

ORIGINAL ARTICLE

Moving toward responsible value creation: Business model challenges faced by organizations producing responsible health innovations

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Abstract

Responsible Research and Innovation (RRI) seeks to steer innovation toward important societal challenges and, by doing so, calls for entrepreneurial activities that create economic, social, and environmental value. Nonetheless, little is known about the way different types of organization can produce responsible products and services and the challenges they face when implementing new business models remain largely uncharted. By linking the RRI and the business model literatures, the aim of this article is to generate a better understanding of the challenges underlying responsible value creation. To do so, we approach the business model as a dynamic construct that crosses organizational boundaries and develop an empirically grounded multilevel model that links entrepreneurs' practices (micro-level), organizational management (meso-level), and innovation system dynamics (macro-level). Our multiple case studies include for-profit and not-for-profit Canadian and Brazilian organizations (n = 16) engaged in the production of responsible health innovations and explore the following research questions: "What business model challenges do these organizations face in their attempt to produce responsible innovations? How do these challenges affect the implementation of their business model and capacity to achieve responsible value creation?" Our findings focus on cross-case commonalities that clarify how specific business model components are dynamically adapted in response to eight micro-, meso-, and macro-level business model challenges, while the organizations' capacity to adequately align these components remains precarious. Our study provides innovation management scholars with an empirically grounded model that brings conceptual clarity to responsible value creation. This groundwork may foster cumulative knowledge growth on the way RRI-oriented organizations can orchestrate their activities toward responsible value creation, which simultaneously requires individual entrepreneurial skills, organizational capacities, and the support of other innovation stakeholders.

KEYWORDS

entrepreneurship, health and social care, not-for-profits, sustainability, technology

1 | INTRODUCTION

In the past decade, the importance of aligning innovation with today's "grand societal challenges" has been emphasized in innovation policy (Mazzucato, 2018; Schot & Steinmueller, 2018) and innovation management scholarships (Hlady-Rispal & Servantie, 2018; McGahan et al., 2021; Ranabahu, 2020). For McGahan et al. (2021), understanding how firms respond to grand challenges and generate positive social impact looms "as the most important management problems of this century." Innovation management scholars are invited to study organizations addressing global concerns ranging from climate change to inclusive growth in order to clarify how they may succeed in generating a new innovation breed: one that harnesses its transformative power toward solving problems that cross-national boundaries such as the United Nation Sustainable Development Goals (SDGs) (Alberti & Varon Garrido, 2017; Ghosh & Rajan, 2019; Ranabahu, 2020).

It is within this shifting innovation landscape that Responsible Research and Innovation (RRI) emerged and gained momentum (von Schomberg, 2013; Stilgoe et al., 2013). While RRI aims to steer innovations toward the greater good, it calls for a significant shift in entrepreneurial activities (Genus & Stirling, 2018) where the capacity to combine economic, social, and environmental value creation into a coherent business model becomes paramount (Geissdoerfer et al., 2018). However, developing and managing a new business model raises significant challenges and this is especially true for emerging innovation-based ventures that are in the process of concurrently refining their value proposition and deploying alternative ways of doing business within an established sector (Chesbrough & Rosenbloom, 2002; Lehoux et al., 2014; Zott et al., 2011). The emergence of RRI-oriented organizations, their capacity to put a responsible value proposition at the center of their business model, and align their activities toward responsible value creation are thus key objects of enquiry for innovation management scholars (Ranabahu, 2020).

To shed light over such emerging innovation management challenges, our study relies on the RRI and the business model scholarships while addressing their respective research gaps. First, RRI scholars explored how private firms and social enterprises perceive and may apply RRI processes (Antoniou, 2020; Jarmai et al., 2020; Lubberink et al., 2019), but little if any conceptual connections have been established with research on business models that tackle societal challenges (Ranabahu, 2020). As a result, how different types of organization can, in practice, produce RRI-oriented products and services (Brand & Blok, 2019) and the role

Practitioner points

- A heightened sense of entrepreneurial responsibility is not sufficient to combine economic, social, and environmental value creation into one's business model.
- Entrepreneurs can "think multilevel" and anticipate how, when, and with whom the eight business model challenges described in this article should be handled.
- Responsible value creation requires entrepreneurs' motivations (micro-level), organizational value-sharing practices (meso-level), and innovation stakeholders' support (macro-level).
- For-profits and not-for-profits should obtain support that is adapted to their value proposition, organizational capacities, and contributions to responsible value networks.

of organizational structures, processes, and behaviors in the production of responsible innovations remain poorly understood (Voegtlin et al., 2018). The business model literature can help to bridge these gaps because it has made important steps toward a better understanding of how organizations learn to do business differently (Gebauer et al., 2017; Kraus et al., 2020; Spiess-Knafl et al., 2015) and engage in social and/or environmental value creation (Bohnsack, 2014; Davies & Chambers, 2018; Geissdoerfer et al., 2018). Nonetheless, the business model scholarship remains highly fragmented (Ritter & Lettl, 2018), and three research gaps call for attention. First, the challenges organizations must overcome to "actually implement new business models" remain largely uncharted (Geissdoerfer et al., 2018). Second, the processes through which business models are developed and dynamically adapted over time (Zott et al., 2011) as well as the patterns of change they undergo are not fully understood (Ritter & Lettl, 2018; Sjödin et al., 2020). Third, business model research is rarely conducted from a multilevel perspective (Kraus et al., 2020), which impedes our understanding of the interactions between phenomena that concurrently unfold at multiple levels of analysis (e.g., individual, organizational, systemic) (Kozlowski & Klein, 2000). These gaps are important to address because if innovation management scholars do not grasp the full complexity of the dynamic interactions between business models and the innovation system in which organizations seek to create societal value (Thompson & MacMillan, 2010), their capacity to inform 21st century organizational practices will remain elusive.

To contribute to bridge these research gaps, the aim of our multiple case study is to develop an empirically grounded model (Eisenhardt & Graebner, 2007; Gioia et al., 2013) that can generate practical insights and inform further research on responsible value creation, here understood as the successful combination of economic, social, and environmental value creation at the service of responsible innovation. Through a theoretical case sampling strategy guided by the Responsible Innovation in Health (RIH) framework (Silva et al., 2018), we recruited 16 small-and medium-sized organizations engaged in the production of responsible health innovations. This sample includes both for-profit and not-for-profit organizations located in the Canadian provinces of Quebec and Ontario and the Brazilian state of São Paulo. Our study explores the following research questions: “What business model challenges do these organizations face in their attempt to produce responsible innovations? How do these challenges affect the implementation of their business model and capacity to achieve responsible value creation?”

Approaching the business model as a dynamic construct that encompasses “boundary-spanning activities” (Zott et al., 2011), we develop a multilevel model that links entrepreneurs’ practices (micro-level), organizational management (meso-level), and innovation system dynamics (macro-level) (Saebi et al., 2019). To increase the robustness and transferability of our model, we focus on cross-case commonalities, i.e., the business model challenges all of these organizations faced. This focus on the patterns common to all cases clarifies how key business model components are dynamically adapted in response to micro-, meso-, and macro-level challenges. It also generates transferable process-oriented insights that can inform the management of responsible value creation. These are the key contributions of our study. Our multilevel model clarifies why a value proposition embedding RRI features should remain the anchor point when other business model components are dynamically (re) adjusted. It invites innovation management scholars to approach responsible value creation as a multilevel phenomenon where organizations engage in joint value creation activities with other RRI-oriented organizations and where those who finance innovation should explicitly recognize the monetary and nonmonetary value that is created for a broad range of stakeholders, including society. Our multilevel model can inform research in sectors characterized by socially and environmentally complex value chains and value networks, where developing coherent business models is key (Geissdoerfer et al., 2018).

This article is comprised of four sections. Below, we summarize bodies of literature that connect RRI with the business model scholarship. This section introduces an initial conceptual framework to guide our empirical investigation. Second, we explain the broader study within

which the current study is nested and how it combines two rounds of interviews ($n = 37$) with other data sources. Third, we provide an overview of the cases, describe the relationships observed between eight business model challenges and specific business model components, and introduce the empirically grounded multilevel model that synthesizes our findings. Fourth, we discuss our study’s contribution, which is two-fold. First, it provides innovation management scholars with an empirically grounded model that clarifies why and how responsible value creation remains a precarious endeavor. Second, it offers the groundwork needed to foster cumulative knowledge growth on the way RRI-oriented organizations may align their activities toward responsible value creation. We conclude with practical insights for innovation managers.

2 | THEORETICAL FRAMEWORK

2.1 | RRI and the call for responsible value creation

The RRI scholarship has grown at a steady pace in the past decades (Timmermans, 2017). For Schönherr et al. (2020), responsible innovation is by definition a normative, value- and purpose-driven concept that requires the “alignment of economic, societal, and environmental business goals.” Lubberink et al. (2017) point, however, to the challenges of aligning innovation with societal goals that may not be in the direct interest of businesses. To steer the development of more responsible innovations, RRI recommends that entrepreneurs: (1) *anticipate* the risks and unintended consequences of their innovation; (2) *reflect* on its underlying values, biases, and social norms; (3) *include* a variety of stakeholders, including the publics, in its development process; and (4) *respond* swiftly to any emerging issues raised by its deployment (Stilgoe et al., 2013). Though interest toward businesses was an important driver in the emergence of RRI, the field has not yet developed a clearly defined approach to study how entrepreneurs and businesses may produce and bring to market more responsible technologies (van de Poel et al., 2020).

Important groundwork was achieved by European initiatives, including the KARIM Network (Hin et al., 2014) and the PRISMA project (Flipse & Yaghmaei, 2018; Porcari et al., 2019).¹ Underscoring a shift that recently took place

¹KARIM is aiming to help companies “reconsider their business model, develop new products and services, new technologies or even improve their production processes” (Hin et al., 2014). Innovation managers are invited to mobilize responsibility “as a lever of creativity” and ensure that “performance and responsibility are combined toward paving a more sustainable and competitive path” for the organization. In a similar vein, PRISMA encourages top-level managers to implement RRI in “their innovation and social responsibility strategies” (Porcari et al., 2019).

from “responsibility as an afterthought to responsibility as a strategy,” Jarmai et al. (2020) stress that when businesses attempt to respond to societal challenges, economic, social, and environmental value creation no longer “falls outside” their core operations, but rather offer a new growth avenue. This view aligns with RRI scholars for whom Corporate Social Responsibility (CSR) could become a strategic lever to create business value as well as “positive social and environmental value” (Gurzawska, 2020). Such an approach, however, mostly applies to large firms and is poorly adapted to examine innovation processes in small- and medium-sized organizations.

Some scholars examined the connections between RRI and social entrepreneurship (Ranabahu, 2020). For instance, Lubberink et al. (2019) examined what they call “de facto” responsible innovation practices, i.e., practices “in line” with RRI but “not initiated with clear frameworks or guidelines” in mind (see Lindner et al., 2016 for a similar approach). The assumptions are that social entrepreneurs innovate for the benefit of society through an efficient business logic and hold values and beliefs compatible with this dual role (Lubberink et al., 2019). Research indeed suggests that social entrepreneurs exhibit a “heightened sense of accountability to the constituencies served” (Dees, 1998), embody “entrepreneurship with a conscience” (Mair et al., 2012), “work together rather than in isolation” (Defourny & Nyssens, 2010), seek to address the “root causes” of a social or environmental problem, “invite competition instead of resisting it” (Santos, 2012), and favor sustainable solutions over sustainable advantages (Mair & Martí, 2006). Nevertheless, for Newth and Woods (2014), scholars should refrain from reifying the noble or “heroic” social entrepreneur as if a successful organization would solely rely on a single individual’s motivations, efforts, and entrepreneurial abilities.

This caveat, which signals the need to avoid a narrow micro-level focus, resonates with the innovation management literature underscoring the “interdependencies” between organizations that are central to their success within an innovation system (McGahan et al., 2021). For Chesbrough and Bogers (2014), distributing knowledge and capacities across organizational boundaries and for purposes that are not solely financial is pivotal to leverage the benefits of innovation. At the meso-level, the capacity to engage in “joint value creation” with the aim to address “a compellingly important” societal challenge indeed becomes paramount (McGahan et al., 2021). Yet, RRI-oriented organizations do not evolve in a vacuum: systems of innovation are pervaded with multiple and at times conflicting responsibilities (Timmermans et al., 2017) because different innovation stakeholders (e.g., research funding agencies, investors, philanthropic foundations, regulatory authorities) steer innovation in different directions

(Cavallo et al., 2019; Defourny & Nyssens, 2010). This is why a multilevel approach to responsible value creation is needed. For Kozlowski and Klein (2000), multilevel theoretical models aim to generate a better understanding of how lower-level elements interact and generate patterns at higher levels of analysis. To capture empirical dynamics that range from the micro- to the macro-level, a multilevel perspective entails “an effort to comprehend the full complexity of a system —its elements, their dynamics over time, and the means by which elements in dynamic interaction” yield the phenomenon of interest (Kozlowski & Klein, 2000).

Within such a multilevel perspective, the RRI literature we have summarized above calls for entrepreneurial behaviors that are more responsive at the micro-level to societal challenges, for organizations that can purposefully combine economic, social, and environmental value creation at the meso-level, and for systems of innovation that foster responsible value creation at the macro-level. Because RRI lacks a framework to study how entrepreneurs, organizations, and their stakeholders can pursue these endeavors, we turn to the business model literature to articulate an initial conceptual framework that can guide multilevel empirical research on responsible value creation.

2.2 | The business model: A dynamic construct spanning across organizational boundaries

In the past two decades, the literature on business model has increased exponentially, leading to several comprehensive reviews including on ways to support business model innovation (Boons & Lüdeke-Freund, 2013; Geissdoerfer et al., 2018; Kraus et al., 2020; Spiess-Knafl et al., 2015). A business model brings forward the “basic foundations of an organization,” i.e., its activities (processes, capabilities), resource transactions, and transformations (Ritter & Lettl, 2018), and it typically defines how a firm “does business,” i.e., how it creates, delivers, and captures value (Spiess-Knafl et al., 2015; Zott et al., 2011). In coherence with the multilevel perspective defined above, we primarily rely on bodies of knowledge that offer “a holistic and systemic” view over responsible value creation by positing the business model as a unit of analysis that encompasses “boundary-spanning activities” performed by an organization, its suppliers, partners, distributors and/or customers (Zott et al., 2011).

In the innovation management field, business models are of interest for two key reasons: (1) they “can be a vehicle for innovation” because they have the capacity for “unlocking the value potential embedded in new technologies”;

and (2) they can be a “subject of innovation” (Zott et al., 2011).² For organizations that want to combine social, economic, and environmental value creation in novel ways, knowing how to design and adapt a business model is “crucial” (Kraus et al., 2020). Conversely, there are sectors where new technologies can prompt major systemic changes (like digital solutions and e-commerce) as well as “new forms of cooperation and collaboration” amongst firms (Zott et al., 2011). Research into these trends suggests that the success or failure of a given business model “depends largely on how it interacts” and evolves with other business models in its environment (Ritter & Lettl, 2018). This is the case for clean technologies and sustainable supply chains, which have raised growing academic and business interest (Boons & Lüdeke-Freund, 2013; Geissdoerfer et al., 2018; Morioka et al., 2017). Sustainable business models do share affinities with RRI-oriented value creation since they incorporate “pro-active multi-stakeholder management, the creation of monetary and nonmonetary value for a broad range of stakeholders, and hold a long-term perspective” (Geissdoerfer et al., 2018).

From an empirical standpoint, by operationalizing the business model as a “firm-centric, yet boundary-spanning” construct (Zott et al., 2011), scholars can examine how *key components* of a business model enable value creation, the *alignment* between these components, and the way organizations seek to *dynamically (re)adjust* these components when interfacing with other organizations, stakeholders, and institutions in their environment (Ritter & Lettl, 2018). More specifically, the framework of Chesbrough and Rosenbloom (2002) is particularly relevant to study the business models of innovation-based ventures because the value proposition—i.e., the innovation being developed—is the cornerstone of a business model (Lehoux et al., 2014). For these authors, a business model articulates six components (see Figure 1) through which an organization offers a new *value proposition*, i.e., a novel service and/or product that meets the needs of specific *market segments* while enabling *revenues* to be generated. A business model is also comprised of a *value chain* through which the organization creates, produces, and distributes the innovation, a *value network* that includes suppliers, partners, and “complementors” and a *competitive strategy* that defines how to “gain and hold advantage over rivals” (Chesbrough & Rosenbloom, 2002). As Figure 1 illustrates, these components are dynamically “tied” to one another because any change in one component requires adjustment to other components.

For example, targeting a new market segment implies integrating into the value proposition these new customers’ demands and revising the revenue model accordingly. Figure 1 also highlights that business model components, by going across the organization’s boundaries, are ‘permeable’ to various stakeholders and reactive to opportunities and constraints emerging from its environment. This is an important feature to support a multilevel analysis of responsible value creation.

2.3 | Business model challenges

Using Figure 1 as an initial framework to guide our study, our aim is to further flesh out empirically the business model challenges small- and medium-sized organizations face when seeking to combine in a novel way in which business model components produce responsible health innovations. We define a ‘business model challenge’ as a problem that confronts any of the six business model components as well as the coherence between them (Zott et al., 2011). Business model challenges may be observed at different stages, from the development of an initial business model, to its adaptation and renewal (Banda et al., 2018; Cavallo et al., 2019). While mature firms operate on the basis of an established business model, new ventures struggle when defining their own business model (Boons & Lüdeke-Freund, 2013). It is “necessarily both prospective and provisional” because the value proposition and the revenue models have neither been fully fleshed out, nor tested in practice (Lehoux et al., 2014). Entrepreneurs may struggle because of their lack of business expertise or because their attention changes focus from the organization’s formation, to its growth and stability (Cavallo et al., 2019).³

The literature indicates that the “co-creation of profits, social, and environmental benefits and the balance among them” (Geissdoerfer et al., 2018) not only require “extra efforts” in terms of external relations management, but also raise challenges to established business mindsets. Social enterprises often run the risk of “mission drift,” a phenomenon that occurs when the tension between economic and social value creation increases or when financial sustainability proves difficult to achieve because of the fragility inherent to their beneficiaries and/or clients (e.g., poor health status, inability to pay) (Santos et al., 2015). Organizations with multiple revenue models are more likely to experience tensions (Davies & Chambers, 2018)

²Seminal work by Chesbrough and Rosenbloom (2002) shed light on the way a business model “mediates between technology development and economic value creation” and clarified why some firms failed in bringing to market new technologies when their pre-existing business model was not adapted to these new value propositions.

³For instance, Banda et al. (2018) observed that regenerative medicine entrepreneurs were “focusing on resolving manufacturing and clinical trial issues but neglecting reimbursement and healthcare adoption,” which they saw as issues “further down the road.”

but more likely to thrive when their value chain is simpler (Santos et al., 2015) and when their social value creation and economic value capture mechanisms are strongly aligned and remain “tightly coupled” over time (Wilson & Post, 2013). Lastly, innovation stakeholders may explicitly or tacitly challenge social entrepreneurs’ legitimacy when they seek financial resources (Battilana et al., 2012) or account for their economic, social, and environmental performance (Ebrahim et al., 2014).

To summarize, the literature suggests that responsible value creation should be approached as a multilevel phenomenon wherein entrepreneurs, organizations, and innovation system stakeholders closely interact (Saebi et al., 2019). Following Kozlowski and Klein (2000) for whom a multilevel approach should specify the level of its key constructs, our initial framework posits that entrepreneurs (micro-level) may embed RRI principles and values to varying extent into their value proposition (Lubberink et al., 2019; Ranabahu, 2020), that organizations (meso-level) may combine more or less successfully economic, social, and environmental value creation into their business model (Gurzawska, 2020; Voegtlin et al., 2018) and that stakeholders (macro-level) may concurrently hinder and support their responsible value creation activities (Mazzucato, 2018; McGahan et al., 2021; Schot & Steinmueller, 2018).

3 | METHODS

The current study is nested within a broader longitudinal case study that began in 2017. Its goal is to generate a better understanding of why and how innovative organizations may develop and bring to market responsible health innovations. We adopted a case study design because of its capacity to structure an empirical investigation of the phenomenon of interest in its “real-life” context (Yin, 2009). To fulfill the aim of this article, a process-oriented concept development strategy was applied (Eisenhardt & Graebner, 2007; Gioia et al., 2013) and we followed the Case Study Evaluation Template (CASET) (Goffin et al., 2019).

3.1 | Cases selection process

We concentrated our broader study in three regions for theoretical and practical reasons.⁴ From a theoretical

⁴Practical reasons included our research team’s location (near the Quebec and Ontario border), linguistic skills (all team members are fluent in French and English) and cultural origins (two members were born and trained in Brazil).

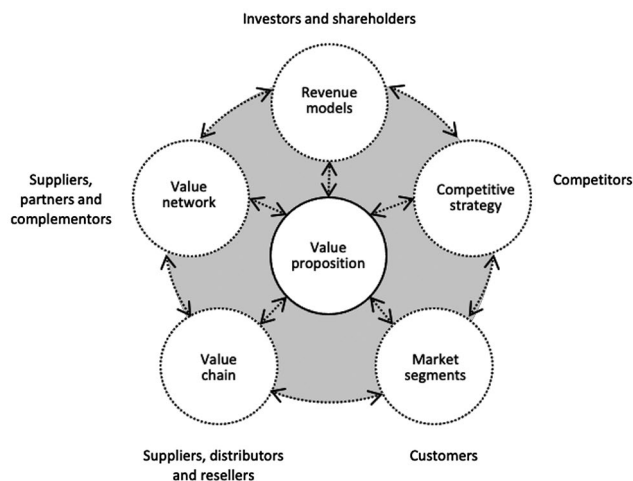


FIGURE 1 Initial conceptual framework: Business model components span across organizational boundaries and interact with stakeholders in the organization’s environment

standpoint, examining how the phenomenon of interest unfolds in different contexts is likely to provide more robust and transferable process-oriented insights (Gioia et al., 2013). We included both mature and emerging economies on the basis of the institutional enablers and constraints found in their system of innovation (Voegtlin et al., 2018). While industrial capacities in several sectors are declining in Canada (Asselin et al., 2020), countries like Brazil, India, China, Russia, and South Africa (BRICS) are increasingly active in the development of vaccines, drugs, and medical devices (Roncarolo et al., 2017). Ontario and Quebec are respectively the first and second largest Canadian provinces, accounting for 38.5% and 19.8% of the country’s Gross Domestic Product (GDP). Health systems in Ontario and Quebec are publicly funded, and the Canadian drug and medical devices industry is concentrated in these two provinces. São Paulo is the most populous and economically developed Brazilian state, accounting for 33.9% of the country’s GDP. Brazil has an important publicly financed health system and a mix of population health needs that call for products and services that Western countries tend to neglect and São Paulo State put in place several mission-oriented innovation policies (Mazzucato & Penna, 2016).

A theoretical case sampling strategy was put forward to develop a robust and detailed understanding of why and how organizations attempt to, and eventually succeed in producing responsible health innovations (Eisenhardt & Graebner, 2007). We thus began with an initial set of concepts pertaining to responsibility in health innovation while remaining sensitive to any emerging aspects of theoretical relevance to RRI-oriented organizing. We aimed to recruit eight

organizations in each country to minimize the impact of attrition. To identify organizations engaged in the production of responsible innovations, we used the RIH framework (Silva et al., 2018), which builds on the RRI framework of Stilgoe et al. (2013) to articulate specific health and social care responsibility concerns. The RIH framework emphasizes nine responsibility attributes: health relevance; health inequalities; ethical, legal and social issues; responsiveness; inclusiveness; level and intensity of care; frugality; business model; and eco-responsibility (Silva et al., 2018). We thus looked for innovations that were, for instance, aiming to reduce health inequalities by catering to the needs of vulnerable groups, enabling safe and effective care in the community or adopted eco-responsible design principles. The legal structures of the organizations and the purposes of their innovation (e.g., assistive devices, diagnostic tools, patient-oriented tools, community interventions, etc.) served as internal diversification criteria.

The case selection process unfolded between January 2017 and March 2018 using websites and social media accounts dedicated to health innovations and/or entrepreneurial activities emphasizing a social or environmental mission. A list of potential cases was created and supplemented through discussions with key informants from mission-oriented incubators. This list was then organized following our diversification criteria using information from the organizations' website. Each organization was contacted through e-mail and invited to schedule a phone or Skype appointment with a research team member. The goal was to describe the study aim and methods and ascertain whether the organization met our criteria and would consider participating in our study. Organizations that did not respond or refused to participate were then removed from our list and another organization was contacted.

Overall, 14 organizations in Ontario were contacted, 1 did not meet our criteria and 9 refused to participate, 6 organizations in Quebec were contacted and 2 refused to participate, and 8 Brazilian organizations were recruited (none refused). A study using the RIH Tool (Silva et al., 2020), which measures the degree of responsibility of health innovations, confirmed the representativeness of our sample: it indicates that the RIH score of close to a third of the cases (31%) falls within the highest interval (*Almost all RIH features are present*), half (50%) within the second (*Many RIH features are present*), less than a quarter (19%) within the third (*Few RIH features are present*) and none within the lowest (*Almost no RIH features are present*) (anonymized). The sample is thus well engaged in the production of responsible health innovations and shows diversity in terms of responsibility.

3.2 | Multiple data sources collection strategy

Using multiple sources of data is recommended by Yin (2009) to develop a more complete chain of evidence. It allows for triangulation of data sources, which contributes to substantiate emerging constructs (Eisenhardt & Graebner, 2007). Our data set consists of semi-structured interviews, self-reported data gathered through an online platform, fieldnotes, and public documents.

Table 1 shows the interviews ($n = 37$) conducted with each organization. Initial interviews were meant to gather and triangulate the views of founders, Chief Executive Officers (CEOs), members of the management team and, if applicable, employees involved in the design, production, or commercialization of the innovation. Initial interviews, mostly conducted face-to-face (30–118 minutes), explored the genesis of the organization (why it was created, its mission), its business model components (as defined above), its organizational capacity (expertise, board members, partners), and the challenges it faces (operations, financing, stakeholders). Depending on informants' preferences, interviews took place in French, English, or Portuguese. About a year later, a follow-up interview with one of the interviewees was conducted through phone or Skype. The aim was to take stock of the progress made, whether the innovation and/or the business model had evolved and to discuss and validate a preliminary case description (a two-pager was sent to participants a week prior to the interview; both interview questionnaires are available upon request). Overall, because one organization withdrew from the study and one respondent was not available for the follow-up interview, a single interview was conducted for one organization, 2 interviews for 11 organizations, 3 interviews for 2 organizations, and 4 interviews for 2 organizations.

Between initial and follow-up interviews, self-reported data were gathered through a login/password-secured online platform. The aim was to supplement the interviews by asking participants to answer brief open- and close-ended questions (challenges faced, milestones reached, key priorities). Fieldnotes were taken throughout the study and include brief memos written prior to and after each interview. When the latter was conducted onsite, the offices, lab, factory, and/or workshop were described, and pictures were taken. Lastly, we conducted online searches using the name of the organizations and of the innovations as keywords. The aim was to gather scientific publications and media articles to validate factual details (e.g., timeline, product launches, awards). The capacity to triangulate different sources of evidence is an important criterion of rigour in case study research (Goffin et al., 2019). It is also an important analytical asset when developing a

multilevel model that must specify robust empirical linkages at different levels (Kozlowski & Klein, 2000).

3.3 | Data analysis

With the consent of each participant, interviews were recorded and transcribed verbatim. The qualitative data analysis software Dedoose™ was used to categorize interview transcripts, fieldnotes, and documents. The coding scheme was initially developed by two co-authors and refined by a third co-author. Throughout the case selection and data collection processes, several meetings with the co-authors and other team members took place. These meetings enabled us to gradually “move beyond description and conceptual ordering” and generate an empirically grounded model (Goffin et al., 2019).

Our analytical strategy involved several iterative steps where deductive and inductive approaches to our data set alternated. The deductive stance was supported by the initial framework (Figure 1), which aligned our analyses toward “scientific theorizing” and brought forward “researcher-centric” codes (Gioia et al., 2013). The inductive stance enabled us to better capture entrepreneurs’ experience and the challenges their narratives evoked, which supported the emergence of “informant-centric” codes (Gioia et al., 2013). Though these two analytical stances pursue seemingly opposite aims, it is the tension between them that enables researchers familiar with the grounded theory data coding process to gradually uncover and conceptualize the dynamic relationships structuring the phenomenon of interest (Sjödin et al., 2020).

More specifically, after having analyzed each case as a stand-alone entity (Eisenhardt & Graebner, 2007; Miles et al., 2014), we created a large number of case- and variable-ordered matrixes to support across-case analyses (Miles et al., 2014). This is where our analytical iterations sought to gain a higher level of abstraction (i.e., aggregating codes into themes) to identify key explanatory patterns (i.e., constituting a coherent whole through thematic linkages). Of course, a sample of 16 cases made the process both time-consuming and analytically demanding. To summarize our evidence and generate a comprehensive overview, both narrative extracts and summative indicators (i.e., presence or absence of a given variable) were tabulated in our matrixes. The latter were developed by combining our different data sources and summarized for each case the business model components described in the initial interviews, whether any changes were reported later (through the online platform, case description feedback, follow-up interviews) as well as interview excerpts explaining the context in

which these changes took place (e.g., stakeholders and institutions involved). To identify the most significant patterns while discarding associations that were empirically unsubstantiated (Eisenhardt & Graebner, 2007), we looked for cross-case commonalities: What challenges are experienced by all organizations? What business model components are modified or realigned because of these challenges? Are these challenges unfolding at the entrepreneur’s level, the organizational level, or the innovation system level? This process led to the formulation and gradual refinement of “data-to-concept” connections (Gioia et al., 2013) that provide a conceptually consistent and empirically robust answer to our research questions: ‘What business model challenges do these organizations face in their attempt to produce responsible innovations? How do these challenges affect the implementation of their business model and capacity to achieve responsible value creation?’ Below, our findings are illustrated with participant quotes, translated from French to English or from Portuguese to English when needed. We use uppercase letters to designate the organization and the region (e.g., K-SP for organization K in São Paulo) and numbers to designate interviewees (followed by “follow-up” when applicable).

4 | FINDINGS

4.1 | An overview of the 16 organizations

Before describing the eight business model challenges our analyses uncovered, we provide an overview of the sample. Table 2 indicates the number of years in operation, the number of Full Time Equivalent (FTE) employees, the legal structure, and the value proposition of the 16 organizations. It shows that the sample is mostly comprised of recently established organizations (median of 5 years) operating with a small number of employees (median of 7 FTE). Following our internal diversification criteria, about half of the sample relies on a for-profit structure ($n = 9$) and the other half on a not-for-profit one ($n = 7$), the value propositions range from diagnostic & research tools to multidimensional interventions, and up to 10 include digital components (e.g., online platforms, apps, artificial intelligence-based solutions).

Table 3 indicates the market segments of each organization and their corresponding revenue models. It indicates that five organizations have a single market segment, which takes a business-to-client (B2C), business-to-business (B2B), or business-to-government (B2G) form, whereas five organizations handle all three forms. For instance, while exporting its hearing aids to

TABLE 1 Interviews (n = 37)

Region	Case	Initial interviewees	Modality	Follow-up interviewees	Modality	
Ontario	A-ON	Founder and Chief Medical Officer (CMO)	In person, on site	Not reachable ^a		
	E-ON	Founder and Chief Executive Officer (CEO)	Phone			
		Vice-President (VP) operations	In person, on site			
		Partnership & impact manager	Phone	Partnership & impact manager	Phone	
	F-ON	Founder and CEO	In person, on site	Founder and CEO	Skype	
	G-ON	CEO	In person, off site			
Chief Scientific Officer (CSO)		Phone	CEO	Phone		
Quebec	B-QC	CEO	In person, on site	CEO	Skype	
		Head, Sustainable development	In person, on site			
	C-QC	Founder and CEO	In person, off site	Withdrew from the study ^a		
		Chief Technology Officer (CTO)	Phone			
	D-QC	Cofounder and CEO	In person, on site	Cofounder and CEO	Skype	
H-QC	Founder and CEO	In person, on site	Founder and CEO	Phone		
São Paulo	J-SP	Cofounder and CEO	In person, on site	Cofounder and CEO	Skype	
	K-SP	Founder and CEO	In person, off site	Founder and CEO	In person, off site	
		Former manager	In person, off site			
		Former manager	In person, off site			
	L-SP	Founder and CEO	In person, on site	Coordinator partnerships, fundraising and volunteers	Skype	
	M-SP	Cofounder and CTO	In person, on site	Cofounder and CEO	Skype	
	N-SP	Founder and CEO	In person, off site	Founder and CEO	Skype	
	P-SP	Operations manager	In person, on site	Operations manager	Phone	
	Q-SP	Marketing director (volunteer)	In person, off site	Marketing director (volunteer)	Skype	
	R-SP	Founder and CEO	Skype	Founder and CEO	Skype	
		Total	23 interviews		14 interviews	

^aC-QC withdrew from the study before the follow-up interviews and A-ON was not reachable.

35 countries, K-SP's largest purchaser is the Brazilian public health system (B2G), followed by hearing aid retailers, not-for-profit organizations (B2B), and audiologists (B2C). Having a single market segment may simplify operations, but this is not always the case. The B2B transactions of B-QC involve dealing with large drug distributors as well as independent pharmacies. While distributors may appreciate "concrete figures on how to reduce the carbon footprint" for the whole banner, each pharmacist must understand how a local environmental effort will matter to regular customers (B1). Likewise, the cofounders of D-QC "tried to be simple at first," but their value proposition based on antibodies using chicken egg yolk (IgY) generates different products, ranging from nutraceuticals where the customer segment is quite large (e.g., multinationals engaged in food-related R&D) to specific antibacterial solutions for hospitals (D1). Three Canadian organizations included low- and middle-income countries (LMICs) within their market segments.

For instance, E-ON's B2B transactions involve bulk sales at a discount rate for aid agencies that distribute in South Asian communities its specially formulated iron ingots (reducing iron deficiency when used as a cooking tool in boiling water) and its e-commerce B2C transactions rely on a buy-one give-one (BOGO) model with North American, European, and Australian clients. Three Brazilian organizations established strategies to supplement their revenues such as L-SP that sells ancillary team-building services (e.g., 'waste-picker for a day') and advocacy products created and donated by artists (e.g., miniature waste-picking carts, t-shirts, prints) (L1). Five organizations developed pricing strategies based on ability to pay or on a redistributive logic and five made their innovations freely available to end-users.

Overall, 11 organizations cater to 2 or 3 market segments altogether and 10 manage 2 revenue models or more, which raise challenges that are discussed in greater depth below.

4.2 | Business model challenges faced by the organizations

Our analyses uncovered eight across-case business model challenges. Underscoring the business model components to which they specifically relate, we begin with the micro-level—*defining a responsible entrepreneurial identity and upholding a responsible mission*—, then move to the meso-level—*building nimble organizational capacity, scaling responsive production processes, and struggling toward financial sustainability*— and close with the macro-level—*juggling with misaligned funding sources, fulfilling ethical, legal, and regulatory responsibilities and accounting for value in use*. Though we provide brief illustrations for each of these challenges, Table 4 contains additional empirical observations substantiating these findings.

4.2.1 | Micro-level: Defining a responsible entrepreneurial identity and upholding a responsible mission

As entrepreneurs iteratively develop their business model through a “trial and error” process (H1) unfolding within a context where “a lot of people think social businesses are a fad” (E1), they face the challenge of *defining their responsible entrepreneurial identity*. This is not straightforward because who they are in terms of background and experience influences how their value propositions are perceived and can be positioned within a value network (see Figure 2). Because it develops an online directory for people with reduced mobility to know which buildings are accessible, H-QC could not operate a for-profit organization as initially intended: “it was a serious mistake [laughs]. I got tagged in the forehead pretty quickly: ‘cursed capitalist who wants to make money on the backs of people with disabilities’” (H1). She thus created a charitable organization to manage the online directory, but also envisaged creating a for-profit entity that could be “taken seriously” by investors to develop another accessibility-related innovation. B-QC, which interacts with large drug retailers and pharmacists who are “businesspeople,” did not want to be seen as a “packaging seller” but rather as enabling these businesses to take concrete action in support of “their own sustainable development value” (B1). For A-ON’s cofounder, a medical specialist, “as soon as you involve money and doctors, people get freaked out”: healthcare is a business in the USA, but in Canada one cannot use “money and healthcare in the same sentence” (A1).

Though entrepreneurs are experts about their value proposition, they “don’t have the capabilities to do all of the tasks” (F1) and need “to keep the team relatively small” (E1). It thus falls on their shoulders to *uphold a*

responsible mission as initially intended and this requires a supportive value network. D-QC’s cofounders are struggling to develop projects that have “much more social interest,” but are “a bit on the fringes of what is interesting for the pharmaceutical world” (D1, follow-up). When seeking to establish new partnerships, Q-SP’s leaders “must understand what [they] want and what [they] don’t want,” otherwise they will “end up deviating from the mission” and will not solve the problems they intend to solve (Q1, follow-up). Though the cofounders of L-SP do not want to “lose the DNA” characterizing its social and environmental mission, they engaged in recycling projects with private firms where “waste-pickers become more of a side effect” (L1, follow-up).

Hence, establishing a clear responsible entrepreneurial identity and upholding a responsible mission are challenging when value propositions are still being vetted and entrepreneurs must protect and position their nascent responsible value creation activities within a value network that is not yet established or sufficiently supportive.

4.2.2 | Meso-level: Building nimble organizational capacity, scaling responsive production processes, and struggling toward financial sustainability

Building nimble organizational capacity implies integrating into one’s value chain the right human resources, assembling “very multidisciplinary teams” (D1) and consolidating their skills because they “have to become experts quickly in things that they had little if no experience in” (E1). It also requires constantly and proficiently overcoming technical challenges arising with one’s value proposition (see Figure 3). Because being “nimble” in terms of human resources is an efficient “way to manage the cashflow” when “funding goes through peaks and valley” (G2), 4 organizations recruited and trained volunteers. Those relying on students underscored the challenge of turnover just when trainees “start getting into their prime” (F1). The online platform of C-QC had to keep up with how fast Artificial Intelligence (AI) and digital solutions are moving, creating the “persistent” need for “ongoing education for the technology team” (C1). The medical device developed by M-SP also called for a complex set of capacities:

To reach the market you need a salesperson, you need to have a very good website to make online purchases. And you need a telemedicine system, a buddy in the regulatory area, and to have staff in the quality area for monitoring the whole production line. (M1)

TABLE 2 Organizational characteristics and value propositions

Case	Legal structure	Age	FTE ^a	Type of innovation	Value proposition
A-ON	For-profit	12	43	Diagnostic & research tools, including digital components	Tablet-based automated audiometer to increase affordability, usability, and portability of hearing tests, with a focus on hard-to-reach workplaces (e.g., offshore oil extraction) or low-resources countries
E-ON	For-profit	5	6	Nutritional supplement	Affordable cooking tool made of cast iron that dissolves in boiling water to reduce iron deficiency around the world
F-ON	For-profit	2	5	Patient & caregiver tools, including digital components	Dementia-friendly illustrated paper and digital books and accompanying app that adapts and changes with users as dementia progresses
G-ON	Not-for-profit	2	7	Technical aids, including digital components	Cloud-based platform and 3D scanning, modeling, and printing system to support codesign, coproduction and sharing of pediatric assistive devices with low-resources countries
B-QC	For-profit	8	26	Sustainable drug packaging	Set of eco-friendly drug packaging solutions to support sustainable transition of distributors and retailers of pharmaceutical drugs
C-QC	For-profit	<1	3	Patient & caregiver tools, including digital components	Online community to support informal caregivers as they navigate care needs and services by connecting them to networks of peers and professionals and providing resources about illnesses that affect older adults
D-QC	For-profit	5	18	Diagnostic & research tools	Platform producing high-quality, low-cost eco-responsible antibodies (using chicken eggs) to support life sciences R&D of nutraceuticals and drugs (gastrointestinal diseases, cholera, malaria, cancer)
H-QC	Not-for-profit	5	4	Patient & caregiver tools, including digital components	Web-based directory and app under development of buildings and accommodations accessible to people with reduced mobility to allow individuals anticipate and choose where to go
J-SP	Not-for-profit	5	2	Patient & caregiver tools, including digital components	Illustrated books clarifying complex terms for children with cancer and their relatives and a serious gaming app for children to learn about their treatment procedures and appease potential fears and anxieties
K-SP	Not-for-profit	12	12	Technical aids	Affordable hearing aids using rechargeable batteries and solar-powered charger to support hearing-impaired individuals access work, school, and social activities to help break the poverty cycle
L-SP	Not-for-profit	6	7	Multidimensional intervention, including digital components	Multidimensional intervention to improve waste-pickers' safety, socioeconomic conditions, and self-esteem, including app to connect those who have material to recycle with waste-pickers
M-SP	For-profit	2	7	Diagnostic & research tools, including digital components	Affordable portable device connected to a smartphone supporting nonmydriatic eye fundus examinations to detect diseases that could cause irreversible blindness
N-SP	For-profit	3	2	Diagnostic & research tools, including digital components	High-quality affordable diagnostic test for indeterminate thyroid nodules that may avoid costly and unnecessary surgical interventions
P-SP	Not-for-profit	10	250	Mobile care	Mobile care units providing in-person accessible medical consultations, exams, and surgeries to patients living in underserved areas
Q-SP	Not-for-profit	2	3	Multidimensional intervention	Sustainable lighting solutions made of plastic bottles, solar panels, and LED lamps to empower communities lacking access to electricity
R-SP	For-profit	3	10	Technical aids, including digital components	Robotics, hardware, and Artificial Intelligence-based components that control a wheelchair by responding to the user's facial expressions to improve mobility and autonomy

Note: Data sources for creating this table include interviews, data shared online by the organizations and their website.

^aFull Time Equivalent (FTE) does not include volunteers and trainees.

TABLE 3 Market segments and revenue models

Case	Market segments	Revenue models and end-user pricing strategies when applicable
A-ON	2 B2C: Primary care providers; Community workers in LMICs B2B: Large employers who monitor employees' hearing; Hearing aid industry	2 (a) Acquisition of whole system; or (b) Software as a Service (SaaS) monthly subscription Prices based on ability to pay
B-QC	1 B2B: Large retail pharmacy centers; Pharmacist-owned drugstores	1 Direct sales to pharmacy distribution centers
C-QC	2 B2C: Family caregivers who use content and share experiences on platform B2B: Pharmaceutical companies; Patient organizations	4 (a) Membership fees for premium services; (b) data commercialization; (c) referral fees for connecting caregivers to providers; (d) advertising fees Certain services free for end users
D-QC	1 B2B: Life sciences research institutions (antibodies); Large food companies (nutraceuticals); Pharmaceutical (antibodies-based drugs)	1 A mix of transaction fees for service and licensing
E-ON	2 B2C: Online or retail purchasers (mostly Westerners) B2B: Aid agencies, companies, and NGOs purchase product in bulk to distribute in LMICs	2 (a) Direct sales to individuals (BOGO); (b) bulk sales to nonprofits and aid agencies Prices based on redistributive logic Innovation is free for end users
F-ON	2 B2C: People with dementia living at home and their caregivers B2B: Long-term care homes; Public libraries	2 (a) Direct sales of printed books to long-term care homes and consumers; (b) subscription fees for digital books
G-ON ^a	1 B2B: Clinics and hospitals in LMICs	- Product not yet launched Prices based on ability to pay
H-QC ^a	3 B2C: People with reduced mobility or functional limitations B2B: Accessible buildings and accommodations B2C: Cities sharing info about their buildings	2 (a) No revenues generated yet through the platform; (b) direct sales of product in development Innovation is free for end users
J-SP	2 B2C: Patients with cancer, relatives, and caregivers; Online purchasers of promotional products B2B: Healthcare organizations; Schools	1 Some revenues from services provided to corporate events Innovation is free for end users
K-SP	3 B2C: Audiologists B2B: Hearing aid stores; Not-for-profit organizations B2C: Brazilian public health system (SUS)	2 (a) Direct sales; (b) training services for companies that have or want to hire employees with hearing impairment Prices based on redistributive logic
L-SP	3 B2C: Waste-pickers and people with recyclable material; Online purchasers of promotional products B2B: Coop of waste-pickers and organizations with recyclable material; Companies providing employees with team-building activities B2C: Governmental bodies (e.g., recycling, waste-pickers' work conditions)	4 (a) Tax credits from "green" legislation; (b) fundraising events; (c) sales of products (art-based advocacy, safety equipment); (d) team-building services Innovation is free for end users
M-SP ^a	2 B2C: Medical ophthalmologists B2B: Hospitals, walk-in clinics, and primary care units	2 (a) Direct sales; (b) monthly fees for cloud-based storage and treatment of images
N-SP	2 B2C: Physicians and patients with indeterminate thyroid nodules diagnosis B2B: Medical and clinical laboratories	1 Direct sales
P-SP	1 B2C: Local governments providing healthcare services	1 Contracts based on volume of service
Q-SP	2 B2C: Local communities without energy B2B: Energy suppliers and distributors; Companies providing their employees with volunteering opportunities or advertising their brand	2 (a) Direct sales of lighting solutions; (b) teambuilding and volunteer training services Innovation is free for end users
R-SP	1 B2C: Patients with severe mobility problems	2 (a) Free kit with monthly fees in USA; (b) single purchase in Brazil Prices based on redistributive logic

Note: Data sources for creating this table include interviews and data shared online by the organizations.

^aIndicates a case for which only projections were available.

TABLE 4 Additional empirical observations on multilevel business model challenges

Micro-level challenges*Defining a responsible entrepreneurial identity*

- G-ON was created because a large charity, which traditionally receives donations from “high-net-worth individuals” to fund infrastructures and hospital equipment in LMICs, “was really interested in how they could innovate” (G1). Its value proposition was articulated around the Chief Scientific Officer’s expertise who: “got deeply embedded in 3D printing” and digital transformations in social contexts (G1)
- The cofounders of D-QC considered creating a cooperative but established a for-profit company because a coop would have restricted access to funding and entailed sharing decisional power with employees. Nonetheless, the “coop mentality” remains (D1)
- The founder of J-SP had considered with her partners creating a start-up, but they decided to establish a nongovernmental organization (NGO) to receive donations and because they “wouldn’t be able to ‘sell’ cancer-related products.” Yet, “a start-up mentality” characterizes the organization (J1)
- The “kick-off” for K-SP came from Botswana where the founder had collaborated with local engineers and hearing-impaired young adults to develop frugal hearing aids, using rechargeable batteries and a solar-powered charger (K2). According to the founder, setting up an NGO in Brazil was “probably the wrong thing to do, but we did it, not knowing any better” (K1)
- J-SP cofounders “go more on the emotional side” by using their “words and language” and “lack the ‘business’ part” that seem required to obtain sponsorships by large companies (J1, follow-up)
- When trying to transition to a social business, Q-SP found resistance from volunteers. They took “a step back and understood that it’s not whether you’re a social business or not that makes the difference.” What they had to “work” was the “business mind and agility” and “it’s a big challenge” because there are no similar models in Brazil (Q1, follow-up)

Upholding a responsible mission

- For A-ON’s cofounder, one must “appeal to the business sense” of the Board of directors who do not “commonly regard a social enterprise as something of value” and explain why “this is both right and financially viable” (A1). He described the tension at the heart of one’s social mission as “what you should be doing” or the “good stuff” versus economic value creation (A1)
- E-ON’s executive team members “worked very hard to become a B-Corp” because they wanted the commitment to achieving the social mission “not only built into the company structure, but also in its by-laws so that both the Board of directors and shareholders” adhere to this commitment (E1). Yet, to “keep the social mission prime and center” while attending to one’s duties is challenging and “it’s easy to lose sight of that larger social mission” (E1)
- C-QC’s founder described its social mission as “vertically integrated”: “We don’t see our social impact as a by-product of what we do, it’s what we do. [...] that core ‘why’ statement – is this contributing to the betterment of family caregivers?—[...] it’s the benchmark. If something doesn’t respond to that fundamental ‘why’, we simply don’t do it (C1).”
- For J-SP, seasoned collaborators who contribute on a pro bono basis are “the most valuable” resources because they bring 10–20 years of experience and “all the knowledge and tools” required (J1)
- For D-QC’s cofounder, “one has to adhere to the classic pharmaceutical world investment model” that is “very much oriented toward financial return”: “So it’s far from the ideal we had set ourselves, but we always try [...] to have a little more social than capitalist mindset” (D1, follow-up)
- Before being able to “dedicate their efforts to development and launch their product,” the cofounders of M-SP had to do “consulting for other companies to survive” (M1, follow-up)

(Continues)

TABLE 4 (Continued)

Meso-level challenges*Building nimble organizational capacity*

- While being capable of running a team that may “get out of its skillset” over time, entrepreneurs have to make their expectations clear: “there are people [who] understand how start-ups work and there are people [who] work in established industries” (A1)
- Several organizations set up boards of directors or advisory committees with diversified expertise (in health, business and/or social aspects) to improve “decision-making” (E2)
- G-ON had to “figure out how to turn as much agency” as they could to African users so they could 3D print prostheses that matched their context of production as well as their patients’ needs (G1)
- P-SP’s employees need to learn how to cope with the volume of work, pressure, and eventual complaints of patients if delays happen (P1)
- Q-SP relies on 3 salaried employees and 180 volunteers. Because volunteers may “want to be volunteers when they want, and to do what they want,” it formalized selection criteria and a minimum level of commitment (6h/week, monthly meetings) (Q1)

Scaling responsive production processes

- As “there is no absolute clarity in exactly what the challenge or what the solution is,” scaling decisions require accountability and responsiveness to users (G1)
- D-QC operates in a market where “big pharma’s” solutions cost a fortune and are “not applicable to small companies” that have to find “homemade” solutions (D1)
- A “strong presence in the press” generated “great empathy” for L-SP and “everyone wanted to take the project” all over Brazil, yet the demand is “infinite” (L1)
- The supply chain is “pretty critical” to N-SP’s activities because “everything is imported” and buying equipment and supplies outside Brazil increase costs and delays (N1)
- R-SP focused its sales in three US states with conditions for “better logistics,” making its production cost in Brazil around US\$950 whereas it would be around US\$300–400 if it were produced in China (R1).
- By creating another entity to sell its product in high-income countries, G-ON’s assumption is that such a “hybrid model will be very important to [its] long-term success and ability to scale” (G1, follow-up)

Struggling toward financial sustainability

- The organization “becomes more attractive” if one can say “we’re going to become sustainable by selling [the innovation] to industry and we’re going to sell it to family doctors and that will help us meet our mission” (A1)
- D-QC was generating revenues, but “not profitable yet.” Its contracts and various partnerships brought in resources, but “validating a drug takes incredible resources, it takes patients, volunteers, millions of dollars and several years of effort” (D1)
- For the founder of H-QC, “there is no business model at all, at least in terms of self-generated income” (H1)
- Because Q-SP could not continue to “map the communities” without giving them more certainty about its ability to secure sponsors, the “first thing” was to “find financial sustainability.” (Q1)
- B-QC’s finances were “subject to all the ups and downs of the Canadian dollar and everything related to increases in oil costs.” In the last year, a 9.4% variation in the cost of raw materials represented “more than 30% of its product cost” (B1, follow-up)

(Continues)

TABLE 4 (Continued)

Macro-level challenges*Juggling with misaligned funding sources*

- For A-ON's founder: "if I say to investors 'hey, we're making a new hearing test for everyone and we're going to give it away to the Third World' ... no investor is going to come near me. But the social finance will say 'ok, that sounds great'" (A1)
- Engaging in "for-profit work" in North America could eventually "subsidize" G-ON's activities in developing countries (G2). A for-profit organization could "sell the software [...] to high resource countries" and when it becomes profitable, it could pay dividends to the not-for-profit
- The founder of K-SP spent himself over \$100,000 in 15 years and "every social entrepreneur would say the same thing, they're spending a lot of their own capital to get things going" (K1). Creating a for-profit social business could increase opportunities for raising "social capital" (K1)
- For M-SP, starting with the cofounders' own resources created the "conditions for other people to collaborate" and a large 2-year grant from the Brazilian national research funding agency covered hardware, equipment, and third-party services (M1)
- L-SP "just closed a deal" with a large beverage company whose goal is to close the reverse logistics loop of PET plastic bottles. It will financially contribute to the development of L-SP's app (L1, follow-up)
- G-ON was at "a crossroad" because it must "switch to other forms of investment and other sources of revenue" (G1, follow-up)

Fulfilling ethical, legal & regulatory responsibilities

- Research ethics and regulatory requirements are "enormous" for medical devices, "almost to the point of insurmountable" (A1). While A-ON follows Health Insurance Portability and Accountability Act (HIPAA) regulations, it must clarify whether the data is being securely handled and be prepared for audits
- F-ON had to go through "a lot of legal stuff to just make sure" that it was "not going against anyone else's IP" (F1)
- As G-ON works with African partners, "dealing with international regulations" as well as cultural differences called for reflexivity regarding Western assumptions (G2). Developing a technology that has "never existed before," it focused its efforts on clinical trials to compare its 3D-printed assistive devices to traditional manufacturing methods (G2)
- M-SP obtained certifications from two regulatory agencies (M1, follow-up)
- N-SP was "working with health insurance companies" and preparing a cost-effectiveness study to fulfill health technology assessment requirements (N1, follow-up)
- For N-SP's founder, "it already takes almost a year for an ethics committee to release a sample—and it's not because they're worried about the patient or about the sample—it's because they're worried about being sued" (N1, follow-up)

Accounting for value in use

- When E-ON discussed the distribution of its product with NGOs and philanthropic agencies, it was told "you don't have enough research" (E1). A Grand Challenges Canada grant was used to generate data to satisfy these requirements while selling the product to the "developed world" kept the "business running" (E1)
- The "greatest goal" of R-SP is to improve wheelchair users' well-being, mobility, and autonomy, but generating metrics is very difficult, even if their surveys and the Twitter and Facebook messages received from users offer precious feedback (R1)
- P-SP sought to measure its impact on patient waiting lists in different regions, but such studies require accessing data collected by multiple local public health systems (P1)
- G-ON was trying to build a community "not only for the software" but also to further develop its innovation. To this end, collaborations with universities in the USA and Saudi Arabia that are "doing work in scanning or different types of wearables" were developed, "looking at ways in which to partner with them to not duplicate research but to support each other" (G1, follow-up)
- J-SP lack the Key Performance Indicators that sponsors are looking for: "okay, we can help you, but what am I going to win here? What will you offer for us, for our patients in terms of gains?" (J1, follow-up)

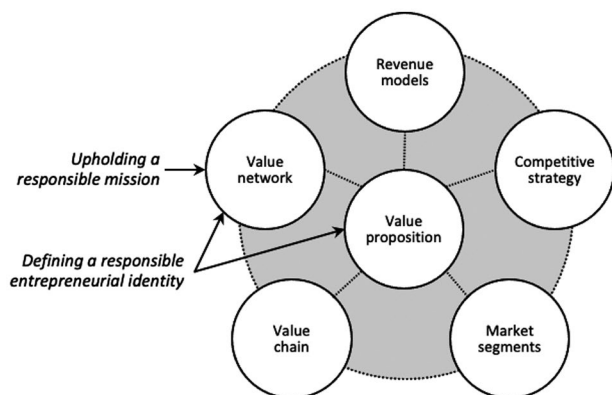


FIGURE 2 Micro-level business model challenges

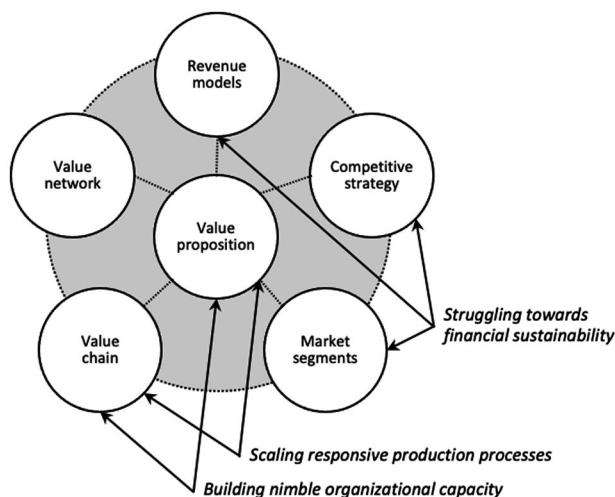


FIGURE 3 A multilevel empirically grounded model of the challenges to responsible value creation

Organizations grappled with the *responsive scaling of their production processes*, which is conditioned not only by the demand, but also by the value chain and the characteristics of the value proposition. When F-ON was “still very small,” after media coverage by two large national broadcasters, then “all of a sudden, it... blasted out throughout Canada” and the organization “just couldn’t keep up with the number of orders” (F1). Approaching a thousand clients, R-SP discovered “some complexities” in its value chain that it did not have when it provided user support for “500 clients” and it thus keeps “remodeling the product” (R1, follow-up). If a partner “wants to donate one million” for Q-SP to produce “one hundred thousand lighting poles,” it “can’t make it” (Q1). Not only such scaling would require a different value chain and studying alternatives (e.g., batteries that do not “hurt” circuits), but the organization would also prefer to work on a “more robust, highly affordable technology,” thus remaining faithful to its value proposition (Q1). The scalability of G-ON implied carefully examining whether different

Nylon-based materials respond well to 3D printing in different African contexts:

Nylon [...] doesn’t blend well with other plastics [and it’s] hydrophilic, meaning it takes on water and so storage of the filament is a huge issue in these high humidity environments and bad storage has a much larger impact on the [assistive] device than we initially knew. (G1)

A dubious *struggle toward financial sustainability* prompts readjustments in revenue models, market segments, and competitive strategies. Although the products of B-QC have been on the market for 7 years, “it may be the first year” where profits will be generated: “Is the objective to make money? Yes, eventually, at some point [laughs]. Was it what we’ve done so far? No. But everyone has a job!” (B1). While P-SP had a regular revenue stream, it still needed to “create an economically sustainable model” because its main client, the city of São Paulo public health system, did not offer sufficiently high reimbursement rates and the volume of services in very small towns precluded sustainable contracts (P1). Even though many pharmaceuticals and hospitals were using its pediatric cancer educational materials, J-SP was struggling to secure stable donations and sponsorships (J1, follow-up). The digital components that were embedded within the value proposition of several organizations made financial sustainability challenges more acute. The impossibility to “monetize” H-QC’s online directory on wheelchair-adapted buildings reduced its financial capacity to update the platform and develop an app (H1). When F-ON decided to develop digital versions of their dementia-friendly books, the founder did not know exactly what subscription model was going to be put in place but envisaged to provide “an endless stream of reading options” that would generate more “consistent revenues” (F1). N-SP launched its product through an “early access program,” charging a price below its cost, with the intent to gain physicians’ confidence and increase accessibility for patients: “We charged R\$999 each exam [which] was very well received” because it compared very well to competitors’ prices, ranging from R\$16,000 to R\$20,000 (N1, follow-up). Q-SP had to “review its values, mission and vision” and “picked some fights” to clarify “who wants to stay, who doesn’t, because you can’t maintain an organization if you are not financially healthy” (Q1, follow-up).

To summarize, meso-level challenges push organizations to dynamically readjust five business model components. Building a nimble organization and responsively scaling production processes imply consolidating the

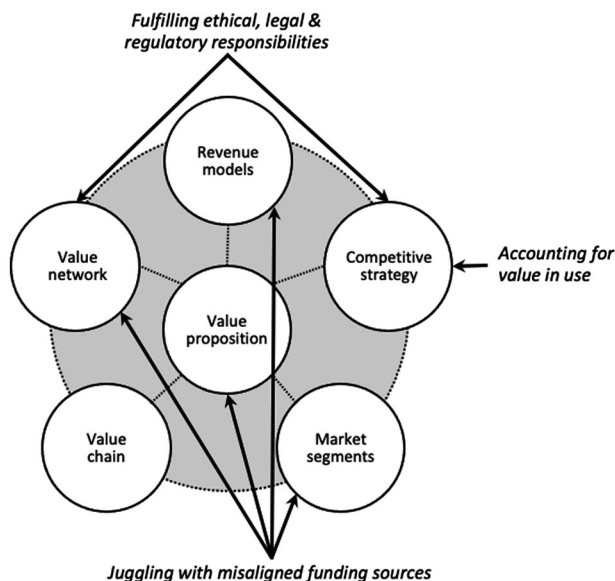


FIGURE 4 Macro-level business model challenges

value chain while developing organizational competencies in improving or solving technical problems related to the value proposition. In their struggle to attain financial sustainability, organizations keep redefining their revenue models, market segments, and competitive strategy.

4.2.3 | Macro-level: juggling with misaligned funding sources, fulfilling ethical, legal, and regulatory responsibilities and accounting for value in use

Juggling with misaligned sources of funding is a constant challenge, affecting the organizations' revenue model, value network, value proposition, and market segments (see Figure 4). While seeking to respond to the varying requirements of multiple sponsors,⁵ organizations keep searching for ways to generate revenues and obtain more stable and larger sources of funding. Because N-SP "never had the money" to do its R&D activities, it established a partnership with a large cancer care hospital, which owns a percentage of its Intellectual Property (IP) and earns royalties for every exam sold (N1). Because "revenues are far away," D-QC "asks for funding all the time" and this forces cofounders to

do business with VCs even though they "would rather have impact investors" because their "main motivation" is to make a drug that will "really have an impact" (D1). When E-ON was "pre-revenue," it could not have grown without social finance investors who "were more willing to take a risk" and "closed the gap" between research grants that "were so restricted" (E1). For its founder, the later support by "traditional" investors "validated" E-ON as a "real company," one that is profitable and scalable (E1). In contrast, G1 criticized the idea of providing social entrepreneurs with "seed money" to operate a for-profit organization and then asking them to seek VC, which is "a problem for real social change" (G1). Some compromises are negotiated along the way and new opportunities being seized. For R-SP to "become more interesting in the next round and increase its market valuation," it chose to "downsize efforts" devoted to its wheelchair user product:

So, what makes more sense to R-SP as a company? Attack different markets in the world with [wheelchair user product]? The American market? Or attack the Latin American, European, and Asian markets with another facial recognition product? Where I have a bigger market and can have a financial return and be more attractive to an investor in 18 months. (R1, follow-up)

Organizations had to *fulfill the ethical, legal, and regulatory responsibilities* specific to their value proposition, which ranged from medical devices to community-based interventions, and this process led to adjustments in their competitive strategy and value network. Because F-ON publishes artwork made by vulnerable individuals, the founder sought legal advice to protect their rights as she "never wanted to be in a space" where the organization appears to be "taking advantage" of them (F1). For N-SP, which handles sensitive health data, fulfilling the General Data Protection Law requirements implies: "a whole technical apparatus of how you store and handle data, levels of encryption, levels of backup [...] it's good for the client, it's good for the patient, but there's not been any kind of flexibility, as we see for research in Europe, Canada, and the United States" (N1, follow-up). Because choosing one's partners may raise significant ethical dilemmas, Q-SP refused many, but also learned more about ways to position the organization within its value network:

we refused a partnership with [strong alcohol company] because alcoholism is one of the main problems in the community [where residents are amongst the poorest].

⁵Most of the sample (n = 11) handled four types of funding or more, which had their own goals and restrictions. The most common funding source was grants to support R&D activities (n = 13), followed by investments (n = 7) to build commercial capacity (venture capitalists [VC], angels, shareholders, governmental bodies, and/or impact investors). Six organizations received donations and founders' own personal resources were used to set up four Brazilian organizations.

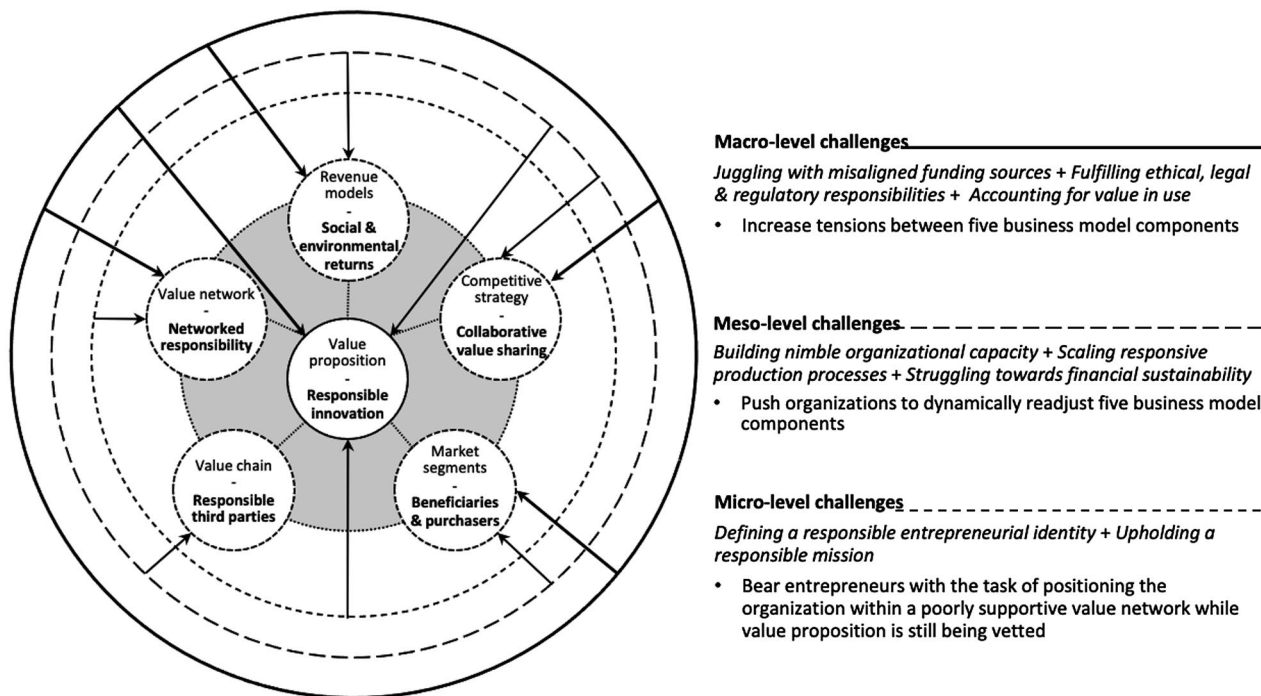


FIGURE 5 Meso-level business model challenges

So, for us it would be bad. But, at the same time, we've managed to light up the world with [beer company] at the World Cup, a commemorative event that doesn't refer to alcohol consumption the same way. (Q1, follow-up)

The obligation to *account for value in use*, i.e., the value ultimately created through those who use or benefit from the innovation, had implications for the competitive strategy of the organizations. For B-QC, if the environmental value of its drug packaging solutions is not well understood by drug retailers and pharmacists, its products “have no value” (B1). The organization thus included such metrics in its competitive strategy. Although its founder shared a detailed analysis of how L-SP may increase the income of informal waste-pickers, the organization could not fund in-depth impact-oriented research (L1). Being “very friendly” with “companies doing similar work, not necessarily competitive work” could increase G-ON's impact (G1, follow-up). Nonetheless, an innovation must first be adopted and disseminated before one may measure its value in use: “nobody [in healthcare management] has much long-term thinking” and accessing data to measure potential savings “is not so trivial” (N1, follow-up). Lastly, properly accounting for value in use requires paying attention to the way economic performance and health and social care impacts are communicated:

if you're coming at it from a social enterprise or a healthcare standpoint, you think and speak

in language A and everyone you talk to thinks and speaks in language A. Unless you talk to a businessperson who speaks and thinks in language B. And you don't understand each other [and] if you don't say the right things, it's not going to work. (A1)

To summarize, macro-level challenges prompt organizations to readjust five business model components. As they always juggle with funding sources that do not pursue similar goals, they revisit their revenue models, include new partners in their value network and modify their value proposition to capture new market segments. Both their competitive strategy and value network are affected by their capacity to fulfill complex ethical, legal, and regulatory responsibilities. While entrepreneurs underscore collaborative relationships that are key to their value creation activities, their competitive strategy remains less fully developed. Their organizations often lack the resources or data to fully report and communicate the economic, social and/or environmental value in use of their innovation.

4.3 | An empirically grounded model of the challenges to responsible value creation

Figure 5 schematizes all the multilevel relationships described above. This empirically grounded model highlights that micro-level challenges (the thinnest dotted

line) bear entrepreneurs with the task of positioning their organization within a generally poorly supportive value network while their value proposition is still being vetted. These challenges include establishing a *responsible entrepreneurial identity* that unambiguously communicates the value of a novel approach to a socially compelling problem and *upholding a responsible mission* that aims to combine economic, social and/or environmental value creation activities in novel ways. Meso-level challenges (the medium dotted line) push organizations to dynamically readjust five of their business model components. *Building nimble organizational capacity* and *scaling responsive production processes* entail adaptations to the value chain that aims to competently improve the value proposition or solve emerging problems, while the revenue model, market segments, and competitive strategy are frequently reconsidered in the pursuit of an unlikely *financial sustainability*. Lastly, macro-level challenges (the large black line) increase the tensions between five business model components. *Juggling with misaligned funding sources* lead organizations to modify their revenue models, integrate new partners in their value network, and adapt their value proposition to new clients or health services purchasers that were not initially part of their market segments. Because *fulfilling complex ethical, legal, and regulatory responsibilities* and *accounting for value in use* require resources that small organizations typically lack, these challenges jointly impact their competitive strategy, which often remains underarticulated. To better reflect our empirical findings, we added precisions to the six business model components in Figure 5. These are discussed below.

5 | DISCUSSION

5.1 | Theoretical contributions and their implications

For McGahan et al. (2021), the 21st century raises important questions for innovation management scholars: What can we “add to the conversation about the deployment of business capabilities, resources, and ideas in pursuit of the public interest?” How shall “the coordination of business and other activities” be accelerated to address societal challenges? To shed light over such issues, our study combined the RRI and the business model scholarships while seeking to address their respective research gaps.

The first contribution of our study is to have empirically fleshed out a multilevel model that bridges these fields of research to clarify why and how the business model components of RRI-oriented organizations are dynamically adapted in response to eight challenges, while their capacity

to adequately align these components remains precarious. Recognizing that a business model articulates “firm-centric, yet boundary-spanning” activities (Zott et al., 2011), our model brings conceptual clarity to the way responsible value creation can be approached by innovation management scholars by adding six precisions. First, it emphasizes the cornerstone of responsible value creation: **a value proposition that deliberately embeds responsible innovation features** and which should remain the anchor point when (re)adjusting other components (see Figure 5). Our multi-level model reveals that the value proposition is the only business model component to be challenged at all three levels. Defining a *responsible entrepreneurial identity* (micro-level), *building nimble organizational capacity* (meso-level), *scaling responsive production processes* (meso-level), and *juggling with misaligned funding sources* (macro-level) all put pressure on the value proposition. This finding is important in view of other studies showing that a value proposition evolves within a short timeframe because other business model components redefine the value it will ultimately offer and to whom (Lehoux et al., 2014). Because responsible value creation should be embedded at the point of inception of a new business model (Wilson & Post, 2013), the tension between the societal value of a responsible innovation and the organizational activities required to produce it and bring it to end users should be handled at an early stage and this requires a multilevel understanding of the challenges ahead. Though multilevel theoretical models present “a substantial challenge” to scholars who are often trained to do research either at a micro or macro level, a more unified conceptualization of responsible value creation should acknowledge how temporal and process-based patterns “cut across multiple levels” to condition the array of observable organizational responses (Kozlowski & Klein, 2000).

Our model brings two additional conceptual precisions, which specify that “stakeholder value rather than solely customer benefit or shareholder value” structures responsible value creation activities (Geissdoerfer et al., 2018). On the one hand, the market segments component should explicitly include the **beneficiaries and purchasers** (including the public sector) to whom responsible innovations are being offered. On the other hand, the revenue models of RRI-oriented organizations should consider the **social and/or environmental returns** expected by their sponsors, investors, and/or shareholders because the latter exhort these organizations to become financially sustainable even though they are generating value for society. Across our sample, we observed an important diversity in terms of revenue models and market segments: 10 organizations were managing 2 revenue models or more and 11 were catering to 2 or 3 market segments altogether. In addition, five organizations developed pricing strategies based on ability to pay or on a redistributive logic and five

TABLE 5 Practical insights arising from the study

Business model challenges	Ways to address the challenge	Business model components involved					
		Value proposition— Responsible innovation	Market segments— Beneficiaries & purchasers	Revenue model—Social & environmental returns	Value chain— Responsible third parties	Value network— Networked responsibility	Competitive strategy— Collaborative value sharing
Defining a responsible entrepreneurial identity	An inclusive responsible innovation development process that includes at an early-stage value network stakeholders possessing responsibility-oriented assets	✓				✓	
Upholding a responsible mission	A prospective mapping of value network stakeholders' complementary assets, followed by continuous (re)alignment toward the pursuit of a socially compelling mission					✓	
Building nimble organizational capacity	Identification of key organizational resources to produce and improve the responsible innovation and of responsible third parties' capacities to complement the value chain	✓			✓		
Scaling responsive production processes	Identification of responsible third parties that can contribute to, and help scale responsibly the value chain	✓			✓		
Struggling toward financial sustainability	A model linking targeted beneficiaries and potential purchasers to the expected social and/or environmental value creation activities, with the aim of identifying partners for value sharing activities		✓	✓			✓
Juggling with misaligned funding sources	Identification of funding sources dedicated to societal challenges and the planning of social and/or environmental value creation activities around the model defined above	✓	✓	✓		✓	

(Continues)

TABLE 5 (Continued)

Business model components involved		Value proposition— Responsible innovation	Market segments— Beneficiaries & purchasers	Revenue model—Social & environmental returns	Value chain— Responsible third parties	Value network— Networked responsibility	Competitive strategy— Collaborative value sharing
Business model challenges	Ways to address the challenge						
Fulfilling ethical, legal & regulatory responsibilities	Identification of organizations and institutions within the value network that can share knowledge and capacities to reflect on, and help address ethical, legal, and regulatory responsibilities					✓	✓
Accounting for value in use	A strategy embedded into the responsible innovation to gather with users and communicate the economic and/or environmental value created through value sharing activities					✓	✓

made their innovations freely available to beneficiaries. From a theoretical standpoint, these value creation activities underscore the need to establish linkages between business models where the beneficiaries are not necessarily the key customers (Ranabahu, 2020) and where other forms of revenue generation mechanisms are required with macro-level initiatives that support responsible value creation such as tax incentives (Santos et al., 2015). In the health sector, the patient is rarely the person making the decision to use a healthcare product or service and the latter is generally reimbursed through public or private insurance (Silva et al., 2018). Nonetheless, the conceptual distinction between “who benefits” and “who pays” applies to value creation activities addressing societal challenges such as economic inclusion, climate change, or sustainable food production where collective externalities and benefits need to be factored in the revenue model equation (Gebauer et al., 2017; Ghosh & Rajan, 2019). Hence, research on responsible value creation should explicitly recognize the monetary and nonmonetary value that is created for a broad range of stakeholders, including society (Geissdoerfer et al., 2018; Kraus et al., 2020).

The last three conceptual precisions in our model are aligned with research on business models that highlights the “networked nature of value creation” (Zott et al., 2011). First, our findings suggest that the value chain supporting the production of responsible innovations requires **responsible third parties**, i.e., suppliers, intermediaries, distributors, etc. that can facilitate a *responsive scaling of the production processes* of RRI-oriented organizations. Second, because close to half of the organizations in our sample were in a precarious situation at the time of the follow-up interviews, our study suggests that responsible value creation activities are unlikely to thrive unless **responsibility gets more evenly “networked”** across the value network of RRI-oriented organizations (Timmermans et al., 2017). In view of today's innovation challenges, *defining a responsible entrepreneurial identity* and *upholding a responsible mission* should not be conceptualized and researched at the micro-level only, i.e., as an individual entrepreneur's ‘burden.’ Our multilevel model rather suggests that their value creation endeavor should be actively supported by a responsible value network, spanning from the meso- to the macro-level. Whereas all organizations within our sample struggled to secure financial support aligned with their value creation aims, some chose to move toward more affluent markets such as nonhealth AI-based facial recognition solutions to attract private investors. This meso-level organizational response is not surprising. Still, rapid growth-oriented innovation financing (Lehoux et al., 2014; Mazzucato, 2018) will only make *juggling with misaligned funding sources* more difficult, a macro-level challenge that

reconfigures four business model components. Third, while our findings showed how demanding it is for RRI-oriented organizations to *account for value in use* of their innovation, several of our cases deployed a **collaborative value sharing strategy** more than a competitive strategy (Morioka et al., 2017). The purposes of these value sharing practices were not solely financial (Chesbrough & Bogers, 2014), they typically sought to increase the circulation across organizational boundaries of responsible capacities and solutions (Hlady-Rispal & Servantie, 2018; Sjödin et al., 2020) as well as “reciprocity” with organizations sharing a similar value creation goal that could contribute to the scaling of their activities (Defourny & Nyssens, 2010). Overall, our empirically grounded model invites scholars to adopt and further develop a networked conceptualization of responsible value creation where “joint value creation” activities (McGahan et al., 2021) combine entrepreneurs’ motivations (micro), organizational value sharing practices (meso), and innovation stakeholders’ commitments to responsible value creation (macro) (Schönherr et al., 2020).

The second contribution of our study is to have generated the “data-to-concept” groundwork (Gioia et al., 2013) that may foster cumulative knowledge growth on the way RRI-oriented organizations can align and orchestrate their activities toward responsible value creation. For Ritter and Lettl (2018), “theories are not like Lego bricks that click together effortless and perfectly — they need glue to connect them” and business model research can play the role of such “glue” in the innovation management scholarship (Ritter & Lettl, 2018). Within this perspective, the model we developed not only connects business model research with RRI, but also specifies the multilevel constructs at play and the relationships they entertain, thereby contributing to a unifying theoretical foundation from which to pursue research on responsible value creation and organizing (Kozlowski & Klein, 2000). More specifically, reflecting the singularity of organizations engaged in responsible value creation, our model can help to structure research on the governance of for-profit and not-for-profit organizations that pursue societally relevant value creation activities. While novel value propositions (e.g., transforming waste into a new product) and value chains (e.g., hiring marginalized workers) are being developed to address societal challenges, our model can guide research on the entrepreneurial, organizational, and system-level activities that bring them together into coherent business models (Spiess-Knafl et al., 2015). Because understanding key systemic drivers and obstacles is a key issue for RRI and mission-oriented innovation policies (Mazzucato, 2018), the model could be used to examine how business models in sectors characterized by socially and environmentally complex value

chains and value networks can be improved (Antoniou, 2020; Ranabahu, 2020; Santos et al., 2015).

5.2 | Managerial implications

As aptly put by Schönherr et al. (2020), RRI’s requirements should be seen as “good news” because they offer guidance in what would otherwise remain “a space of uncertainty” for those who develop and manage innovations. Although leadership and high-level governance may be important facilitators of responsible value creation within a large firm (Voegtlin et al., 2018), our findings suggest that innovation managers in small- and medium-sized enterprises need to “think multilevel” (Kozlowski & Klein, 2000) and consider responsibility throughout multiple stages, from the initial design of the value proposition and its business model to the mapping of the activities, resources, and capabilities that will be needed in both the short- and long-term (Sjödin et al., 2020). By deploying the anticipatory, reflective, inclusive, and responsive processes suggested by RRI (Stilgoe et al., 2013), innovation managers could identify how, when, and with whom the tensions raised by the eight business model challenges summarized in Table 5 can be managed. An RRI-oriented innovation management process would recognize that social and environmental value creation does not simply stem from individual motivations or a heightened sense of entrepreneurial responsibility. Different organizational forms should find the managerial and financial support adapted to their respective value proposition and capacities to produce responsible innovations or contribute to responsible value chains and value networks. Because “innovative ideas and practices traverse” organizational boundaries, innovation managers should certainly become proficient in establishing and maintaining partnerships with organizations that share a strong interest in responsible value creation (McGahan et al., 2021).

5.3 | Limitations of the study, further research, and conclusion

Our findings were reported following the Case Study Evaluation Template (CASET), which includes providing an explanation of the reasons why a case study design was chosen, of the theoretical case sampling strategy and of the way different data sources were gathered, coded, and iteratively reviewed by multiple investigators (Goffin et al., 2019). We recruited many organizations, which may be seen as both a strength and a weakness. On the one hand, cross-case commonalities are empirically more robust than if they were based on a limited number of cases.

On the other hand, case-specific dynamics and variations across regions were not reported in this article. Though we did not conduct a pilot study prior to our case study as CASET recommends, the validity and trustworthiness of our findings are high. One strength of the Dedoose data analysis online platform is to enable multiple investigators to review the coding scheme and cross-check the evidence, which increases internal validity. Though retrospective narratives have limitations and a hermeneutical analytical approach (e.g., sensemaking, identity-building processes) would have enriched our findings, our participants validated a preliminary case description, which also contributes to internal validity. Our analyses relied on detailed summary tables, which enable readers to review how our interpretations are empirically substantiated and ascertain the transferability of our findings to cases that share similar characteristics.

Further research on the organizational capacities required to innovate responsibly and bring to scale responsible innovations is warranted. Innovation management scholars could study when and how innovation-based ventures would benefit the most from social finance because it could be a more “effective lever” for launching and growing RRI-oriented organizations (Voegtlin et al., 2018). Comparative longitudinal studies could examine whether organizations that are backed by socially oriented investors at an early stage better succeed in embedding responsibility into their business model and in further advancing responsible value sharing activities through mutually beneficial organizational collaborations.

Overall, our study shed light over the multidimensional nature of the business model challenges raised by the production of responsible innovations and clarified why and how responsible value creation remains a precarious endeavor. It indicates that responsible value creation simultaneously requires individual entrepreneurial skills, organizational capacities, and the support of other innovation stakeholders. Knowing how to overcome the challenges our study uncovered is essential, otherwise organizations engaged in new ways of doing business will not “resist on the market” (Kraus et al., 2020). Yet, the capacity of organizations to put a responsible value proposition at the core of their business model is amongst today’s most salient innovation management problems (McGahan et al., 2021; Ranabahu, 2020).

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CONFLICT OF INTEREST

The authors declare they have no conflicts to disclose in relation to this study.

ETHICS APPROVAL

Ethics approval was obtained from the Health Research Ethics Board of the University of Montreal (CERES-D #17-024) and from the National Commission of Ethics in Research in Brazil (CONEP, #2.673.002).

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