecture linking these elements (see also Foss and Saebi, 2017) aimed at furthering environmental and/or social value creation. The SBMI

archetype framework proposed by Bocken *et al.* (2014) provides different options in the context of SBMs, emphasizing the importance of environmental, social and economic impacts (Schaltegger *et al.*, 2016). Furthermore, SBMI incorporates inclusive value creation, highlighting the prevalence of peer-to-peer and sharing models (Bocken *et al.*, 2019). SEs use SBMI to introduce environment-friendly products, adopt sustainable production techniques, disseminate green technologies and advocate for policy changes that support conservation efforts (Neessen *et al.*, 2021). Understanding the role of SEs business models in signalling legitimacy for new ventures is crucial in contemporary discussions on sustainable entrepreneurship (Bunduchi *et al.*, 2023). Their business models are intricately designed to generate social value while ensuring economic viability, thus signalling to stakeholders their commitment to addressing societal challenges.

CEP represents an organization's proactive commitment to managing its impact on the natural environment, going beyond mere compliance with legislation to include the broader environmental consequences of its operations, products and resource use, particularly in the context of SEs (Aragón-Correa and Sharma, 2003; Singh *et al.*, 2020). CEP is a multidimensional construct commonly assessed using metrics such as pollutant emissions, environmental investments, and pollution-related costs, which provide a comprehensive view of an organization's environmental footprint (Clarkson *et al.*, 2011). The literature shows that investments aimed at reducing environmental costs improve environmental performance and contribute positively to overall profitability, as they often lead to process efficiencies and resource optimization (Guiffrida *et al.*, 2011; Porter and Van der Linde, 1995). This alignment with profitability highlights the potential for CEP to create shared value, a concept central to SBMI, which emphasizes the design of business models that integrate environmental goals with economic outcomes. Furthermore, this proactive attitude is consistent with EMT, which advocates the integration of environmental considerations into organizational practices and innovation. EMT posits that organizations can achieve long-term sustainability and competitive advantage by adopting environmentally responsible behaviours that not only comply with, but also exceed regulatory standards (Longhofer and Jorgenson, 2017). This approach is particularly relevant for SEs, whose mission-driven focus provides an ideal platform for implementing SBMI to achieve sustainable environmental outcomes. We, therefore, propose the following hypothesis:

- H1. Sustainable business model innovation is positively related to corporate environmental performance in social enterprises.

2.4 The moderating role of external collaboration

In the field of SBMI and CEP, the importance of EC cannot be overstated. Collaboration means partnering with entities outside an organization, such as other companies, research institutions, non-profits and governmental bodies, to achieve common goals, share resources and leverage each other's expertise and capabilities (Ciulli *et al.*, 2022). Collaboration is essential for SBMI, as it enables resource and knowledge sharing, mitigates risks and provides access to new markets and technologies. By working together, firms can address complex sustainability challenges more effectively, align with regulatory standards and build supportive ecosystems (Schaltegger *et al.*, 2016). This collaborative approach fosters comprehensive and innovative solutions, offering a competitive advantage by differentiating companies with advanced and sustainable offerings. Studies have consistently highlighted collaborative efforts between organizations and industries in co-creating environmental value (Lashitew *et al.*, 2020; Bocken *et al.*, 2014). These partnerships require the active participation of external stakeholders, which is essential for a functioning SBM. Such a

model is defined as a streamlined representation of the components, their interconnections, and interactions with stakeholders that an organizational unit uses to create, deliver, capture and exchange sustainable value (Geissdoerfer *et al.*, 2018). Such partnerships often require the development of new competencies, changes in roles within the value chain and adjustments in organizational goals, all of which are essential components of SBMI (Suškevičs *et al.*, 2018; Tykkyläinen and Ritala, 2021).

From an INT perspective, collaboration is shaped by institutional norms, policies and cultural expectations that influence how SEs adopt EC practices in their pursuit of SBMI (Bansal and Clelland, 2004). INT emphasizes that organizations, as social entities, seek legitimacy to access essential resources and to conform to societal expectations, as legitimacy can enhance reputation, facilitate innovation and improve environmental performance (DiMaggio and Powell, 1983; Scott, 2008). Achieving environmental legitimacy offers benefits such as improved access to resources, positive employee relations and reduced innovation risks, thereby supporting the sustainable expansion and effective implementation of SBMI. SEs navigate and adapt to their institutional environment by forming alliances that serve various purposes, including conforming to norms, acquiring resources, establishing legitimacy and responding to stakeholder and regulatory demands (Ball and Craig, 2010).

Achieving coherence between companies and stakeholders is essential for the success of SBMI, yet it presents considerable challenges (Guo *et al.*, 2022; Velter *et al.*, 2022). By adopting sustainable practices, SEs respond to external pressures and influence the institutional landscape by introducing innovative policies such as carbon offsetting, waste reduction and fair-trade practices and motivating others in the sector to emulate these practices (Spanuth and Urbano, 2024). Moreover, integrating inter-organizational collaboration theory into this framework underscores how collaborations facilitate knowledge transfer, generate new ideas and promote interactive learning among stakeholders (Pouwels and Koster, 2017; Hagedoorn, 2002). Therefore, we propose the following hypothesis:

- H2.* External collaboration positively moderates sustainable business model innovation and environmental performance in social enterprises.

The conceptual model in Figure 1 guided our study. The dependent variable of the model is CEP, the independent variable is SBMI, and EC is a moderator variable. We expect SBMI to positively influence CEP and EC to moderate the relationship between CEP and SBMI.

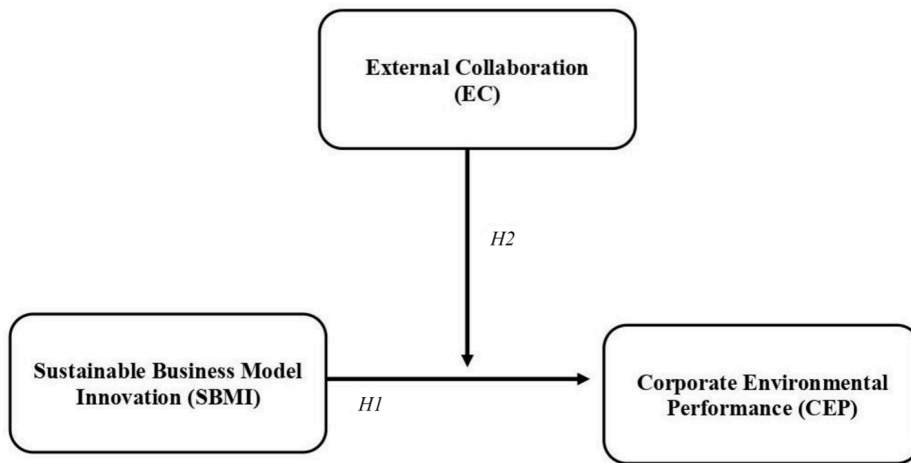
3. Methodology

3.1 Research design

The sample for this study consists of Canadian social entrepreneurs selected through purposive and convenience sampling to ensure representation across different industries (Taherdoost, 2016). According to the Global Data on Social Enterprises Report by the World Economic Forum (2024), it is estimated that approximately 18,200 social enterprises are currently operating in Canada. The study focuses on newly established SEs – founded within the last three years – in education, healthcare, food services, retail, financial services and media sectors. Data were collected from Ontario and British Columbia, regions with a high SE concentration, allowing for nuanced subgroup analyses (Vergouwe *et al.*, 2005).

This study uses a quantitative, cross-sectional research design to examine the relationship between SBMI and CEP in emerging SEs. Cross-sectional designs capture data at a single point, facilitating examining how SBMI influences CEP without the complexities of longitudinal data collection (Setia, 2016).

Data analysis used chi-square tests, structural equation modelling (SEM), correlation and regression analysis, which were selected to address the research questions across categorical



Source: Authors' elaboration

Figure 1. Conceptual model

and continuous variables. Chi-square tests assessed the relationship between categorical SBMI strategies and CEP (Field, 2024). Correlational analysis measured the strength and direction of relationships between SBMI and CEP (Cohen, 2013; Pallant, 2020), while multiple linear regression assessed the predictive relationship between SBMI and CEP, controlling for EC (Pallant, 2020). Finally, SEM allowed for a detailed examination of direct and indirect effects between SBMI, CEP and EC, providing a robust analysis of latent constructs and complex relationships.

3.2 Survey instrument

A specific questionnaire was developed for this study to ensure accurate and relevant data collection (Taherdoost, 2021). Details of the questionnaire items are provided in the variable measurement subsection, and the design of the questionnaire was informed by an extensive literature review on SEs, SBMI, CEP and EC to ensure alignment with current research.

Data was collected using the Google online survey platform, which was chosen for its convenience and accessibility, allowing the questionnaire to be efficiently distributed to a diverse group of SE entrepreneurs. Social entrepreneurs were invited to participate in the study via email and were provided with detailed explanations of the research objectives, privacy protections and guidelines for completing the online survey. Ensuring the reliability and accuracy of the study results was of paramount importance, which required a focus on maintaining data quality (Sürücü and Maslakci, 2020). A pilot testing phase was conducted with 56 Canadian SE entrepreneurs (29 male, 27 female) to identify potential problems or areas for improvement.

The data collection took place from January 2023 to March 2023, targeting a sample of SEs (founded within the prior three years). Automated reminders were sent every two weeks to encourage respondents to participate. The study included entrepreneurs in managerial positions. The online questionnaire was distributed to 621 entrepreneurs, of which 507 responses were received. Seven incomplete responses were identified after checking the

instruments for completeness and missing data, leaving 500 complete responses for data analysis.

Table 2 shows the socio-demographic characteristics of the entrepreneurs, which were also used as control variables. Of the respondents, 50.97% (263 entrepreneurs) identified as male, 48.64% (251 entrepreneurs) identified as female and 0.39% (two entrepreneurs) chose not to disclose their gender. These results indicate a balanced gender representation within the study sample, suggesting that entrepreneurs feel comfortable sharing their gender identity and are willing to engage openly.

The age distribution of the entrepreneurs, as shown in Table 2, shows that 241 entrepreneurs (46.62%) were between 35 and 44 years old, 189 entrepreneurs (36.56%) were between 25 and 34 years old, 66 entrepreneurs (12.8%) were between 45 and 54 years old, 7 entrepreneurs (1.4%) were between 55 and 64 years old, and 14 entrepreneurs (2.7%) were between 18 and 24 years old. Notably, the age group between 35 and 44 had the highest number of entrepreneurs, suggesting an increased interest and engagement in social entrepreneurship and environmental management among entrepreneurs aged 35–44.

In terms of educational background, the data presented in Table 2 shows that 43.33% (224 entrepreneurs) have a bachelor's degree, 36.17% (187 entrepreneurs) have a trade school diploma, 12.19% (63 entrepreneurs) have an associate degree, 8.12% (42 entrepreneurs) have a master's or higher degree, and 0.19% (1 participant) have a high school diploma/GED. This diversity of educational backgrounds within the participant pool indicates that the entrepreneurs in the study possess relevant academic qualifications, skills and knowledge essential to the research.

3.3 Measurement

The questionnaire was structured into four sections, each designed to capture key dimensions of the study. Section 1 gathered demographic data on the entrepreneurs. The remaining sections focused on SBMI, CEP and EC.

Table 2. Sample characteristics

Sample characteristics	Frequency	%
<i>Gender</i>		
Male	263	50.9
Female	251	48.5
I prefer not to say	2	0.4
<i>Age group</i>		
18–24 years old	14	2.7
25–34 years old	189	36.6
35–44 years old	241	46.6
45–54 years old	66	12.8
55–64 years old	7	1.4
<i>Education level</i>		
Bachelor's degree	224	43.3
Master's degree or higher education	42	8.1
Associate degree	63	12.2
Trade school certification	187	36.2
High school diploma/GED	1	0.2

Source: Authors' elaboration

For SBMI, we used the Novelty-Centred Business Model Design Theme Scale (Zott and Amit, 2008), a six-item, five-point Likert scale ($\alpha = 0.87$) that measures four core aspects: task leadership, relational leadership, change leadership and micropolitical leadership orientations. This scale captures entrepreneurs' perceptions of SBMI practices.

CEP was assessed using a five-item, five-point Likert scale ($\alpha = 0.82$) based on Zhang *et al.* (2022), focusing on environmental acknowledgment, emission reduction, renewable energy use, green policy implementation and support for environmental innovation. This scale reflects entrepreneurs' perceptions of their firms' environmental performance.

For EC, we adapted Jap's (2001) five-item, five-point Likert scale ($\alpha = 0.51$) to evaluate the extent and quality of external partnerships. Key elements included external collaboration, contributions from external partners, potential future partnerships, benefits and risks of collaboration, and interactions with NGOs and government entities.

3.4 Data analysis

The study used the Statistical Package for the Social Sciences (SPSS) to analyse the collected data. Descriptive statistics, such as frequencies, percentages, means and standard deviations, were calculated to summarize key characteristics of SBMI and CEP in the context of Canadian SMEs. Business models' perceived effectiveness and impact were assessed by calculating mean scores. In addition, the study used path diagram analysis and model fit analysis.

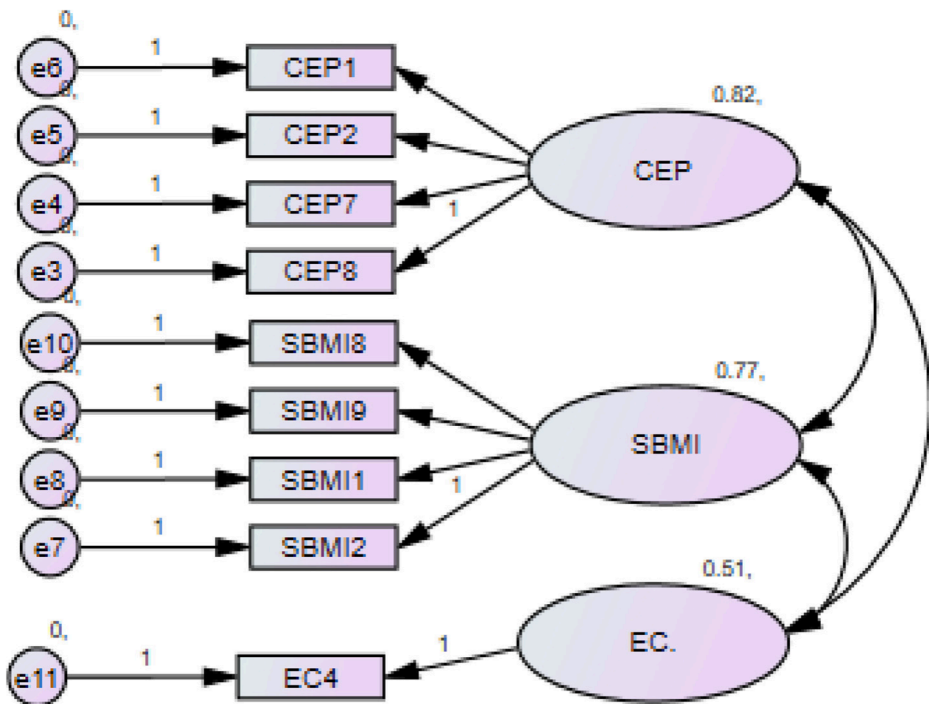
As depicted in Figure 2, the path diagram illustrates the relationships between SBMI, EC and CEP, enabling an assessment of both direct and moderated relationships among the variables. Model fit analysis evaluates how well the model aligns with the collected data, enhancing the interpretation and understanding of complex relationships between the measured variables.

Figure 2 represents the relationship between SBMI and CEP in SEs, with four main components. The diagram starts with SBMI on the left, indicating it as the primary factor investigated for its impact on other components. An arrow from SBMI to CEP suggests a causal influence. The rectangular nodes in the centre – labelled SMB1, SMB2 and EC4 – represent the study's moderating variables, which are specific dimensions of SBMI that affect CEP. SMB1 denotes sustainable value proposition, defined as "the way a firm defines the benefits it offers to its customers and other stakeholders" (Bocken *et al.*, 2014). SMB2 stands for sustainable value delivery, described as "the way a firm designs and manages its processes, resources, and capabilities to deliver the value proposition" (Bocken *et al.*, 2014). EC4 represents environmental capabilities, defined as "the skills, routines, and systems that enable a firm to manage its environmental impacts and opportunities" (Hart, 1995). The arrows connecting the nodes depict paths of influence between the study's variables. The numbers on these arrows represent the strength of influence, indicated by standardized regression coefficients. For example, an arrow from SBMI to SMB1 with a coefficient of 0.82 indicates a strong positive influence, while the arrow from SMB1 to CEP, marked by 0.71, reflects a moderate positive impact. The arrow from SBMI directly to CEP has a coefficient of 1, indicating a positive, unmoderated influence on CEP.

4. Results

4.1 Perception and sampling of SEs and CEP

Table 3 shows some key findings regarding assessing SBMI in SEs. The Kaiser–Meyer–Olkin (KMO) result shows a coefficient of 0.500 within the 0.6-factor loading, indicating a possible limitation in the sample size used to assess perceptions of the impact of SBMI on



Source: Authors' elaboration

Figure 2. Path diagram model

Table 3. KMO and Bartlett's test

Test	Approx. Chisquare-df-Sig.	Value
<i>Kaiser–Meyer–Olkin measure of sampling adequacy</i>		0.500
Bartlett's test of sphericity	Approx. Chi-square	2.420
	df	6
	Sig.	0.877
<i>KMO and Bartlett's test Kaiser–Meyer–Olkin measure of sampling adequacy</i>		0.495
Bartlett's test of sphericity	Approx. Chi-square	5.953
	df	3
	Sig.	0.114
<i>SBMI and SEs impacts Kaiser–Meyer–Olkin measure of sampling adequacy</i>		0.571
Bartlett's test of sphericity	Approx. Chi-square	630.157
	df	10
	Sig.	0.000

Source: Authors' elaboration

SEs. Bartlett's test, with a result of 0.877, indicates a statistically significant relationship between perceived SBMI development and CEP factor loadings measuring the perception of SBMI development in SEs are all greater than 0.7, indicating the potential for SEs to improve CE through SBMI implementation.

Table 3 shows that sample adequacy ($KMO = 0.571$) and Bartlett's test ($p = 0.000$) confirm the data's suitability for factor analysis and the suitability of the data set for extracting meaningful factor structures. The analysis reveals a strong positive factor loading of 0.919 for the influence of SBMI on CEP, highlighting the central role of SBMI in promoting sustainable outcomes within SEs. Conversely, the analysis also reveals a negative factor loading of -0.744 for market demand, indicating the challenges SEs face in achieving widespread customer adoption of SBMI-based products. This result is in line with Klarin and Suseno (20–23), who attribute these challenges to higher prices and the need to adapt customer behaviour to sustainable practices, which may limit market uptake. The factor loadings of 0.72 and 0.727 for coalition building and stakeholder involvement, respectively, highlight the critical role of the EC in SBMI implementation. As noted by Fobbe and Hilletoft (2023) and Bocken *et al.* (2014), partnerships – particularly with NGOs and government agencies – provide SEs with essential resources and extensive networks, increasing the effectiveness and reach of SBMI efforts. Cross-sector relationships, as evidenced by the high factor loading of 0.93 for social entrepreneur networks, are critical for overcoming operational and financial barriers while promoting community engagement strategies that support SBMI. These collaborations enable SEs to mobilize support and broaden their impact, leveraging shared resources and expertise to overcome challenges in adopting and implementing sustainable models.

4.2 Factor loadings model

Table 4 shows the component matrix, highlighting the variables' correlations using varimax rotation and principal component analysis. The factor loadings illustrate the direction and degree of the association between the factors SBMI on CEP (Q17) and EC (Q24 and Q15), each with a factor loading of 0.953. The three criteria are substantially linked to SBMI implementation and CEP. The socially oriented business model is extended to environmental

Table 4. Component matrix

Item	Component			
	1	2	3	4
15. We foster collaboratively with other organizations due to our SBMI implementation	0.953			
17. Our SBMI has a notable impact on corporate environmental performance	0.953			
24. Our evaluation shows that the level of available external collaboration is significantly important	0.953			
12. Our social-oriented business model has been extended to environmental sustainability	0.886			
14. We overcome the reluctance to embrace change to develop SBMI	0.886			
21. Our corporate environmental performance increased the venture's competitive advantage		0.839		
24. Our environmentally friendly products and services address specific environmental challenges			0.850	
20. We are complying with environmental regulation				0.980

Source: Authors' elaboration

sustainability (Q12), with a factor loading of 0.886. The assessment of CEP for organizational shame of SBMI (Q14) resulted in a factor loading of 0.886. The component analysis shows that SBMI, collaborative engagement, and managerial flexibility are interrelated and critical for supporting environmental goals in SEs. Because of this interdependence, SEs must use tactics that encourage external collaboration and ease internal alignment to incorporate environmental sustainability into their socially conscious missions.

The feasibility of SE CEP (Q21) was investigated. The factor loading is 0.839. The substantial positive link suggests that social firms have higher CEP than typical corporations. [Khan et al. \(2023\)](#) found that environmentally conscientious companies increase stakeholder trust and customer loyalty. It highlights their significant advantage over conventional corporations in gaining shareholder loyalty, which should convince and support our belief in their potential. More importantly, it shows how they motivate us with their potential and accomplish CEP objectives via socially conscious activities. Their clear and unambiguous goal of environmental sustainability (Q16) is linked to increasing SBMI implementation. The factor loading is 0.85, demonstrating a significant relationship between SEs and SBMI in the CEP ([Du et al., 2013](#)).

4.3 Confirmatory factor analysis

The confirmatory factor analysis in [Tables 5 and 6](#) elucidates the links between EC, SBMI, CEP and customer motivation in SE. The link between EC and SBMI has a high, statistically significant correlation, as shown by the chi-square value of 343.997 ($p < 0.000$), suggesting that EC is essential for adopting SBMI and improving CEP. This conclusion is consistent with the study of [Bos-Brouwers \(2010\)](#), who found that EC increases an organization’s ability to successfully execute sustainable innovations.

There is a strong association between consumer behaviour and SBMI, as seen by the considerable chi-square value in [Table 6](#). It highlights SBMI’s ability to impact client choices about eco-consciousness. This aligns with [Zhou et al. \(2023\)](#), who highlight that the successful combination of SBMI and Green Technology Innovation can enhance company sustainability and engage customers by establishing a shared value system centred on environmental consequences.

The final analysis in [Table 6](#) shows low, non-significant positive correlations between SE, CEP and SBMI. The SE-CEP relationship (coefficient 0.056, $p = 0.211$) and the poor correlations

Table 5. Goodness of fit between SBMI and EC, SBMI and advocacy chi-square tests

Test	Value	df	Asymptotic significance (two-sided)	Exact sig. (two-sided)	Exact sig. (one-sided)
Pearson chi-square	343.997 ^a	1	0.000		
Continuity correction ^b	192.746	1	0.000		
Likelihood ratio	22.393	1	0.000		
Fisher’s exact test				0.000	0.000
Linear-by-linear association	343.332	1	0.000		
No. of valid cases	517				
	Value	df	Asymptotic Significance (two-sided)		
Pearson chi-square	6.639 ^a	2	0.036		
Likelihood ratio	2.799	2	0.247		
Linear-by-linear association	1.580	1	0.209		
No. of valid cases	517				

Source: Authors’ elaboration

Table 6. Correlation between SEs and CEP, SEs and SBMI, SBMI and CEP correlations

Variable	SEs	CEP
<i>SEs</i>		
Pearson correlation	1	0.056
Sig. (two-tailed)		0.211
<i>N</i>	515	503
<i>EP</i>		
Pearson correlation	0.056	1
Sig. (two-tailed)	0.211	
<i>N</i>	503	505
	<i>SEs</i>	<i>SBMI</i>
<i>SEs</i>		
Pearson correlation	1	0.050
Sig. (two-tailed)		0.262
<i>N</i>	515	512
<i>SBMI</i>		
Pearson correlation	0.050	1
Sig. (two-tailed)	0.262	
<i>N</i>	512	514
	<i>SBMI</i>	<i>CEP</i>
<i>SBMI</i>		
Pearson correlation	1	0.008
Sig. (two-tailed)		0.862
<i>N</i>	514	502
<i>EP</i>		
Pearson correlation	0.008	1
Sig. (two-tailed)	0.862	
<i>N</i>	502	505

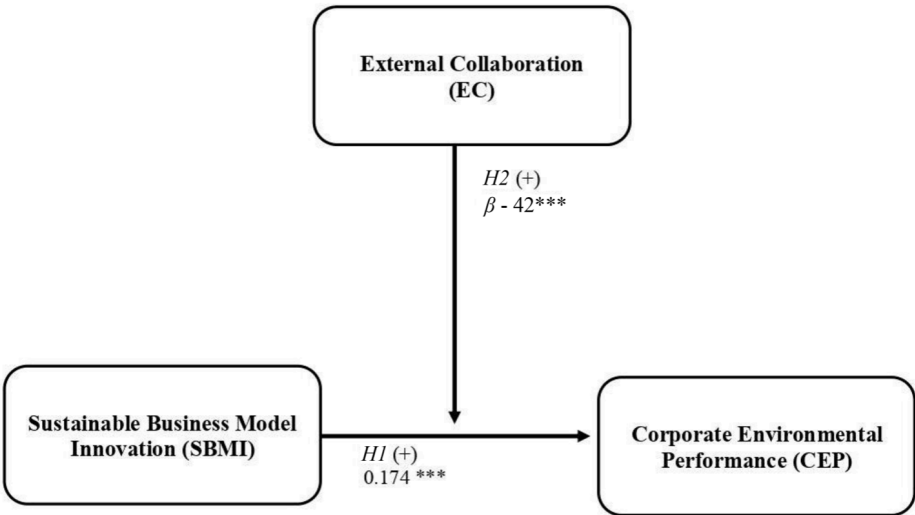
Source: Authors' elaboration

between SE–SBMI and SBMI–CEP indicate a limited direct influence. [Bridoux and Stoelhorst \(2014\)](#) suggest that the complexities intrinsic to SEs derive from their unique combination of social and financial objectives, which can sometimes dilute the environmental impact of SBMI. In contrast, [Peng et al. \(2024\)](#) offer an alternative view, suggesting that while the direct impact of SBMI on CEP may be limited, its indirect benefits – such as enhanced brand reputation and customer trust – may contribute positively to CEP. Finally, [Baquero and Monsalve \(2024\)](#) emphasize the benefits of tailoring SBMI strategies to specific local market and environmental contexts, as these adaptations can strengthen the link between SBMI and CEP.

4.4 Hypotheses testing

SEM was used to test the study hypotheses with direct and indirect effects. In addition, the slop test through the Hayes process macro was used to test the moderating effect ([Conboy et al., 2020](#)).

The results show a significant and positive effect of SBMI on CEP, see [Figure 3](#). The impact estimate is quantified with a coefficient of 0.14 and is statistically significant at the $p < 0.001$ level. This convincing result supports *H1*, which states that SBMI has a positive effect on CEP. These results underscore the significant impact of SBMI on improving CEP, and reinforce the central role of SBMI in promoting environmentally responsible practices in our study.



Source: Authors' elaboration

Figure 3. The moderation effect of external collaboration

According to Table 7, EC moderates the indirect relationship between EC, CEP and SBMI, suggesting that SBMI has a stronger positive effect on CEP as EC increases. Partnerships contribute to CEP improvements by sharing knowledge, resources and expertise (Wang *et al.*, 2012). The moderation analysis shows how different levels of EC affect the relationship between SBMI (independent variable) and CEP (dependent variable). Tian and Wang (2024) emphasize that stakeholder engagement is essential for environmental sustainability, and EC can help SBMIs overcome both market and internal challenges (Yi *et al.*, 2023). Our findings show that SEs with high levels of EC are better positioned to improve their sustainability models, thereby enhancing CEP. Collaboration strengthens the indirect relationship between SBMI and CEP, providing SEs with a strategic advantage. As noted by Peng *et al.* (2024), the moderating role of EC helps SEs align their environmental strategies with customer expectations and regulatory requirements, thereby supporting competitive advantage and sustainable growth.

The findings in Table 8 show a positive correlation between SBMI and CEP, which becomes more robust with higher levels of EC. At the same time, this relationship is not statistically significant at all levels. It reveals that although EC may increase the effect of

Table 7. Test of hypotheses (indirect effect) relationship

Relationship	Total effect		Direct effect		Relationship	95% Confidence interval			
	β-value	SE	β-value	SE		Indirect effect Beta	SE	LLCI	ULCI
EC SBMI→CEP	0.42***	0.029	0.13***	0.062	H2-EC → SBMI → → CEP	0.078	0.071	0.004	0.067

Source: Authors' elaboration

Table 8. Regression analysis for SBMI predicting CEP at different levels of EC

EC level	Unstandardized coefficients (B)	Standardized coefficients (beta)	Sig.
Low	0.0450	0.0320	0.284
Medium	0.0650	0.0550	0.192
High	0.1020	0.0820	0.112

Source: Authors' elaboration

SBMI on CEP, it does not guarantee considerable improvement on its own. The steeper slope of [Figure 1](#) at higher EC levels supports this pattern, as reported by [Tian and Wang \(2024\)](#), demonstrating that EC provides considerable resources but requires internal alignment for significant results. [Weerakoon \(2024\)](#) highlights that EC helps sustainability, but SEs must commit to it. When SEs fully incorporate SBM innovation into their operations, relationships with NGOs and government organizations promote environmental activities ([Baquero and Monsalve, 2024](#)).

Several variables impact the successful implementation of SBMI inside SEs, notably the resources, experience and relationships provided by EC. Successful integration of SBMI within SEs requires a careful balance between strategic internal alignment and selectively chosen external partnerships. [Sahoo et al. \(2023\)](#) emphasize that while external resources such as expertise and collaborations can enhance SBMI, the quality of these partnerships is critical. SBMI thrives when collaborations are optimized, and partnerships are aligned with sustainability goals. To illustrate the tangible benefits of such alliances, [Osmanovic et al. \(2024\)](#) introduce the concept of “uncaptured value” within SBMI and recommend that partnerships should be evaluated on their ability to contribute measurable environmental and social value. However, EC does not always amplify the impact of SBMI on environmental performance. This aligns with [Esposito et al. \(2023\)](#), who explore the challenges SEs face in balancing economic, social and environmental objectives, often leading to “mission drift” where economic priorities become more important than environmental objectives.

5. Discussion and implications

This study explores the positive influence of SBMI on CEP in SEs and emphasizes the moderating role of EC. Our findings support the integration of EMT and INT for interpreting these dynamics, shedding light on SEs' unique contributions to sustainability. SEs, characterized by their dual mission of achieving social impact and financial sustainability, face unique challenges related to mission drift and operational viability ([Tykkyläinen and Ritala, 2021](#)). By examining how SBMI enhances CEP within SEs, this study offers empirical evidence supporting the positive relationship between innovative business models and environmental outcomes ([Dahan et al., 2010](#)).

The observed positive relationship between SBMI and CEP affirms EMT's premise that environmental sustainability can be achieved through green technologies and innovative practices ([Mol and Spaargaren, 2000](#); [Geissdoerfer et al., 2018](#)). SEs, by adopting SBMI, exemplify EMT's call for embedding ecological goals into economic activities, positioning them as transformative agents within the green economy ([Manninen et al., 2024](#)). Through sustainable practices, such as resource efficiency and green technology adoption, SEs drive meaningful ecological changes in line with EMT's emphasis on progressive environmental adaptation ([York et al., 2010](#)). However, challenges in consumer demand for sustainable products reflect EMT's discussions on the economic and societal constraints of adopting sustainable practices ([Jänicke, 2008](#); [Utaminingsih et al., 2024](#)). This tension highlights the

barriers SEs face in creating immediate financial returns from SBMI, requiring a long-term outlook that aligns with EMT's call for sustainable market transformation. The findings support the notion that while SBMI can yield positive environmental outcomes, SEs must address financial and consumer behavioural barriers, confirming EMT's perspective on the gradual nature of ecological modernization (York *et al.*, 2010).

INT provides a vital lens for understanding how EC enhances SEs' environmental impact by strengthening institutional legitimacy and aligning practices with societal expectations (Scott, 2017; DiMaggio and Powell, 1983). The study's results indicate that EC positively moderates the relationship between SBMI and CEP, especially when SEs engage deeply with partners aligned with sustainability goals. This reinforces INT's assertion that organizational success, particularly for SEs, relies on conformity to institutional norms and acquiring legitimacy through credible collaborations (Spanuth and Urbano, 2024). Strategic collaborations, particularly with NGOs, government entities and industry allies, are critical for SEs to access resources and meet regulatory expectations, enhancing the impact of SBMI on environmental performance (Ball and Craig, 2010; Hagedoorn, 2002).

However, while EC generally enhances the impact of SBMI on CEP, our findings reveal that its influence varies across different levels of engagement. The moderation analysis suggests that EC has a stronger positive effect when collaborations are deeper, indicating that the depth and quality of partnerships play a pivotal role in achieving environmental outcomes. This variability likely stems from differences in partner alignment, resource sharing and commitment to sustainability goals (Ciulli *et al.*, 2022; Lashitew *et al.*, 2020). At higher levels of collaboration, SEs benefit from more strategic alignment and resource integration, allowing them to implement SBMI practices more effectively and achieve greater CEP improvements. This underscores INT's emphasis on institutional alignment and legitimacy as essential for sustainable innovation, where partnerships provide crucial resources and institutional support, especially when aligned with SEs' environmental missions (Spanuth and Urbano, 2024; Fobbe and Hilletoft, 2023). Conversely, at lower levels of EC, partnerships may lack the comprehensive support or resource integration necessary to significantly impact CEP. This differentiation highlights the importance of cultivating purpose-driven collaborations that align with SEs' sustainability objectives. Future research could examine these variations further, exploring how different types and intensities of collaboration influence SBMI and CEP outcomes (Hagedoorn, 2002; Sahoo *et al.*, 2023).

The convergence of EMT and INT in this study emphasizes that SEs require ecological innovation and institutional legitimacy to succeed in sustainability endeavours. SEs integrating SBMI into their core operations embody EMT by advancing sustainable practices and fostering ecological innovation (Pushpakumara *et al.*, 2018). Simultaneously, by navigating and shaping institutional norms, they fulfil INT's framework, positioning SEs as agents capable of achieving social and environmental legitimacy (Scott, 2017; Jennings and Zandbergen, 1995). This dual alignment, which combines EMT's emphasis on green technology with INT's focus on legitimacy, allows SEs to overcome resource constraints and gain stakeholder trust. SEs are thus well-positioned to act as sustainable exemplars, driving both ecological progress and institutional change through SBMI (Khan *et al.*, 2023; Klarin and Suseno, 2023). Specific SBMI activities, such as waste reduction, green supply chains, and community engagement, exemplify these dual priorities and support sustainable outcomes while aligning with regulatory and social expectations (Schaltegger *et al.*, 2016; Weerakoon, 2024).

Our analysis emphasizes that specific sustainability-driven activities within SBMI – such as resource efficiency, waste reduction and community engagement – directly complement and reinforce environmental objectives. These activities build resilience and position SEs to deliver sustainable environmental benefits in the long term. However, it is important to

recognize that sustainable competitiveness does not automatically equate to improved environmental performance. As [Klarin and Suseno \(2023\)](#) highlight, companies can achieve competitive advantage through sustainable practices without necessarily improving their CEP. This distinction allows our framework to focus more precisely on the direct and indirect pathways through which SBMs contribute to CEP, thereby addressing the limitations of assuming that all sustainable competitive strategies lead to positive environmental outcomes.

5.1 Theoretical implications

This study contributes to a deeper understanding of the relationship between SBMI and CEP within SEs, addressing a significant gap in quantitative research on this topic ([Snihur and Bocken, 2022](#)). By examining the dynamics of SBMI in SEs, our findings make distinct theoretical contributions that advance both EMT and INT, providing insights into how SEs function as transformative agents within the sustainability landscape.

First, this study substantiates EMT's core assertion that economic and environmental goals can align, demonstrating that SEs – driven by dual social and economic missions – are uniquely positioned to act as test cases for EMT. By implementing SBMI, SEs contribute to market-driven environmentalism, illustrating how sustainable business practices can foster economic benefits alongside environmental progress ([Shakeel et al., 2020](#)). This offers a nuanced extension of EMT by showing that emerging SEs, through innovative business models, serve as catalysts for environmental modernization. Notably, our findings provide empirical support for EMT's premise of ecological innovation, highlighting how SEs can facilitate the gradual incorporation of sustainable practices into mainstream markets, as evidenced by their ability to align market viability with environmental responsibility ([Ringvold et al., 2023](#)).

Second, our research extends INT by illuminating the ways SEs actively shape both formal and informal institutions, influencing regulatory frameworks and social norms through their sustainability practices. By embedding SBMI into their operations, SEs not only comply with existing institutional expectations but also drive institutional change, setting new standards and norms that challenge traditional business practices. This study reveals how SBMI can act as a mechanism for institutional change, helping to explain how new sustainable practices gain legitimacy, acceptance and even disrupt existing structures ([Scott, 2017](#); [Meyer and Rowan, 2006](#)). This insight enriches INT's perspective on institutional adaptation, suggesting that SEs are not merely passive recipients of institutional pressures but are proactive actors in institutional evolution ([Dart, 2004](#); [Peralta and Gismera, 2021](#)).

Third, the study underscores the importance of SEs in achieving broader environmental policy objectives, demonstrating that SEs, through SBMI, offer valuable insights for policymakers aiming to promote sustainable business practices. Previous research has shown that the diffusion of green innovations is often facilitated by regulatory support, market competition and technological advancements ([Leitner et al., 2010](#)). Our findings suggest that policies promoting SBMI can enhance CEP by encouraging SEs to integrate sustainable practices within their models. This alignment with Manninen's (2024) conclusion on strategic sustainability actions further positions SEs as critical players in shaping sustainable value networks, providing a theoretical framework that links policy incentives directly with sustainable impact.

Fourth, the study proposes a theoretical framework that positions SBMI as a lever for both environmental and institutional transformation, with EC as a critical moderating factor. By framing SEs as hybrid entities that drive both ecological modernization and institutional change, our study provides a dual-theory perspective that encourages future research on how different levels and types of collaboration influence SBMI outcomes across various institutional contexts.

This framework invites further exploration of SEs as models for balancing social, environmental and economic goals in a way that reinforces both EMT and INT.

In sum, this study contributes novel insights into EMT and INT, positioning SEs as active agents in both ecological and institutional transformations. By bridging these theories through the lens of SBMI, our findings open pathways for future research to examine SEs' roles in broader societal shifts towards sustainability.

5.2 Managerial implications

This study provides practical recommendations for SE managers and entrepreneurs seeking to integrate social missions with environmental sustainability through SBMI. For SEs, aligning social and environmental objectives depends on meaningful stakeholder engagement. Key stakeholders, including local communities, NGOs and government agencies, not only support SE managers in building networks and accessing critical resources but also play an important role in advancing environmental goals (Evans *et al.*, 2017; Hagedoorn *et al.*, 2023). Their involvement fosters a sense of ownership and inclusivity, making them integral to the mission of the SE. By adopting this collaborative approach, SEs can better address complex environmental challenges through effective EC, creating the basis for sustainable partnerships and long-term impact (Hagedoorn *et al.*, 2023). This integrated method enables SEs to address environmental complexity while building resilience and fostering community-driven commitment to sustainable practices.

Another critical aspect for SE managers is a commitment to ecologically responsible sourcing, manufacturing and distribution procedures, which is essential for developing green supply chains. This commitment is essential for creating sustainable product alternatives and significantly enhancing CEP by reducing greenhouse gas emissions (Singh *et al.*, 2020). Adopting green supply chains strengthens SEs' environmental impact and enhances their reputation and brand value, positioning them with a competitive advantage as they transition to sustainable manufacturing practices (Hagedoorn *et al.*, 2023). This approach reinforces stakeholder trust and aligns with a broader commitment to sustainable growth and resilience.

6. Conclusions

Our research sheds light on the complex relationship between SBMI and CEP within SEs. The findings underscore the importance of SBMI as a driver of environmental sustainability and highlight the need for strategic collaborations and innovative approaches in the business landscape. In considering the implications of our study, it is clear that emerging SEs, equipped with innovative models and a focus on environmental performance, have the potential to make meaningful progress in addressing pressing environmental challenges. These findings provide valuable guidance for social enterprises and researchers and highlight the importance of integrating sustainable practices into the core of social enterprise operations. The path to a greener future requires practical action, and this research offers tangible strategies for social enterprises to make a meaningful contribution to environmental protection.

As with any scientific study, our research has certain limitations that create opportunities for further exploration. Firstly, this study examines the relationship between SBMI and CEP in SEs within the specific context of Canada. While this focus provides valuable insights, the findings may not fully generalize to SEs operating in other geographic or regulatory environments. Future research could extend this inquiry across various regions to explore how differences in regulatory frameworks, social pressures and resource availability impact the SBMI–CEP relationship. For future research, we also recommend focusing on specific industries where government policies actively promote sustainability, particularly creative industries that have become focal points for economic development. Such a targeted

approach would provide more nuanced insights into how government-backed initiatives and industry characteristics influence SBMI practices and CEP outcomes. This industry-focused approach could reveal how different sectors respond to sustainability imperatives and government support, thereby enriching the understanding of SBMI's role in economic resilience and environmental stewardship.

Another limitation lies in the study's emphasis on EC as a moderating factor in the SBMI–CEP relationship. Although our findings highlight the positive impact of EC, future studies could explore other potential moderators, such as organizational ambidexterity, intellectual capital and technological readiness. These internal factors might uniquely interact with SBMI to influence environmental performance, providing a more comprehensive view of the conditions that optimize SBMI outcomes. Future research could delve into how various types of collaborators (e.g. government agencies, non-profits and corporate partners) differentially affect SEs' environmental achievements. Exploring these aspects could deepen our understanding of SEs' internal dynamics and provide managers with actionable insights for enhancing environmental impact through strategic innovation.

Moreover, this research has contributed significantly to the scientific development of EMT, advancing current thinking by integrating SBMI and institutional factors to explain SEs' environmental performance. However, future studies could extend this theoretical framework by considering technology-based innovation as a core component to drive environmental improvements. Integrating technology-based solutions into SBMI practices could further enhance the capacity of SEs to achieve sustainable outcomes and adapt to ecological imperatives. Comparative studies could explore how the integration of advanced technologies varies across different institutional contexts, shedding light on the role of technology in ecological modernization within SEs.

Finally, our study's cross-sectional design limits its ability to capture the long-term effects of SBMI on CEP. Longitudinal studies would provide richer insights into the durability and cumulative impact of SBMI practices over time. Tracking the environmental performance of SEs that adopt SBMI could reveal how these models evolve, scale and adapt to changing conditions. In addition, such studies could investigate how sustained SBMI practices influence organizational resilience, providing a more holistic understanding of the transformative potential of sustainable business models within the SE sector.

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