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Article — Published Version

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R&D Management

Suggested Citation: Breitenmoser, Pascal; Spieth, Patrick; Roeth, Tobias (2025) : Blurred Lines: Leveraging Business Model Ambiguity for Innovation and Agility, R&D Management, ISSN 1467-9310, Vol. 56, Iss. 3, pp. 441-459, <https://doi.org/10.1111/radm.70029>

This Version is available at:

<https://hdl.handle.net/10419/342748>

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RESEARCH ARTICLE OPEN ACCESS

Blurred Lines: Leveraging Business Model Ambiguity for Innovation and Agility

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Received: 21 May 2025 | **Revised:** 11 November 2025 | **Accepted:** 20 November 2025

Keywords: business model ambiguity | business model innovation | cognition | digital technologies | organizational agility

ABSTRACT

Earlier research has established the cognitive perspective on business models (BM) and business model innovation (BMI), which predominantly assumes that the understanding and interpretation of established BMs are uniform among organizational actors. Our study challenges this view by investigating the implications of BM ambiguity and the related multiplicity of BM schemas within a firm. By drawing on a multiple-case study, we explore how organizational actors of incumbent firms apply and leverage BM ambiguity. Our findings demonstrate that organizational actors purposefully establish a homogeneous baseline while, at the same time, allowing and embracing partially heterogeneous BM schemas. The emergent theoretical framework reveals three interrelated categories of mechanisms managers apply to cope with BM ambiguity (*seeking uniformity*, *applying heterogeneity*, and *realizing BM ambiguity*). Furthermore, we investigate the mechanisms' implications on digital BMI activities and how they can affect organizational agility (OA). In doing so, we contribute to the literature by revealing the positive implications of BM ambiguity for digital BMI, while also providing evidence for ambiguity as a cognitive antecedent for facilitating OA as a higher-order dynamic capability.

1 | Introduction

Business models (BM) can be viewed as cognitive schemas that reflect the organizational actors' understanding of the activities that constitute a BM (Doz and Kosonen 2010; Martins et al. 2015; Snihur and Zott 2020). Given the abstract and holistic character of BMs (Massa et al. 2017), organizational actors often interpret the very same BM differently. The lack of clarity about the meanings of and linkages between activities as well as their outcomes can result in a variety of BM schemas within a firm, causing substantial complexity to managers (Weick 1995; Zuzul 2019). BM ambiguity refers to the presence of multiple different BM schemas within a firm, whether purposefully or unintentionally created (Foss and Saebi 2018; Aagaard and Nielsen 2021).

Ambiguity is shown to have beneficial implications such as it can, for instance, mobilize organizational actors' support in strategic work (Jarzabkowski et al. 2010; Abdallah and Langley 2014), enable strategic change (Davenport and Leitch 2005; Sorsa and Vaara 2020), and provide a common direction for organizational actors while, at the same time, ensuring the creative elaboration of diverse interpretations (Eisenberg and Witten 1987; Leitch and Davenport 2007). Multiple different BM schemas, each acting as a distinct cognitive frame, are used for interpreting novel information and stimuli (Hahn et al. 2014; Martins et al. 2015), such as digital technologies, resulting in different business model innovation (BMI) responses (Spieth et al. 2014; Schneckenberg et al. 2022; Spieth et al. 2025). The multiplicity of different lenses can, in turn, facilitate organizational agility (OA), describing a

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firm's capability to sense changes in its business environment and respond promptly (Teece et al. 2016; Zahoor et al. 2024). This is because the concept's subdimensions, i.e., sensing, decision-making, and responding to external changes, depend on the individual processing and interpretation of information (Tallon et al. 2019). Therefore, we argue that BM ambiguity can serve as a cognitive antecedent for OA (Lu and Ramamurthy 2011; Park et al. 2017; Tallon et al. 2019). While OA is also determined by a firm's innovative capacity, the effective leverage of BM ambiguity as a resource can enhance its ability to adapt to contingencies in its business environment by broadening the portfolio of potential BMI activities (Ravichandran 2018).

Despite the growing interest in BMs as cognitive schemas (Martins et al. 2015; Shepherd et al. 2023), previous research has overlooked how BM ambiguity can be actively leveraged as a BMI-enhancing resource (Abdallah and Langley 2014; Cappellaro et al. 2021). Furthermore, while there is extensive knowledge on antecedents of OA, particularly its technological aspects such as IT resources and infrastructure, research currently misses empirical evidence regarding its cognitive antecedents (Sambamurthy et al. 2003; Tallon et al. 2019).

In response, our study aims to investigate the following research question: how can BM ambiguity be intentionally managed to facilitate BMI activities and OA?

To investigate this research question, we conducted a multiple-case inductive study (Eisenhardt and Graebner 2007; Yin 2018), drawing on 79 interviews from three incumbent firms across three different industries and rich archival data. We develop a model for how organizational actors can purposefully manage and leverage BM ambiguity to drive OA.

In doing so, our study contributes to research at the intersection of BMs, digital BMI, and OA. First, we provide a novel theoretical framework that links mechanisms for managing BM ambiguity to digital BMI and OA. We identify three categories of mechanisms that provide insights into how managers can navigate the complexity of BM schemas within organizations, contributing to our understanding of BMs as cognitive schemas. Second, we contribute to research on OA by demonstrating how BM ambiguity can act as a cognitive antecedent of OA. This article also adds to the research on ambiguity by illustrating the substantial benefits that BM ambiguity entails, thereby supporting the view of ambiguity as a resource. This paper seeks to enrich the discourse on BMs and digital BMI, OA, and the management of ambiguity, providing a solid foundation for future research at the intersection of these areas. It offers practical insights for managers on how to harness BM ambiguity as a tool to enhance OA and competitive advantage in a fast-changing business environment.

2 | Conceptual Background

2.1 | Business Model Ambiguity and Digital Business Model Innovation

BMs are often conceptualized as cognitive schemas that organize managerial understandings of firms' activities and value-creation processes (Martins et al. 2015; Shepherd et al. 2023). As

such, they guide managerial decision-making not based on concrete systems but on their understanding of value capture and organizational structure. These cognitive images help define company boundaries and internal governance, acting as a lens or frame through which managers interpret new information and make BMI decisions (Kaplan and Tripsas 2008; Doz and Kosonen 2010; Hahn et al. 2014). Due to their highly structural nature, BM schemas are considered inertial and, thus, cannot be easily changed or modified (Martins et al. 2015). As a cognitive schema or template, a BM represents a manager's accumulated knowledge about a BM's constituent activities and their inter-relationships. In firms operating multiple BMs simultaneously, organizational actors form BM schemas for every BM within the portfolio, enabling them to evaluate, for instance, the benefits of digital technologies from different perspectives but, at the same time, increasing the extent and complexity of information (Snihur and Tarzijan 2018).

BMI can be defined as "designed, novel, nontrivial changes to the key elements of a firm's business model and/or the architecture linking these elements" (Foss and Saebi 2017, 201). The BMI lens is frequently used to identify and explain sources of firm performance (Spieth et al. 2016; Leppänen et al. 2023; Spieth et al. 2025). Recent research increasingly focuses on the notion of digital BMI, which sees digital technologies as an essential element for BMI activities (Kohli and Melville 2019; Soluk et al. 2021; Böttcher et al. 2022; Wang et al. 2024). Digital technologies, such as information, computing, communication, and connectivity technologies (Nambisan et al. 2017; Vial 2019), entail the potential to, for instance, improve firms' operational excellence and develop new value propositions (Rindfleisch et al. 2017; Teece 2018b), but also to tackle challenges in the business environment (Wang et al. 2024). As earlier studies have shown, the decision to conduct BMI activities hinges on the managerial perception of a BM's coherence with its external environment (Osievskyy and Dewald 2015; Shepherd et al. 2023). Therefore, organizational actors may evaluate digital technologies, for instance, as either suitable or not for integrating them into the legacy BM, ultimately affecting their decision-making and support for digital BMI activities (Schneckenberg et al. 2017). Due to their specific characteristics, the impact and benefits of digital technologies depend on their actual usage and integration into the BM (Yoo et al. 2010; Wang et al. 2024). Hence, the individual frame and interpretation play a pronounced role in this type of BMI.

Previous research has revealed some compelling insights regarding the influence of cognition-related aspects on BMI. For instance, it is argued that diverse managerial perspectives regarding BMI alternatives can increase the likelihood of firm success (Teece 2007), that cognitive diversity can affect the scope in which executives search for BMI possibilities (Narayan et al. 2021), and that executives' framing of external developments affects BMI responses (Osievskyy and Dewald 2018; Snihur et al. 2025). Since these studies focus on individual cognition that is mainly determined by the managers' life experiences and socio-cognitive factors, we currently lack insights into how differences in BM schemas affect (digital) BMI.

In this vein, we suggest that BM ambiguity can be beneficial because organizational actors with divergent BM schemas frame

the opportunities associated with, for example, specific digital technologies differently, leading to varying BMI approaches (Egolford and Sund 2020).

Ambiguity in BMs refers to the presence of multiple, even contradictory or competing, interpretations within a firm regarding the established BM (Daft and Weick 1984; Abdallah and Langley 2014).¹ Traditionally, ambiguity is viewed as a challenge or even a problem for firms, for example, by constraining action and change (Alvesson and Sveningsson 2003) and leading to organizational immobility (Denis et al. 2011). This view is contrasted by recent studies that underscore the positive implications of ambiguity. For instance, multiple interpretations resulting from ambiguity can promote organizational change and innovation (Davenport and Leitch 2005; Sorsa and Vaara 2020), encourage collective working (Croft et al. 2022), and facilitate collaborative innovation (Zuzul 2019). Moreover, maintaining a degree of BM ambiguity can encourage creative exploration among organizational actors, enabling firms to navigate complex environments flexibly (Cappellaro et al. 2021). As these insights suggest, firms can actively leverage BM ambiguity for BMI activities, thus implying that ambiguity can be an important resource or asset (Eisenberg 1984). Nevertheless, we currently lack knowledge of mechanisms managers can apply to actively use and capitalize on BM ambiguity to support and enhance BMI activities and, ultimately, increase their organization's level of OA.

2.2 | A Cognitive Perspective on Organizational Agility

OA is referred to as the ability to swiftly sense and respond to changes, seize opportunities, and address threats (Park et al. 2017), encompassing changes in organizational structures and routines (Strobl et al. 2025). Therefore, literature frequently classifies OA as a higher-order dynamic capability (Sambamurthy et al. 2003; Teece et al. 2016; Teece 2018a; Zahoor et al. 2024). Dynamic capabilities can be seen as an organization's capacity to innovate and adapt its current way of doing business (Helfat and Peteraf 2009; Teece et al. 2016; Teece 2018a; Schilke et al. 2018). As such, OA highlights the need for rapid execution, change, and flexibility (Cheng et al. 2020). Applying a capability perspective, OA can be viewed as an organization's characteristic relating to its BMI processes (Meier and Kock 2024).

Earlier research has revealed several implications OA can have for a firm's BMI activities. For instance, OA can support BMI to address market disruptions (Hock et al. 2016), function as a core mechanism for the strategic renewal of an organization's BM (Battistella et al. 2017; Warner and Wäger 2019), and facilitate overcoming constraints to BMI (Martinez 2022). OA enables firms to cope with and successfully manage uncertainty and unpredictable changes in the business environment (Teece et al. 2016) and, therefore, has direct implications for innovation activities (Roberts and Grover 2012). In turn, a firm's innovation capacity and IT capabilities arguably are crucial antecedents for OA to adapt to contingencies posed by the environment (Chakravarty et al. 2013; Ravichandran 2018).

Nevertheless, we currently lack insights regarding cognitive aspects that affect OA. OA is arguably driven not only by IT resources and capabilities, but also by managerial factors (Cyert and March 1963; Tallon et al. 2019). For instance, sensing internal and external changes hinges on individual cognition, which is determined by the mental models and interpretive frames that managers rely on for information processing and sensemaking (Hahn et al. 2014; Tallon et al. 2019). Due to bounded rationality, managers use cognitive frames, such as their individual mental BM schema (Martins et al. 2015), to “develop subjective representations of the environment that, in turn, drive their strategic decisions and subsequent firm action” (Nadkarni and Barr 2008, 1395). In other words, the appropriate and timely reaction of an organization depends on whether an opportunity or threat is sensed and interpreted as critical to the BM. As BM ambiguity can lead to heterogeneous BM schemas within an organization, the differences in sensing and processing information can positively contribute to developing a broad repertoire of potential BMI activities for responding to external changes and exploiting emerging business opportunities, ultimately contributing to OA (Foss and Saebi 2017).

3 | Method

3.1 | Research Design

To investigate our research question, we adopt a qualitative-exploratory research design, building on a multiple-case study to engage in theory elaboration through grounded theory (Glaser and Strauss 1967; Eisenhardt 1989; Yin 2018). This methodological approach emphasizes replication logic, cross-case analysis, and the iterative processing and comparison of data and theory (Eisenhardt and Graebner 2007; Eisenhardt 2021), thereby facilitating theory building regarding BM ambiguity and its linkages with BMI and OA. We chose this research design as (i) there is currently no knowledge of the managerial mechanisms for managing BM ambiguity, (ii) this approach enables deep insights into a complex social phenomenon that may depend on the context, and (iii) it ensures generalizability of the results due to comparing the results across multiple cases.

We employed a theoretical sampling approach to identify case companies (Eisenhardt 2021). First, we selected incumbent firms running long-established BMs within their respective industries, facing similar major challenges in their business environment, e.g., digital transformation, rapid shifts of demand, and global crises, forcing them to strategically and rapidly adapt their BMs. Second, we identified firms operating highly similar BMs but from different industries to ensure the generalizability of our insights. Third, we only sampled firms with high availability of firm-related data (e.g., press releases and annual reports) to compare our qualitative findings with archival data. As the BM of an incumbent and the level of OA are both relatively stable over time, comparing the insights from qualitative data with secondary data is essential for validating the theoretical results, i.e., their actual ability to cope with changes in their respective business environment and

BMI activities. Finally, we conducted initial interviews with randomly selected informants of the identified firms to assess if there are different interpretations of the respective BM, indicating ambiguity and the presence of different BM schemas.

Our final sample encompasses three firms from three industries that are incumbents in their respective industries and operate similar BMs. Even though there may be BM elements that are different, e.g., B2B or B2C focus, the core BM characteristic of all three firms is to develop and manufacture products. Case A is an automotive manufacturing firm that offers premium segment automobiles. Case B is a mechanical engineering firm that manufactures production facilities for several industries. Case C manufactures medical technology and products for the pharma industry. The similarity between the BMs of the three firms from different industries enables replication and cross-case comparison under different conditions and enhances theoretical generalizability.

3.2 | Data Sources

We relied on two units of analysis for exploring the research questions. First, we focused on individual cognition and behaviors to examine mechanisms for managing BM ambiguity. Second, we focused on the organizational level to assess each sampled firm's OA capability. We utilized multiple data sources to triangulate the findings of each case, thereby enhancing the confidence and accuracy of our results. First, we gathered extensive archival data to (a) support our case selection, (b) triangulate information about digital BMI activities, and (c) assess the actual OA capability by analyzing the firms' responses to external changes. Second, we conducted semi-structured interviews, which served as the primary data source for this study. To gather comparable insights, we focused on gathering qualitative insights on digital BMI activities. In summary, we conducted 79 interviews with 62 different informants across all three cases and gathered over 3000 pages of in-depth archival data (see Appendix S1).

To ensure the reliability of our results, we took several measures to prevent information bias, retrospective sensemaking of the informants, and social desirability when answering questions (Eisenhardt and Graebner 2007). First, we mitigated information bias by interviewing managers and executives from various hierarchical levels and organizational units. While this was essential to compare individual perspectives, it was crucial to gather not only insights from executives but also from non-executive managers. This is because (i) BMI initiatives can also be triggered from lower hierarchical levels depending on the comprehensiveness and resource intensity, and (ii) BMI integration highly depends on the support and contribution of non-executive managers. Second, we encouraged informants to elaborate on important events step-by-step, which is known as event tracking (Eisenhardt 1989), and cross-checked the information with prior interviews and archival data to address information bias. Third, anonymity encouraged the informants to speak with candor. Lastly, the emergent theoretical framework and findings were frequently discussed by the research team.

3.3 | Data Analysis and Theory Building

Our analysis follows established comparative multi-case study research practices (Eisenhardt 1991; Yin 2018). First, we started with creating comprehensive case write-ups that built on all gathered case data. The case write-ups involved narratives, selected quotes from interviewees, and tables summarizing key information on BMI activities and insights into the individual OA capability. These insights were used to create comprehensive case descriptions (Appendix S2).

Second, we conducted a within-case analysis by applying a thematic coding procedure. We coded statements about approaches and mechanisms referring to the management of BM ambiguity in each case, resulting in a list of first-order codes that we consolidated across all cases. The coding, as well as the concepts and terminology, was iteratively refined by cycling back and forth between our data and the literature on ambiguity, BMI, and OA (Eisenhardt 1989). For each case, we selected quotes that best represent the first-order codes and underline the differences across the cases. This enabled us to group first-order codes with similar characteristics and meaning into more general second-order themes. We developed aggregate themes by grouping and further abstracting the second-order themes and drawing on the gathered data and literature. The aggregate themes best reflect the central mechanisms managers apply to leverage BM ambiguity.

Third, by drawing on replication logic, we confirmed the emergent patterns identified in the within-case analyses and further sharpened the definitions and characteristics of each mechanism (Eisenhardt and Graebner 2007).

Fourth, we conducted a cross-case analysis by comparing the application of each mechanism across all three cases, enabling us to draw linkages to the individual extent of OA.

Lastly, we conceptualized a theoretical framework that elaborates on the relationships between the concepts derived from both within- and cross-case analysis. We followed an iterative procedure to refine our theory, providing a better fit with the data (Eisenhardt 1989).

4 | Results

Our findings indicate that organizational actors of all three sampled firms apply various mechanisms to manage BM ambiguity. The mechanisms can be clustered into three distinct but interrelated categories: (a) *seeking uniformity*, (b) *applying heterogeneity*, and (c) *realizing BM ambiguity*. Based on our analysis, we explain the core objective of each category, elaborate on the mechanisms identified within each case as well as their respective linkages to extant literature, work out the differences in their application across the cases, and discuss each category's implications for OA, ultimately arriving at a new emerging theoretical framework. In Table 1, besides showing the coding structure, we contrast the differences in applying the identified mechanisms across the cases.

TABLE 1 | Cross-case comparison and coding structure.

	Case A	Case B	Case C	Second order themes	Aggregate themes
Summary of findings	Clear and effective communication of key BM elements via formal representations and linguistic devices	Insufficient communication of key BM elements using formal representations and linguistic devices	Clear communication of key BM elements via formal representations and linguistic devices	Leveraging boundary objects	
Exemplary evidence	“With a strategy like this, it is then clear which business model we are operating.”	“I would not even know if it is written down somewhere. But I think our business model is to offer assembly systems to the automotive industry or suppliers.”	“You never initiate something like that: This is our business model. Instead, it is a strategy, individual elements that ultimately contribute to a business model.”		Seeking uniformity
Summary of findings	Comprehensive and empathic explanations of key BM elements	Comprehensive and empathic explanations of key BM elements	Comprehensive and empathic explanations of key BM elements	Shepherding BM schemas	
Exemplary evidence	“You somehow try to take a diplomatic or political approach. This means packaging small steps in such a way that they can be addressed and accepted, but without immediately disclosing the overall objective.”	“Ultimately, in my opinion, the employees in the firm are the driving force behind the whole thing, and they need to know the direction and also the purpose of the business model.”	“I think it is a challenge for leaders to have the employees recognize their specific value contribution to the business.”		
Summary of findings	Strong awareness and instantiation of the legacy BM	Strong awareness and instantiation of the legacy BM	Strong awareness and instantiation of the legacy BM	Grounding in BM heritage	
Exemplary evidence	“We have been able to bend sheet metal and build engines for more than a hundred years. It is in our genes.”	“From our history in the field of the combustion engine, the long tradition of mechanical engineering, including special machine construction, machine tool construction, we certainly still have special expertise in some areas.”	“You have to look at it historically. We used to be a medical device player. We then gradually ventured more into pharmaceuticals, but we continued to be a product provider.”		

(Continues)

TABLE 1 | (Continued)

	Case A	Case B	Case C	Second order themes	Aggregate themes
Summary of findings	Comprehensive and frequent usage of discourses between organizational actors with divergent BM schemas	Hardly any effective usage of discourses between organizational actors with divergent BM schemas	Frequent usage of discourses between organizational actors with divergent BM schemas	Exploiting frictions between BM schemas	
Exemplary evidence	“I have the impression that there is often friction at the interfaces. Because the objectives are different. And someone who somehow develops a vehicle has little understanding of fleet operation. And they have to come together somewhere.” Active utilization of exchanges among organizational actors	“There is a controversial discussion about the business model, and most people are not interested in that at all. It is about the fact that they are concerned about their own job. But I think most people do not really care about the overall picture.” No active utilization of regular exchanges among organizational actors	“A strategy of cuddling up and avoiding conflict usually means that you don't get anywhere. I think strategy must always lead to a degree of dissent. Otherwise, you don't evolve.” Active utilization of exchanges among organizational actors	Facilitating the interplay of divergent BM schemas	Applying heterogeneity
Summary of findings	“It is also the case that the firm is very much shaped by the fact that people exchange ideas with each other, including personal exchanges.” Encouragement of initiatives challenging the BM status quo	“It does us no good if each location handles its own project. In this case, it fits technically, but not commercially.” Limited support for working outside the established BM's boundaries	“That is why it is sometimes necessary to work in a way that's not strongly divisionalized, but cross-departmental, so that such concepts can be properly implemented.” Limited support for working outside the established BM's boundaries	Encouraging deviations from uniformity	
Exemplary evidence	“I think 80% of people see it the same way. The 20% who don't see it that way are working precisely on the new business areas, which I personally believe are necessary in order to survive in the long term.”	“We have deliberately stretched the scope so far that we say we do not necessarily have to be in the automotive sector.”	“We communicate an alleged strategy but only provide a framework in which direction we are moving, and actually leave it to all business units and departments to fill this framework themselves.”		

(Continues)

TABLE 1 | (Continued)

	Case A	Case B	Case C	Second order themes	Aggregate themes
Summary of findings	Empathic and considerate communication to ensure acceptance of BM schema heterogeneity	Awareness for considerate communication to ensure acceptance of BM schema heterogeneity	Empathic and considerate communication to ensure acceptance of BM schema heterogeneity	Inducing tolerance for BM schema multiplicity	
Exemplary evidence	“You cannot expect someone who makes door constructions to have a fully comprehensive understanding. I believe it is important to have tools that give colleagues the opportunity to see what business models we have.”	“It is not just about content, it is also about the person, who sometimes needs immediate feedback to assess what has triggered the other person and also to recognize differences.”	“It is important that you listen to where their concerns are, and that is why this exchange is needed. If you do it only through a monolog, you will not be able to take people completely with you, and you need to take them mentally and emotionally.”		Realizing BM ambiguity
Summary of findings	Emphasizing and supporting the integration of different perspectives for BMI activities	Limited to no support for integrating different perspectives for BMI activities	Limited support for integrating different perspectives for BMI activities	Broadening individual BM schemas	
Exemplary evidence	“To build real electric cars, you have to think holistically, which requires a major reorganization in our company, both in terms of mindset and cooperation between different departments to find comprehensive solutions.”	“We all have the same goal, but everyone has their internal processing structures, which are rather a hindrance because they are so far apart.”	After all, silo thinking does not move the overall company forward. It only hinders it.”		
Summary of findings	Encouragement and facilitation of innovative ideas and BMI projects.	Limited to no incentives and support for innovative ideas that depart from the established BM	Facilitation of innovative ideas and BMI projects to some extent	Providing freedom for creative elaboration	
Exemplary evidence	“We also have the opportunity to explore topics experimentally. And that is what we usually do, we try things out.”	“But that is quite simple. Maybe also the approach that we do not just say, we will try this out now, we will do a quick prototype run, and just try this out. There we always have too many concerns.”	“We simply have to test more, and even if only one or two of 10 new ideas are realized, it is still a huge success instead of continuing to work within the existing structures or with the existing business model.”		
Overall assessment of mechanism application	Strong	Weak	Moderate		

TABLE 2 | Seeking uniformity: definitions, links to extant literature, and exemplary quotes.

	Leveraging boundary objects	Shepherding BM schemas	Grounding in BM heritage
Definition	Provide guidance and a common understanding of the established BM using formal representations and linguistic devices	Carefully communicate the key aspects of the established BM through frequent conversations and reconciliations	Instantiate a common understanding of key BM elements by frequently referring to the legacy BM in the communication
Link to extant literature	Utilization of boundary objects to harmonize sensemaking processes (Cornelissen et al. 2014; Jalonen et al. 2018; Zuzul 2019; Shepherd et al. 2023)	Discourse actions to reproduce and manifest established structures (Heracleous and Barrett 2001; Heracleous 2006)	Imprinting mechanisms for manifesting information (Simsek et al. 2015; Snihur and Zott 2020)
Exemplary quotes	“There is only one central strategy . And this strategy also defines the breadth of our business model . And at least all senior managers should feel committed to it.” (A17)	“You have to communicate it, you have to make it transparent why you are doing it, what economic advantage it has.” (B01)	“Do we want to continue focusing on the products, where we have a 180-year history , and simply become even stronger in this area?” (C14)

4.1 | Seeking Uniformity

The first category’s objective is to achieve a common understanding of the most important key aspects of the BM while, at the same time, leaving space for individual interpretations that result in differences in the BM schemas of organizational actors. The sampled firms use mechanisms to achieve a shared understanding of the established BM to ensure the acceptance, support, and alignment of digital BMI activities in response to changes in the business environment (Spee and Jarzabkowski 2017). These mechanisms are particularly relevant for fostering fundamental BMI activities for which the support of organizational actors across hierarchies and departments is necessary. We identified three mechanisms that aim to reduce BM ambiguity and support the development of uniformity regarding key points of the established BM to facilitate digital BMI activities: (1) leveraging boundary objects, (2) shepherding BM schemas, and (3) grounding in BM heritage (see Table 2).

4.1.1 | Leveraging Boundary Objects

The firms in our multiple-case study attempt to achieve uniformity by providing guidance and a common understanding of the established BM using boundary objects, i.e., formal representations and communication devices (Zuzul 2019; Shepherd et al. 2023), such as the corporate strategy and mission statements. These findings underline the importance of communication and meaning-making for accomplishing homogeneous sensemaking processes of organizational actors (Cornelissen et al. 2014; Jalonen et al. 2018). For instance, informants of case A describe that “our corporate strategy defines the business

model or the claim we have” so that it is clear for organizational actors “which products we want to offer, when, for which customers, etc.” (A03), indicating a clear and effective communication of key BM elements.

The effectiveness of this mechanism hinges on how clearly and unambiguously the important key points of the BM are communicated, as insufficient communication of the BM’s boundary objects can result in a heterogeneous understanding of the established BM across organizational actors. This is reflected by an informant of case B, who reports that “it is indeed a fact that we do not have a description of the business model of the company, or rather we have not published it” (B16).

Hence, the boundary objects have to be communicated in a way that leaves no space for divergent BM interpretations and is easily understood and accessible by any organizational actor to facilitate uniform and rapid sensemaking and ensure support for digital BMI activities: “Since mid-2020, we have a new strategy reflecting [the business model] I just described. That is why I would assume that all of my colleagues understand that we are currently undergoing an extreme transformation driven by digitalization.” (C01), indicating a clear communication of the BM in this case, providing a common direction.

4.1.2 | Shepherding BM Schemas Through Active Discourse

Firms in our case study carefully communicate the common ground regarding the understanding of the established BM

and important BMI activities in active and empathic discourse (Heracleous and Barrett 2001; Heracleous 2006). In their discourse with organizational actors, managers carefully communicate explanations regarding key BM elements to provide clarity and avoid confusion. Accordingly, a manager in case A states that: “I actually address specific areas. What is the customer value that I am creating here and that I want to create? And how do I do that? How do I capture value within the organization? Then it becomes much clearer, and then you can see the differences in the individual areas, but also the similarities” (A03). Similarly, it is crucial to “formulate the strategy in such a way that the employees can recognize their specific value contribution” (C13), indicating a good understanding for an empathic communication in case C for successfully achieving higher levels of uniformity of BM schemas and general understanding and support for BMI activities.

Our results show that it is also essential to “make it transparent, what economic advantage it could have” (B01) to achieve support regarding digital BMI activities. Poor communication, as indicated by informants of case B, can lead to the result that organizational actors “feel lost from the direction of how you want to proceed” (B15).

Enabling organizational actors to recognize their individual value for the established BM and their contribution to digital BMI activities is crucial for achieving similar sensemaking via uniform BM schemas.

4.1.3 | Grounding in BM Heritage

Our data shows that the firms frequently refer to the historical roots of their established BMs to achieve a uniform BM interpretation. This mechanism is closely linked to the imprinting of key BM elements (Simsek et al. 2015; Snihur and Zott 2020). Informants report that, for example, “we have been able to bend sheet metal and build engines for more than a hundred years” (A01), or “we used to be a medical device player, then we gradually ventured more into pharmaceuticals, but we are still product suppliers” (C05), indicating a homogeneous understanding of the core competencies on which the extant BM is built. Hence, managers use the historical roots of the BM as a reference point for their explanations to achieve a common understanding of the established BM as well as digital BMI activities.

In addition, from the informants’ experience, BMI activities also need to be communicated in terms of how they align with the BM heritage to secure the support and contributions of organizational actors. In line with the other cases, interviewees of case B report that “we never had our own product, we always said ‘okay, I am just going to sell a certain plant to somebody’, and this is changing a bit now” (B05).

This mechanism, having found evidence of its usage across all cases, may even be more effective if organizational actors are affiliated with the firm for an extended period, supporting its linkages to imprinting literature.

4.2 | Applying Heterogeneity

Besides the mechanisms aimed at reducing BM ambiguity, we found evidence that firms intentionally use the differences in BM schemas resulting from BM ambiguity to positively affect the sensitivity to external changes, achieve a broad repertoire of possible digital BMI responses, and enable holistic sensemaking (Sillince et al. 2012). Our results highlight that firms apply heterogeneity of BM schemas to embrace discussions about the trajectories of digital BMI activities. We identified three mechanisms firms utilize for applying heterogeneity in BM schemas and, therefore, actively take advantage of BM ambiguity: (1) exploiting frictions between BM schemas, (2) facilitating the interplay of divergent BM schemas, and (3) supporting deviations from uniformity (see Table 3).

4.2.1 | Exploiting Frictions Between BM Schemas

The sampled firms intentionally bring together organizational actors with diverging BM schemas to enhance the discourse about digital BMI activities (Leitch and Davenport 2007; Whittle et al. 2023). Accordingly, interviewees argued that to improve BMI initiatives, “conflict is necessary as it leads to friction”, as “a cuddly course and conflict avoidance strategies usually lead to the fact that there is no progress” (C13), and that “friction does not necessarily have to be a bad thing” since it is a success factor to “look at how my company as a whole can achieve the best solution” (A19). Therefore, managers of cases A and C rely on a “very intensive cross-divisional exchange” (C01) and “exchange rounds on a problem” (A19) to support holistic decision-making and debates about potential digital BMI activities and, subsequently, the effectiveness of responses to external changes and opportunities.

It is also argued that for such discourse to succeed, managers have to ensure that critical voices are heard. Otherwise, “everyone does their own thing” (B16) and “business model innovations are controversial, and most people are not interested in these discussions at all” (B10), indicating a lack of consideration of organizational actors with different BM schemas, resulting in decreased willingness to participate in BMI-related discussions.

4.2.2 | Facilitating the Interplay of Divergent BM Schemas

The interview results indicate that firms utilize the variety in BM schemas to extend the individual—and often narrow—BM understanding by facilitating the interaction of divergent BM schemas across organizational units (Sharma and Jaiswal 2018). Collaborations across functions and departments foster a mutual understanding of BM schemas among organizational actors and provide insights into function-related expectations regarding BMI activities. Showing an active usage of the mechanism, respondents from case C indicate that “cross-departmental work is necessary so that new [business model] concepts can be properly implemented” (C04), as it is “not enough to know how our product works; we

TABLE 3 | Applying heterogeneity: definitions, links to extant literature, and exemplary quotes.

	Exploiting frictions between BM schemas	Facilitating the interplay of divergent BM schemas	Encouraging deviations from uniformity
Definition	Intentionally enhancing debates about BMI activities by bringing together organizational actors with diverging BM schemas	Extend the individual BM schema by supporting the adoption of different perspectives	Encourage organizational actors to depart from established BM processes and boundaries
Link to extant literature	Critical discursive perspectives to enhance and broaden sensemaking processes (Leitch and Davenport 2007; Whittle et al. 2023).	Positive implications of interacting cognitive frames across organizational units (Hahn et al. 2014; Sharma and Jaiswal 2018).	Creative consumption of novel information challenges the status quo (E. M. Eisenberg 1984; Abdallah and Langley 2014; Croft et al. 2022)
Exemplary quotes	“Friction does not necessarily have to be a bad thing , but you have to look at how my company as a whole can achieve the best solution.” (A19)	“It is also the case that the firm is very much shaped by the fact that people exchange ideas with each other, including personal exchanges.” (A02)	“We communicate an alleged strategy but only provide a framework in which direction we are moving and actually leave it to all business units and departments to fill this framework themselves .” (C05)

also have to know exactly how it is sold, how it is calculated, and what business model we use on the market” (C08). Taking on different perspectives is vital to consider other organizational actors’ expectations and demands on how the existing BM should be developed, so that “people exchanging ideas with each other” (A02), as “through contact with several people, ideas arise that one had not previously considered” (A09), thereby effectively extending the individual BM schemas. Subsequently, a “very intensive cross-divisional exchange” (C01) to ensure the quality of decision-making and the support of digital BMI as responses to external change increase, as it “thrives on the different [business model] perspectives” (C05).

Managers have to avoid the situation that “there are two departments or areas that do not communicate with each other” (B15), reflecting a disconnection of business units and no application of the mechanism, even though for BMI, a “second and third opinion does not hurt, especially to form your own opinion and, above all, to make the right decisions” (B16), highlighting an understanding of the importance of facilitating the interplay of organizational actors with different BM schemas.

4.2.3 | Encouraging Deviations From Uniformity

The analyzed firms promote individuality and creative elaborations of novel information and stimuli by encouraging organizational actors to depart from established BM processes and boundaries. This mechanism aims at the intentional utilization of divergent BM schemas and the differences in sensemaking for contributing to the range of potential digital BMI activities

and creative approaches on how to integrate digital technologies (Abdallah and Langley 2014; Croft et al. 2022). Respondents refer to behaviors that encourage organizational actors to take unconventional approaches instead of sticking to established BM processes. Case A, in particular, shows an extensive usage of the mechanism, pointing out that managers are “not so fixated on a business model that someone would tell me ‘no, you cannot have this idea because it does not fit our current business model.’” (A02).

In case C, informants indicate that managers “set the [business model] framework, and we can decide within this framework where we want to go” (C08). This enables organizational actors to deviate from the predominant BM schema, paving the ground for developing creative digital BMI projects that can contribute to enhancing their OA capability. However, they fail to “create the structures to support and implement a digital business model” (C12), which shows limited support for BMI activities outside the established structures.

It is also necessary to ensure that organizational actors working on BMI projects that do not fit into the prevailing BM schema are not isolated. For instance, respondents of case B report that if “departments run a bit outside the core business model,” it is “another matter bringing that into the actual business” (B12), highlighting difficulties with accepting and implementing unconventional BMI activities due to perceived incoherence with the predominant BM schema. Furthermore, they remark that “the business processes with the corresponding approval hierarchies are extremely structured” (B16), indicating that the creativity of organizational actors is hindered.

4.3 | Realizing BM Ambiguity

Firms in our sample aim to continuously enhance organizational sensemaking by making use of mechanisms for preserving the tolerance for heterogeneous BM schemas among organizational actors to maintain BM ambiguity (Cappellaro et al. 2021; Dwyer et al. 2021). As tensions can emerge from a multiplicity of BM schemas, firms have to anticipate and overcome them by making organizational actors' BM schemas more flexible. In doing so, organizational actors may view other BM schemas not as conflicting but as complementary to their BM schemas (Raffaelli et al. 2019). In doing so, they try to implement an organization-wide understanding that different BM schemas can act as the foundation for unconventional BMI activities (Gavetti 2012; Zuzul 2019). We identified three mechanisms firms use for maintaining BM ambiguity: (1) inducing tolerance for BM schema multiplicity, (2) broadening individual BM schemas, and (3) providing freedom for creative elaboration (see Table 4).

4.3.1 | Inducing Tolerance for BM Schema Multiplicity

The firms in our sample try to achieve awareness of the benefits of accommodating a multiplicity of BM schemas by considering organizational actors' emotions so that organizational actors remain open to and embrace new ideas (Leitch and Davenport 2007; Raffaelli et al. 2019). Accordingly, informants report that "constant dripping wears away the stone. If I am now saying provocatively 'you will be making 0 Euros with aftersales in a few years' then I will lose them completely" (A15), indicating a highly thoughtful and considerate communication of BMI activities.

Moreover, digital BMI often comes with fear and anxiety among those so that "it is important that you listen to where [their]

concerns are," and that "through a monolog, you will not be able to take people completely with you, and you need to take them mentally and emotionally" (C19), pointing toward a considerate and effective application of the mechanism.

With a similar awareness to be empathic, informants from case B explain that "I cannot just trash it and say it's shit" (B09) and that it is necessary "to motivate people through fun somehow, that they take on more or different tasks, that they think outside the box" (B10) for institutionalizing tolerance for divergent BM schemas.

4.3.2 | Broadening Individual BM Schemas

Compared to the lenses of a camera, the individual BM schema can be extended in composition and perspective by interacting with others who have divergent BM schemas (Raffaelli et al. 2019; Matoh et al. 2024). Informants report that, to both increase the mutual BM understanding and broaden the individual BM schema, it is important that the organizational structures make it easy to contact and collaborate with organizational actors throughout the firm. As indicated by respondents from case A, "you are sometimes confronted with new [business model] ideas because someone is looking for a contact person in the employee directory, and suddenly you have a contact for a topic that you thought you had nothing to do with" (A02), so that they can "realize that my colleagues just have completely different interests" (A06) which is reflected in how they approach digital BMI activities.

While respondents of case C show awareness that "silo thinking does not move the overall company forward, it only hinders it" (C01), they also point out that "a major challenge is internal collaboration on digitization, because there are far too many Gallic

TABLE 4 | Realizing BM ambiguity: definitions, links to extant literature, and exemplary quotes.

	Inducing tolerance for BM schema multiplicity	Broadening individual BM schemas	Providing freedom for creative elaboration
Definition	Achieve awareness of the benefits of accommodating a multiplicity of BM schemas by considering organizational actors' emotions.	Create and ensure the possibility for cross-functional collaborations for exchanging and, in turn, extending perspectives	Support organizational actors to work on unconventional ideas as expressions of their diverging BM understanding
Link to extant literature	Importance of emotional framing to achieving positive resonance and connection with organizational actors (Gavetti 2012; Raffaelli et al. 2019)	Cognitive frame flexibility as a factor to ensure the understanding of seemingly incompatible information and perspectives as compatible (Raffaelli et al. 2019; Matoh et al. 2024)	Frame multiplicity and organizational learning (E. Eisenberg 2007; Grewatsch and Kleindienst 2018)
Exemplary quotes	"It is important that you listen to where their concerns are , and that is why this exchange is needed. If you do it only through a monolog, you will not be able to take people completely with you, and you need to take them mentally and emotionally. " (C19)	"There should be a lot of freedom for people to work together on ideas and for people to pitch them in a relatively short time and then say 'great, let's pursue this further!'" (A13)	" We have to be open to things , and you are only open when someone puts an idea, however crazy, on the table and says: 'Let's think about it.'" (C09)

villages there” (C16), indicating the problem of having organizational actors with relatively homogeneous BM schemas isolated. Insights from the interviews show that the more frequently organizational actors with different BM schemas exchange their perspectives and experiences, the more they understand the individual focus, ultimately developing a tolerance for diverging BM schemas and broadening their own.

The interview results also indicate that the organizational structure must support cross-departmental collaborations. Accordingly, informants from case B remark that “it is not the people, and it is not the interpersonal cooperation, it is the structure itself, the organization is an issue” (B08) and that “everyone has their internal processing structures, which are rather a hindrance” (B12), underscoring that the effectiveness of this mechanism hinges on the internal structure.

4.3.3 | Providing Freedom for Creative Elaboration

Our analysis revealed that firms realize BM ambiguity by ensuring that organizational actors can work on innovative projects that do not necessarily contribute to the established BM but are potentially relevant to BMI activities. This contributes to the creative elaboration and exploration of those areas of the BM that are not communicated accurately, i.e., where BM ambiguity persists (E. Eisenberg 2007). Accordingly, informants of case A state that: “Especially in the area of digital business models, you have to give your colleagues more freedom. You can scale so much in the digital sector, and if you have good ideas, you can bring in so much money. That is why there should be a lot of freedom for people to work together on ideas” (A13), such as the “development and distribution of pothole maps, black ice maps, etc.” (A07), highlighting encouragement and support to work on innovative projects. This suggests that the individual BM schema prompts organizational actors to consider alternative digital BMI trajectories and creatively elaborate their unique interpretations of the established BM, thereby also contributing to organizational learning (Grewatsch and Kleindienst 2018).

It is also essential to support ideas that do not necessarily fit the predominant BM schema. Hence, firms have to ensure there is freedom for experimentation so that “even if only one or two out of ten new ideas are realized, it is still a huge success instead of continuing to work in the existing structures or with the existing business model” (C08). Especially in the context of “technically driven devices that we simply want to make smart” (C 08), concerns regarding IT- and cybersecurity can restrict creative ideas: “we definitely need appropriate cybersecurity solutions, otherwise the business model is not viable” (C07).

In case B, respondents clearly highlight that there are limited possibilities to work on innovative BMI projects: “It does not always have to be like, ‘I want you to have a virtual commissioning tomorrow,’ but rather, ‘I’ll take it, try it out, and maybe it will open up some opportunities for us.’ And this is where we always struggle” (B11).

Based on the informants’ experiences, organizational actors need to be aware that innovative and unconventional ideas are

valued within the firm as they can enhance sensemaking due to a multiplicity of BM schemas (Dwyer et al. 2021).

4.4 | Emergent Theoretical Framework: Mechanisms for Managing BM Ambiguity and Implications for Organizational Agility

The results of the cross-case analysis revealed different levels of the firms’ OA capability that match the previously identified differences in the utilization of the identified mechanisms for managing BM ambiguity. Table 5 shows that cases in which the mechanisms were applied comprehensively also exhibit a stronger expression of the subdimensions of OA.

Seeking uniformity aims to increase the speed and quality of decision-making processes and responses to external changes by establishing a shared understanding and support of the established BM and crucial digital BMI activities. Case B, in which the mechanisms were used the least, shows that “as a corporation, we are too slow. It was all a good idea, but by the time it was mature enough, (...) others had already finished” (B02), indicating slow decision-making processes. *Applying heterogeneity* actively uses the differences in individual BM schemas to increase the sensitivity to opportunities and threats arising from external changes, ensure holistic decision-making processes, and facilitate the development of various potential digital BMI activities to react rapidly. While we identified a moderate intensity in the application of mechanisms in this category, respondents from case C report: “I have a few examples from the past in mind. We missed the right momentum and were too late. If you have a certain trend in the clinical sector, especially in the area of therapies, if you’re not in it at the right time, then priorities sometimes shift” (C19), showing also a limited ability to respond timely to external changes. Lastly, *realizing BM ambiguity* aims to institutionalize awareness among organizational actors that BM ambiguity and the resulting differences in BM schemas can benefit the firms’ BMI activities. As tolerating a multiplicity of BM schemas can enhance sensemaking, the mechanisms ultimately increase organizational actors’ ability to sense opportunities and threats in the business environment. It also broadens the digital BMI repertoire of firms for responses to unpredictable and rapid changes, as the variety of ideas that originate from BM schemas distinct from the common perspective is promoted. Case A, indicating a comprehensive application of the mechanisms, also shows a high ability to sense and respond to changes in their business environment via BMI activities: “In terms of the adaptability of our business model, we are quite fast for a company of our size. If we say we need a new product or service, then a new product process is put in place and the product goes live, so it’s all quite quick” (A19). Therefore, the ability to capitalize on environmental changes is enhanced, as well as the capacity of a firm’s internal processes to translate innovative ideas in the face of change quickly. In sum, all three categories of mechanisms entail the potential to drive OA (Teece et al. 2016; Tallon et al. 2019).

Our findings can be condensed into a new theoretical framework linking mechanisms for managing BM ambiguity and OA (see Figure 1). In doing so, we build on Teece (2018a, 2018b) view that the design, refinement, and transformation of

TABLE 5 | Cross-case analysis: Level of organizational agility.

OA dimensions	Case A—Automotive manufacturer	Case B—Mechanical engineering	Case C—Medical technology
Sensing external changes	“We identify tech trends, and we carry them into the company. We have a start-up garage with which we scan thousands of start-ups per year and bring innovations in.” (A03) “Despite a volatile business environment characterized by bottlenecks in the supply of semiconductor components, pandemic-related lockdowns in China, and the war in Ukraine, [Firm A] can look back overall on a positive business performance in the year under review.” (Annual Report, 2022)	“Whenever something new comes along, we jump on it halfway passably but make such a wave out of it that time to market is completely out of focus, and we buy machines that are already running in dozens elsewhere.” (B02) “The CEO of [Firm B], is also convinced: ‘The companies complement each other ideally, and our international orientation means we are ideally equipped for this future technology.’” (Press Release 01, 2021)	“The BM is so broad-based that it can only align itself flexibly with the market because there is not this one business model. Instead, it moves in one direction or another, depending on the market and the customer situation.” (C05) “The war in Ukraine, which resulted in higher delivery costs and raw material prices, had a significant impact. The CEO, therefore, also addressed the ‘internal measures to reduce costs.’ Among other things, [Firm C] has closed a development center for sensor technology. (Press Report 01, 2023)
Holistic and rapid decision-making	“We are always involved in future topics, but we do not do it holistically and comprehensively as necessary. But we still have a certain amount of knowledge in the company to be able to react to it.” (A14) “We solve the world’s major challenges through innovation and technological progress. To do this, we use our ability to integrate highly complex technical systems into a product to tailor it optimally to the requirements of specific markets. In this way, we serve the markets in their individuality and speed of change with the appropriate technologies.” (Press Release 01, 2021)	“But we as a group are too sluggish. It was all a good idea, but by the time it was mature enough to be launched on the market and we as a group would have been prepared to buy partners, others would already have finished.” (B02) “We are gradually adjusting our portfolio to the development potential of the individual businesses. [...] we not only want to contribute to CO2 reduction significantly and consistently align our activities to sustainability criteria but also participate in the growth opportunities that arise, for example in the areas of renewable energies, hydrogen, and electromobility.” (Annual Report, 2021)	“Thanks to a base of reusable APIs, [Firm C] can move projects forward more quickly and respond flexibly to requirements, as new functions can be built on top of existing assets instead of having to be developed from scratch each time.” (Press Report 03, 2021)
Responding to opportunities and threats	“We are flexible to add new topics and change the old ones accordingly. So, it is fair to say that our business model is a safe bank, but we are also prepared to leave these paths and also develop new business models.” (A02)	“There are relatively many ideas, and the problem is actually that we are currently still so busy with projects.” (B17)	“I do not think we have enough internal capacity there for incubation that would benefit many new ideas. Capacities have certainly been created, but that is still not enough.” (C07)

(Continues)

TABLE 5 | (Continued)

OA dimensions	Case A—Automotive manufacturer	Case B—Mechanical engineering	Case C—Medical technology
	“The production system of [Firm A] is characterized by a high degree of flexibility and efficiency. This enables a rapid response to market changes and regional sales fluctuations.” (Annual Report, 2019)	“In the reporting year, we drove forward various innovations (...) in line with our climate strategy that addresses emissions of climate-damaging gases.” (Annual Report, 2019)	“We took countermeasures at an early stage and began to adapt our business models to the changed world systematically. This enabled us to drive forward future topics and invest further.” (Annual Report, 2022)
Overall OA assessment	High	Low	Medium

business models are outputs of higher-order dynamic capabilities. We conceptualize OA as a higher-order dynamic capability that enables firms to sense, seize, and transform in response to environmental change. Despite identifying the mechanisms, our analysis also revealed interrelations between the three categories of managing BM ambiguity that guide firms in orchestrating their resources and business model schemas.

In particular, by applying the mechanisms of seeking uniformity, key aspects of the BM are communicated accurately while, at the same time, firms intentionally leave space for organizational actors to form unique BM schemas based on the BM aspects that are left ambiguous. This enables the sampled firms to utilize divergent sensemaking originating from heterogeneous BM schemas to contribute to their OA capability (Sillince et al. 2012; Croft et al. 2022). Thus, seeking uniformity can be seen as the necessary condition for applying heterogeneity.

By applying heterogeneity, organizational actors increasingly understand the beneficial aspects of BM ambiguity, such as holistic decision-making to improve digital BMI activities and their implementation success. These mechanisms are complemented by mechanisms aimed at realizing BM ambiguity, which seek to establish and institutionalize a firm-wide openness among organizational actors to accommodate a multiplicity of co-existing BM schemas (Dwyer et al. 2021). This interrelation is necessary so that the awareness that divergent BM schemas can be beneficially utilized for digital BMI is not only preserved but also supported by mechanisms aimed at broadening individual BM schemas and establishing a persistent tolerance for BM schema multiplicity.

As BM schemas evolve through ongoing digital BMI activities, the need arises to establish a new common ground. Firms apply the mechanisms of seeking uniformity again to achieve a homogeneous interpretation of the BMI. To ensure that organizational actors' BM schemas do not deviate substantially due to the application of the two categories of applying heterogeneity and realizing BM ambiguity, firms need to frequently remind organizational actors of the key BM aspects through the ongoing utilization of mechanisms for seeking uniformity.

The explored mechanisms affect OA by enhancing the sense-making of novel information, which, in turn, affects both the sensitivity to external changes and the quality of decision-making processes (Dwyer et al. 2021). These mechanisms help firms balance coherence and flexibility in BM design since effective business model innovation depends on the ability to continuously align, test, and refine model components through dynamic managerial actions (Teece 2018a, 2018b). A firm's innovative capacity is enhanced as the breadth and depth of its digital BMI repertoire are positively affected by actively leveraging BM ambiguity to develop novel BMI ideas (Sharma and Jaiswal 2018; Matoh et al. 2024). This ultimately affects the response time required to react to external changes (Grewatsch and Kleindienst 2018; Ravichandran 2018).

5 | Discussion and Conclusion

By applying a qualitative-exploratory approach, our multiple case study identifies three different but interrelated

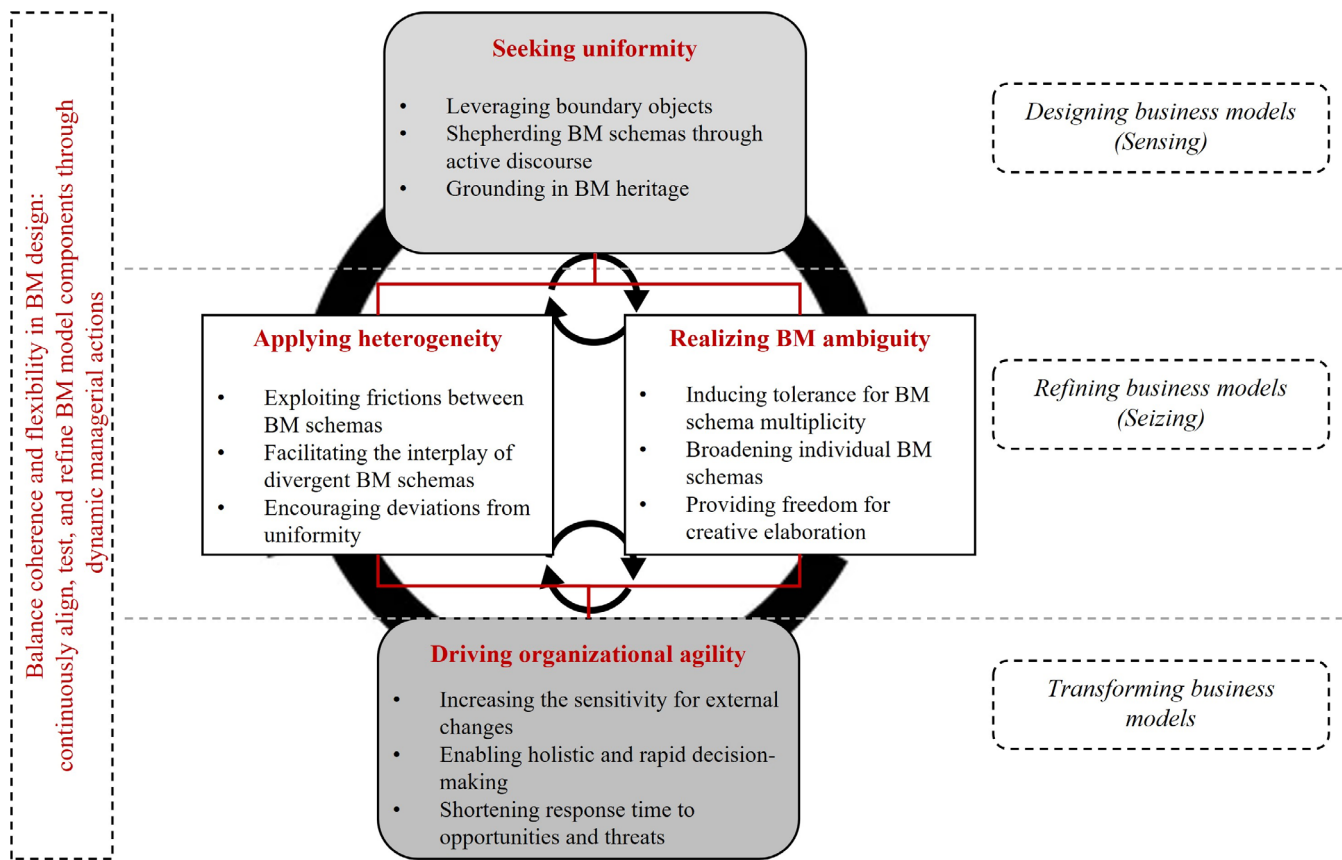


FIGURE 1 | Managing BM ambiguity for driving organizational agility. [Colour figure can be viewed at [wileyonlinelibrary.com](https://onlinelibrary.wiley.com)]

categories of mechanisms for actively leveraging BM ambiguity. We also examine how these mechanisms affect digital BMI activities (Nambisan et al. 2019; Schneckenberg et al. 2022; Spieth et al. 2025) and OA as a higher-order dynamic capability (Teece et al. 2016; Park et al. 2017; Teece 2018a, 2018b). In doing so, this study enriches the extant literature by demonstrating how BM ambiguity can serve as a cognitive antecedent for OA.

5.1 | Theoretical Implications

This study contributes to and extends current research as follows: First, building on Teece's (2018a, 2018b) view that the design, refinement, and transformation of business models are outputs of higher-order dynamic capabilities, we develop a novel theoretical framework linking mechanisms for managing BM ambiguity to organizational agility (OA). We conceptualize OA as a higher-order dynamic capability that enables firms to sense, seize, and transform in response to environmental change (Sambamurthy et al. 2003; Zahoor et al. 2024). The framework identifies three categories of mechanisms—seeking uniformity, applying heterogeneity, and realizing BM ambiguity—that guide firms in orchestrating their resources and business model schemas. These mechanisms help firms balance coherence and flexibility in BM design, echoing Teece's (2018a, 2018b) argument that effective business model innovation depends on the ability to continuously align, test, and refine model components through dynamic managerial actions. By introducing BM ambiguity as a productive tension that enhances learning and adaptive capacity (Abdallah and Langley 2014; Cappellaro

et al. 2021; Croft et al. 2022), we extend prior research on business model schemas and innovation to show how firms can leverage ambiguity to support digital BMI activities and more informed decision-making (Schneckenberg et al. 2017, 2022).

Second, our research contributes to knowledge about OA as a higher-order dynamic capability by demonstrating how the identified mechanisms for managing BM ambiguity can bolster a firm's ability to cope with rapid and relentless changes in its business environment (Teece et al. 2016; Park et al. 2017; Strobl et al. 2025). Researchers agree that to achieve OA, firms need to develop a repertoire of BMI options from which to select responses to change (Teece et al. 2016). In line with earlier research, the inductive analysis reveals that different cognitions stemming from BMI ambiguity can support the development of a broader repertoire of digital BMI options (Spieth et al. 2025). Our study reveals that BM ambiguity acts as a cognitive antecedent for OA (Tallon et al. 2019), since the multiplicity of coexisting BM schemas within a firm enhances sensemaking processes, ultimately contributing to a broad analysis and interpretation of novel information and stimuli, such as digital technologies (Dwyer et al. 2021). This, in turn, affects the comprehensiveness and quality of decision-making processes, as well as the time required to respond to external changes via BMI, by increasing a firm's innovative capacity (Ravichandran 2018).

Third, we contribute to research viewing ambiguity as a resource that firms can intentionally use for strategic actions and innovation (Abdallah and Langley 2014; Croft et al. 2022) by

analyzing how differences in the management of BM ambiguity can affect the ability to react to threats and opportunities. Research that elaborates on how firms can actively manage and leverage ambiguity stemming from the complexity of a BM is still scarce (Eisenberg and Goodall 1997; Eisenberg 2007; Shepherd et al. 2023). In contrast to the mainstream literature, we show that by establishing a common ground while simultaneously providing space for the creative elaboration of individual interpretations of a BM, firms can achieve flexibility due to a broader repertoire of potential digital BMI options. Hence, we contribute to ambiguity literature by providing a rationale for how intra-organizational mechanisms help maintain and leverage BM ambiguity (Cappellaro et al. 2021).

5.2 | Managerial Implications

The research findings can help managers navigate the complexities of BM ambiguity to drive OA capabilities. First, firms are advised to embrace the co-existence of divergent BM schemas and institutionalize a tolerant organizational culture. Encouraging teams to share and discuss their diverse views on the BM can lead to novel digital BMI activities and adaptive strategies that enhance OA. Firms should communicate the value of exploring multiple BM interpretations and the potential they hold for digital BMI and firm growth. Second, to capitalize on BM ambiguity, firms should implement mechanisms that encourage active discourse and interaction between organizational actors with divergent BM schemas, ensuring that various perspectives are considered. Firms can also develop a portfolio of BMI options by supporting digital BMI activities that are based on the creative elaboration of ambiguous BM aspects, enabling them to pivot in response to market changes or technological advancements quickly.

Third, it is crucial to continuously evaluate whether the current degree of BM ambiguity is conducive to flexibility or if it hampers decision-making and execution of BMI activities.

5.3 | Limitations and Future Research

We acknowledge that our study has several limitations that suggest further research opportunities. First, we focused on incumbents from three industries for our sample. To ensure the general validity of our findings, future research can investigate different industries in other countries, accounting for possible cultural and environmental variations in coping mechanisms with BM ambiguity.

Second, our study is primarily based on interviews and secondary data collected at one point in time. We mitigated this limitation by collecting secondary data from previous years and asking informants to reflect on past events and actions. However, further research can address this limitation by adopting a longitudinal design to examine the long-term effects of BM ambiguity and the effectiveness of the explored mechanisms. Future research can also apply other research designs, such as experiments and long-term observations, to derive and explain the effects of BM ambiguity and the tools to handle it.

Third, as we gathered data only at one point in time, our study lacks insights into how managers maintain a certain level of BM ambiguity within firms. Future research drawing on longitudinal data can close this gap by investigating how the suggested mechanisms are employed to maintain BM ambiguity.

Finally, we examined BM ambiguity within individual firms. Therefore, further research can explore the possible effects of BM ambiguity in collaborations with external partners and ecosystems. This can ensure the validity of the explored managerial mechanisms for dealing with BM ambiguity.

Funding

The authors have nothing to report.

Acknowledgements

Open Access funding enabled and organized by Projekt DEAL.

Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

Endnotes

¹ In contrast to uncertainty, which refers to the amount of information available for organization actors, ambiguity refers to the meaning and quality of information (Weick 1995). This conceptual delimitation is particularly important as ambiguity and uncertainty lead to different (cognitive) processes. While organizational actors facing situations of uncertainty try to gather more data and information to fill information gaps, ambiguity leads them to form interpretive frames (Zack 2000; Cappellaro et al. 2021).

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Supporting Information

Additional supporting information can be found online in the Supporting Information section. **Appendix:** Supporting Information.