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Business Model Innovation – A Gamble or a Manageable Process?

Yariv Taran¹, René Chester Goduscheit² and Harry Boer³

Abstract

Purpose: Any business model innovation process involves a certain level of uncertainty, complexity and, in effect, risk. A sloppy approach towards the management of risk may result in catastrophic, sometimes even fatal, consequences to a company's core business. Although risk, risk appetite and risk management are relatively well-established concepts, their role in business model innovation is not well understood. The objective of this paper is to investigate how the risk associated with the innovativeness of a business model innovation, an organization's risk appetite, and its risk management approach interact to affect the success or failure of a business model innovation process.

Design: Retrospective case studies of business model innovations undertaken by three industrial companies provide the empirical basis for this paper. These companies were selected based on their relatively successful, yet somewhat different, business model innovation experiences over the years, and focused on the, in total four, cases in which they failed to implement their new business model attempts successfully. The reasons that led to these failures are discussed.

Findings: Important factors explaining the business model innovation failure of these cases, appear to be the company's risk appetite, the risk associated with the radicality, reach and complexity of the business model innovation, the company's awareness of these risks and their management, and especially the association between these factors.

Originality: There are many lessons to be learned from the aftermath of a failed attempt in terms of what not to do and what to improve a next time. The cross-case analysis produced six testable propositions that enhance our understanding of business model innovation success/failure, with particular focus on the characteristics of the business model innovation, overall innovation management, risk, risk awareness, risk appetite and risk management, and the interaction and fit between these six constructs.

Keywords: Business Model Innovation; Risk Management; Retrospective case studies.

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Introduction

Business model innovation is risky business. Many business model innovation attempts result in an innovation failure (e.g. Christensen, Bartman and Van Bever 2016). Especially if a company follows a first mover strategy, arguing from a “no risk no reward” aphorism, a sloppy implementation approach towards business model innovation may result in catastrophic or even fatal consequences to the company’s core business (e.g. Taran 2011). Thus, managers should recognize that taking risks, while at the same time controlling them, is fundamental to the successful development and implementation of a sustainable business model. However, although there is a considerable body of literature on risk management, particularly in relation to project management (e.g., Chapman and Ward 2004; Kendrick 2003) and product innovation management (e.g., Keizer, Halman and Song 2002); Keizer and Halman 2007), it has not yet been fully incorporated into other core business decision-making processes (Deloitte ERM survey 2008), including business model innovation. This paper seeks to enhance the understanding of the potential interaction between risk, risk appetite and risk management in the context of business model innovation.

Literature Review

Risk, Risk Management and Risk Appetite

The term risk refers to “*uncertainty of outcome*” (Chapman and Ward 2004). Risk management has been defined as “*the systematic application of management policies, procedures and practices to the tasks of communicating, consulting, establishing the context, identifying, analyzing, evaluating, treating, monitoring and reviewing risk*” (ISO/IEC Guide 73 2003).

Although companies have successfully adopted risk management in their internal audit, treasury, insurance, health and safety, and legal functions, it has not yet been fully incorporated into core business processes related to future growth, such as strategic planning, capital allocation, and performance management (Deloitte & Touche 2008). This seems to imply that *unrewarded risks*, in the sense that no premium is obtained from managing them – only the potential for loss is reduced, are the main driver in today’s

risk management practices. Apparently, managing *rewarded risks*, which are part and parcel of decision-making processes associated with future growth, is not yet fully embedded in organizational change and innovation processes, including business model innovation.

Furthermore, even if companies attempt to manage rewarded risks systematically, for example, in project management (e.g. Kendrick 2003; Chapman and Ward 2004) or product innovation management (e.g. Keizer and Halman 2007), they essentially assume that those risks can be managed in isolation from the rest of the system. Organizations tend to perceive risk merely in terms of technical and market uncertainty and not in terms of a more comprehensive understanding of the organization and the resources that are available (Dillon, Lee and Matheson 2005). Recent surveys and studies (e.g. Taplin 2005; Deloitte and Touche 2008), however, have shown that a growing percentage of managers worldwide are interested in applying risk management more proactively and holistically. Yet, despite the benefits gained by applying risk management to enhance risk responsiveness (e.g. COSO 2004) and strategic decision-making (e.g. Hoyt and Liebenberg 2011), an over-abundance of risk management processes may be problematic as well, in the sense that it may overload the organization with too much time-consuming control and bureaucracy (cf. Taran, Boer and Lindgren 2013). Thus, although risk management is important, finding the right balance between risk and risk management is a serious challenge.

Risk appetite is “*the total impact of risk an organization is prepared to accept in the pursuit of its strategic objectives*” (KPMG 2009, p. 3). HM Treasury (2006, p.3) developed a risk appetite scale, which aims at helping companies to map various possible impact categories (e.g. reputation and credibility; operational and policy delivery; financial and legal/regulatory compliance) and to determine their corporate risk appetite on a scale ranging from:

1. *Averse* – Avoidance of risk and uncertainty is a key objective.
2. *Minimalist* – Low degree of inherent risk, but with a limited potential of reward.

3. *Cautious* – Preference for safe options that have a low degree of residual risk.
4. *Open* – Willing to consider all options and choose the one that is most likely to result in successful delivery.
5. *Hungry* – Eager to be innovative and to choose options based on potentially higher rewards.

A Business Model Innovativeness Scale 1

Through the years, essentially three approaches have been proposed to measure innovativeness. The first approach, associated with business model innovation *radicality*, considers business model innovation as a radical change in the way a company does business (Chesbrough 2007, Linder and Cantrell 2000). Linder and Cantrell in particular clearly attempt to draw a line in suggesting what can and cannot be defined as business model innovation.

The second approach defines innovativeness in terms of, what might be called, the *reach* of the innovation (e.g., Rogers 1983, Garcia and Calantone 2002). A suitable scale measures the degree to which an innovation in terms of “new to whom”, which could range from new to the company, via new to the market and new to the industry, to new to the world.

The third approach considers measuring the innovativeness of a new business model through its *complexity*, where any change in any of the (core) building blocks or the relationships between them could be considered as a form of business model innovation (Amit and Zott 2001; Osterwalder, Pigneur and Tucci 2004; Magretta 2002). In line with Abell (1980) and Skarzynski and Gibson (2008), business model innovation could then be considered in terms of the number of building blocks that are changed simultaneously: any change in one of the building blocks would constitute a simple innovation, while simultaneous changes in all of the building blocks would be the most complex form of business model innovation.

If these three approaches are combined, a three-dimensional space, first proposed by Taran, Boer and Lindberg (2008) and later published in Taran *et al.*

(2015), emerges, which helps in qualifying the innovativeness of a new business model (Figure 1):

- *Radicality* – How new (incremental vs. radical) is each building block (see Table 1 for different examples).
- *Reach* – To whom is the innovation new?
- *Complexity* – Number of building blocks changed simultaneously.

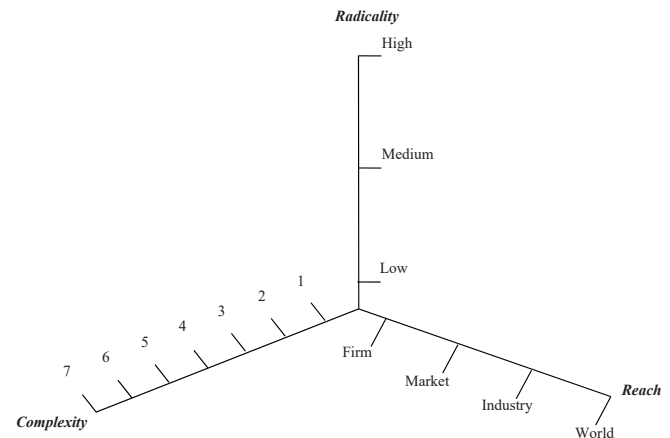


Figure 1: A Three-Dimensional (Business Model) Innovativeness Scale (Source: Taran *et al.* 2015)

In this space, any business model innovation can be positioned in terms of its *degree* of radicality, reach and complexity. Some changes are more radical and/or complex than others, and some (e.g. radical product innovation, incremental process improvement) are better understood than others (e.g. a holistic, new to the world departure from all business models known so far).

Research objective

The basic assumption behind this paper is that the risks involved in business model innovation increase with the radicality, reach and complexity of the innovation. While risk, risk appetite, risk management and, to a certain extent, business model innovativeness and innovation management are relatively well-established constructs, their role and interaction in business model innovation processes are not well understood. The objective of this paper is to investigate how these constructs interact to affect the eventual outcome of a business model innovation process, in terms of its “success” or “failure”.

¹ Most of this section is from Taran, Boer and Lindgren (2015), with permission from the authors.

Building block	Incremental innovation “Do what we do but better”	Radical innovation “Do something different”
Value proposition	Offering “more of the same”	Offering something different (at least to the company)
Target customer	Existing market	New market
Customer relationship	Continuous improvements of existing channels	New relationship channels (e.g. physical/virtual, personal/peers/ mass awareness)
Value chain architecture	Exploitation (e.g. internal, lean, continuous improvements)	Exploration (e.g. open, flexible, diversified)
Core competences	Familiar competences (e.g. improvement of existing technology)	Disruptive new, unfamiliar, competences (e.g. new emerging technology)
Partner network	Familiar (fixed) network	New (dynamic) networks (e.g. alliance, joint-venture)
Profit formula	Existing processes to generate revenues followed-by/or incremental processes of (cost) retrenchments	New processes to generate revenues followed-by/or disruptive processes of (cost) retrenchments

Table 1: Incremental and Radical Orientation to Each Building Block (Source: Taran et al. 2015)

Research Design

Case Studies Description

Four retrospective case studies of business model innovation processes undertaken by three industrial companies (Table 2) provide the empirical basis for this paper. The companies were selected based on their relatively successful, yet somewhat different, business model innovation experiences over the years, and focused on

Alpha	Beta	Gamma
Large global company, which is specialized in developing, manufacturing and marketing (for the most part) professional audio products	Large global company, specialized in developing, manufacturing and marketing flexible electrical/electronic control and instrumentation solutions within power production, marine and offshore	Large IT company, which is specialized in providing IT solutions for primarily public organizations
Two failure cases (A and B)	One failure case (C)	One failure case (D)

Table 2: Company Descriptions

the, in total four, cases in which they failed to implement their new business model attempts successfully.

Data gathering techniques

Given the exploratory nature of this research, the case study methodology was adopted (Yin 2003). Multiple qualitative data gathering methods were used to ensure the validity and reliability of the research. The desk research involved gathering of information through books, articles, websites, as well as documents received from the three companies. The field research consisted of semi-structured interviews (for interview guide see Appendix A), e-mail correspondence and company visits. The questionnaire used to guide the interviews covered all six constructs (business model innovativeness, innovation management, risk, risk appetite, risk management, success/failure) plus contextual variables (e.g. company background, strategy, open/network-based innovation) and was semi-structured in order to allow the respondents maximum freedom to explain their views on the new business model and their understanding of the innovation process, and the researchers the possibility to discover unexpected yet relevant issues. The interviews were held with the companies’ middle managers (e.g. technology/innovation, product, project or marketing managers).

In Alpha, 18 hours of interviews were conducted, and in Beta seven hours of interviews in total. In Gamma, the interviewees represented the eleven organizations involved in that company's business model innovation. More than 25 hours of interviews were recorded.

Analytical Focus

The cross-case analysis focused on identifying and analyzing the similarities and differences between the four focal business model innovation experiences. In order to increase the credibility of the research, the data gathering and analysis of all cases focused on the following, theory based, criteria:

- *Characteristics of the business model innovations*, in terms of radicality (how new?), reach (new to whom?) and complexity (Table 1 and Figure 1).
- *Overall innovation management*. Here, the innovation process of each company was analyzed using Tidd and Bessant's (2009) innovation model of "Search-Select-Implement".
- *Risk, risk appetite and risk management*, including the analysis of: 1) both strategic and operational risks occurring, 2) the risk appetite of each company over the years, and 3) the way risks were managed (e.g. explicitly, implicitly, stage-gate oriented).
- *Fit*. Looking for the interaction between the business model characteristics, overall innovation management, risk, risk appetite, risk management and the outcomes (success/failure) of the business model innovation process, the analysis particularly focused on the "fit" between these constructs, reasoning that the higher the risk appetite of a company, the higher the likelihood that it will pursue a more innovative business model, which will involve greater risk which, in turn, needs to be managed more tightly in order for the new business model to be realized and become a success.

Given the exploratory character of the case studies, additional criteria emerging from the case studies were also actively sought, but not found.

Data Gathering Results

Table 3 summarizes the case study data gathered. As that table illustrates, the cross-case analysis focused on the selection of dimensions describing similarities

and differences between the three companies' experiences (e.g. Eisenhardt 1989).

Cross-case analysis and Proposition Development

The cross-case analysis produced six propositions, which are organized according to the four criteria formulated above.

Characteristics of the Business Model Innovation and Success Rate

Company Alpha: Throughout the years, company Alpha engaged in seven business model innovations. Four cases were very successful², one case partly succeeded, and in two cases, the company failed to succeed (cases A and B). The successful cases involved the exploitation of existing technology, or the development and exploitation of new technology-based products, together with a partner, in a market segment new to company Alpha. The two failure cases, presented here, were attempts to outsource marketing and sales (case A) and production (case B), respectively, to a third party. Two factors caused their failure. First, the partner did not match the company's high quality standards. Second, they realized in a later phase (particularly case A) that the market was too small to play a significant part in the company's turnover (i.e. low reach).

Company Beta: Over the years, this company engaged in three business model innovations experiences, two of which became a success, while one attempt failed (case C). The successful cases involved the application of existing, and the development of new, competences and technologies for a new market segment, followed by an acquisition. These innovations were rather risky for the company, both in terms of investment as well as time constraints, and involved the development and exploitation of new technology for a new market segment. In case C, a failure, the company "pushed" a self-developed radically new product into the market in an attempt to exploit a new emerging technology,

² The success of the business model innovations was measured by their profitability, where *successful* cases were highly profitable for the company, *partly successful* cases were the ones with small profit margins, and *failure* cases were those who failed to bring any profits, or worse. See Taran et al. (2015) for more information on the successful cases of companies Alpha and Beta.

	Alpha	Beta	Gamma
The four failure business model innovation cases	<ul style="list-style-type: none"> • Case A – New business unit offering existing technology-based products to a new market (studios), plus outsourcing of marketing and sales to a partner (low radicality, low reach, high complexity). • Case B – Outsourcing the manufacturing of one of the products – failure (low radicality, low reach, high complexity). 	<ul style="list-style-type: none"> • Case C – New technology-based product, aimed at serving existing and potential new customer segments. After one year of heavy investment in the product, the project was terminated due to incongruity with customer demands (product shape and size; price – too expensive) – (low radicality, low reach, high complexity). 	<ul style="list-style-type: none"> • Case D – New IT solution based on approaching shift in technological opportunities within metering utility consumption. The project was terminated due to strategic shift within the company and lack of believe in customer demand (high radicality, high reach, high complexity, given the difficulty in network structure among the participating organizations).
Overall innovation management	<p>Search processes - No search process in any of the cases. <i>“It was just something that came up along the way”</i>. One project was managed proactively in search of a radically new business model (Case B). Otherwise, it was internal competences chosen to be used elsewhere.</p> <p>Selection and implementation processes - Following a stage-gate model, radical innovation ideas are handled with extra awareness. A slower process, which always starts with small steps and then grows slowly. Radical ideas follow gates similar to those of incremental ideas. The difference is, though, that it takes more time to move from gate to gate.</p>	<p>Search processes - Recognized as one of the weaknesses of the company. They do not really have any systematic processes to manage radical, or even incremental, innovation ideas. It is something that usually just <i>“pops up”</i>. They give more attention to ideas that come from their main customers.</p> <p>Selection and implementation processes - A stage-gate model is used to move the business concept idea through a maturity roadmap and development process. Many complaints about the fact that there is not enough market research behind ideas proposed. In effect, lacking understanding of the potential market and sales volume.</p>	<p>Search processes - Initial idea developed by area director of the company. In continuation of this initial idea, ten additional organizations were involved into the further development of the business idea and the business model underlying the project.</p> <p>Selection and implementation processes - An open, network-based approach to develop and test the business idea. A development process, which was marked by a substantial number of iterations and radical shifts in the overall business model.</p>
Risk, risk appetite and risk management	<p>Used to be between “open” and “hungry”. Currently moving towards “open” – “cautious”, and taking fewer risks. Intending to move to ‘hungry’ again in future.</p> <p>No explicit risk management processes, but rather a project culture and a project/ innovation model that is structured by many gates aimed at continuity and reducing the risks throughout the innovation process. It is not an advanced risk management model, or one that applies a risk assessment method, but nonetheless a very sufficient model to reduce many risks through the innovation process.</p>	<p>Used to be between “cautious” and “open”. Moving towards “open” and “hungry”. Willing to take chances and aim high, but aware of the risks involved in that.</p> <p>No explicit risk management processes were identified. However, their innovation processes are highly controlled, to insure that strategic decisions made at the gates are being implemented adequately at the stages throughout the innovation process, and, the company considers those control processes as a form of risk reduction.</p>	<p>Mostly “averse” but moving towards an “open” approach. Focusing on a new market position in the aftermath of a privatization process.</p> <p>No explicit risk management processes were identified. Yet, they perceived the openness approach as a form of risk mitigation and sharing, by opening up both the business model and its innovation process, which would be the fundament of the project. The company stated that the project was not so much an internal development project, but rather something, in which all the participating organizations should be able to mirror themselves (i.e. risk sharing).</p>
Fit	None	None	None

Table 3: Summary of the Case Data

without any idea of how customers would respond. The market place failed to pick up the new product.

Company Gamma: This company was very eager to meet the new challenges of a post-privatization period (during the innovation project the ownership of company Gamma shifted from a number of different public organizations to an investment fund). The company had little experience with business model innovation, since it had always relied on a familiar and fixed group of customers within the public sector. Actually, the target customers of the company were to a large extent also the company’s owners. Consequently, case D actually concerned a fundamental innovation experimentation for company Gamma.

Table 4 provides more details on the data gathered by visualizing the business model innovation cases through their degrees of innovativeness in terms of radicality, reach and complexity.

On the aggregate scale combining radicality, reach and complexity, cases A, B and C were low in radicality and reach. Case D, however, was high in radicality and reach. All cases were highly complex. Case A involved the establishment of a new business unit offering incremental improvements to existing products, combined with outsourcing of marketing and sales to a partner. Case B concerned outsourcing of manufacturing to a partner which, however, failed to result in a competitive product. Alpha was a highly competent design company, pushing new products into the marketplace and with a successful history of collaborative technology development. However, they seemed to have underestimated the complexities involved in establishing a successful operational collaboration through outsourcing. In Beta, new product development activities were

usually based on market-pull. Case C failed because the company “pushed” a radically new product into the market without any idea of how customers would respond. Gamma’s case D was a radical and new to the industry innovation, which went far beyond the company’s previous innovation experiences.

Moreover, the case studies suggest that business model innovation failures are situated at the “extremes” of: 1) low radicality and reach, and 2) high radicality and reach.

Proposition 1: *Even if the radicality and reach of a business model innovation are low, companies may underestimate its complexity, particularly if the innovation does not build on the company’s experiences with previous innovations.*

Proposition 2: *If a company does not have the disruptive exploration capabilities and commitment required to support a radically new and high reach business model innovation, the innovation process is likely to fail.*

Yet, however tempting it may be to propose that companies best stay away from the extremes, the more compelling reason for these failures seems to be the lack of prior related knowledge (Cohen and Levinthal 1990). Alpha was a technology developer, without any experience with operational collaboration. Beta understood how to translate market requirements into new products, but did not understand how to push new technology into the market place. Gamma overplayed its hand by trying to accomplish a new to the industry innovation, which went far beyond its previous experiences.

Case	Radicality (to the core business)		Reach	Complexity (to the core business)	
	Case	Radicality		Case	Complexity
Alfa	Case - A	Low: VP; PN	Low: new to the company	High: VP; TC; VC; PN; CR; PF	
	Case - B	Low: VC; PN	Low: new to the company	High: VP; TC; VC; CC; PN; PF	
Beta	Case - C	Low: VP; TC	Low: new to the company	High: VP; TC; CC; VC; PN; CR; PF	
Gamma	Case - D	High: VP; TC; VC; PN	High: new to the industry	High: VP, TC, VC, PN, PF	

VP=value proposition; TC=target customer; VC=value chain; CC=core competences, CR=customer relation; PN=partner network; PF=profit formula.

Table 4: Radicality, Reach and Complexity of the Four Cases

Overall Innovation Management

Company Alpha: In most business model innovations ventured by this company, there was never a search process for new business models. Rather, ideas were slowly developed along the way based on the company's existing core competences (e.g. technologies, know-how). The company simply considered it obvious that existing competences would give them relatively easy access to other industrial settings. It seems that the company had a prevalence for generating an idea, testing it first internally, starting with a low scale production process, and considering growth in due course (e.g., through a joint venture, or a new business unit). This *inside-out* replication of previous business model innovation processes seemed to be a winning formula for the company, and was expected to work in any (future) business model innovations. However, in cases A and B, one of the key challenges for the company was to find the right partner to work with, and here the company failed.

Company Beta: Just like company Alpha, company Beta never implemented a formal search process for new business models. Radically new ideas emerged in the course of time, either through existing technological development capabilities, cost reduction programs, or as a reaction to emerging competitors' technologies, which was the trigger of case C. The failure of case C, caused by a pure "technology push" strategy, made the management team even more aware of the need to understand customer demands as a basis for selecting future innovation ideas.

Company Gamma: The innovation process was marked by a rather wide and creative search for new business models. At an early stage, company Gamma realized that the developed concept would be marked by a significant level of complexity, which would go beyond the complexity of the products and services the company had produced hitherto. The entire network of organizations involved in the project was invited to a co-creation process in order to enable them to mirror themselves in the final outcome of the process. The two project managers of company Gamma (there was a shift during the process) and the area director who initiated the project, explicitly stated that the intention was to invite everybody into the process. Both project managers were willing to

accept the inherent risks of this open innovation (cf. Bogers, Chesbrough, Heaton and Teece 2019) process experimentation (e.g. the risk of knowledge spill-over to potential competitors; the risk of one of the participating organizations to be inspired and develop their own solutions without the participation of company Gamma). Sadly, though, this high level of inherent risk acceptance did not work to their benefit. The business model innovation failed and in the aftermath company Gamma chose to reduce its network and be more cautious, i.e. accept less risk.

In all three cases, results indicate that experimentation, learning from previous experiences and using the lessons learned, have significant impact on the success (or failure) of business model innovation.

Proposition 3: *Insufficient experimentation and lack of learning from failures increase the likelihood of business model innovation failure.*

Risk, Risk Appetite and Risk Management

Company Alpha: The company's risk appetite used to be "hungry", but they gradually took fewer risks and moved towards "cautious". In the past, the company was more willing to take risks, and experimented with new, rather than "more of the same", products and business models. However, due to a significant downturn in the company's profits during the last couple of years, which was partly related to the financial crisis and resulted in the hiring of a new CEO, the strategy of the company changed significantly and, with that, also its risk appetite.

The innovation process of the company was very structured and followed many gates. The process and gates were the same for all innovations. The company did not apply any *explicit* risk assessment/management processes. Rather, they considered the gates as (implicit) risk reduction processes: all ongoing business development projects had to meet each requirement at each gate before green light was given to proceed to the next stage. An additional mechanism used to reduce risks was associated with time. That is, despite the fact that the innovation process and the gates remained the same for all types of innovations, the time taken to move from gate to gate increased as the level of

radicality, reach and/or complexity increased. This gave the company the flexibility to proceed with more caution and to terminate projects that were expected to be unsuccessful without too many consequences. Yet, it was also apparent to the management team that despite the fact that the decision-making and implementation processes were well designed for technological success, the company did not really possess adequate processes to predict the possible success in the market place, that is, commercial success. Consequently, the management team was very keen to search for new, more structured ways to deal with risk-benefit projections and increase the likelihood of commercial success of future innovations. Those new processes, according to the company's innovation director, are not meant to increase control but rather to reduce uncertainty as regards future sales.

Company Beta: The company used to focus on electronics and instruments that were used in switchboards in factories. It was very traditionally oriented, and had relied upon North Europe as its sales market. The company's risk appetite used to lay somewhere between "cautious" and "open", but had grown significantly since the early nineties and was leaning towards "open" and "hungry" at the time of the study. This is partly due to a replacement of the senior management, but also because sales volume had grown and new technologies had emerged that opened up new opportunities for the company. Willing to take chances, the company was aiming high, even though they were aware of the risks involved.

Company Beta did not have an explicit risk management process in place. Instead, with each gate, the company set a high level of control requirements. In doing so, decision makers did not question the risks involved the innovation process, but rather insured that decisions made will be efficiently executed (e.g. investments, resources, time). Thus, unlike company Alpha, which gave the innovation team the flexibility to manage the stages freely from gate to gate, in company Beta, the control processes were very formal, continued also through the stages from gate to gate, but did not consider any risks.

According to one of the managers, the innovation processes involved a lot of paperwork and forced the innovation team to spend a lot of time on completing

checklists instead of managing the process forward, which, however, had very little impact on output effectiveness. In its *technological* innovation projects, company Beta used scenario planning. Performed by the business intelligence unit, this method involved the development of three sales forecast scenarios: an optimistic, a realistic, and a conservative scenario. These scenarios used to assist the company with analyzing the actual "as-is" business progress (e.g. better than expected, as-planned, worse than expected). However, those scenarios were not applied in any of the *business model* innovation processes.

Company Gamma: Historically, this company serviced a substantial number of customers within the public sector. The strategic focus was not to expand the market or to innovate products and services. Instead the primary goal of the company was to stick to the current customers, products and services. This risk-averse approach to business modeling and innovation was revised as a consequence of the privatization of company Gamma. The privatization process ran in parallel with the innovation project and drove the initial stages of the project in terms of involving external organizations in the innovation process and the development of the business model.

Company Gamma did not have an explicit risk management process in place either. Yet, unlike the other two companies, the company was willing to *accept*, that is, to tolerate, a substantial risk during the entire innovation process. They saw the involvement of some of the potential customers (the utility companies) as a way to minimize the risk if a failure outcome should occur. Furthermore, it was very important for the company to have the customers "on board" to ensure market fit to the project objective. In effect, here too, risk mitigation activities were only partly and, then, implicitly initiated. The area director addressed this issue by stating that the end-result of this open innovation process could potentially result in little to no positive impact to the organization overall and possibly even with an (affordable) loss. This "all-in" gambling by the company was often mentioned during the network meetings, and the project managers as well as the area director emphasized that the project should not be perceived as a "Gamma project" but rather as a "network project", which consisted of all the organizations involved. The project was closed down as a

consequence of a strategic shift within company Gamma. A new area director sought to get an overview of the various projects within the business area. He did not see any potential in this particular project, nor a fit between this project and the newly-planned overall strategy, closed down the project and fired the project manager.

In all three companies, the top management risk appetite had a strong but different impact on the company's corporate risk appetite. While the replacement of the CEO in company Beta, and the privatization process that took place in company Gamma turned both companies to be risk hungrier in their pursuit of new business opportunities, Alpha's experience made the company more risk averse.

Proposition 4: *The top management has great influence on the risk appetite of the company. Fit between the corporate strategy of a company and top management's risk appetite should be one of the selection criteria for top managers.*

However, in none of the three companies an explicit risk management program was in place. Risks were managed implicitly, that is, embedded in the innovation stage-gate process design (companies Alpha and, to a lesser degree, Beta), or not managed at all (company Gamma). In effect, problems continued to manifest themselves in different ways. At the time, many of these problems seemed to have a tolerable impact along the process, e.g. unexpected but solvable surprises; goals and objectives that required redefinition during the process; accepted solutions that were rejected in a later phase; implemented solutions that were less effective or glamorous than anticipated; and/or schedule and budget overruns. Yet, the cumulative effect resulted in the business model innovation project to fail in all four cases. Clearly, the companies were unhappy with their risk mitigation processes, but none of them had any solution – they did not really know, and never learned, how to optimize the process and, particularly, how to manage risk proactively.

Proposition 5: *The absence of dedicated risk management program to a business model innovation initiative increases the likelihood of the initiative to fail.*

The interaction Between Risk, Risk Appetite, Risk Management, And The Role Of Risk Awareness

On an aggregate level, the four failure cases indicate that risk (due to the business model innovativeness), risk appetite and risk management and, more importantly, the interaction between these constructs, play a significant role in the success or failure of business model innovation initiatives.

The concept of interaction or “fit” plays a central role in various theories, including manufacturing strategy (e.g. Skinner 1985), organization theory (e.g. Mintzberg 1979) and innovation theory (e.g. Boer and During 2001), but has not been used so far to understand the relationships between business model innovation and risk management. Miles and Snow (1994), for example, discuss the dynamics of internal-external fit. They argue that “minimal fit” is necessary to ensure a company's survival, “tight fit” frequently results in excellent administration, while “early fit” may enable a company to sustain an unusually high level of performance over an extended period of time. Yet, they were also aware of the fact that “fit” has its limitations as well – even “Hall of Fame” companies may suffer from downturns in performance (e.g. due to unexpected external hazard impact).

In cases A, B and C, companies Alpha and Beta were “open” to take risk, but although the business model innovations they pursued were relatively complex, they were also rather incremental and new to the company only, i.e. low reach (Table 4) and, in effect, low risk initiatives. Neither company applied any risk management mitigation activities. In case D, it was company Gamma's limited *risk awareness* that seems to have led to complacency when it ran a highly innovative (radical change, new to the industry, complex; Table 4), i.e. a high-risk, initiative. In effect, the company did not apply any risk management either. In short, the companies' risk appetite and awareness, the innovativeness of, and, consequently, risk associated with, the business model innovations pursued and, finally, the effort the companies put into risk management, did not fit together.

Although it can be argued that a perfect fit between risk, risk appetite, risk awareness, risk management

and business model innovativeness will not automatically ensure business model innovation success (and vice versa), it will increase the probability of success substantially. Both Alpha and Beta had multiple successful business model innovation experiences in their past, and it has been observed (e.g. Taran *et al.* 2015) that fit, particularly between the companies' risk appetite and the business models' innovativeness and associated risks, was much better in the successful cases than in the failure cases. For example, in its successful attempts (e.g. a new joint venture; new business unit development), company Alpha built slack (e.g. Galbraith 1973) into the process by taking more time to get from gate to gate as the level of radicality, reach and/or complexity increased. This gave the company the flexibility to proceed with more caution and to terminate those projects that were expected to be unsuccessful without too many consequences. In addition, company Alfa also mapped each innovation project's timetable as red, yellow or green to illustrate both its readiness to meet the next gate requirements deadline, as well as the sense of urgency for its process completion.

The results indicate that compared to incremental, low reach and simple business model innovations, the importance of ensuring alignment between a company's risk appetite, risk awareness and risk management approach increases in more radical, higher reach and more complex business model innovations.

Proposition 6: *The likelihood of launching a successful new business model increases if the company's risk appetite, risk awareness, the innovativeness of the new business model, and the risk management approach adopted, align with the risks associated with the intended innovation.*

Conclusion

Despite two decades of intense research, business model innovation still lacks a solid theoretical basis, particularly with respect to the antecedents, contingencies, and outcomes (Foss and Saebi 2017). In this paper, we focused on how the risks associated with the innovativeness of a business model innovation initiative, an organization's risk appetite, and its risk

management approach interact to affect the success or failure of a business model innovation process.

Contribution

The cross-case analysis produced six testable propositions. Together, these propositions seem to suggest the following picture.

Risk appetite and *risk awareness* seem to play a significant role in business model innovation decision-making. The top management's personality, risk appetite, and assessment of the company's economic position and outlook overall, tend to have great influence on selecting new business model innovation initiatives. As such, it is imperative for companies to consider whether the various internal stakeholders' and also external partners' risk appetites and awareness are aligned, in order to reduce the likelihood of future conflicts when designing the company's innovation portfolio. This proposition is also confirmed by, for example, Rogers (1983), who argued for the important role that key stakeholders' perceptions have in "setting the innovation stage".

Additionally, it is vital to consider the *strategic aggressiveness* as part of business model innovation decision-making. Top management perception greatly affects its appreciation of the nature of the innovation, and may lead to underestimation of the difficulties involved, even, or perhaps especially, at the two business model innovation extremes of:

- Incremental (radicality), new-to-the-company only (reach), but highly complex business model innovations initiatives. Risk-averse managers may have the impression (possibly, illusion) of "safe enough" business model experimentation, but may risk that the innovation will have little or no positive impact in the market place.
- Radical, new-to-the-industry or new-to-the-world (reach), highly complex business model innovations, which in most cases depart from the company's previous strategy and do not, consequently, allow building on experiences with previous innovations.

Although the likelihood of failure seems to be largest at these extremes, they are fundamentally different, so that it is quite important to distinguish between

the two. The first can be considered to reflect a reactive strategy (cases A, B, and C), whereas the second is a much more proactive initiative (case D). Being too defensive and, in effect, unambitious may lead to failure, while pursuing a proactive initiative requires managers to appreciate the high uncertainties and the consequent risks inherent in the process, which in many cases go beyond the scope of the company's existing core competences and capabilities and requires *non*-prior related knowledge (cf. Cohen and Levinthal 1990).

Companies should not overlook the importance of *learning from failure* either. There are many lessons to be learnt from the aftermath of a failed attempt in terms of what not to do and what to improve on for a next time. Sadly, the cases presented here indicate that due to locked-in path dependency trajectories (Nelson and Winter 1982), companies tend to "simply" repeat successful business model innovation processes and to, equally "simply", drop unsuccessful approaches, rather than learning from them. The inherent danger is that a company fails to learn how to approach innovations that are essentially new to the company, which, in turn, may decrease its growth potential significantly.

Taking a *risk management and alignment* perspective, even if 1) a company's risk appetite and awareness fits its economic position and outlook, and 2) the company estimates the nature and characteristics (radicality, complexity, reach) of the intended innovation correctly, and 3) the company is prepared, if necessary, to learn new approaches, business model innovation is still loaded with risks. Hence, risk management and, more

importantly, its alignment with the other key constructs (i.e. the actual risk associated with the innovativeness of the business model innovation and the company's risk appetite) is of paramount importance in any business model innovation process. Furthermore, it appears that adopting a widely used approach such as the stage-gate process (Cooper 1993) to manage a business model innovation process is not enough. The three companies' experiences suggest that incorporating dedicated risk management processes (Chapman and Ward 2004) in a business model innovation process, whether that process is stage-gate driven or not, can help reduce the likelihood of innovation failure. Moreover, as case C suggests, risk management can also potentially facilitate meeting customer demands. Too much focus on technological aspects combined with insufficient attention for commercial aspects and, possibly, a "push" strategy, may lead to technical success but commercial failure (cf. e.g. Voss 1988).

Further Research

The empirical investigation performed in this research involved four retrospective case studies, based on mostly qualitative data. There are several well-documented advantages to this methodology, such as richness and depth, but also weaknesses related to, amongst others, generalization. Accordingly, the case study results and propositions developed here should be tested on a larger scale, using a mix of comparative and longitudinal case studies as a first step, aimed at enriching, sharpening and adding to the propositions presented here. Thereafter a larger case or questionnaire-based survey may be used to test and generalize the propositions developed.

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APPENDIX A: INTERVIEW GUIDE

Only the questions relevant to this paper are listed here. Company information (e.g., location, size, structure, products, and markets) were inferred from company documents and checked with the interviewees.

Core constructs	Interview questions												
Characteristics of the business model innovation:	<ol style="list-style-type: none"> 1. How many business model innovations did the company experiment with over the past couple of years? 2. From a business model perspective, what did these innovations involve, i.e. which building blocks were changed? 3. Please map each of the business model innovation initiatives according to the three-dimensional innovativeness space (Figure 1 in the paper). 												
Overall innovation management:	<ol style="list-style-type: none"> 4. How many of those business model innovations were successful, partly successful or a failure? 5. Why did you choose to engage in each of these business model innovations? Was it a response to some kind of threat (reactive), or did you take advantage from an emerging opportunity (proactive)? Which of the innovations would you rate as 'idea push', which as 'market pull'? 6. Who made the choice for each of those innovations (e.g. R&D manager, management team, stakeholders)? 7. The rationality of choices: Based on what data analysis did you make the choice (e.g. cost-benefit financial analysis, business plan, "gut feeling")? 8. Did you apply similar innovation processes to all innovations (incremental/radical) or different ones? 												
Risk, risk appetite, risk management and interactions between constructs:	<ol style="list-style-type: none"> 9. Based on the table below, how would you characterize the company? <table border="1" data-bbox="363 1010 1481 1473"> <thead> <tr> <th data-bbox="363 1010 730 1048">How [risk] hungry is the company?</th> <th data-bbox="730 1010 1481 1048">Description</th> </tr> </thead> <tbody> <tr> <td data-bbox="363 1048 730 1086">Averse</td> <td data-bbox="730 1048 1481 1086">We never take risks</td> </tr> <tr> <td data-bbox="363 1086 730 1167">Minimalist</td> <td data-bbox="730 1086 1481 1167">Preference for extra safe options that have a low, or no, degree of risk and only have a potential for limited reward.</td> </tr> <tr> <td data-bbox="363 1167 730 1247">Cautious</td> <td data-bbox="730 1167 1481 1247">Preference for somewhat safe options that have a low degree of risk and may only have limited potential for reward.</td> </tr> <tr> <td data-bbox="363 1247 730 1395">Open</td> <td data-bbox="730 1247 1481 1395">Willing to consider all options and choose the one that is most likely to result in successful delivery while also providing an acceptable level of reward (despite medium level of risks that we need to take through the innovation process).</td> </tr> <tr> <td data-bbox="363 1395 730 1473">Hungry</td> <td data-bbox="730 1395 1481 1473">Eager to be innovative and to choose options based on potential higher rewards (despite greater risk).</td> </tr> </tbody> </table> <p style="text-align: right; margin-right: 20px;">HM Treasury (2006)</p> 10. How, if at all, were risk management processes used through the business model innovation process? 11. To what extent did you consider through the innovation process the interaction between the level of risk, and the way you chose to organize for each business model innovation? 12. What did you learn from that experience for next time? 	How [risk] hungry is the company?	Description	Averse	We never take risks	Minimalist	Preference for extra safe options that have a low, or no, degree of risk and only have a potential for limited reward.	Cautious	Preference for somewhat safe options that have a low degree of risk and may only have limited potential for reward.	Open	Willing to consider all options and choose the one that is most likely to result in successful delivery while also providing an acceptable level of reward (despite medium level of risks that we need to take through the innovation process).	Hungry	Eager to be innovative and to choose options based on potential higher rewards (despite greater risk).
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Open	Willing to consider all options and choose the one that is most likely to result in successful delivery while also providing an acceptable level of reward (despite medium level of risks that we need to take through the innovation process).												
Hungry	Eager to be innovative and to choose options based on potential higher rewards (despite greater risk).												
In case the innovation process involved open/network-based innovation:	<ol style="list-style-type: none"> 13. How do you experience your organization's attitude / openness to formal / informal networks? 14. What did you perceive as the theme of the network (how clearly it was formulated)? 15. Based on what criteria were partners selected (past relationships, brand new partners, strategic options / limitations, customer base, partners' existing technology)? 16. Who was leading the network - how (positive/negative) did you experience his/her role? 17. What was your overall experience of the network meetings - progress/non-progress? 18. If you look back on the course of the network - can you point to any key times, meetings, events, etc. where the network/innovation project took a decisive turn? 												

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