

Individual sensemaking and business model innovation in internationalizing SMEs: the mediating effect of network capability

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Abstract

Purpose – This study examines how individual sensemaking relates to business model innovation (BMI) in internationalizing small and medium-sized enterprises (SMEs) and whether network capability mediates that relationship.

Design/methodology/approach – The hypotheses are tested with survey data from 187 internationally operating Finnish SMEs. Ordinary least squares regressions with bootstrapped mediation analyses are used to assess the relationships between communication-oriented sensemaking, cultural sensemaking, network capability and BMI.

Findings – Communication-oriented sensemaking is positively associated with BMI, whereas cultural sensemaking is not. Network capability is positively associated with BMI and mediates the relationship between communication-oriented sensemaking and BMI, but not the relationship between cultural sensemaking and BMI. Robustness checks support this pattern.

Research limitations/implications – The study is based on cross-sectional data from SMEs in Finland, which may limit causal inference and generalizability. Future research should test the model longitudinally and across cultural and institutional settings, especially in emerging markets contexts. The findings extend the dynamic capabilities perspective of SMEs by identifying sensemaking as a cognitive micro-foundation of BMI, thus integrating individual-level cognition with organizational-level relational capabilities.

Practical implications – SME managers seeking sustainable international growth should encourage open dialog and communication within and outside the firm, as that will help them align internal interpretations and strengthen relational learning with partners, subsequently facilitating business model development. Developing network capability is important for translating interpretive sensemaking into organizational growth. Managers should seek to complement cultural awareness with active sensegiving and collaborative sharing practices to maintain the viability of their business models across international contexts.

Originality/value – The study links sensemaking, network capability and BMI in SME internationalization literature, showing that the cognitive microfoundations of BMI depend less on cultural interpretation alone than on communicative sensemaking translated through network capability.

Keywords Individual sensemaking, Business model innovation, Network capability, SME internationalization, International entrepreneurship, Dynamic capabilities, Finland

Paper type Research article



1. Introduction

The accelerating pace of globalization and technological disruption has intensified competitive pressures on small and medium-sized enterprises (SMEs) seeking international expansion, requiring them to adapt their business models to foreign market contexts (Child *et al.*, 2017). In international market environments, managers' ability to make sense of complex and uncertain situations can be a determinant of firm success (Prashantham and Floyd, 2019).

Sensemaking, defined as the process of "turning circumstances into a situation that is comprehended explicitly in words and that serves as a springboard into action", represents a fundamental cognitive mechanism through which managers navigate uncertainty and drive strategic change (Weick *et al.*, 2005). Individual sensemaking around business models occurs via a co-constituted process involving both individual interpretation by managers and entrepreneurs of SMEs and collective sensegiving activities (i.e. attempts of individual actors to shape others' interpretations and guide their understanding of the business model) (Islam, 2019; Ivanova-Gongne *et al.*, 2022).

International entrepreneurship as a phenomenon has been found to rely on sensemaking processes for a long time (e.g. Rasmussen *et al.*, 2001), with business models being argued to be the defining factors of early internationalization in particular (Hennart, 2014). Being able to proactively change business models constitutes business model innovation (BMI), which is defined as changes across core business model dimensions of value creation, value proposition, and value capture domains (Clauss, 2017).

Research has increasingly examined antecedents of BMI and internationalization, including top management mindfulness, dynamic managerial capabilities and the sensing component of dynamic capabilities (Bhatti *et al.*, 2021; Heubeck and Meckl, 2022; Ibarra *et al.*, 2020). However, we still lack a clear account of how individual managers' sensemaking operates as a microfoundation of BMI in internationalizing SMEs (Coviello *et al.*, 2017; Niittymies and Pajunen, 2020).

In particular, extant literature lacks understanding of how sensemaking drives BMI in resource-constrained SMEs, especially under the uncertainty and institutional complexity of international markets. Internationalizing SMEs must interpret foreign market signals, regulatory frameworks and cultural contexts while coping with limited resources, liability of foreignness and liability of outsidership (Lu and Beamish, 2001; Schweizer, 2013; Tinitis and Fey, 2022). Network capability can help SMEs access external knowledge and overcome these size-related constraints (Torkkeli *et al.*, 2012; Peng and Chang, 2023). Yet SME internationalization and international entrepreneurship research still lack a clear explanation of how the capability to develop and manage network relationships is connected to managers' sensemaking and to BMI.

The present study therefore asks: How does individual sensemaking relate to BMI in internationalizing SMEs, and does network capability mediate this relationship? We answer this question by integrating sensemaking theory, the dynamic capability perspective and SME internationalization research into an empirical mediation model. Specifically, we distinguish between communication-oriented and cultural sensemaking and test whether each dimension is associated with BMI directly and indirectly through network capability.

Using Ordinary Least Squares (OLS) regression and bootstrapped mediation analyses on a sample of internationally operating Finnish SMEs, we find that communication-oriented sensemaking is positively associated with BMI and that this association is partly mediated by network capability. Cultural sensemaking, by contrast, is not significantly associated with BMI either directly or indirectly. By cultural sensemaking, we refer to sensemaking grounded in culturally embedded schemas that actors use to ascribe meaning to business interactions (Ivanova-Gongne, 2015).

The value and novelty of the study are in connecting an individual-level cognitive process, an inter-organizational capability and firm-level BMI in one empirical model. First, the study advances research on the microfoundations of SME internationalization and BMI by

identifying individual sensemaking as a cognitive antecedent of business model change in internationalizing SMEs. Second, it integrates sensemaking and dynamic capability perspectives (Teece *et al.*, 1997; Teece, 2010, 2018) by showing that network capability mediates the association between communication-oriented sensemaking and BMI. Third, it contributes to international entrepreneurship research by clarifying that communicative, rather than cultural, sensemaking carries the strongest association with BMI in this context.

The paper is structured as follows. Section 2 reviews the relevant literature and develops the hypotheses. Section 3 details the data, measures and analytical procedures. Section 4 presents the empirical results. Section 5 discusses the theoretical contribution and managerial implications, and Section 6 concludes by outlining the limitations and future research directions.

2. Theoretical background

2.1 Individual sensemaking and business model innovation in international business

Sensemaking represents a fundamental cognitive process for international business research, enabling individuals and organizations to interpret and navigate the complex, dynamic environments that characterize international markets (Ivanova-Gongne and Törnroos, 2017; Ivanova-Gongne *et al.*, 2022). Drawing from management and organization studies, sensemaking theory encompasses “the ongoing retrospective development of plausible images that rationalize what people are doing” (Weick *et al.*, 2005, p. 409), providing an essential individual lens for understanding how various meanings are assigned to events and phenomena (Helms Mills *et al.*, 2010). In this study, we focus on sensemaking as an individual-level phenomenon, that is nevertheless intertwined with organizational sensemaking through the process of communicating individual sensemaking and establishing shared meanings within an organization (Weick, 1995). At the same time individual sensemaking is grounded in shared cultural schemas that serve as resources for ascribing meaning within organizational and broader contexts (Cristofaro, 2021; Ivanova-Gongne, 2015).

Within international entrepreneurship, sensemaking assumes particular significance as it precedes the internationalization process of entrepreneurial firms (Rasmussen *et al.*, 2001; Prashantham and Floyd, 2012). For SMEs entering international markets, sensemaking becomes instrumental in identifying and capitalizing on international opportunities, allowing these firms to comprehend unfamiliar market conditions, evaluate potential partnerships, and navigate different regulatory environments. BMI, defined as systemic innovation encompassing products, services, technologies, and information flows that extend beyond the focal firm and include changes across value creation, value proposition, and value capture (Clauss, 2017), holds similar importance in both international business (Pitelis, 2022) and international entrepreneurship (Asemokha *et al.*, 2019; Onetti *et al.*, 2012).

Sensemaking is often described at the individual level as managers noticing cues and constructing interpretations that guide action. While sensemaking originates as an individual cognitive process, it is fundamentally intertwined with organizing: individual meaning-making becomes collective through social interaction, communication, and shared enactment (Weick *et al.*, 2005; Maitlis and Christianson, 2014). This scaling from individual to organizational sensemaking is particularly consequential for BMI, as managers’ cognitive interpretations of their environment must be shared, negotiated, and translated into collective representations to enact changes in business models (Cristofaro, 2021). Indeed, recent empirical evidence confirms that organizational sensemaking mediates the relationship between strategic interpretation and BMI outcomes (Moqaddamerad and Ali, 2024), while management team characteristics, such as cognitive and ideological diversity, can determine the nature and extent of BMI pursued (Narayan *et al.*, 2021).

Furthermore, sensemaking enables firms to anticipate and interpret evolving dynamics of new business fields, facilitating the development and communication of strategic agendas that

influence business model development (Möller, 2010). Recent empirical evidence suggests that when managers communicate their interpretations both internally and externally, they stimulate bricolage (the creative recombination of slack or undervalued resources) which subsequently can impact business model experimentation and change (Vuorio *et al.*, 2025). This notion highlights the dynamic relationship between sensemaking, communication, and BMI processes.

The relationship between sensemaking and BMI can be seen to operate via several interconnected processes between cognition and strategic innovation: sensemaking serves as an enabler of dynamic capabilities, which are “the firm’s ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments” (Teece *et al.*, 1997, p. 516). More specifically, sensemaking helps facilitate organizational adaptation to uncertainty and external changes by enabling the development and alignment of resources and operational models (Sakellariou and Vecchiato, 2022). This adaptive capacity can be particularly important for firms in international markets where they need to be ready to reconfigure their business models to respond to different market environments, regulatory changes and competitive pressures across different host countries. The sensemaking process can allow organizations to interpret ambiguous signals from their environment and translate these interpretations into strategic responses that lead to BMI, rather than reactionary business model changes.

Successful BMI requires organizations to question pre-existing assumptions about markets, organizational capabilities, and future developmental paths (Ghosh *et al.*, 2025). Sensemaking facilitates this assumption-challenging process by providing cognitive frameworks through which managers can reinterpret existing knowledge and integrate new perspectives (Islam, 2019). This cognitive reframing process uses sensemaking to align internal understanding with emerging business model requirements, which in turn can potentially increase shared understanding and continuous learning that are essential for successful BMI implementation (see Sosna *et al.*, 2010).

Furthermore, sensemaking enhances organizational innovation capacity through its role in integrating learning and knowledge, particularly when organizations encounter paradoxes where conventional understanding is not enough (Annosi *et al.*, 2024). These paradoxes often arise during BMI processes when traditional performance metrics may not adequately capture the value creation potential of new business models. Sensemaking activities help organizations navigate these paradoxes by creating coherent narratives that reconcile conflicting information and enable continued innovation efforts, positioning sensemaking as a potentially important mediator between organizational experience and BMI.

The temporal dimension of this relationship is seen through the impact of strategic foresight on the effectiveness of BMI, a relationship which sensemaking and learning can mediate, enabling firms to capture and respond to emerging trends and disruptions (Moqaddamerad and Ali, 2024). Organizations with high sensemaking capabilities can thus potentially better anticipate market shifts, technological developments, and changing customer preferences, enabling more proactive and effective business model adaptations.

Additionally, organizational design significantly influences how top management attention is directed toward BMI opportunities, with this attention directly affecting the noticing and sensemaking of innovation possibilities (Angelshaug *et al.*, 2025). This relationship demonstrates the dynamics between organizational structure, managerial attention, and cognitive processes in driving BMI: Effective organizational design creates attention structures that enhance the ability of managers to recognize and make sense of BMI opportunities, while simultaneously providing the cognitive resources necessary for translating these opportunities into concrete innovation initiatives. Research also highlights, however, that business model frameworks themselves entail socio-cognitive structures that guide individual sensemaking (Massa *et al.*, 2017). Business models can thus be seen not merely as strategic templates but also as schemas through which actors interpret, communicate, and innovate value creation and capture logics. This view represents BMI as

a form of collective sensemaking and sensegiving embedded in networks of actors (see [Nybye and Ellborg, 2023](#); [Petersen, 2024](#); [Petersen and Rasmussen, 2024](#)). In light of this literature, and given that sensemaking in our study is operationalized as two dimensions (communication-oriented and cultural), we posit that each dimension is positively associated with BMI in internationalizing SMEs:

- H1.* Individual sensemaking is positively associated with business model innovation in international SMEs.
- H1a.* Communication-oriented sensemaking is positively associated with business model innovation in international SMEs.
- H1b.* Cultural sensemaking is positively associated with business model innovation in international SMEs.

2.2 Network capability and business model innovation in SMEs

Network capability captures the ability of a firm to develop, manage and leverage inter-organizational relationships for strategic ends ([Ritter et al., 2004](#); [Mitrega et al., 2012](#)). When viewed through a dynamic capabilities lens, network capability enables entrepreneurial firms to sense entrepreneurial opportunities, to seize external resources and to continually reconfigure internal routines (e.g. [Srećković, 2018](#)). These are also the conditions under which BMI flourishes, and we can assume a positive link between network capabilities and BMI for several reasons.

First, networks constitute a design element of the business model itself ([Palo and Tähtinen, 2013](#)), with value creation, delivery and capture increasingly dependent on alliances, customer interfaces and partner ecosystems ([Snihur and Bocken, 2022](#)). Because network capability determines how effectively a firm negotiates roles and orchestrates joint activities, it directly also influences the latitude managers need to redesign value propositions, revenue mechanisms and key processes. As firms deepen their relational ties, information richness rises, alerting them to shifting customer needs and technological options and thus lowering the cognitive and resource barriers to experimenting with new configurations. Consequently, higher network capability can increase the strategic choices for feasible BMI actions in companies ([Asemokha et al., 2019](#)).

Second, network partners act as both enablers and as co-developers of BMI. Partners transfer specialized knowledge, provide complementary assets and set expectations that may demand mutual adaptation. Prior research noted that the pressure for business model change in SMEs can arise from their network partners ([Asemokha et al., 2020](#)). Through repeated interaction, trust and commitment can reduce ex-ante contracting costs between firms, enabling rapid prototyping of joint offerings or alternative revenue logics; therefore, network capability does not merely increase the quantity of ties but also increases their quality, depth and absorptive capacity ([Kotabe et al., 2017](#)), which jointly can lead to increased BMI. Earlier conceptual work has found that boundary-spanning competences underlie successful renewal of business models ([Bankvall et al., 2017](#); [Mason and Leek, 2008](#)). It also links to the dynamic capabilities view, wherein orchestration capabilities (of which network capabilities are one manifestation) serve as antecedents of scalable, feasible business models ([Teece, 2018](#)).

Third, network capability can help decrease the risks that are often associated with BMI: Because BMI can disrupt existing routines and revenue streams, firms require external validation and resource buffers. Strong networks can supply market feedback, pilot customers and co-investment, thereby lowering the downside of experimentation. It is feasible that relational governance structures can lead to better shared sensemaking (cf. [de Metz et al., 2024](#)), which in turn can accelerate buy-in for both parties on business model changes.

In sum, theoretical logic on resource orchestration as well as empirical findings from SME internationalization literature lead us to posit that network capability should be positively associated with BMI:

- H2. Network capability is positively associated with business model innovation in international SMEs.

2.3 Network capability as a mediator connecting sensemaking and business model innovation

Sensemaking does not occur in isolation; instead, it is determined by the environment, context, and interactions with others (Vuorio *et al.*, 2025). This underscores the importance of communication in the processes of sensemaking and organizing (Weick *et al.*, 2005). While sensemaking on an individual level is a cognitive process, it is translated into action through communication both within and outside the company. As Weick *et al.* (2005) explain, communication plays a key role in shaping a shared and continuously refined interpretation of events, which then serves as a basis for action. Communicating individual and organizational understandings of certain events and phenomena to business partners is also crucial for business relationships and networking (Ellis, 2010).

Given the pivotal role of communication in turning sensemaking into action, the network capability of a firm is essential for it to fully accrue the benefits of sensemaking: Such a capability includes, among other things, the company's ability to develop effective problem-solving routines and close ties with its partners (Mitrega *et al.*, 2017). Close ties and collaboration facilitate smoother communication processes, thereby improving the sharing of individual sensemaking between partners (Bellis and Verganti, 2021). In turn, knowledge and understanding accrued from shared sensemaking between partners within the network can contribute to BMI being more effective. The contextual nature of sensemaking, occurring within specific environments and through interaction with others, fundamentally shapes meaning-making processes. Consequently, communication emerges as central to both sensemaking and organizing (Weick *et al.*, 2005).

The communicative dimension of sensemaking proves crucial for understanding partners' actions within organizations, as both internal and external communication of individual sensemaking processes facilitates organizational coordination (Weick *et al.*, 2005). Unlike sensegiving, which is focused on strategically shaping others' sensemaking and meaning construction (Gioia and Chittipeddi, 1991), communicative sensemaking emphasizes the mutual creation of shared meaning through interaction. Thus, communication generates what Weick *et al.* (2005) characterize as "continual, iteratively developed, shared understanding" (p. 412) of situations requiring sensemaking, subsequently leading to action based on established interpretations.

For SMEs pursuing international expansion, effective communication of sensemaking both internally and with external stakeholders fosters the shared understanding necessary for successful internationalization (Weick *et al.*, 2005; Brown *et al.*, 2008; Vuorio *et al.*, 2025). SMEs depend on networks and partnerships to access resources and knowledge that are otherwise unavailable due to their limited internal resource base, and in internationalizing SMEs, individual sensemaking of entrepreneurs and managers is likely to influence BMI partly by determining how firms build and leverage these external relationships. Specifically, communicative and cultural sensemaking support the interpretation, articulation, and alignment of meanings with external stakeholders, which can foster the development of routines for initiating, coordinating, and adapting inter-firm relationships - i.e. network capability (Ritter *et al.*, 2004). In turn, stronger network capability should increase BMI of firms by allowing access to complementary resources, market information, and partners needed to implement business model change across borders. Therefore, we posit that:

- H3.* Network capability mediates the relationship between sensemaking and business model innovation in internationalizing SMEs.
- H3a.* Network capability mediates the relationship between communication-oriented sensemaking and business model innovation in internationalizing SMEs.
- H3b.* Network capability mediates the relationship between cultural sensemaking and business model innovation in internationalizing SMEs.

The resulting conceptual model with the developed hypotheses is illustrated in [Figure 1](#) below.

3. Method

3.1 Data and sample

This study adopts a quantitative research design. Hypotheses were evaluated with survey data drawn from 187 Finnish SMEs engaged in international operations; data collection took place between November 2017 and February 2018. The sampling frame was generated by applying predefined filters (SME criteria) to two commercial firm databases (Bisnode Selector and Amadeus) and then contacting the resulting list. The initial firm list spanned multiple sectors, including metal and software industries, to ensure that both manufacturing-oriented and service-oriented sectors were present in the sample. In selecting participants, we applied the European Commission’s SME definition (fewer than 250 employees and either annual turnover below €50 million or a balance-sheet total below €43 million) while aiming to exclude micro-enterprises (≤ 10 employees) at the sampling-frame stage to reduce heterogeneity. Because employee counts are self-reported and may vary year-to-year, the final dataset included a small number of micro firms, however, excluding these firms in a robustness test did not change the results. We also excluded any SME-sized subsidiaries of larger multinationals to ensure a focus on independent, internationally active firms. Thus, while the approach provides cross-industry coverage of internationally operating Finnish SMEs listed in these databases, it did not constitute a probability sample from an official population registry with known inclusion probabilities. The English questionnaire was translated into Finnish and then back-translated by a professional language-editing service to guarantee linguistic accuracy. A pilot with managers from diverse industries confirmed that the items were clear and uniformly interpreted.

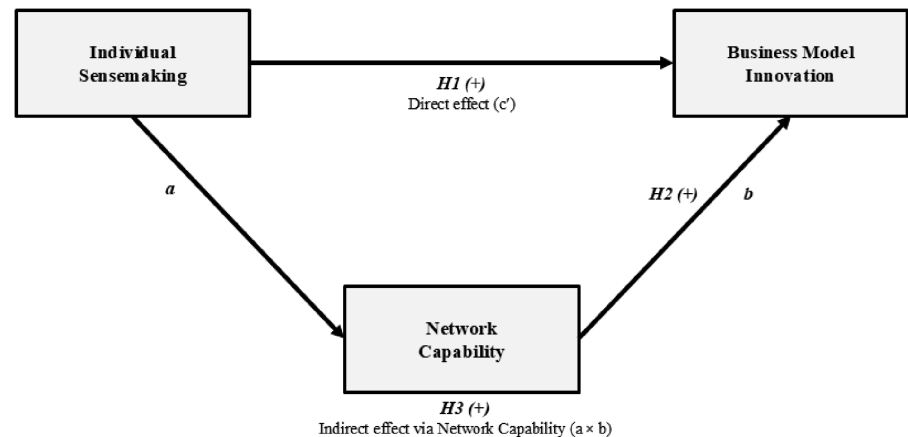


Figure 1. The conceptual model of the study. Source: Authors’ own work

In total, 2029 firms were invited to complete the online survey. For organizations that consented, the survey link was emailed to the chief entrepreneur or manager, followed (if needed) by two reminders at two-week intervals. Independent samples *t*-tests on key variables indicated no significant differences between early and late respondents or among managers with different titles, reducing concerns about non-response bias. Of the 1821 firms successfully contacted, 1387 met the study criteria, and 1032 agreed to participate. The process ultimately yielded 365 usable questionnaires, representing a 26% response rate.

After removing cases with missing values on central measures, the final analytical sample comprised 187 firms. Among firms with valid information on the year of first internationalization ($N = 182$), the median time to internationalization was 4 years, while the mean was 11 years ($SD = 14.8$), reflecting a right-skewed distribution. 28% internationalized in their founding year (0 years), and 54% cumulatively internationalized within the first five years. A nontrivial subset internationalized much later (25% after 16 or more years, with a maximum of 93 years).

3.2 Measure development

For sensemaking, we used the recently developed scale (Vuorio *et al.*, 2025). The scale was two-dimensional, constructed as comprising cultural sensemaking and communication of sensemaking. This was because the cultural sensemaking dimension is justified by the notion that individuals, when interpreting events, may selectively apply certain cultural schemas while disregarding others (Weick, 1995; Weick *et al.*, 2005), often relying on the schemas most familiar to them (Ivanova-Gongne, 2015). An individual's interpretation may be shaped by cognitive biases or prejudices against other cultures (Ivanova-Gongne, 2015), and by the broader social conditions present in both their own and others' countries (Helms Mills *et al.*, 2010), highlighting the interconnectedness of social and cultural factors in cultural sensemaking. For BMI, we applied the scale developed by Clauss (2017) that has been recommended to be applied in international entrepreneurship research (Child *et al.*, 2017).

The two-dimensional sensemaking scale (communication and cultural) was adopted without modification from Vuorio *et al.* (2025). Their item-level confirmatory-factor analysis (CFA) and multi-sample validation indicated adequate unidimensional fit for each second-order dimension ($CFI = 0.93$, $RMSEA = 0.06$). In our data ($n = 187$) the same structure replicated (communication: $\alpha = 0.78$, $AVE = 0.57$; cultural: $\alpha = 0.75$, $AVE = 0.55$), confirming scale adequacy for hypothesis testing.

For BMI, the initial item listing included the twenty-six 7-point items derived from Clauss (2017). After list-wise deletion, 187 complete responses remained. Sampling adequacy was satisfactory ($KMO = 0.87$; Bartlett's $\chi^2(325) = 4613$, $p < 0.001$). Principal-axis factoring with Promax rotation yielded six eigenvalues >1 , yet the scree plot suggested a dominant first factor (eigenvalue = 8.22). Items with primary loadings <0.40 or cross-loadings >0.30 were removed, leaving 19 items that loaded cleanly on a single dimension (loadings = 0.72–0.44). Cronbach's α reached 0.89, composite reliability (CR) 0.91 and average variance extracted (AVE) 0.54. A single-factor CFA confirmed uni-dimensionality ($\chi^2/df = 1.92$; $CFI = 0.92$; $TLI = 0.91$; $RMSEA = 0.07$; $SRMR = 0.05$). BMI was operationalized as the mean of these 19 items ($M = 4.85$, $SD = 0.98$ in the regression sample).

For network capability, we adapted the scale by Chen *et al.* (2009). The correlation matrix was factorable ($KMO = 0.83$; Bartlett's $\chi^2(21) = 752$, $p < 0.001$). Exploratory factor analysis indicated a clear one-factor solution (eigenvalue₁ = 3.86; eigenvalue₂ = 0.90). One item exhibited a weak loading (0.29) and was dropped. The remaining six items loaded between 0.79 and 0.65, yielding $\alpha = 0.85$, $CR = 0.88$ and $AVE = 0.58$. CFA results again supported uni-dimensionality ($\chi^2/df = 1.48$; $CFI = 0.96$; $TLI = 0.95$; $RMSEA = 0.05$; $SRMR = 0.04$). The network capability measure was operationalized as the mean of the six retained items ($M = 5.29$, $SD = 0.99$ in the regression sample).

When considered jointly, all three main constructs reached or exceeded the recommended thresholds ($\alpha \geq 0.70$; $CR \geq 0.70$; $AVE \geq 0.50$), and none of the inter-construct correlations were above 0.70, indicating no severe multicollinearity. We included firm age and firm size as theoretically motivated control variables because both may provide alternative explanations for variation in network capability and business model innovation. Older firms may possess more accumulated experience and more established external ties, but they may also exhibit greater structural inertia, which can affect how managers' sensemaking is translated into organizational action. Larger firms typically possess more resource slack, more specialized managerial roles, and more formalized coordination structures, all of which may facilitate the development of network capability and the implementation of BMI independently of the sensemaking variables. Controlling for firm age and firm size therefore helped to isolate the extent to which the observed relationships reflected the theorized sensemaking–network capability relationship rather than underlying differences in organizational maturity or resource endowment. Firm age was measured as years since founding (survey year minus foundation year). Firm size was operationalized as the natural logarithm of total employees plus 1. These controls are commonly included because older and larger firms may possess more established routines and resources that facilitate capability development and innovation. The descriptives and inter-correlations between the variables are reported in Table 1. Four cases from the analytical sample of 187 had missing values on the control variables, yielding an effective regression sample of 183 used in all subsequent analyses.

Because the focal constructs were collected via a single survey, common method variance (CMV) is a potential concern. To address it, procedurally we applied several ex ante remedies during data collection: careful translation and back-translation, pilot testing with managers from diverse industries, assurances of confidentiality, and the use of different scale anchors across constructs (cf. Podsakoff *et al.*, 2012, 2024). To assess CMV statistically, we conducted a marker-variable sensitivity analysis (Lindell and Whitney, 2001). We used a six-item institutional environment composite as a theoretically unrelated marker, since perceptions of home-market regulatory conditions are conceptually orthogonal to the focal cognitive, relational, and innovation constructs. The smallest correlation between the marker and any focal construct was $r = 0.08$ ($p = 0.30$), yielding an estimated method variance of less than 1%. After adjusting the inter-construct correlations for this marker, all significant relationships remained significant and the pattern of results was unchanged. Re-running the focal regressions and mediation with the marker as a statistical control produced essentially identical coefficients (e.g. communicative sensemaking $b = 0.43$, $p < 0.001$ with indirect effect = 0.22, 95% BCa CI [0.11, 0.36]). VIF values ranged from 1.06 to 1.49, further suggesting that CMV-induced collinearity was unlikely to explain the findings.

Table 1. Descriptives and inter-correlations of the variables (regression sample, $n = 183$)

Variables	Mean	SD	1	2	3	4	5	6
1. Sensemaking (Communication)	5.23	0.98	–					
2. Sensemaking (Cultural)	3.53	1.22	0.21**	–				
3. Network capability	5.29	0.99	0.53***	0.05	–			
4. Business model innovation (BMI)	4.85	0.98	0.44***	0.07	0.53***	–		
5. Firm age (years)	30.57	20.58	–0.03	0.06	0.04	–0.08	–	
6. Firm size (ln employees + 1)	3.71	1.10	0.04	0.08	–0.05	0.03	0.29***	–
Note(s): † $p < 0.10$. * $p < 0.05$. ** $p < 0.01$. *** $p < 0.001$								
Source(s): Authors' own work								

4. Results

We conducted OLS regression modeling to test hypotheses H1 and H2, and bootstrap mediation analysis to test H3. All models used HC3 robust standard errors and controlled for firm age and firm size ($N = 183$). The results are presented in Tables 2 and 3. As shown in Model 1 (Table 2), communication-oriented sensemaking was positively associated with BMI ($b = 0.44, p < 0.001$), supporting H1a. Cultural sensemaking was not significantly associated with BMI ($b = -0.02, p > 0.10$), thus H1b was not supported. The model explained 20% of the variance in BMI (Adj. $R^2 = 0.18$). Replacing the sensemaking predictors with network capability (Model 2) increased the explanatory power of the model. Network capability was positively associated with BMI ($b = 0.54, p < 0.001$), supporting H2 (Adj. $R^2 = 0.29$).

To test the mediation hypotheses (H3a–H3b), we estimated indirect effects using 5000 bootstrap resamples and 95% BCa confidence intervals. Model 3 (Table 2) shows the mediator equation: communication-oriented sensemaking was positively associated with network capability ($b = 0.56, p < 0.001$), while cultural sensemaking was not ($b = -0.05, p > 0.10$). In the full outcome model (Model 4), the direct effect of communicative sensemaking on BMI remained positive but was reduced ($c' = 0.20, p < 0.05$), while network capability retained a significant positive association with BMI ($b = 0.43, p < 0.001$). As shown in Table 3, the bootstrapped indirect effect for communication-oriented sensemaking was positive and significant ($a \times b = 0.24$, 95% BCa CI [0.12, 0.37]), indicating that network capability accounted for a substantial portion of the association between communicative sensemaking

Table 2. OLS regression results. Model 1: H1 (sensemaking $\rightarrow$ BMI). Model 2: H2 (network capability $\rightarrow$ BMI). Model 3: the mediator path (sensemaking $\rightarrow$ network capability). Model 4: the full outcome model

	Model 1 (H1) DV: BMI		Model 2 (H2) DV: BMI		Model 3 (path a) DV: NC		Model 4 (full) DV: BMI	
	b	SE	b	SE	b	SE	b	SE
Constant	2.62***	0.56	1.88***	0.56	2.79***	0.44	1.42*	0.58
Firm age (years)	−0.00	0.00	−0.01*	0.00	0.00	0.00	−0.01*	0.00
Firm size (ln empl. + 1)	0.03	0.06	0.08	0.06	−0.10†	0.05	0.07	0.06
Sensemaking (Comm.)	0.44***	0.09			0.56***	0.06	0.20*	0.10
Sensemaking (Cultural)	−0.02	0.06			−0.05	0.06	0.00	0.05
Network capability			0.54***	0.08			0.43***	0.10
R^2	0.20		0.30		0.30		0.33	
Adj. R^2	0.18		0.29		0.28		0.31	

Note(s): Unstandardized coefficients with HC3 robust standard errors. $N = 183$. † $p < 0.10$. * $p < 0.05$. ** $p < 0.01$. *** $p < 0.001$

Source(s): Authors' own work

Table 3. Bootstrapped indirect effects for mediation hypotheses H3a–H3b

Path	Communication sensemaking	Cultural sensemaking
Indirect $a \times b$	0.24	−0.02
95% BCa CI	[0.12, 0.37]	[−0.08, 0.02]

Note(s): Indirect effects computed as $a \times b$ from Models 3 and 4 in Table 2. Based on 5000 bootstrap resamples with 95% bias-corrected and accelerated (BCa) confidence intervals. Controls: firm age and firm size. $N = 183$

Source(s): Authors' own work

and BMI. In contrast, the indirect effect for cultural sensemaking was not statistically different from zero ($a \times b = -0.02$, 95% BCa CI $[-0.08, 0.02]$).

Diagnostics indicated low multicollinearity (VIFs 1.06–1.49). Sensitivity analyses showed that conclusions were robust to excluding micro-enterprises (≤ 10 employees): the communication-oriented indirect effect remained significant ($a \times b = 0.26$, 95% BCa CI $[0.13, 0.41]$, $N = 168$). Alternative ordering models yielded smaller indirect effects than the theorized model (Appendix), reinforcing the need to interpret the evidence as consistent with, but not proof of, the proposed causal ordering in cross-sectional data (Kline, 2015).

Regarding homoskedasticity, a Breusch–Pagan test indicated heteroskedasticity ($p = 0.012$), and we therefore reported HC3 heteroskedasticity-robust standard errors. We also assessed influential observations using Cook’s distance. Excluding cases above the 4/ n threshold did not change the conclusions: the coefficients remained comparable in magnitude and significance to those seen in Tables 2–3, confirming that the results were not determined by influential observations.

5. Discussion

The findings of this study indicate that communicative sensemaking, rather than cultural sensemaking, is the cognitive process most closely associated with BMI in internationalizing SMEs. While the literature suggests that cultural competencies can enable firms to reflect on their actions through culturally embedded schemas (Lisak *et al.*, 2016; Thomas, 2016), our findings indicate that such cultural grounding alone does not translate into BMI. Instead, it is the active communication of interpretations, both within the firm and with external partners, that is associated with proactive business model change.

Recent research suggests that communication of sensemaking, both internally and with external stakeholders, can improve the ability of firms to leverage resources innovatively across institutional settings (Vuorio *et al.*, 2025). This communicative dimension of sensemaking is particularly critical for SMEs, which often lack formalized structures to mediate cross-cultural interpretations. We suggest the findings of the present study point towards effective communication having a critical role in this process (Ivanova-Gongne, 2015). By clearly articulating their sensemaking efforts to foreign partners, companies can minimize misunderstandings: For instance, they would not misinterpret culturally specific behaviors, because the situational context would be clearly communicated, reducing the need for assumptions or guesses.

Notably, this finding goes beyond the extant literature, which has shown that cognitive processes broadly can be seen as antecedents of BMI (Bhatti *et al.*, 2021; Heubeck and Meckl, 2022). However, our results indicate that not all cognitive processes are equally consequential. The differential effect of communicative versus cultural sensemaking on BMI can be seen as a refinement of the cognitive antecedents perspective: it suggests that, in the context of internationalizing SMEs, it is the active communication and sharing of interpretations, rather than the cultural grounding of those interpretations, that is associated with innovativeness in business model development.

In light of the literature above, our findings indicate that the relationship between sensemaking and firm-level business behavior depends on the dimension of sensemaking considered, and that network-related dynamic capabilities can mediate this relationship. This aligns with prior work emphasizing that sensemaking processes are integral to how managers interpret complex inter-organizational environments (Weick *et al.*, 2005). In particular, cultural background can shape managers’ interpretation of networks (cf. Ivanova-Gongne and Torkkeli, 2018) and managers with different cultural schemas “make sense” of interactions in distinct ways (Ivanova and Torkkeli, 2013). Although communicative sensemaking is a more recent concept, it links with findings that effective internal communication and dialog enable shared understanding in networks (Walter *et al.*, 2006). In fact, the Walter *et al.* (2006) study previously identified internal communication as a core dimension of network capability that

enhances knowledge sharing and joint decision-making with partners. Therefore, the mediating role of communicative sensemaking is not surprising. Rather, it suggests that sensemaking and dynamic capability perspectives should be applied as partly interrelated explanatory domains.

Earlier literature also suggests that communication and culture jointly influence how managers construct interpretations of network opportunities (Ivanova-Gongne and Torkkeli, 2018; Ivanova and Torkkeli, 2013). Our results partially support this view: communicative sensemaking was associated with both network capability and BMI, suggesting that, at least in the context of internationalizing SMEs, the communicative rather than the cultural dimension activates the sensemaking–network capability–BMI linkage.

Our evidence that network capability mediates between a specific kind of sensemaking (and not all kinds of sensemaking necessarily) and BMI joins a growing literature on dynamic network capabilities and their role in internationalization of firms (Sullivan Mort and Weerawardena, 2006; Torkkeli *et al.*, 2019). Prior research has shown that firms' ability to develop and manage external relationships enables business model change (Asemokha *et al.*, 2020). In line with this, our results imply that sensemaking leads to BMI mainly by increasing network capability. In other words, managers' communicative sensemaking appears to build relational and structural competencies (network capability) that then enable new value creation, proposition and capture logics. This interpretation is in line with Sheng (2017), who construes organizational sensemaking as a resource that requires complementary combinative capabilities to realize innovation. Our findings then suggest that network capability serves as the “missing link” through which sensemaking processes can translate into the reconfiguration of the firm's business models. Culturally grounded interpretation, in comparison, may require complementary communicative practices to manifest in organizational routines.

The main finding that, even if managers make sense of market signals via communication or cultural awareness, that understanding only leads to business-model change if it is embedded in robust network processes, aligns with Moqaddamerad and Ali (2024), who found that sensemaking (together with learning) mediates other strategic drivers to BMI in a non-international domain. We similarly found that sensemaking processes are upstream of innovation outcomes, but here network capability was identified as the intervening phenomenon. This mediational role also links to dynamic capabilities theory, in that sensemaking can be viewed as a sensing activity, while network capability represents seizing and reconfiguring at the inter-organizational level. We stress that the non-significant result does not necessarily mean that cultural cognition would not be valuable in BMI, but rather that in operationalizing BMI, culturally derived sense may not translate into it without supporting communicative practices or structural dynamics (cf. Ivanova-Gongne and Torkkeli, 2018). Beyond firm performance, these findings suggest communicative sensemaking and network capabilities underlie sustainable international operation and strategy in the dynamic cultural and institutional environments that global markets are characterized by.

5.1 Theoretical contribution

In summary, this study illustrates how individual sensemaking as a microfoundation for both BMI and internationalization can enable individuals to interpret complex and uncertain international contexts, which is important for identifying and exploiting international opportunities. In doing so, it contributes to the literature by providing empirical evidence on sensemaking as a microfoundational antecedent of BMI and its subsequent relationship with the international performance of SMEs.

Specifically, our findings demonstrate that communicative sensemaking enables firms to operate across different international environments, while cultural sensemaking may not be a significant direct or indirect predictor of BMI. This differential finding contributes to theory by revealing that not all dimensions of sensemaking are equally consequential for BMI in internationalizing SMEs. By understanding and effectively communicating cultural nuances,

SMEs can innovate their business models in ways that enhance their successful internationalization, and by pooling partner resources and capabilities, firms can reconfigure value delivery and capture mechanisms (Foss and Saebi, 2017).

Whereas previous research often treats sensemaking and networking as parallel drivers of adaptation, we find the effect of sensemaking on BMI to occur through the ability to function in network relationships. This suggests that sensemaking alone (e.g. cultural acumen or communication clarity) is insufficient for BMI without the relational infrastructure to act on that sensemaking. This finding challenges the prevailing view in the literature of sensemaking and network capabilities as parallel or independent drivers of strategy. Instead, the findings suggest a sequential dynamic in which individual cognition is channeled by relational infrastructure to produce firm-level innovation outcomes. This kind of mediational relationship has been theorized but not previously shown empirically for internationalizing SMEs. This study therefore contributes by empirically demonstrating that network capability is not just correlated with BMI but in international firms specifically, functions as a mediator between individual sensemaking and the firm's innovative reconfiguration of its business models.

For international entrepreneurship scholarship, the findings of this study contribute in three main ways. First, the present study links the microfoundations of BMI by identifying individual sensemaking as the cognitive “spark” that initiates proactive change in business models, thereby addressing calls to connect micro-level cognitive processes with macro-level firm outcomes (Coviello *et al.*, 2017). Our findings go beyond demonstrating that cognition matters for BMI, a point already established by prior work on managerial mindfulness (Bhatti *et al.*, 2021) and dynamic managerial capabilities (Heubeck and Meckl, 2022). We extend those findings by showing that the type of sensemaking is consequential (communicative sensemaking is important for BMI while cultural sensemaking is not), revealing a more fine-grained view into how and which cognitive microfoundations can translate into innovation outcomes in SMEs in general, and in international SMEs in particular.

Second, this study integrates a dynamic capability perspective by demonstrating that network capability not only orchestrates resources directly but also can further increase the performance benefits of sensemaking, revealing a notable contingency in the BMI process. Qiu *et al.* (2022) and others have called for an “interactive” view of dynamic capabilities that operate across firm boundaries, and our findings suggest network capability is exactly such a capability that can leverage individual-level cognition into innovation.

In summary, the findings of this study add to existing theory and discussion on the role of sensemaking in capability development (e.g. Pandza and Thorpe, 2009) and BMI (Moqaddamerad and Ali, 2024) by showing that specific types of communicative sensemaking are needed to link capabilities with BMI in entrepreneurial firms.

5.2 Managerial and policy implications

For international entrepreneurs and managers of SMEs seeking international expansion, the findings come with several practical implications and recommendations. For one, the findings suggest that developing understanding of effective communication strategies can be more important than cultural understanding when seeking foreign market entry. More specifically, managers should prioritize the communication aspect of sensemaking over cultural sensemaking alone, as communication-focused sensemaking can support BMI, which prior research has linked to firms' international performance. The fact that cultural sensemaking was not found to have a similar relationship suggests that, rather than simply understanding cultural differences, managers should actively communicate their interpretations both internally within their organizations and externally with international partners and stakeholders, doing so can help with engaging in BMI and, consequently, in successful internationalization of the firm.

The findings also emphasized the important role of network capability, i.e. the developed organizational ability to initiate, develop and maintain network relationships, in translating sensemaking efforts into specific innovation outcomes. This constitutes another reason why SMEs should invest strategically in building and managing inter-organizational relationships, as network capabilities serve as an important mediator through which sensemaking can translate into successful business renewal. Managers should recognize that an effective BMI process can require both active sensemaking and development of network management capabilities.

5.3 Limitations and future research

The present study naturally also comes with limitations, both methodologically and contextually, that may constrain the generalizability of its findings. First, the study used cross-sectional, self-reported survey data. Therefore, we cannot infer causality, and the mediation results should be interpreted as evidence consistent with the theorized relationships and associations rather than definitive causal proof. Future research could test the proposed mediation using longitudinal or time-lagged designs and multi-respondent data to strengthen causal inference.

The single-country context (international SMEs originating from Finland only) can also mean that the findings may not be generalizable across culturally and economically different home market contexts. However, we consider it likely that generalizability, or at least substantial transferability, is across contexts of similar small open economies, such as the Nordics, Ireland, New Zealand etc. Moreover, the chosen cross-sectional research design prevents drawing definitive causal inferences about the relationships between sensemaking, network capability, and business model innovation. To do so empirically would have required panel or lagged data, which we did not have access to in the constraints of this study. Additionally, the study focuses on international SMEs within particular industries specifically, and we consider it possible that the dynamics of sensemaking and network capabilities may be somewhat distinct between early internationalizing firms and more traditional internationalizers.

The sample size used, while adequate for the analytical approach used, may not capture the full diversity of internationalization experiences across different types of SMEs and international markets. Because the sampling frame was compiled from commercial databases, the sample may reflect database coverage and classification practices (e.g. underrepresentation of firms that are not comprehensively captured by these databases or that have missing or incorrect export or size indicators). In addition, participation was voluntary and the final analytical samples were restricted to sufficiently complete responses, which may introduce self-selection. Therefore, the findings are most appropriately generalized to internationally operating Finnish SMEs meeting the described screening criteria, rather than to the full population of all SMEs operating in the country.

Moreover, a quantitative approach has limitations for capturing the concept of sensemaking, and sensegiving, in that some qualitative studies have suggested that business models are shaped not only through individual sensemaking but also through interaction with other people's sensegiving or communicative sensemaking (see [Clarke and Freytag, 2023](#)). Such a perspective of business models as socially constructed value logics that are formed by joint enactive and interactive sensemaking would benefit from a qualitative approach to further validate the findings of this study across contexts, teams, and organizations.

Future research should address these limitations and could do so in several ways. The present study has suggested that future research on international entrepreneurship and international business should continue to explore the role of individual-level factors, such as leadership styles and cognitive biases, in shaping sensemaking processes and their impact on business behavior of international firms. As such, the microfoundations perspectives to international business ([Santangelo et al., 2025](#)) and international entrepreneurship

(Vanderstraeten *et al.*, 2020) remain in light of this study also highly relevant for ongoing discussions and contribution in these domains.

Additionally, longitudinal studies would be needed to establish clearer causal relationships between sensemaking and capability development, while cross-cultural validation studies could test whether the findings generalize beyond the Finnish context to other national and cultural environments. The question as to whether or not the concept of sensemaking is quantifiable and can be meaningfully measured or not remains a point of discussion; however, in light of recent research on the topic (e.g. Vuorio *et al.*, 2025), adequate quantifiable constructs can be derived from conceptual literature. However, how cultural as opposed to communicative sensemaking occurs in practice over time may also require a mixed methods or even fully qualitative approach to ascertain, which is another area where more research is still needed for a fuller picture. Furthermore, our findings point to a possible connection between cultural and communicative sensemaking, suggesting that these processes may influence or reinforce one another in shaping network capability and business model innovation. Future studies could explore this relationship in greater depth.

Scholars should also consider industry-specific analyses to understand how sector characteristics might moderate the relationships between sensemaking, networking and business modeling. Finally, we recommend that future research examine whether certain network practices (e.g. digital collaboration tools) specifically and distinctly leverage sensemaking for innovation. Overall, by integrating sensemaking and network literatures, our findings point out that in internationalization of SMEs, novel business models emerge not just from individuals' insight, but more specifically from the combination of informed managers and interfirm network capabilities.

Finally, while the indirect effect of cultural sensemaking was not statistically significant in this study, this does not preclude the possibility that cultural interpretation plays a more distal or conditional role. We consider it possible that it may in part help determine the content of what is communicated rather than independently driving network capability or BMI. Future research could explore whether cultural sensemaking operates as a moderator of, or precondition for, communicative sensemaking rather than in a parallel mediating role.

6. Conclusion

Taken together, this study has shown that BMI in internationalizing SMEs is grounded in the micro-processes of individual sensemaking and partly enacted through network capability. By showing that communicative, but not cultural, sensemaking is consistent with an indirect association with BMI through firms' capability to develop and manage network relationships, the study connects cognitive and dynamic capability perspectives on strategic renewal in international entrepreneurship. The findings provide a basis for future work that can examine in greater detail how evolving individual-level interpretations contribute to the development of organizational capabilities and, ultimately, sustainable competitive advantage in international markets.

Declaration of AI use

The authors used ChatGPT-5.4 for proofreading, language editing and reference-list formatting. The authors reviewed and verified all AI-assisted changes and take full responsibility for the final content.

Table A1. Alternative ordering diagnostic models for the indirect effect (cross-sectional mediation)

Model ordering (X to M to Y)	Indirect effect $a \times b$	95% BCa CI
Theorized: Sensemaking (Communication) to Network capability to BMI	0.24	[0.12, 0.37]
Alt 1: Network capability to Sensemaking (Communication) to BMI	0.11	[0.02, 0.20]
Alt 2: Sensemaking (Communication) to BMI to Network capability	0.17	[0.09, 0.28]

Note(s): Indirect effects based on 5000 bootstrap resamples with 95% BCa confidence intervals. Controls: firm age and firm size. $N = 183$
Source(s): Authors' own work

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