

Practices for Open Business Model Innovation – An Innomediaries Perspective

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Abstract. Innovative business models generate competitive advantage and are becoming more important than innovative products or processes. Despite its importance, firms continuously fail to innovate business models. Reasons are inhibiting structures, cultures and missing resources or capabilities. Integrating external stakeholders can help to overcome these barriers. Turning to innovation intermediaries, so-called “Innomediaries” support firms. Innomediaries specialize on the integration of suppliers, customers, or inventive partners (startups or universities) into innovation projects. With three in-depth case studies, we provide an actionable framework for integrating external stakeholders into business model innovation. It guides firms when, with whom, and how they can integrate external stakeholders to reduce risks and accelerate the creation of innovations. We shed light on the understudied intersection of open innovation and business model innovations and the linking role of innomediaries. Future research can extend the role of IT, protection against opportunistic behavior, and innomediaries as service platforms in innovation ecosystems.

Keywords: Business Model, Open Innovation, Innovation Intermediary, Case Study.

1 Introduction

An innovative business model generates competitive advantage [1–3] and is becoming more important than innovative products or processes [4]. A business model describes how value is created, delivered, and captured [5], and business model innovation is a rising topic in the literature [6]. Firms often leverage new digital technologies to innovate their business model [7, 8]. For example, traditional manufacturers use digital technologies to increase service offerings with servitization strategies [9, 10]. Daimler AG, for instance, innovated from traditional product sales to mobility services and short-term renting with car2go as a leader in car-sharing [11].

Firms fail to innovate business models for many reasons [11, 12]. Barriers erect inhibiting structures, cultures, capabilities, and resources. Firms' values and processes might spur product innovation but hamper business model innovation [13].

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Traditional industries might lack digital capabilities and resources for transformations [14].

Integrating information, resources, needs, requirements, and perspectives of external stakeholders' can mitigate inhibiting structures and cultures and enables access to new resources and capabilities, which aids in creating viable business models [15, 16]. Firms that lack the capabilities or resources to integrate external stakeholder turn for assistance to innovation intermediaries. As specialists in managing innovation and integrating stakeholders, these innomediaries [17, 18] integrate expertise from suppliers, customers, or inventive partners (startups or universities). They support business model innovations and become "central to creating and maintaining a successful innovation ecosystem" [19].

Previous studies disregard how innomediaries facilitate open innovation [20] and integrate external stakeholders (suppliers, universities, startups, even potential competitors) into business models innovation [21]. Most contributions focus on one particular stakeholder group and neglect integrating several ones [22, 23]. If, when and how firms integrate other external stakeholders, such as suppliers, universities, startups, or even (potential) competitors in innovation projects is rarely investigated. Scholars have called for more research on innovation projects' frameworks [24, 25]. Research on multilateral stakeholder relationships remains sparse [26]. Similarly, little attention has been given to the process of designing business models [21]. Thus, extant research seldom guides business model innovation.

This study fills that gap in the literature with an actionable approach for integrating external parties into business model innovation, that is "open business model innovation". We address the following research question:

RQ: How can firms integrate external stakeholders in business model innovation?

We build on three in-depth case studies of German innomediaries that specialize in supporting firms to succeed in business model innovation by linking them to external stakeholders. We structure their activities into distinct phases and describe how and when they involve external stakeholders in their clients' deliberations.

The result is a framework for planning, monitoring, and controlling stakeholder integration during business model innovation. The framework with its activities and practices of innomediaries contributes to open innovation and business model literature. For practice, it guides practitioners toward when and how to integrate external stakeholders into business model innovation. Results can further apply to other customer-centric, open, innovation projects.

2 Related Work

To analyze business model innovations and external stakeholder integration, we first define main concepts and have a look at extant work on business model innovation, open innovation, and different modes of stakeholder integration. Following a common

definitions, we understand a business model as “the design or architecture of the value creation, delivery and capture mechanisms employed” [5] and business model innovation as “designed, novel, nontrivial changes to the key elements of a firm’s business model and/or the architecture linking these elements” [3].

As practices for external stakeholder integration differ concerning the phases of innovation processes, we had a look at different process models for business model innovations [27–30]. As basis for our research, we chose a high-level widely applicable process model: the 4i-framework [31]. It covers four process phases of business model innovation: initiation, ideation, integration and, implementation. First, initiation, is about the ecosystem analysis. This phase aims at, first, understanding the needs of all players involved including customers and users, and second, to identify possible drivers of change, which include technology trends and changes in markets and business environments [31]. Second, ideation, firms generate business model ideas. Identified stakeholder needs and change drivers from the first phase are transformed to tangible business model ideas. It is important to think out of the box and overcome industry standards [31]. Third, integration, contains the actual building of a new business model. Business model ideas from the preceding phase are used to develop profound and comprehensive business models. Central aspects are integrating all business model elements, i.e., value creation, value delivery and value capture [5], as well as the management of partners for business model implementation [31]. Fourth, implementation, the business model is implemented. It is important to overcome internal resistance with open communication so that all stakeholders understand and support the new business model. The phase typically includes experimentation with pilots and trial-and-error [31]. Overall, the four phases do not form a linear process. They rather imply iterations within and between themselves. Thus, we can use it as a flexible basis to analyze and describe practices for open business model innovation.

To analyze and add integration practices to business model innovation, we have a look at open innovation literature. Global competition leads to rising costs in research and development (R&D) and technology as well as shorter product life-cycles, which requires firms to open their innovation processes towards open innovation [32, 33]. With open innovation firms integrate external expertise, e.g., from suppliers or customers. Open innovation covers various innovation activities, such as buying or licensing technology, hosting innovation contests, or forming R&D alliances or joint ventures with the help of innovation intermediaries [33]. An open innovation strategy changes traditional business models to open business models [32, 33]. Open business model innovation seeks and exploits the ideas of stakeholders outside the innovating firm [32] and, thus, integrating different external stakeholders. A stakeholder is “any identifiable group or individual who can affect the achievement of an organization’s objectives or who is affected by the achievement of the organization’s objectives” [34].

We found three different modes of stakeholder integration in literature: *Passive integration*, *reactive integration*, and *active integration* [35, 36]. *Passive integration* is about integrating external stakeholders without their awareness with no active communication between stakeholders and the investigating party. This mode covers

identifying stakeholder needs, ideas or requirements and conducting market analyses or ethnographic studies, such as netnography or empathic design. In *reactive integration*, investigating firms invite external stakeholders to give feedback about or evaluate ideas, concepts, prototypes and uses, or further specify their needs and requirements. Reactive integration uses methods, such as surveys or concept testing. In *active integration*, external stakeholders are equal partners an innovation project to jointly solve and discuss a problem. An active dialog and development of new ideas, concepts, or prototypes characterizes this mode. Typical methods are a co-creation workshops or open platforms, such as innovation communities, where stakeholders develop their own ideas and concepts and can act independently from the organization.

However, discussed contributions give a rather high-level guidance and mainly focus on customer integration without considering other stakeholders. Further, innovation intermediaries and the specific context of business model innovations is not addressed. Thus, this paper investigates practicable approaches for stakeholder integration in business model innovation from the expert perspective of innovation intermediaries.

3 Research Method

For exploring innomediaries and their integration practices of external stakeholders into business model innovation projects, we chose a case study approach [37]. To obtain rich results from innomediaries in their natural setting, we choose multiple cases based on interviews and secondary data [37].

Table 1. Case Studies and Interviews

<i>Firm</i>	<i>EE¹</i>	<i>Est.²</i>	<i>Expert</i>	<i>Duration</i>	<i>Position</i>	<i>Years³</i>	<i>Projects</i>
StartupCo	250	2010	Expert A	75 min	Partner	2,5	≈15
			Expert B	62 min	Senior Project Manager	2,5	5
			Expert C	65 min	Senior Project Manager	2,5	6
NetworkCo	125	2008	Expert D	64 min	Project Manager	3	≈15
			Expert E	63 min	Senior Project Manager	2,5	15
			Expert F	68 min	Innovation Consultant	4	13
CrowdCo	100	2000	Expert G	47 min	Managing Director	15	≈100
			Expert H	66 min	Senior Innovation Consultant	3	≈15

EE¹: Employees (appr.); Est.²: Founding year; Years³: Working years at the innomediary

We interviewed eight executives of three German innomediaries that specialize in integrating external stakeholders into business model innovation projects. We used the following selection criteria: (1) Firms routinely integrate external stakeholders in business model innovation projects. (2) They are established, comparatively large innomediaries. (3) They do not specialize in a specific industry. (4) They offer consulting and project management. These inclusion criteria ensured that our sample is appropriate to help answer our research question and to minimize the risk of investigating the wrong cases.

We selected interviewees based on their professional expertise, e.g., the number of managed projects and years of work experience. Sources that support triangulation of data [37] include semi-structured in-depth interviews with executives and employees and follow-up with e-mails and phone calls, corporate materials, Internet sources, and business publications. Table 1 shows the firms, interviewees, and their experience.

The interview guideline consists of 15 primary questions (i.e., demographic, knowledge, and experience) and various follow-up questions [38]. Experience questions capture information about past observations or actions of the interviewee. Knowledge questions relate to the accumulated knowledge of the interviewee and do not necessarily include own experience. Demographic questions gather background information about the interviewee. The questions were adjusted after the first interview [38]. We interviewed five experts face-to-face and three by phone. A snowball method was employed [39], where interviewees recommend additional interviewees of the firm.

We transcribed the interviews and secondary data and coded them with MaxQDA [38]. We used several coding approaches to obtain different perspectives about the data i.e., value coding, process coding, descriptive coding and holistic coding [40]. We derived 783 codes and grouped them into smaller categories and subcategories to synthesize initial summaries of data segments. We extracted all quotes about external stakeholder integration, its mode, and its method. We identified patterns—repeated behaviors, actions, norms, and routines—for both single and multiple cases and assigned them within the 4I-framework [31].

4 Results

4.1 Three Innomediaries

The three innomediaries we interviewed typically form teams of their employees and clients to provide comprehensive support throughout the innovation process. They integrate external stakeholders, including suppliers, experts, freelancers, partner organizations, customers, and users.

StartupCo emphasizes collaboration with startups. Its global network of firms, incubators, accelerators, and partners lets it connect the right people at the right time and place, including founders of tech firms, political decision-makers, and other influencers. A dedicated division develops startups and establishes startup pilots.

StartupCo supports later stages of business model implementation, including go-to-market. This distinguishes it from our two other case companies, which typically exit projects after delivering a validated prototype or minimum viable product (MVP).

NetworkCo maintains networks of marketing services and private networks. As part of a global group of marketing service firms, NetworkCo can directly search and solicit personnel as needed. Its project managers use private networks and public websites to identify experts and freelancers. NetworkCo has extensive experience with social media and digital technologies. Its consumer integration methods are typical of digital marketing, such as focus groups, product clinics, and online analysis.

CrowdCo employs open innovation methods (e.g., crowdsourcing) and relations with universities to develop ideas. CrowdCo runs its own platform for crowdsourcing whereby people generate and develop ideas, concepts, and solutions. CrowdCo provides additional toolkits to support development of the crowd's ideas and to improve results. For very specific cases, CrowdCo exchanges tech knowledge with competitors.

Although these firms differ, all share principles, processes, and methods for integrating external stakeholders. All three take a lean-startup approach—that is, test assumptions quickly, learn from findings, and repeat. Client work primarily involves reactive and passive integration. The most-used modality of reactive integration is face-to-face surveys. Passive integration includes market studies and ethnography, including empathic design and netnography. The primary active integration modality is co-creation workshops with external stakeholders, such as startups, experts, customers, and users. NetworkCo builds on focus groups, whereas CrowdCo uses lead-user workshops. CrowdCo goes beyond workshops to sponsor communities of ideas, contests, and innovation toolkits.

4.2 Integration Methods in Open Business Model Innovation

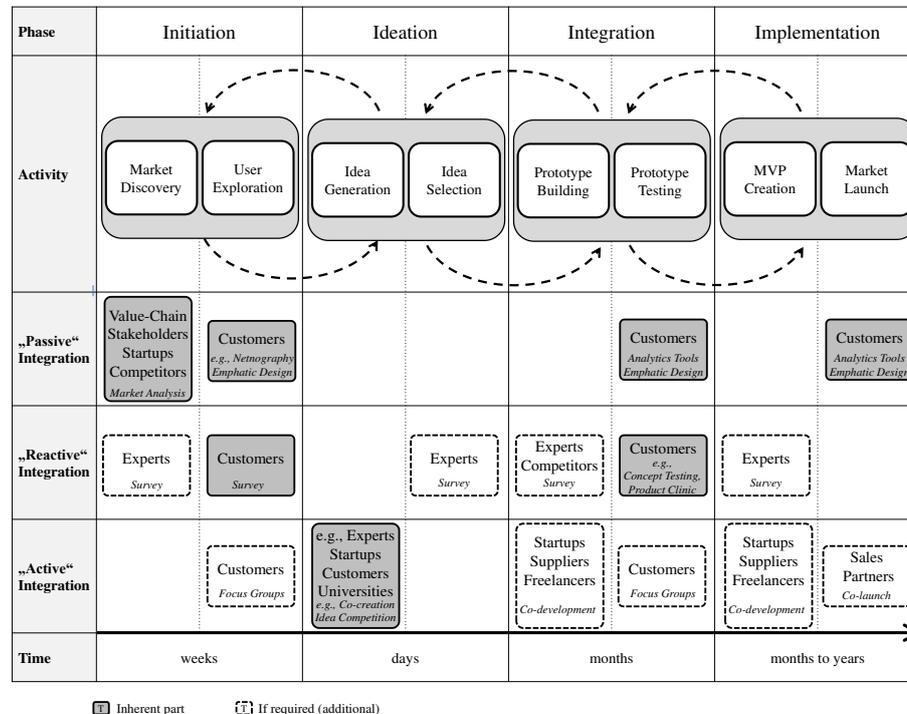


Figure 1. Framework for External Stakeholder Integration in Business Model Innovation

The three interviewed innomediaries employ integration methods that can be grouped into eight activities within four phases. We structured our findings within the four phases of the 4I-framework for business model innovation [31]. We added a time-component to denote and weight phases by importance. Our results guide open business model innovation by specifying its four phases, their duration and sequence, and eight activities and their integration methods (Figure 1).

The three modalities of stakeholder integration are *passive*, *reactive*, and *active* [35, 36]. Passive integration identifies external stakeholders' needs, ideas, or requirements without their awareness through market analyses or ethnographic studies (e.g., netnography or empathic design). Through surveys or concept testing, reactive integration solicits external stakeholders' comments about ideas, concepts, prototypes, and incorporates their needs and requirements. Active integration involves external stakeholders as equal partners through dialog and development of ideas, concepts, or prototypes. Typical methods are co-creation workshops and open platforms where external stakeholders develop ideas and concepts without influence from investigators.

Initiation. During the initiation phase the three innomediaries acquire knowledge to underpin subsequent activities. They “focus on the understanding and monitoring

of the surrounding ecosystem of the innovating firm” [41]. *Market discovery* and *user exploration* dominate this phase. Market discovery analyzes internal and external elements of the status quo such as the client's current business model, strategies, and core competencies. External analysis examines the client's value network and screens technologies and market trends. All interviewed executives agreed that both must be part of the initial innovation process. To understand new technologies, StartupCo, for example, uses informal meetings and interviews with external experts. Market discovery includes market analyses, surveys, or interviews. Passive integration of startups and (potential) competitors, i.e., startup screening uncovers ideas and market trends:

“First, the focal firm, the competition, and the entire market have to be analyzed to show where digitization is taking place in the industry and to identify relevant starting points for innovation.” (Expert D)

“The most valuable currency for innovation are startups. Why? Startups work exclusively on new, future-oriented business models – otherwise, it would not be a startup. Furthermore, any startup which got seed or series A funding has already convinced a lot of people and investors.” (Expert A)

For user exploration, the three intermediaries identify the explicit and latent needs, desires, discomforts, habits, and routines of their client's customers through netnography, surveys, surveys, contextual face-to-face interviews, and customers focus groups.

“A very detailed understanding of the customer is generated. This entails the understanding, structuring, and processing of customer needs and problems.” (Expert B)

Ideation. The ideation phase encompasses *idea generation* and *idea selection*. The former generates novel, applicable ideas [42] to *“quickly generate as many ideas as possible”* (Expert A). This activity converts opportunities into ideas for new business concepts. Idea generation is not a sequence of steps but a stream of different co-creation workshops and idea competitions with experts, startups, customers, and universities:

“For example, we do crowdsourcing within our innovation community. Along with a co-creation workshop where we include, for instance, customers. At the same time, we organize a second workshop with students from our partner universities. The ideas from these strands are then clustered and prioritized.” (Expert H)

Active methods reveal information about clients' needs, solutions, and leading-edge information based on their implicit and tacit knowledge. Integrating external stakeholders into interdisciplinary teams expands perspectives on problems and solutions. Integrating stakeholders generates commitment and willingness to participate in other projects:

“We involve the client [into ideation workshops] and give them the feeling of being part of the project.” (Expert A)

During idea selection, all three innomediaries emphasize small internal teams aided by external experts. Larger teams increase the likelihood of disagreement and endless discussions. Team selection depends less on members' creativity and more on their business sense. All three innomediaries invite or consult external experts for checking technical feasibility if specific technologies are involved.

Integration. During the integration phase our three interviewed innomediaries develop and test ideas from the ideation phase and transform them into viable business models. In addition, firms approach necessary partners and integrate them into further development. All three innomediaries take the *lean-startup* approach to launch products, firms, and business models [43]. It entails swift experimentation, customer feedback, and short development cycles with rapid prototyping and hypothesis testing. Accordingly, the integration phase consists of *prototype building* and *prototype testing*.

Customer integration quickly indicates whether solutions match identified requirements and prompts quick adjustment of business models. Relations with potential partners are important, especially during later stages of integration, when instantiating prototypes and business models require external help. Here firms integrate startups, experts, and suppliers for specific capabilities. StartupCo, for example, co-develops prototypes with partner organizations, i.e., startups or suppliers. For specific problems, they use external experts. CrowdCo, for example, outsources the development of specific prototypes. Freelancers can overcome resource bottlenecks. Existing solutions, services, or products can be tested with direct reactive methods:

“It is about creating something very fast, something that can be assessed and is tangible. Then, one must enhance the object in several iterations until one has a final product.” (Expert G)

“Prototypes can be tested independently and without our intervention, for example, with simple websites where we track and monitor the behavior of the users or we walk the customer through the prototype and subsequently conduct interviews.” (Expert C)

Implementation. After integration validates ideas and concepts, innomediaries support clients to implement business models. This phase involves extensive risks and investment [44]. To mitigate them it is advisable to conduct trial-and-error market experiments with an MVP. MVPs originated in Silicon Valley, where tech firms sought ways to innovate faster. An MVP generates business models with limited features to test in real-life settings. By testing different features, innomediaries and their clients evaluate new ideas and functions, learn market responses, and fine-tune business models:

“Finally, the ideas are implemented in the form of a so-called minimal viable product. This is a first marketable, a first testable product or product generation, which can then be further ‘rolled out’ or scaled after a successful market test.”
(Expert B)

“We then build small, new organizations that do not have to follow existing rules. Such a new organization is the pilot of a business concept. Subsequently, there is

some form of testing and validation. This cycle is repeated as often as necessary.”
(Expert F)

Similar groups of external stakeholders participate in integration and implementation. However, integration builds and tests prototypes and features, whereas implementation creates and launches a business model. Co-development and co-launching with startups, suppliers, freelancers, or sales partners can mitigate risks of implementation. Building close, durable business relationships is more important during implementation than in other phases.

All in all, different phases of business model innovations show different integration methods and diverse stakeholders. Customers typically contribute heavily in early phases with their problems and ideas, as well as in later phases with prototype feedback. Universities as partners contribute with ideas and emerging technologies. Startups and suppliers are typically involved in co-development of prototypes. External experts are invited and consulted with regard to specific technologies. Additionally, communicating with competitors can support leveraging specific technologies. Figure 1 summarizes open business model innovation activities and practices.

5 Discussion

Integrating external stakeholders in business model innovation initiatives is crucial for their success [16]. To deepen our understanding how and when to integrate whom, we analyze innomediaries as specialists in this area. Three case studies show how and when innovation intermediaries integrate external stakeholders into innovation projects. We identify eight activities (i.e., market discovery, user exploration, idea generation, idea selection, prototype building, prototype testing, MVP creation, and market launch) and related stakeholder integration practices (e.g., market analysis, netnography, survey, focus groups, and co-development) that are relevant for stakeholder integration. Cases integrate external stakeholders either reactively or passively. In reactive integration, surveys in the form of face-to-face interviews are the most commonly disseminated method. In passive integration, popular methods are market studies or ethnographic techniques, such as empathic design and netnography. Active integration most often uses co-creation workshops with internal staff and external stakeholders, such as startups, experts, customers, and users. Idea communities, idea contests, and toolkits for innovation are also used. However, the method of stakeholder integration changes with the phase and activity of the business model innovation.

This study has two main limitations. First, the findings are based on eight interviews in three German innomediaries, which has implications for the study's generalizability. The number of cases does not provide generalizable results, which was not the aim of this qualitative case study. The sampling strategy includes only German firms. In more open or closed cultures, the integration of external stakeholders might be different from our findings. Moreover, the limited number of interviews restricts the findings. However, we used rich secondary data and

interviewees with substantial experience to mitigate this issue. Besides, the sample includes innomediaries only and no other incumbents or startups, what leads to innomediary-specific results. However, innomediaries are particularly experienced with the management of open business model innovation projects and integration of external stakeholders, other incumbent firms might not, particularly in traditional industries. Second, qualitative research are generally prone to response and observer biases [37]. Response biases include a wide range of cognitive biases such as positive leniency and social desirability [45]. In this case, experts may have influenced answers regarding the practice of integrating external stakeholders. Data triangulation, though, mitigates this issue. These limitations aside, the provided framework and related best practices are valuable contributions, because they build on three international, well-reputed innomediaries and experience from hundreds of business model innovation projects.

5.1 Contributions to Literature

This study contributes to open innovation and business model innovation literature in two ways. First, the perspective of innomediaries enriches the open innovation literature. While previous studies mainly focused on one stakeholder group, i.e., customers, analyzing innomediaries enables us to expand this perspective. As innomediaries are specialists in boundary spanning between actors in innovation ecosystems, their perspective augment open innovation with additional stakeholders, such as suppliers, universities, startups, or even potential competitors. We present how and when business model innovation projects integrate external stakeholders. Innomediaries further introduce new methods that can support open innovation, i.e., MVP or lean-startup. This broader lens to open innovation paves the way for new research and reveals a new level of analysis. For example, the ecosystem as a unit of analysis in platform literature allows scholars to examine phenomena from high-level perspective [46, 47]. This moves the field from a dyadic firm-customer relationship to theories spanning organizational boundaries. The findings illustrate that the concept of innomediaries is important and worthwhile to study.

Second, our study enhances business model innovation research. Our research extends the existing 4I-framework [31] and shows practices of innovation intermediaries and related stakeholder integration in business model innovations. The results specify tangible practices and activities for each phase of business model innovation and combines it with open innovation. Therefore, our contribution lies in combining both research streams and making sense of their intersections and commonalities. Doing so reinforces the concept of ecosystems as units of analysis for business model innovation, which involves multilateral stakeholders beyond the firm's boundaries. Finally, from an ecosystem perspective, the business model innovation approach provides fruitful connections and generalizable findings to the domains of product, process, service, and organizational innovation.

5.2 Practical Implications

The framework in Figure 1 guides practitioners toward when and how to integrate external stakeholders into business model innovation and applies to other customer-centric, open, innovation projects. The framework emphasizes intermediaries because they guide entire business model innovation projects, can accelerate innovation, and access networks of entrepreneurs, professionals, and potential partners. Following are guidelines for considering stakeholders.

Integrate users and customers, especially during early stages and prototype testing. Users and customers should be integrated into the initiation, ideation, and integration phases (especially prototype testing) [41]. Passive methods, (netnography, empathic design), reactive methods (surveys, contextual face-to-face interviews), and active methods (co-creation workshops, idea competitions) are most suitable. Integrating users and customers into prototype testing is at least as important as early-stage activities. Users and customers provide better input when ideas are mature enough to be presented visually [48]. Reactive methods (concept testing, product clinics) and active methods (focus groups) fit best, as do passive methods like analytic tools and empathic design. Integration throughout the innovation phase builds commitment and willingness to participate in future innovation projects [49].

Invite customers, startups, experts, and universities during ideation. To generate meaningful or disruptive ideas, it is important to summon a mix of stakeholders. Integrating startups, experts, and university students can soften entrenched structures, transform dominant cultures, and provide new capabilities that expand perspectives and ideas. Experts can endorse the technical feasibility of ideas, concepts, and prototypes and facilitate understanding technology. Suitable methods are active: co-creation workshops and idea competitions. Co-creation workshops with university students can be a cost-efficient means of generating innovative ideas.

After selecting an idea, approach partners early and work with them closely. Firms should integrate partners (suppliers, sales associates, competitors, startups, experts) when they lack capabilities to develop ideas further. Three aspects are important. First, firms typically approach potential partners late in the integration phase and early in the implementation phase. Here, first prototypes are validated [50], and expansion of a novel business model requires added help and capabilities. Active methods (co-development, co-launch) best suit partner integration. Additional expert surveys and interviews as reactive methods can shape the MVP.

Second, if it is readily apparent that implementing an idea requires external partners, they should be approached as early as possible to accelerate innovation [51]. An early approach creates shared visions and group identities, develops mechanisms to prevent opportunistic behavior, and elicits information and resources for further development. An early approach also supports close and long-term partnerships with suppliers instead of simple buyer-seller relationships. Active methods (e.g., co-development workshops) and reactive methods support early integration of partners.

Third, build on intermediaries as partners. They can access expertise and networks of potential partners and thereby accelerate innovation, which is pivotal for competitive advantage [52]. They are experts about when to integrate whom, and how

in business model innovation. Innomediaries facilitate innovation ecosystems beyond the firm.

6 Conclusion and Future Research

Integrating external stakeholders is crucial for successful business model innovation [16]. This study has produced an actionable framework for integrating stakeholders into business model innovation based on in-depth case studies of innovation intermediaries engaged in that purpose. Case studies of three German innomediaries identified three modes (passive, reactive, and active), five hands-on methods (market analysis, netnography, surveys, focus groups, and co-development), and eight activities (market discovery, user exploration, idea generation, idea selection, prototype building, prototype testing, MVP creation, and market launch) for integrating external stakeholders into business model innovations.

To understand when to integrate, with whom, and how in open business model innovation, we investigated innomediaries as specialists in this area. The innomediaries integrate external stakeholders actively, reactively or passively, depending on the phase of the project. Customers generally are integrated, reactively and passively, at the start of a project before prototypes exist, whereas potential partners are approached during later phases of development after prototypes exist. Face-to-face surveys are common method of reactive integration. Market studies or ethnographic techniques (empathic design, netnography) are preferred methods of passive integration. Active integration often involves co-creation workshops with internal staff and external stakeholders (startups, experts, customers, users). In addition, idea communities, idea contests, and toolkits for innovation are promising. This article provides recommendations on how and when to integrate which external stakeholders into business model innovation to reduce risks and speed up innovations.

For future research, we see three areas: First, research can investigate the role of IT in external stakeholder integration for business model innovations. Our results already show on the one hand that digital technologies heavily support collaboration and indicate towards digital co-creation. On the other hand, we can see that digital business model innovation projects requires a greater variety of stakeholders and, thus, increases complexity. Future research can build on these findings and show how more or less *digital* products and approaches changes open business model innovation. Second, since this paper is innomediary-specific, future studies can analyze different external stakeholder groups and how they affect the success and innovativeness of the resulting business model. Different stakeholders can have different objectives and perspectives. Successful open business model innovation projects require both, openness and protection against opportunistic behavior. Future research can develop proper incentives as well as governance structures to foster commitment and willingness to collaborate. Third, research can analyze emerging innomediaries, which might build on additional innovation methods, such as design science, design thinking, or design sprints. Research can further investigate how

service platforms for innovation ecosystems arise and how they influence business model innovations and success.

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References

1. Weking, J., Böttcher, T., Hermes, S., Hein, A.: Does Business Model Matter for Startup Success? A Quantitative Analysis. 27th European Conference on Information Systems, p. 77 (2019)
2. Aversa, P., Haefliger, S., Reza, D.G.: Building a winning business model portfolio. MIT Sloan Management Review 58, 49–54 (2017)
3. Foss, N.J., Saebi, T.: Fifteen Years of Research on Business Model Innovation. Journal of Management 43, 200–227 (2017)
4. Gassmann, O., Frankenberger, K., Csik, M.: The St. Gallen business model navigator (2013)
5. Teece, D.J.: Business Models, Business Strategy and Innovation. Long Range Planning 43, 172–194 (2010)
6. Zott, C., Amit, R., Massa, L.: The Business Model. Recent Developments and Future Research. Journal of Management 37, 1019–1042 (2011)
7. Weking, J., Stöcker, M., Kowalkiewicz, M., Böhm, M., Krcmar, H.: Archetypes for Industry 4.0 business model innovations. 24th Americas Conference on Information Systems (2018)
8. Chesbrough, H.: Business Model Innovation. Opportunities and Barriers. Long Range Planning 43, 354–363 (2010)
9. Weking, J., Brosig, C., Böhm, M., Hein, A., Krcmar, H.: Business Model Innovation Strategies for Product Service Systems—An Explorative Study in the Manufacturing Industry. 26th European Conference on Information Systems (2018)
10. Lenka, S., Parida, V., Wincent, J.: Digitalization Capabilities as Enablers of Value Co-Creation in Servitizing Firms. Psychology & Marketing 34, 92–100 (2017)
11. Christensen, C.M., Bartman, T., van Bever, D.: The hard truth about business model innovation. MIT Sloan Management Review 58, 31 (2016)
12. Weking, J., Hein, A., Böhm, M., Krcmar, H.: A hierarchical taxonomy of business model patterns. Electronic Markets In Press, 1–22 (2018)
13. Friedrich von den Eichen, Stephan, Freiling, J., Matzler, K.: Why business model innovations fail. Journal of Business Strategy 36, 29–38 (2015)
14. Buijs, J.A.: Innovation can be taught. Research Policy 16, 303–314 (1987)

15. Hermes, S., Böhm, M., Krcmar, H.: Business Model Innovation and Stakeholder Exploring Mechanisms and Outcomes of Value Creation and Destruction. 14th International Conference on Wirtschaftsinformatik (2019)
16. Amit, R., Zott, C.: Crafting Business Architecture. The Antecedents of Business Model Design. *Strategic Entrepreneurship Journal* 9, 331–350 (2015)
17. Sawhney, M., Prandelli, E., Verona, G.: The power of innomediation. *MIT Sloan Management Review* 44, 77 (2003)
18. Mele, C., Russo-Spena, T.: Innomediary agency and practices in shaping market innovation. *Industrial Marketing Management* 44, 42–53 (2015)
19. Silva, M. de, Howells, J., Meyer, M.: Innovation intermediaries and collaboration. Knowledge-based practices and internal value creation. *Research Policy* 47, 70–87 (2018)
20. Chesbrough, H.: Open innovation: Renewing growth from industrial R&D. 10th Annual Innovation Convergences, Minneapolis 27 (2004)
21. Ebel, P., Bretschneider, U., Leimeister, J.M.: Leveraging virtual business model innovation. A framework for designing business model development tools. *Information Systems Journal* 26, 519–550 (2016)
22. Kazadi, K., Lievens, A., Mahr, D.: Stakeholder co-creation during the innovation process. Identifying capabilities for knowledge creation among multiple stakeholders. *Journal of Business Research* 69, 525–540 (2016)
23. Driessen, P.H., Hillebrand, B.: Integrating Multiple Stakeholder Issues in New Product Development. An Exploration. *Journal of Product Innovation Management* 30, 364–379 (2013)
24. Coombes, P.H., Nicholson, J.D.: Business models and their relationship with marketing. A systematic literature review. *Industrial Marketing Management* 42, 656–664 (2013)
25. Truong, Y., Simmons, G., Palmer, M.: Reciprocal value propositions in practice. Constraints in digital markets. *Industrial Marketing Management* 41, 197–206 (2012)
26. Mele, C.: Conflicts and value co-creation in project networks. *Industrial Marketing Management* 40, 1377–1385 (2011)
27. Laudien, S.M., Daxböck, B.: Business model innovation processes of average market players: A qualitative-empirical analysis. *R&D Management* 47, 420–430 (2017)
28. Osterwalder, A., Pigneur, Y.: Business model generation: A handbook for visionaries, game changers, and challengers. John Wiley & Sons, Hoboken, New Jersey (2010)
29. Geissdoerfer, M., Bocken, N.M.P., Hultink, E.J.: Design thinking to enhance the sustainable business modelling process – A workshop based on a value mapping process. *Journal of Cleaner Production* 135, 1218–1232 (2016)
30. Geissdoerfer, M., Savaget, P., Evans, S.: The Cambridge business model innovation process. *Procedia Manufacturing* 8, 262–269 (2017)
31. Frankenberger, K., Weiblein, T., Csik, M., Gassmann, O.: The 4I-framework of business model innovation. A structured view on process phases and challenges. *International Journal of Product Development* 18, 249 (2013)
32. Chesbrough, H.W.: Why companies should have open business models. *MIT Sloan Management Review* 48, 22 (2007)
33. Saebi, T., Foss, N.J.: Business models for open innovation. Matching heterogeneous open innovation strategies with business model dimensions. *European Management Journal* 33, 201–213 (2015)
34. Freeman, R.E., Reed, D.L.: Stockholders and Stakeholders. A New Perspective on Corporate Governance. *California Management Review* 25, 88–106 (1983)

35. Jonas, J.M., Roth, A.: Stakeholder integration in service innovation - an exploratory case study in the healthcare industry. *International Journal of Technology Management* 73, 91 (2017)
36. Zogaj, S., Bretschneider, U.: Customer integration in new product development – A literature review concerning the appropriateness of different customer integration methods to attain customer knowledge. 20th European Conference on Information Systems, p. 208 (2012)
37. Yin, R.K.: Case study research. Design and methods. SAGE, Los Angeles, London, New Delhi, Singapore, Washington, DC (2014)
38. Gläser, J., Laudel, G.: Experteninterviews und qualitative Inhaltsanalyse als Instrumente rekonstruierender Untersuchungen. VS Verlag für Sozialwissenschaften, Wiesbaden (2009)
39. Robinson, O.C.: Sampling in Interview-Based Qualitative Research. A Theoretical and Practical Guide. *Qualitative Research in Psychology* 11, 25–41 (2013)
40. Miles, M.B., Huberman, A.M., Saldaña, J.: Qualitative data analysis. A methods sourcebook. SAGE Publications, Inc, Thousand Oaks (2013)
41. Alam, I.: Removing the fuzziness from the fuzzy front-end of service innovations through customer interactions. *Industrial Marketing Management* 35, 468–480 (2006)
42. Howell, J.M., Boies, K.: Champions of technological innovation. The influence of contextual knowledge, role orientation, idea generation, and idea promotion on champion emergence. *The Leadership Quarterly* 15, 123–143 (2004)
43. Ries, E.: The lean startup. How today's entrepreneurs use continuous innovation to create radically successful businesses. Penguin Group, London, England (2017)
44. Frankenberger, K., Weiblen, T., Gassmann, O.: Network configuration, customer centricity, and performance of open business models. A solution provider perspective. *Industrial Marketing Management* 42, 671–682 (2012)
45. James, L.R., Demaree, R.G., Wolf, G.: Estimating within-group interrater reliability with and without response bias. *Journal of Applied Psychology* 69, 85–98 (1984)
46. Hein, A., Schreieck, M., Riasanow, T., Setzke, D.S., Wiesche, M., Böhm, M., Krcmar, H.: Digital platform ecosystems. *Electronic Markets* In Press (2019)
47. Hein, A., Weking, J., Schreieck, M., Wiesche, M., Böhm, M., Krcmar, H.: Value co-creation practices in business-to-business platform ecosystems. *Electronic Markets* 29, 503–518 (2019)
48. Witell, L., Gustafsson, A., D. Johnson, M.: The effect of customer information during new product development on profits from goods and services. *European Journal of Marketing* 48, 1709–1730 (2014)
49. Edvardsson, B., Kristensson, P., Magnusson, P., Sundström, E.: Customer integration within service development—A review of methods and an analysis of insitu and exsitu contributions. *Technovation* 32, 419–429 (2012)
50. Gebauer, H., Gustafsson, A., Witell, L.: Competitive advantage through service differentiation by manufacturing companies. *Journal of Business Research* 64, 1270–1280 (2011)
51. Gassmann, O.: Opening up the innovation process. Towards an agenda. *R&D Management* 36, 223–228 (2006)
52. Knockaert, M., Spithoven, A.: Under Which Conditions Do Technology Intermediaries Enhance Firms' Innovation Speed? The Case of Belgium's Collective Research Centres. *Regional Studies* 48, 1391–1403 (2014)