

Business model tools as cognitive mediators: sensebreaking and sensemaking in business model innovation

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Abstract

Purpose – Business model innovation represents a central challenge for companies facing technological, competitive and institutional change, requiring incumbent firms to move beyond the taken-for-granted assumptions embedded in their established business models. This article examines how business model tools enable sensebreaking and sensemaking throughout the business model innovation process, investigating how their complementary mobilisation helps organisations construct and develop alternative business models in the context of digital servitisation.

Design/methodology/approach – The article draws on an interventionist case study conducted over nearly four years in an Italian manufacturer developing smart connected products for industrial machines. The empirical material was collected predominantly through meetings held during the project, semi-structured interviews and document analysis.

Findings – Using sensebreaking and sensemaking as the theoretical lens, we show how business model innovation unfolds through three interrelated cognitive mechanisms. First, business model tools destabilise incumbent business model assumptions by exposing the limitations of existing product logics. Second, they provide a shared interpretive platform through which alternative service-oriented business models are collectively reframed. Finally, they stabilise these emerging interpretations by translating them into organisational and calculative commitments.

Originality/value – The article conceptualises a break–then–make process in which sensebreaking opens interpretive space and sensemaking constructs alternative business model logics and translates them into organisational commitments. The study contributes to business model innovation research by shifting attention from business model design to the cognitive mechanisms that enable it.

Keywords Business model innovation, Business model tools, Sensebreaking, Sensemaking, Digital servitisation, Interventionist research

Paper type Research article

1. Introduction

Business model innovation represents a central challenge for companies facing technological, competitive and institutional change (Aagaard and Nielsen, 2021; Foss and Saebi, 2017). Organisations are increasingly required to reconsider their strategic orientation and to modify either specific components of their existing business models or their overall configuration (Wirtz *et al.*, 2016). The capacity to renew and reconfigure the business model can therefore play a fundamental role in sustaining firms' competitiveness and ensuring their long-term survival (Achtenhagen *et al.*, 2013).

For established organisations, however, undertaking business model innovation might be particularly challenging (Sund and Lindskov, 2022). Existing business models often embody taken-for-granted assumptions about customers, value propositions and revenue generation. These assumptions shape how managers interpret emerging opportunities and determine which alternatives they consider possible (Martins *et al.*, 2015; Tikkanen *et al.*, 2005). As a result, potentially transformative opportunities may be assimilated into the existing business model and treated as incremental extensions of established products, activities or customer relationships.

Consequently, the central challenge of business model innovation is not simply to generate alternative configurations but to enable managers to reinterpret where value resides, how it is



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created and how it can be captured. Business model innovation therefore depends as much on cognitive transformation as on business model design (Maitlis and Christianson, 2014; Weick, 1995).

Business model innovation research has generated a rich repertoire of business model tools – including canvases, patterns and configurational templates – to support the exploration and design of alternative business models (Athanasopoulou and de Reuver, 2020; Osterwalder and Pigneur, 2010; Zott and Amit, 2010). Although previous studies increasingly acknowledge that business models support communication and strategic conversations (Doganova and Eyquem-Renault, 2009; Magretta, 2002; Nielsen and Bukh, 2013), business model tools are still conceptualised primarily as analytical or representational artefacts deliberately mobilised to support the description and representation of alternative business model configurations. This perspective overlooks a broader stream of research showing that managerial artefacts actively shape organisational cognition by enabling actors to question assumptions, negotiate meanings and construct shared understandings (Spee and Jarzabkowski, 2009; Stigliani and Ravasi, 2012). Specifically, research has paid comparatively less attention to how business model tools shape organisational interpretation than to how they represent alternative business model configurations (Shepherd *et al.*, 2023). Moreover, existing studies have predominantly examined business model tools individually, even though business model innovation typically involves multiple tools mobilised sequentially throughout the innovation process. Consequently, we still know little about how different business model tools interact to support cognitive transitions during business model innovation (Athanasopoulou and de Reuver, 2020). Notably, existing research implicitly assumes that innovation begins once alternative business model configurations are already conceivable (Martins *et al.*, 2015). We argue instead that business model innovation begins earlier, when managers start questioning the assumptions embedded in their existing business models, thereby framing business model innovation as a process of cognitive transformation.

Against this background, this study aims to investigate how different business model tools interact throughout a business model innovation process to progressively disrupt an established business model logic and support the reconstruction of a new, shared one. Specifically, drawing on the concepts of sensebreaking and sensemaking (e.g. Maitlis, 2005; Pratt, 2000; Weick *et al.*, 2005), this study addresses the following research question.

RQ. How do business model tools enable sensebreaking and sensemaking throughout the business model innovation process?

We investigate this question in the context of digital servitisation, focusing specifically on smart connected products. By embedding sensors, connectivity and data-processing capabilities into physical goods, manufacturers can extend their offerings beyond the sale of hardware to include monitoring, optimisation, outcome-based and subscription services (Porter and Heppelmann, 2014), thereby shifting from selling products to providing integrated product-service offerings (Visnjic Kastalli and Van Looy, 2013). In the context of smart connected products, connectivity and data transform products into continuous sources of information capable of generating new value propositions and revenue streams (Favoretto *et al.*, 2022; Frank *et al.*, 2019; Paiola and Gebauer, 2020). Nevertheless, technological capability alone does not generate business model innovation. Data may reveal new opportunities, but they do not explain which services should be offered, to whom, through which relationships or under what revenue logic (Kohtamäki *et al.*, 2019; Sjödin *et al.*, 2020). The challenge is therefore not simply technological but interpretive. Digital servitisation consequently provides a theoretically revealing context in which to examine the cognitive dynamics of business model innovation.

Empirically, the article draws on an interventionist case study (Jönsson and Lukka, 2005) conducted within a nearly four-year collaborative research project involving an Italian manufacturer developing a new generation of digitalised, cloud-connected components. The study traces how an initial portfolio of twenty-eight candidate services was progressively

refined through the mobilisation of various business model tools, ultimately resulting in two business models being translated into validated business plans for implementation.

This study makes two main contributions. First, it advances business model innovation research (Sund and Lindskov, 2022; Teece, 2007; Wirtz *et al.*, 2016) by conceptualising innovation as a recursive cognitive process enabled by sensebreaking and sensemaking. It theorises a break-then-make dynamic in which complementary business model tools destabilise established interpretations, support reframing and consolidate emerging business model logics. Second, it contributes to research on business model tools (Doganova and Eyquem-Renault, 2009; Sort and Nielsen, 2018) by conceptualising them as cognitive mediators that shape attention, assumptions and perceived alternatives.

The remainder of the article is organised as follows. Section 2 reviews the literature on business model innovation, business model tools and organisational sensemaking and sensebreaking. Section 3 describes the research method. Sections 4 and 5 present and discuss the findings. Section 6 concludes by outlining the theoretical contributions, managerial implications, limitations and avenues for future research.

2. Theoretical background

2.1 Business model tools for business model innovation

A business model describes the architecture through which a firm creates, delivers and captures value (Teece, 2010; Zott *et al.*, 2011). Business model innovation refers to change in that architecture – including new value propositions, new configurations of activities and resources, or new revenue logics – rather than to product or process innovation alone (Chesbrough, 2010; Foss and Saebi, 2017; Massa *et al.*, 2017).

Research on business model innovation has generated a rich collection of tools (e.g. canvases, patterns, etc.) designed to support the (re)design of value creation, delivery and capture (Osterwalder and Pigneur, 2010; Zott and Amit, 2010). Within the dominant perspective, these tools are analytical instruments for disaggregating a business model into its constituent elements and representing them in a form that can be examined and rearranged. This view captures an important part of what these tools do. However, it disregards a second function that is equally significant for innovation, i.e. the interactional work that tools perform when actors gather around them to discuss, question and reach agreement.

A parallel stream of research deepens this function, portraying business models less as static representations than as narrative and communicative devices. Magretta (2002) describes business models as stories that explain how an enterprise works; Bukh (2003) and Nielsen and Bukh (2013) show how business models operate as platforms for aligning communication between a firm and its external stakeholders, particularly investors. Doganova and Eyquem-Renault (2009), analysing entrepreneurial ventures, show that the business model operates as a “market device” that demonstrates and enrolls by circulating among actors, mobilising allies and, performatively, bringing a prospective venture into existence through the interactions it enables.

Across these studies, the value of a business model – and, by extension, of the tools that render it explicit – resides not only in what it represents but also in the shared vocabulary it supplies, through which otherwise dispersed actors can construct a common object of discussion.

Empirical evidence of this communicative work is provided by Sort and Nielsen (2018), whose study of investment processes traced the introduction of a business model tool into an interaction between actors characterised by inherently different backgrounds and informational expectations. The authors observed that the Business Model Canvas reshaped the conversation, providing a shared language that bridged the gap between these different perspectives and allowed the parties to reason about the venture collectively. In their study, this communicative work had limits: when the parties failed to converge on the value proposition, the canvas did not resolve the disagreement but instead rendered it visible and, at times, intensified it (Sort and Nielsen, 2018).

Research has also begun to connect business models to sensemaking, highlighting how they serve as interpretive frameworks through which actors navigate change and construct viable courses of action. [Williamsson et al. \(2019\)](#) conceptualise business logic as a shared and contextually grounded understanding that connects strategy, business models and organisational processes, establishing the contours within which managers expect their business to develop. Similarly, [Sund and Lindskov \(2022\)](#) show that managers act on subjective interpretations of their competitive environment, which guide business modelling activities and influence the choice between incremental and radical business model innovation. Finally, [Rumble \(2019\)](#) demonstrates how material and metaphorical business modelling facilitates collective sensemaking, allowing actors to explore alternative configurations and future scenarios. At the same time, recent research shows that firms may exploit only a limited portion of the business model innovation space available to them, remaining anchored to familiar configurations ([Montemari et al., 2024](#)).

Taken together, this literature suggests that business model tools perform interpretive and communicative work, but it leaves the how of that work underspecified. It hints that tools can shift frames and build shared understanding, but it says less about the mechanisms through which these tools unsettle an entrenched interpretation and support the construction of a new one. We use the term cognitive mediation to capture this broader role. Whereas communication devices primarily facilitate the expression and exchange of interpretations, cognitive mediators also shape which assumptions become visible, which alternatives become thinkable and which interpretations become sufficiently plausible to guide action. Business model tools may therefore influence not only how managers communicate about business models, but also how they cognitively construct the space of possible business models.

The need for such cognitive transformation becomes particularly visible in contexts characterised by technological and market discontinuity. In recent years, one of the most consequential drivers of business model innovation has been digitalisation, and within digitalisation, the emergence of smart connected products ([Ancillai et al., 2023](#); [Frank et al., 2019](#); [Kohtamäki et al., 2019](#)). By combining physical components with sensors, software and connectivity, smart connected products generate data that can support monitoring, predictive maintenance, performance optimisation, usage-based pricing and subscription services ([Porter and Heppelmann, 2014](#)). These developments underpin digital servitisation, namely the transition from product sales towards integrated, data-driven product–service offerings ([Paiola and Gebauer, 2020](#)) enabled by digital technologies (e.g. the Internet of Things, cloud computing, digital twins and advanced analytics). This transition constitutes a process of business model innovation as it requires firms to reconfigure their value propositions, value-delivery, customer relationships and revenue mechanisms ([Palo et al., 2019](#)).

For manufacturing organisations, this transition is particularly demanding ([Karatzas et al., 2025](#); [Messina and Leotta, 2025](#)), and its difficulty is organisational and cognitive as much as technical ([Brekke et al., 2024](#)). Manufacturers must reconcile product and service logics, coordinate and align the interests of multiple ecosystem actors (i.e. original equipment manufacturers (OEMs), end users and software providers) and reconfigure not only the activities they perform, but also their understanding of what business they are in ([Sjödén et al., 2020](#)). Digital servitisation therefore provides a theoretically revealing context in which to examine how established business model interpretations are questioned and how alternative value creation, value capture and value delivery logics become conceivable. Understanding these dynamics requires a conceptual vocabulary sensitive to interpretation and cognition. The notions of sensebreaking and sensemaking provide such a lens and are therefore introduced in the following section.

2.2 Theoretical framing: a sensemaking and sensebreaking lens

Sensemaking can be defined as a process through which actors assign meaning to situations by drawing on their existing knowledge, prior experiences, values and beliefs, thereby

constructing an understanding of a situation that can guide action (Thomas *et al.*, 1993; Weick, 1995). It can therefore be regarded as a foundational mechanism of decision-making because it connects interpretation with action, since actors develop a particular understanding of reality and subsequently act in accordance with that interpretation (Weick *et al.*, 2005). Sensemaking is a retrospective, social and identity-grounded process through which actors select and delimit salient cues, interpret them using particular frames and construct meaning in interaction with others and in accordance with their understanding of who they are (Gioia and Chittipeddi, 1991). Furthermore, it entails constructing arguments and linguistic accounts that justify and legitimate organisational practices (Weick *et al.*, 2005). Applied to business model innovation, sensemaking describes how managers facing ambiguity – concerning emerging technologies, shifting customer needs and uncertain revenue logics – assemble a workable interpretation of what a new business model could be (Hill and Levenhagen, 1995; Tikkanen *et al.*, 2005).

Since actors interpret novelty through pre-existing schemes, an established business model logic tends to reproduce itself, while new cues are assimilated to the existing frame rather than prompting a new one. This is where sensebreaking becomes relevant and logically prior. Whereas sensemaking creates meaning, sensebreaking involves its “destruction or breaking down” (Pratt, 2000, p. 464). In this sense, it disrupts a taken-for-granted understanding and opens a “meaning void” that must subsequently be filled (Pratt, 2000, p. 464). It is typically enacted through practices such as questioning established assumptions and redirecting attention. These interventions may stimulate adaptation and learning, but they can also lead to unsuccessful or dysfunctional outcomes (Almqvist *et al.*, 2011; Maitlis and Christianson, 2014).

Almqvist *et al.* (2011) draw on these insights to show how organisations facing fundamental environmental change may need sensebreaking routines to unlearn established ways, precisely because organisational technologies tend instead to promote stability. Studying an organisation forced to re-evaluate its purpose when its environment changed fundamentally, they argue that some organisational technologies (e.g. budgets, performance measures, etc.) reproduce the taken-for-granted. Such organisations therefore require destabilising activities: a reflective stance from which goals, strategy and even the organisation’s reason to exist can be questioned. In their study, sensebreaking proceeds through questioning and redirecting, and it can be enacted through features that deliberately disturb a settled order rather than confirm it. Destabilisation, in this sense, is a precondition for arriving at a new orientation.

We accordingly define sensebreaking in the business model domain as the destabilisation of an established business model logic that opens a void of meaning and renders reconstruction necessary (Almqvist *et al.*, 2011; Pratt, 2000). Sensemaking, in turn, refers to the social and ongoing reconstruction of a plausible and shared business model logic from enacted cues (Weick, 1995).

Read together, sensebreaking and sensemaking operate in sequence rather than in isolation, and artefacts are often implicated in both moments. Existing devices, when relocated into a new frame, can shed their former meaning and take on another (Giuliani, 2016), and the same instruments that help actors make sense of a situation can be the means by which a prior sense is broken (Giuliani and Skoog, 2020). It is this articulation – the breaking of an established logic as the enabling condition for a new one – that the present study examines in the context of the shift from a product logic towards digital servitisation.

3. Research method

This article adopts an interventionist research approach (Dumay, 2010; Jönsson and Lukka, 2005, 2006), in which the researcher actively participates in organisational processes rather than observing them from the outside. Interventionist research is particularly suited to contexts in which understanding how tools are mobilised in practice requires immersion in the organisational setting in which they operate (Quarchioni and Chiucchi, 2023). The approach

entails a dual commitment: solving a practical problem alongside organisational actors and generating theoretical contributions that extend beyond the specific setting (Jönsson and Lukka, 2005). Consistent with a “strong” interventionist approach (Chiucchi, 2013; Dumay, 2010), the researchers acted as members of the team, cooperating with organisational actors rather than acting as external advisers, thereby becoming active co-designers of the business-model innovation process.

This methodological approach is well established within business model research, in which interventionist and action-oriented research designs have been adopted to investigate business model creation and transformation (Ahokangas and Myllykoski, 2014; Heikkilä *et al.*, 2014). Within this stream, interventionist approaches have been used to examine how business models evolve longitudinally through sustained interaction between researchers and practitioners, combining participant observations with semi-structured interviews and document analysis (Lund and Nielsen, 2014, 2018).

The empirical setting of this study is a nearly four-year research project involving an Italian manufacturing company: Company Gamma. Company Gamma is a global B2B manufacturer of machine-tool components, with subsidiaries operating in several major international markets. OEMs install its products on machines used by end users across a wide range of industries, from furniture to automotive components and optical lenses. The project created the technological preconditions for digital servitisation by equipping a new product with Internet of Things (IoT) connectivity and a proprietary cloud platform. Specifically, the connected component communicates information about its own behaviour, supporting preventive and predictive maintenance, informing process and design improvements, and enabling data-based services for customers and suppliers. Within this project, the research team supported company members in identifying and developing new business models enabled by the digital technologies embedded in the new product.

Company Gamma was selected through theoretical sampling (Eisenhardt, 1989; Patton, 2002), as it represented an information-rich setting in which the emergence of digital servitisation was occurring in real time, making it particularly suitable for observing the cognitive dynamics through which business model innovation unfolds. Rather than seeking statistical generalisation, the objective was to achieve analytical generalisation through theory development (Jönsson and Lukka, 2005).

3.1 Data collection and analysis

The empirical material was collected predominantly through meetings held during the project, semi-structured interviews and document analysis. Data collection spanned the entire project, from mid-2022 to the early months of 2026. Data were collected primarily during 30 meetings (each lasting between 1 and 4 hours) between the research team and the Heads of the Sales, Service, Purchasing, Product and Innovation, Research and Development, and Information Technology (IT) functions (see Table 1). The meetings were held at the organisation’s head office or online, and, when possible, were recorded and subsequently transcribed. When conversations could not be recorded, detailed notes were taken immediately after the meetings. Work proceeded through a series of meetings in which the research team introduced each tool, guided its application and iterated the resulting representations with company members.

The material collected during the meetings was complemented by three semi-structured interviews with the Head of the Product and Innovation function. This organisational member followed the project continuously from its inception and acted as the primary organisational interface between Company Gamma and the research team. Each interview lasted approximately one hour and was recorded and transcribed. The interviews were conducted between late 2025 and early 2026, during the final stage of the research project, to refine the reconstruction of the intervention and confirm the issues that had emerged during the meetings. Finally, document analysis complemented these sources and included official reports, presentations used in internal meetings and internal working documents.

Table 1. List of meetings between the research team and organisational members

Date of the meetings	Duration (approx. hours)
21st July 2022	4
7th September 2022	1.5
26th January 2023	4
17th February 2023	1
22nd February 2023	2
24th February 2023	4
14th March 2023	1
31st March 2023	2
7th April 2023	1.5
11th April 2023	1.5
14th April 2023	4
27th April 2023	1
5th May 2023	2
22nd June 2023	2
13th July 2023	4
21st September 2023	1.5
9th November 2023	2
20th November 2023	2.5
4th December 2023	2
18th January 2024	1.5
29th February 2024	3.5
19th March 2024	2
25th September 2024	2
17th October 2024	3.5
15th January 2025	1
6th March 2025	2
21st May 2025	2
29th October 2025	3
20th February 2026	2
9th March 2026	4
<i>Tot. 30 meetings</i>	<i>Tot. 70 hours</i>
Source(s): Authors' own work	

The intervention unfolded in three main stages, each involving different business model tools. Business model tools may assume different forms and support different tasks across the stages of business model innovation. [Doganova and Eyquem-Renault \(2009\)](#), for example, show that business models may materialise through artefacts ranging from presentations to business plans and may operate simultaneously as narrative and calculative devices. Consistent with [Schwarz and Legner \(2020\)](#), we use the term business model tool broadly to encompass models, analyses and methods mobilised to explore, articulate, evaluate and develop business models. We therefore adopt a functional understanding, according to which an artefact is considered a business model tool based on the role it performs in the business model innovation process.

In the first stage, the working group mapped 28 candidate services enabled by the connected components. It assessed each service using a prioritisation matrix, reducing the portfolio to seventeen initiatives (six business models and eleven features). In the second stage, the six business models were articulated through a Strengths, Weaknesses, Opportunities, and Threats (SWOT) analysis and the Business Model Canvas and then extended to the environmental layer of the Triple Layered Business Model Canvas ([Joyce and Paquin, 2016](#)). In the third stage, the two business models judged to be the most promising were translated into business plans covering a three-year horizon; these were drafted by the research team and refined with the firm's members.

The researchers' interventionist role inevitably influenced both the development of the business model innovation process and the empirical material generated during the project. The researchers contributed to shaping the business model innovation process through the selection, introduction and sequencing of the tools. The sequence of tools was developed collaboratively with the organisation as the researchers proposed different tools in response to practical needs emerging during the intervention, while their application and refinement were discussed jointly with organisational participants. Rather than considering this involvement a limitation, interventionist research views researchers' participation as a source of theoretical insight, provided that analytical interpretations remain explicitly grounded in empirical evidence. Throughout the project, the researchers deliberately distinguished between facilitating managerial discussions and developing theoretical interpretations, documenting decisions and continuously reflecting upon their own influence on the evolving process.

Data analysis was conducted iteratively alongside data collection and was informed by abductive logic (Kennedy and Thornberg, 2018), allowing empirical observations and theoretical concepts to inform one another throughout the research process. Rather than applying a predefined analytical framework, the analysis evolved through an iterative dialogue between the empirical material and the emerging theoretical interpretation.

The analysis unfolded in four stages. First, all empirical material, including meeting transcripts, field notes, interviews and internal documents, was read several times independently by each of the three authors to develop a shared understanding of the organisational context and reconstruct the evolution of the intervention. This familiarisation enabled the development of a comprehensive narrative of the company's business model innovation journey and provided the contextual basis for the subsequent analysis.

Second, following Langley's (1999) temporal bracketing strategy, the intervention was organised into three analytically distinct yet sequentially interconnected phases corresponding to the progressive development of the innovation process: (1) the mapping and prioritisation of digitally enabled service opportunities, (2) the strategic, economic and environmental development of alternative business models and (3) the elaboration of business plans for the selected business models. These phases represent analytical rather than strictly chronological categories, as episodes of questioning, interpretation and revision occurred throughout the intervention.

Third, within each phase, empirical episodes describing the use of business model tools were coded according to their dominant interpretive function. Initial data-near codes captured how organisational members framed the connected product, evaluated service opportunities, discussed customer value, revised existing assumptions and justified strategic decisions. Through iterative comparison across meetings and data sources, these first-order observations were progressively grouped into higher-order interpretive categories reflecting whether the tools primarily challenged incumbent assumptions, facilitated the construction of alternative interpretations, or consolidated emerging business model logics. These categories were subsequently interpreted through the theoretical concepts of sensebreaking and sensemaking, allowing the theoretical framework to emerge progressively from the interaction between empirical evidence and existing theory.

Finally, emerging interpretations were continuously challenged against the empirical material through constant comparison (Eisenhardt, 1989). Coding decisions and theoretical interpretations were discussed among the three authors and refined until a shared interpretation was reached. This iterative process strengthened analytical rigour while ensuring that the proposed explanations remained firmly grounded in the empirical evidence.

To enhance the credibility of the findings, several strategies commonly adopted in qualitative interventionist research were employed. Methodological triangulation combined evidence from intervention meetings, semi-structured interviews and internal documentary sources, while investigator triangulation was ensured through the independent interpretation of the empirical material by the three authors before they reached shared analytical conclusions. The longitudinal nature of the intervention, spanning almost four years, enabled

continuous comparison between emerging interpretations and subsequent organisational developments, reducing the risk of relying on isolated observations. Finally, interpretations were repeatedly discussed with organisational participants throughout the intervention, allowing emerging explanations to be challenged, refined and compared with practitioners' experiences. Throughout the project, the authors also engaged in continuous reflexive discussions to minimise confirmation bias and maintain analytical distance.

4. Findings

We organise the findings around the three main phases identified through the data analysis. Although the intervention unfolded as a continuous organisational process, the three phases presented below emerged inductively during the analysis through temporal bracketing. They therefore represent analytical rather than strictly chronological categories. Each phase is characterised by a dominant cognitive function performed by the business model tools, while recognising that elements of sensebreaking and sensemaking continued to coexist throughout the intervention.

4.1 Phase 1 – mapping and prioritisation

At the beginning of the project, Company Gamma defined itself around its core product: a high-precision machine-tool component that it engineered, manufactured and sold. The project began with a mapping conducted by the research team in collaboration with key organisational members from Company Gamma's Sales, Service, Purchasing, Product and Innovation, Research and Development, and IT functions. Through a combination of desk analysis and a series of meetings, 28 candidate services that the company could potentially offer by leveraging the data flows generated by the new connected product were identified. This initial list spanned a broad spectrum, from incremental enhancements to existing service offerings to structurally new configurations requiring significant organisational reconfiguration. At this stage, however, the connected component was conceived by the organisational members as an enhanced product whose data could be leveraged to support additional services, rather than as the foundation of a fundamentally different business model. As emphasised by the Head of Product and Innovation and the Head of Research and Development:

The fundamental problem is that you can invent whatever you want, but if the customer is not interested, the customer will never buy it, and we will simply have wasted our time. Throughout all of this, we must bear in mind that someone will have to buy these products, and we will have to sell them to them. (Head of Product and Innovation – meeting)

Some of these services partially overlap with activities that already exist or that we already perform and may cannibalise them. Pay-per-use models, usage-based contracts, or rental services may reduce repair revenues, because repairs become included in the price paid by the customer. We have to consider the potential loss and avoid creating diseconomies. (Head of Research and Development – meeting)

At this point, a conceptual distinction was introduced between two categories: features and business models. Features were defined as “*services deliverable in continuity and coherence with the way the company currently operates*” (Internal PowerPoint presentation), that is as upgrades to existing offerings that could be implemented without significant new investment or relational reconfiguration and were therefore consistent with the current model. Business models, by contrast, were defined precisely as services requiring “*new processes, new partner relationships, new resources, and entry into market segments not previously served by Company Gamma*” (Internal PowerPoint presentation), as such services marked a discontinuity with what the company had previously done and had implications at both the economic and environmental levels.

This categorisation took the current product-sale architecture as the baseline against which everything was measured and acknowledged that some opportunities could be absorbed into that baseline (features) while others could not (business models). Accordingly, the organisational members, in collaboration with the research team, were required to sort the 28 services into features and business models. This distinction prompted the organisational members to reconsider whether each opportunity could still be interpreted within the established product-sale logic. As the Head of Product and Innovation reflected:

Up to that point, we had a list of possible services around the product. The distinction forced us to ask a different question: is this simply something more that we can add to what we already sell, or does it require us to change the way we do business? (Head of Product and Innovation – interview)

A first filtering mechanism was then applied by constructing a prioritisation matrix. Each service was assessed along two dimensions, namely implementation complexity and expected benefits. The resulting matrix enabled the research team and company representatives to distinguish between services promising high benefits at manageable complexity and those whose potential was offset by disproportionate implementation requirements. More fundamentally, implementation complexity was assessed exclusively from Company Gamma's perspective. By contrast, benefits were evaluated separately for the three key actors in the value chain: Company Gamma, OEMs and end users.

This multi-actor perspective required participants to assess value from perspectives beyond that of the manufacturer. Rather than equating value solely with product performance, they had to consider how different services generated benefits for multiple stakeholders across the value chain.

By requiring medium-to-high benefits for all three actor groups as a prerequisite for selection, the matrix embedded a relational understanding of value into the evaluation process, thereby challenging a traditional product-centric perspective. The prioritisation matrix ranked service opportunities, but in doing so it exposed the fragility of the firm's established view of where value should be located. The relevance of this relational shift was also recognised by the Head of Sales, who observed that:

Our route to the market is not direct: we sell our products to machine builders, who in turn sell the machines to those who use them. Therefore, the service involves not only the user of the machine, but also those who sell and support it, and someone from our company will have to remain involved. (Head of Sales – meeting)

The final selection combined this multi-actor assessment with an evaluation of market maturity, reducing the initial portfolio of twenty-eight service concepts to seventeen initiatives, comprising six business models and eleven product features. The six business models became the focus of the subsequent phases, during which they were subjected to a more structured and multi-layered evaluation process.

At this stage, the distinction between features and business models, together with the prioritisation matrix, primarily performed a sensebreaking function. Rather than generating solutions, these tools challenged the assumptions embedded within the firm's dominant product logic and created the cognitive conditions necessary for subsequent reinterpretation.

4.2 Phase 2 - strategic, economic and environmental analysis

Once the portfolio had been narrowed down, the six business models entered a phase of more detailed articulation. The feature/business model distinction and the prioritisation matrix had served to unsettle existing assumptions; the tools mobilised in this phase – first a SWOT analysis and then, more centrally, the Business Model Canvas – were instead used to construct and specify alternative business model configurations. This shift also affected the relationship between the parties. While the previous phase had largely involved the university team confronting Company Gamma with the tensions and inconsistencies embedded in its initial

product-oriented framing, the articulation phase was more explicitly co-produced. The university team provided the canvas structure and guided the sequence of its use, whereas Company Gamma's members contributed the operational knowledge required to populate the blocks. In this phase, the Business Model Canvas became a shared working platform through which researchers and company members jointly negotiated what the connected component could come to mean.

Before developing the six individual business models separately, the team first constructed a common SWOT analysis, structured to capture both shared strengths, such as existing specialised know-how and proprietary technology, and shared threats, such as cybersecurity risks and connectivity issues. The SWOT analysis was accompanied by a "common" Business Model Canvas designed to identify the elements that cut across all six models. Only subsequently were model-specific canvases developed to capture the distinctive features of each alternative.

This stage required the firm and the university team to agree on a shared value proposition for the entire portfolio, before articulating the individual business models. In the Value Proposition block of the common canvas, the group formulated the following shared value proposition:

The sale of innovative, high-performance connected components to which a set of digital services is attached. ("Common" Business Model Canvas, internal working document)

The formulation of this shared value proposition marked an important moment of reframing. It gave the parties a common vocabulary for moving beyond the view of the component as a finished good whose value is realised at the point of sale. The connected component came to be understood as the material basis for an ongoing service relationship, enabled by the data generated during its use and sustained through the digital services attached to it. This emerging interpretation was explicitly articulated in one of the meetings:

These connected components enable us to provide services through which users can see Company Gamma as a partner throughout the entire product life cycle and for all their needs – with new, renewed and reconditioned components, all digitalised, continuously monitored and controlled to deliver maximum efficiency and maximum lifetime. (Head of Service – meeting)

This reframing emerged gradually from the interaction between the research team and company representatives, as they worked through the canvas and negotiated the meaning of the connected component within the emerging portfolio of business models.

The model-specific canvases then further differentiated this shared premise by redescribing the same connected component through multiple value logics, identifying distinct patterns. The reconditioning model situated the component within a circular logic of life extension. The retrofit model, which involved upgrading earlier-generation components into connected ones, reframed the installed base as a resource that could be reactivated rather than replaced. The usage-based warranty extension model recast the warranty as a service calibrated to the end user's actual operating conditions. The on-site assistance model, offered for a monthly fee, reframed maintenance as a recurring subscription-based relationship.

Across these canvases, the customer segment was also reconfigured. Value was no longer addressed exclusively to the firm's existing OEM customers. The end user entered the business model as a relevant recipient of value in its own right. As emphasised by the Head of Sales:

The OEM is our main customer: it purchases the component, manufactures the machine and sells it, and after that we lose track of the product. As long as the OEM is present, it manages the relationship with the end user. These digital services give us the possibility to connect directly with the end user and to develop a relationship that is currently very limited, but could become much stronger over time. (Head of Sales – meeting)

At the same time, the OEM's role expanded beyond that of customer to encompass the roles of channel and partner within the emerging service network. As commented by the Head of Research and Development:

A business model that could work is one that guarantees the OEM transparency and gives it a share of the revenue. The point is not to bypass the OEM, because otherwise it may become annoyed and stop buying from us. (Head of Research and Development – meeting)

In parallel, the revenue logic shifted from traditional product sales towards subscriptions, usage-based fees and recurring service charges. This led Company Gamma to move beyond its established product-sale perspective and to consider how value would be perceived, accessed and captured from the standpoint of both OEMs and end users, whose roles had previously remained peripheral within the dominant frame.

The subsequent extension to the Triple Layered Business Model Canvas carried this reframing further. In addition to the economic layer, each model was represented through the environmental layer, which mapped its life-cycle implications in terms of materials, production processes, distribution, end-of-life management, and environmental impacts and benefits, making visible impacts that the conventional canvas tends to leave implicit. The environmental dimension had not initially occupied a central position in the company's interpretation of the project. As the Head of Purchasing function acknowledged during a meeting:

Sustainability was not central to the project at the outset, but it is certainly something we would have to address. (Head of Purchasing – meeting)

The inclusion of the environmental layer widened the shared understanding of value by bringing circularity, product life extension and environmental impact into the business model discussion.

By the end of this phase, the university team and Company Gamma had jointly developed a service-, data- and sustainability-oriented language for discussing the connected component. Specifically, by making explicit the cost structures, revenue streams, key resources and partner dependencies associated with each business model option, the Business Model Canvas and the Triple Layered Business Model Canvas generated a shared analytical vocabulary that bridged the research team and company managers. However, this language had not yet produced a final choice among the alternatives. Rather, the Business Model Canvas operated as a preparatory instrument, creating the conditions for the quantitative financial modelling that followed.

During this phase, the tools' dominant function shifted from disruption to collective interpretation. Rather than questioning existing assumptions, the business model tools progressively enabled organisational actors to negotiate a shared understanding of new value creation mechanisms.

4.3 Phase 3 - business plan development

The previous phase had expanded the range of possible interpretations of the connected components. However, the portfolio of alternative business models still required convergence. At this stage, Company Gamma selected two business model configurations for the development of full business plans: retrofitting earlier-generation components into connected components and extending warranties on a usage basis. These two models were regarded as capable of combining the main success factors emerging from the broader portfolio. The selection of the two business models was based on a comparative assessment informed by the preceding SWOT analysis and Business Model Canvas. The assessment considered their strategic fit with the company's existing capabilities and priorities, their ability to respond to identifiable market needs, their implementation feasibility and their potential to generate economically attractive and environmentally sustainable outcomes. The two models were also considered mutually reinforcing: the diffusion of connected and upgraded components would create the installed base and operational conditions required for the subsequent provision of usage-based warranty services.

The business plan contributed to stabilising these interpretations by translating them into calculative form. As observed by the Head of Product and Innovation:

We need to show that this is not only a technical proposition. It also has to be marketable, and there has to be a credible path to market. (Head of Product and Innovation – meeting)

The business plan for each model was structured to provide a multi-year financial projection, articulated around market-size estimation, revenue modelling, variable and fixed-cost composition, contribution-margin analysis and break-even quantification over a three-year horizon. Through this translation, the service logic moved from a conceptual proposition to a quantified, assessable claim about how Company Gamma could generate value and capture revenue from the connected components. Specifically, the business plans made explicit a recurring-revenue logic that highlighted a significant change in the economic meaning attributed to the installed base:

We have to take account of an installed base that can generate recurring revenues through access to digital services and that grows as the number of connected products increases. We assumed that 50 products would be connected in the first year and then 250. (Head of Service – meeting)

As in the previous phase, the elaboration of these plans followed an iterative co-construction process between the research team and members of Company Gamma, with multiple rounds of revision conducted during focused sessions. The university team prepared an initial structure for each plan, which was subsequently refined through meetings with company members. These interactions enabled the plans to be adjusted in light of the firm's operational knowledge, commercial assumptions and strategic priorities. The business plan for the retrofit model projected progressive growth in market share, with a declining break-even threshold that reflected the reduction in fixed costs achieved through operational learning. The business plan for the usage-based warranty extension model indicated a high-margin revenue stream with limited fixed-cost exposure, with profitability contingent on market penetration. Although the two business plans displayed different financial profiles, both yielded positive and strategically coherent results. On this basis, Company Gamma decided to proceed with the implementation of both business models.

Finally, the business plan translated emerging interpretations into organisational commitments. At this point, sensemaking stabilised through calculative representations that supported managerial decision-making.

5. Discussion

The findings show that, in an organisation undertaking business model innovation, business model tools act as cognitive mediators, supporting the transition from the disruption of an established business model logic to the consolidation of a new one; i.e. business model tools play a relevant role in the break-then-make dynamic. Drawing on the case of Company Gamma, we conceptualise three mechanisms through which business model tools enabled sensebreaking and sensemaking, thereby fostering business model innovation: destabilising, reframing and stabilising. [Figure 1](#) summarises this process.

First, the distinction between features and business models and the subsequent prioritisation matrix performed a destabilising function. These tools supported

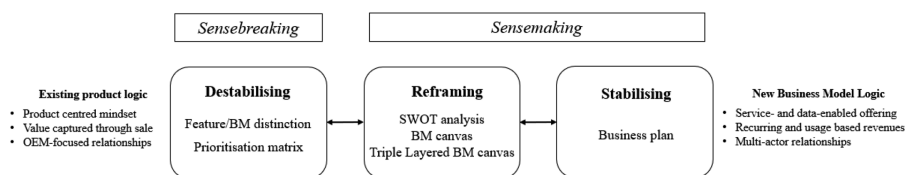


Figure 1. Business model tools as cognitive mediators in business model innovation. **Source(s):** Authors' own work

sensebreaking by disrupting the organisation's product-centred logic and redirecting attention towards cues that this logic had previously marginalised (Almqvist *et al.*, 2011; Pratt, 2000). Specifically, the feature/business model classification required organisational actors to distinguish opportunities that could be absorbed within the existing product-sale logic from those demanding new processes, relationships, resources and revenue mechanisms. The multi-actor prioritisation matrix further destabilised the incumbent frame by decentring the manufacturer's own viewpoint. It required value to be assessed from the perspectives of OEMs and end users, rather than solely from that of Company Gamma.

The second mechanism, reframing, developed primarily through the SWOT analysis and the Business Model Canvas. Once the existing frame had been loosened, these tools – and particularly the Business Model Canvas – facilitated sensemaking (Weick *et al.*, 2005) by enabling organisational actors to select, connect and reinterpret salient cues concerning customers, partners, value propositions and revenue logics, and to assemble them collectively into plausible alternative business model interpretations. The move to the Triple Layered Business Model Canvas offers further evidence that participants understood business model tools as interpretive devices rather than as neutral templates, as it brought environmental consequences into the scope of collective interpretation and strategic consideration.

The stabilising mechanism occurred through the development of business plans for the two selected configurations. Following the exploratory expansion of possible interpretations, organisational actors needed to determine which business models were sufficiently credible to support implementation. The business plans supported the consolidation of sensemaking by translating the emerging service-oriented logics into assumptions concerning market size, adoption, pricing, costs, margins, break-even points and recurring revenues. In doing so, they stabilised collectively constructed interpretations by translating them into organisational commitments.

Overall, the three mechanisms refine our understanding of business model innovation by highlighting the cognitive processes that enable the redesign of business model configurations. Dominant perspectives have primarily framed business model innovation as the redesign of organisational configurations through which value is created, delivered and captured (Foss and Saebi, 2017; Teece, 2010; Zott and Amit, 2010). While this structural perspective remains fundamental, our findings suggest that it captures only part of the phenomenon. Before organisations can redesign business models, managers must first reconstruct the interpretive frames through which opportunities become conceivable. Accordingly, business model innovation can be understood not only as the design of new organisational configurations but also as the progressive transformation of managerial cognition. Business model tools therefore operate as cognitive mediators that enable organisations to question established assumptions, negotiate alternative interpretations and ultimately enact new business opportunities. In so doing, our findings complement Montemari *et al.* (2024), who show that firms may leave part of the available business model innovation space unexplored. Our findings suggest that exploiting this space depends not only on the availability of alternative configurations, but also on their cognitive accessibility to managers. Business model tools might contribute to this accessibility when used to challenge incumbent assumptions and make alternative configurations conceivable.

Instead of conceptualising business model innovation as a linear design activity, the proposed framework depicts it as an iterative cognitive process in which different business model tools perform complementary interpretive functions. Their effectiveness resides in their sequential mobilisation rather than solely in their individual characteristics. From this perspective, the effectiveness of business model innovation therefore depends less on identifying the “best” tool than on orchestrating complementary tools in an appropriate sequence (Massa *et al.*, 2017; Schwarz and Legner, 2020; Sort and Nielsen, 2018). This finding extends the work of Rumble (2019), who illustrates how a specific modelling artefact supports sensemaking, communication and scenario exploration. Building on this insight, our study shows that the cognitive effects of business model tools depend not only on their

individual characteristics, but also on their position within a broader process and on their relationship with other tools mobilised across different stages.

Furthermore, as noted above, rather than progressing linearly from problem identification to business model configuration, business model innovation emerges as a recursive interpretive process in which questioning, reframing and stabilising continually interact. Although [Figure 1](#) represents the dominant temporal sequence identified in the case, the process was not mechanically linear. Local episodes of questioning, interpretation and revision occurred within each phase, and actors occasionally revisited earlier assumptions as new information emerged. The framework therefore captures a dominant progression from sensebreaking to sensemaking, while allowing for recursive movement within and between phases. Importantly, these cognitive phases are neither independent nor interchangeable. Rather, they form a path-dependent sequence in which each stage creates the cognitive conditions required for the next. Destabilisation weakens the plausibility of the incumbent business model and opens an interpretive space for alternatives ([Almqvist et al., 2011](#)). Without this disruption, subsequent sensemaking would largely reproduce existing assumptions rather than generate genuinely novel interpretations. Reframing, in turn, remains provisional unless emerging interpretations are stabilised through calculative and organisational commitments capable of supporting coordinated action; similarly, new calculations may reopen questions about value propositions.

This interpretation extends previous research on business model tools. Existing studies have established that business model tools facilitate communication, stakeholder alignment and the construction of shared understandings ([Bukh, 2003](#); [Doganova and Eyquem-Renault, 2009](#); [Sort and Nielsen, 2018](#)). Our findings confirm this communicative role but suggest that, before enabling convergence, business model tools first supported divergence by making established assumptions visible and therefore open to challenge, destabilising an existing understanding before constructing a new one. This extends [Almqvist et al. \(2011\)](#), who argue that organisations facing fundamental change require sensebreaking mechanisms capable of disrupting stabilised routines. This finding also resonates with [Sund and Lindskov's \(2022\)](#) argument that managers' subjective interpretations of their competitive environment influence whether business modelling produces incremental or more radical innovation. In the case of Company Gamma, however, the distinction between features and business models, together with the prioritisation matrix, did not simply express those interpretations but made the underlying distinction between continuity and discontinuity explicit and therefore open to collective scrutiny.

Building on this communicative perspective, [Sort and Nielsen \(2018\)](#) show that business model tools facilitate communication by providing a shared vocabulary that bridges the gap between different perspectives and backgrounds. Our findings extend this view by showing that tools do not merely help actors articulate existing interpretations; they can also shape the interpretive frames through which business opportunities are understood. Whereas communication devices structure interaction, cognitive mediators foreground certain assumptions and relationships while rendering others open to question. In Company Gamma, a shared language became transformative only after the initial tools had destabilised the product-centred logic and made alternative interpretations conceivable.

The findings also speak to research on digital servitisation. Existing studies consistently argue that manufacturers must overcome deeply embedded product-centric logics to develop digitally enabled service business models ([Kohtamäki et al., 2019](#); [Porter and Heppelmann, 2014](#)). However, this transition has generally been conceptualised either as a necessary precondition or as an outcome of business model innovation. The process through which it unfolds has received considerably less attention. Our findings provide insights into this “black box” by showing how successive business model tools progressively mediate the transition from product-centred to service-centred thinking. Moreover, the findings suggest that this cognitive transition progressively brought the broader ecosystem into the firm's interpretation of the business model, including OEMs and end users ([Sjödin et al., 2020](#)).

6. Conclusions

This article contributes to the literature on business model innovation (e.g. [Montemari et al., 2024](#); [Sund and Lindskov, 2022](#); [Teece, 2007](#); [Wirtz et al., 2016](#)) by showing how business model tools enable sensebreaking and sensemaking during business model innovation through the complementary mechanisms of destabilising, reframing and stabilising. We theorise this as a break-then-make dynamic, whereby business model tools initially destabilise established interpretations before enabling the construction of new ones. Crucially, these effects emerged not from individual tools in isolation, but from their complementary mobilisation over time, revealing business model innovation as a recursive process in which questioning, reframing and stabilising continually interact.

This article also contributes to research on business model tools and their communicative function (e.g. [Doganova and Eyquem-Renault, 2009](#); [Nielsen and Bukh, 2013](#); [Sort and Nielsen, 2018](#)) by conceptualising them as cognitive mediators. Their role is not limited to expressing, comparing or coordinating interpretations. They also shape the formation of those interpretations by directing attention, making assumptions visible and influencing which alternatives are considered plausible. These insights also contribute to the sensebreaking literature ([Almqvist et al., 2011](#); [Pratt, 2000](#)) by showing that business model tools themselves can operate as organisational mechanisms through which entrenched assumptions become open to questioning.

Finally, this article offers insights into the digital servitisation literature (e.g. [Kohtamäki et al., 2019](#); [Paola and Gebauer, 2020](#)) by shedding light on the process through which manufacturers move from product-centric to service-oriented business models, thereby responding to recent calls to integrate business model innovation and digital servitisation research ([Ancillai et al., 2023](#)). Furthermore, the findings also suggest that this transformation is not confined to the focal organisation but develops through interactions among manufacturers, OEMs and end users within the broader ecosystem.

The findings also offer practical implications for managers and innovation facilitators. Rather than viewing business model tools as isolated analytical techniques, managers should consider them complementary devices whose effectiveness depends on their sequencing. In particular, organisations undergoing business model innovation may begin with tools that expose contradictions within existing business models, then introduce tools that support reframing and finally tools that stabilise emerging business opportunities through calculative analysis. Selecting appropriate tools therefore remains important, but equally critical is determining when each tool should be mobilised within the broader innovation process, as its effectiveness depends on the cognitive conditions created across the other stages of business model innovation.

This study has limitations that suggest promising avenues for future research. First, it is based on a single interventionist case involving a B2B manufacturer developing connected products. Comparative studies across multiple organisations and industries would help assess the broader applicability of the proposed break-then-make dynamic and examine whether different organisational contexts require different business model tools. Second, the study follows the development of two business models up to the decision to implement them, rather than through their full implementation in the market. Future longitudinal research could follow these business models through implementation to examine how organisational interpretations continue to evolve as they encounter customers, partners and other ecosystem actors. Third, the observed process was influenced by the researchers' active involvement in selecting, introducing and sequencing the tools. This involvement provided access to the interpretive dynamics of the process ([Jönsson and Lukka, 2005](#); [Quarchioni and Chiucchi, 2023](#)) but also means that the findings cannot be considered independent of the intervention. Future studies using comparative case designs or noninterventionist qualitative methods could assess whether similar cognitive sequences emerge under different conditions.

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