

Business continuity of business models: Evaluating the resilience of business models for contingencies

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ABSTRACT

Company business models are vulnerable to various contingencies in the business environment that may unexpectedly render their business logic ineffective. In particular, technological advancements, such as the Internet of things, big data, sharing economy and crowdsourcing, have enabled new forms of business models that can effectively and abruptly make traditional business models obsolete. By disrupting or even diminishing companies' revenue streams, environmental contingencies may present a significant threat to business continuity (BC). Evaluating the resilience of business models against these contingencies should therefore be a core area of BC. However, existing BC approaches tend to focus on the continuity of the resources and processes through which a particular business model is accomplished in practice but omit the business model itself. We argue that in order for BC approaches to become holistic and strategic, business models need to become a part of the BC considerations, entailing an expansion of the scope of BC from value preservation to value creation. We propose an approach of Strategic Business Continuity Management, which consists of two parts: (1) sustaining the continuity of the company business model (value preservation) and (2) evaluating and modifying the business model (value creation). We illustrate conceptually the value creation part with an example drawn from the sharing economy.

1. Introduction

We have recently witnessed numerous cases in which technological progress has enabled newcomers to innovate business models that have severely threatened incumbents' business continuity (BC) (Eggers & Park, 2017). These disruptions have not been market specific but have shaken nearly all fields from retail to transport and from manufacturing to service providers, and they have rendered many established business models obsolete. Companies, such as Uber, AirBnB, Amazon, and Alibaba, have not just challenged established companies but have also reorganised and renewed the markets. For instance, the forerunners of the platform economy (e.g. Amazon, Alibaba) with their innovative business models have become some of the world's biggest players in just a portion of the time it took for the giants, such as Walmart, Target and others, to grow and which now find themselves under severe pressure to renew their business models or gradually fade into non-existence. It is therefore imperative for companies—whether market leaders or challengers—be proactive with their business models. They need to stay alert and periodically evaluate the resilience of their business models against environmental contingencies.

Environmental contingencies that threaten business models are strategic BC risks to companies. Multidisciplinary groups of scholars and practitioners have sought to provide companies the necessary tools and knowledge to help them proactively and holistically prepare for all kinds of contingencies (Herbane, 2010; Niemimaa, 2015b). As an ongoing effort, scholars have argued for and sought to establish BC amongst organisational strategic initiatives (e.g. Herbane, Elliott, & Swartz, 2004; Niemimaa, 2015a). In other words, BC is seen as strategic, as it 'readies an organisation to preserve value derived from competitive advantage' (Herbane et al., 2004, p. 439; Sawalha, Anchor, & Meaton, 2015). This kind of thinking feels rather intuitive because, after all, unanticipated contingencies 'threaten the strategic goals of organisations' (Richardson, 1994, p. 63). Operational disruptions may not only create immediate loss but, when prolonged, can also prevent the achievement of the strategic goals set. Whilst these may sound as less important considerations when it comes to organisational preparations for contingencies, they are significantly important, as strategic initiatives tend to be better resourced and win management buy-in more easily than operational initiatives do¹.

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¹ Both sufficient resources and management buy-in are broadly recognized as critical success factors for BC (e.g. Lindström & Hägerfors, 2009; Seow, 2009)

Business models are strategic assets for organisations and define the logic through which they transform the produced goods and services into profit (Foss & Saebi, 2017). The literature on BC has tended to focus on ensuring continuity by increasing the resilience of resources through which a specific business model is implemented. The resilience is inherently socio-technical in nature (Herbane, 2010; Järveläinen, 2012) and is built on diverse technological redundancy solutions (Bajgoric, 2006, 2010) and organisational social and structural arrangements (Niemimaa, 2017), such as high-availability servers, redundant network connectivity and deputy arrangements. For instance, if the business model is implemented in practice with the help of a dedicated web shop, BC aims to ensure that sufficient technological and human resources are available to ensure that the web shop can operate even under adverse circumstances (e.g. during power outage and denial-of-service attacks).

The innovative business models enabled by technological development provide significant opportunities for the companies that have innovated them but pose significant BC threats for other established companies and their business models. By focusing on the continuity of resources that implement the current business model, the business model itself is left out of consideration despite the strategic threat it poses to BC. For instance, ensuring the continuity of a company's dedicated web shop does not provide a sufficient basis to assume BC when online sales are moving to centralised platforms (e.g. eBay and Amazon) that require rethinking, such as sales and provisioning logic. Evaluating the resilience of a company's business model against disruptive business models may increase the company's BC and help establish BC firmly amongst the strategic imperatives of the company. Business models need to adapt in response to the external contingencies (Demil & Lecocq, 2010) engendered by technology-driven innovations.

In this study, we focus specifically on the BC of business models because of their central role in companies' business strategies and in ensuring the continuity of revenue streams (e.g. Amit & Zott, 2001; Bouwman, Faber, Haaker, Kijl, & Reuver, 2008; Chesbrough, 2010; Chesbrough & Rosenbloom, 2002). Incorporating business model resilience to BC has the potential to extend its value creation potential and thus make it more rightfully a strategic asset and activity. Whilst strategy-level decisions (including innovating business models (McGrath, 2010)) are often viewed as the responsibility of senior management, we can see that BC scholars and practitioners—when equipped with the right tools and knowledge—are also well apt to deal with these strategic issues (Wong, 2009). After all, dealing with environmental contingencies is customary for these experts. What is needed is merely a shift in the domain of application of this expertise and in the use of a practical method.

These considerations provide us the motivation to pose the following question: How can the BC of business models be evaluated and improved against potentially competing emergent business models? We are particularly interested in contingencies related to emergent business models enabled by technological development. Whilst technologies and business models are intimately linked, business models focus on the mechanisms through which technologies are transformed to value, as technologies do not have any inherent value outside of their use potential (Baden-Fuller & Haefliger, 2013). We turn to the literature on BC and business models to conceptually elaborate an approach called strategic business continuity management (SBCM). Our research can also be viewed as a response to calls to make BC holistic and strategic (e.g. Herbane et al., 2004; Gerber & von Solms, 2005; Gibb & Buchanan, 2006; Niemimaa, 2015b; Zuccato, 2007).

The rest of the paper is structured as follows. First, we outline the literature on BC and business models. Second, we propose the approach of SBCM and elaborate its main phases. Third, we demonstrate its use through two illustrative cases of how the approach might be used in practice. Finally, we discuss our main contributions and draw the conclusions.

2. Business continuity of business models

2.1. The literature on business continuity

BC has roots that date back to 1970s research on disaster recovery plans (Herbane, 2010). This history is of importance to develop an understanding of current discussions and some of the limitations these BC approaches have. Whilst several definitions exist, each having its own small nuances, we use the term 'business continuity' to broadly refer to a company's socio-technical ability to withstand and restore from intra- and extra-organisational contingencies (Niemimaa, 2015b).

As the word *disaster recovery* already implies, early approaches were about recovery. In practice, this meant that companies prepared detailed procedures that would support their recovery efforts should an IT system or the whole server facility fail (Post & Diltz, 1986). Soon, however, organisations realised that this scope was too narrow (Castillo, 2005; Hinde, 2003). Focusing on the recovery of an IT system did not support companies' recovery from their business processes nor provide any concrete assistance as to how they should continue without an IT system (Junglas & Ives, 2007; Thornton, 2008). Furthermore, this approach failed to provide instructions on how to recover business processes after the IT system is recovered (Menkus, 1994; Stanton, 2005), and it did not cover major incidents such as large area power cuts (Hinde, 2003). BC approaches sought to address shortcomings, such as how to ensure that the information technology (IT)-based warehouse inventory is accurate if orders have been processed manually.

BC planning expanded the scope of disaster recovery to include business processes (Cerullo & Cerullo, 2004; Smith & Sherwood, 1995; Trček, 2003). However, in lieu of this broader scope, such business approaches are essentially about preparation. Preparation involves integrating redundancy into critical business processes and in the resources needed to run these processes in order to increase their resilience against contingencies. These approaches are reactive in that they focus on the anticipation of failures instead of active and ongoing avoidance of failures (Butler & Gray, 2006). Proactiveness, however, is crucial for effective BC (Butler & Gray, 2006).

As Gerber and von Solms (2005) argue, 'business continuity depends very much on the use of a holistic approach' (p. 27). This is what BC management (BCM) aims to achieve. It is an attempt to provide a holistic and socio-technical approach to proactively manage preparations and response to incidents (Herbane, 2010; Niemimaa, 2015b). It seeks to prepare organisations for all kinds of contingencies, although in any contemporary setting, technological incidents are the priority. Also, '[t]he aim of information security is to ensure business continuity' (Von Solms & Van Niekerk, 2013, p. 98). BCM is founded on the management system (i.e. a set of formal procedures and processes) rather than on plans. However, this does not mean that BCM has superseded earlier planning approaches but rather that these approaches *per se* are no longer perceived sufficient and tenable approaches for preparation. In particular, without ongoing processes of maintenance and update, plans are often outdated and fail to provide meaningful support during recovery. Furthermore, culture (Alesi, 2008; British Standards Institute, 2006; Sawalha et al., 2015), embeddedness as a form of commitment to resilience (Herbane et al., 2004; Niemimaa & Järveläinen, 2013) and other social and cognitive processes (Niemimaa, 2017) are now recognised as salient factors that shape organisational survivability and BC (Devargas, 1999; Quirchmayr, 2004; Rapaport & Kirschenbaum, 2008).

In recent years, scholars and practitioners have brought forth several methodologies to assist organisations in improving their BC (e.g. British Standard Institute, 2006; International Organization for Standardization, 2012; Botha & von Solms, 2004; Gibb & Buchanan, 2006; Lindström, Samuelsson, & Hägerfors, 2010). Generally, the preparations span across several methodological steps that involve 1) initiating a BC project; 2) identifying risks and their business impact; 3)

designing a continuity plan and the processes and procedures necessary for establishing a management system; 4) implementing the designed measures; 5) testing their effectiveness and exercising them for incidents; and 6) continuous maintenance and update of measures through the established processes and procedures (Niemimaa, 2015b, 2017; Pitt & Goyal, 2004; Stucke, Straub, & Sainsbury, 2008). Generic frameworks have been complemented with methodologies and approaches that focus on specific issues, such as achieving BC standard compliance (Freestone & Lee, 2008), integrating with risk management (Nosworthy, 2000), managing supply chains (Benyoucef & Forzley, 2007), outsourcing (De Luzuriaga, 2009) and building a resilient IT infrastructure (Bajgoric, 2006).

As the above discussion suggests, throughout this long history (Herbane, 2010), BC has focused on either restoring or ensuring the continuity of operations. It seeks to secure the continuity of (critical) organisational resources and processes through which the organisation produces its goods and services and transforms these into value. In other words, BC has essentially focused on *value preservation* (Herbane et al., 2004; Zadeh, Millar, & Lewis, 2012, p. 4274)—on ensuring the continuity of measures implementing the current business model. Research suggests that these measures may also create value for companies by increasing the resilience of business processes (Sawalha et al., 2015; Wong, 2018), meeting customer expectations with credible service quality (Sawalha et al., 2015, p. 433, Wong, 2018), and provide a qualifying factor in tenders, to name a few of the value additions. The focus has been on the value that can be derived from the implemented BC measures supporting the realisation of the set strategic goals rather than on how BC may contribute to the organizational strategy formulation. Because of this tendency, the literature has overlooked an important source of contingencies which threaten the actual business logic through which the organisation creates value for its customers. More specifically, these relate to environmental contingencies that threaten the organisation's business model. Accounting for these contingencies is significant because otherwise, BC may not be able to deal with some of the most significant BC threats, which have the potential to render business models ineffective. But in order to start developing an understanding of how to prepare for business model contingencies, we first need to understand business models. Next, we will turn to the literature on business models.

2.2. Business models

Whilst business models have always existed, the concept of the business model itself is more recent (DaSilva & Trkman, 2014; Zott, Amit, & Massa, 2011). The understanding of researchers dealing with business models is slowly converging, and the majority of current definitions of business models are in line with that of Teece (2010)—the *logic or architecture of the value creation, delivery and capture mechanisms of a firm* (Foss & Saebi, 2017). That is, it 'reflects management's hypothesis about what customers want, how they want it, and how the enterprise can organize to best meet those needs, get paid for doing so, and make a profit' (emphasis ours) (Teece, 2010, p. 172).

The logic through which an organisation transforms its products and services into value is one of the most significant strategic-level decisions of organisations (Foss & Lindenberg, 2013; Zott et al., 2011). The concept of value creation has been central for business models in prior literature (e.g. Amit & Zott, 2001; Bouwman et al., 2008; Chesbrough & Rosenbloom, 2002; Mäkinen & Seppänen, 2007). By making strategic-level decisions, an organisation seeks for ways to move from *red ocean* to *blue ocean* (Kim & Mauborgne, 2004)—from the crowded and highly competitive market to an uncrowded, new and novel market. Casadesus-Masanell and Ricart (2010) claim that the business strategy determines the business model, but the terms 'strategy' and 'business model' are not the same, despite being connected. DaSilva and Trkman (2014) argue that a business model has a shorter temporal perspective than a strategy, which views business on a long-term basis.

More recently, scholars have recognised that a business model itself can be a potential innovation. The term 'business model innovation' denotes an activity or process in which the core elements of a firm and its business logic are deliberately altered (Bucherer, Eisert, & Gassmann, 2012; Heikkilä, Bouwman, & Heikkilä, 2018; Pohle & Chapman, 2006). Indeed, it is broadly accepted nowadays that technology innovations are not themselves sufficient; they need to be accompanied with a business model innovation (Baden-Fuller & Haefliger, 2013). Even the most creative and novel technologies without business value would not be an innovation but merely an invention (Witell, Snyder, Gustafsson, Fombelle, & Kristensson, 2016).

There are several taxonomies, typologies and classifications of business model components (i.e. their *architecture*), such as STOF (Bouwman et al., 2008), the business model canvas (BMC) (Osterwalder & Pigneur, 2010) and VISOR (El-Sawy & Pereira, 2013). Many of the business model component frameworks are similar (Wirtz, Pistoia, Ullrich, & Göttel, 2016). For example, value proposition (i.e. the value created for customers) can be found in Chesbrough and Rosenbloom's model (2002), from STOF as a part of the service design and from BMC as value (and services). The service design part in STOF also includes customers, service offerings, effort for the customers and customer relationships when BMC has customer segments and relationships. STOF seems to aim for comprehensiveness, whereas BMC and Chesbrough and Rosenbloom's model are simplified.

In a turbulent economy, business models need to adapt to existing and upcoming contingencies or uncertainties (DaSilva & Trkman, 2014; Haaker, Bouwman, Janssen, & de Reuver, 2017). One method to prepare for changes in the business environment is business model stress testing (Bouwman, Heikkilä, Heikkilä, Leopold, & Haaker, 2017; Haaker et al., 2017), in which the business model is tested against future uncertainties by using scenario analysis. BCM can also be considered as preparing for existing and forthcoming uncertainties (Niemimaa, 2015b), and continuity planning may likewise use scenarios (Herbane et al., 2004; Tammineedi, 2010).

3. Strategic business continuity management

Considering the identified shortcomings in the BC literature, we propose an extension of existing BCM approaches for organisations to meet the set goals to become a) holistic and b) strategic. Fig. 1 provides an illustration of the approach we propose.

Our extension proposes the business model as a key BC concept. In Fig. 1, the business model should not be seen as an espoused business model but rather as the actual business model that an organisation has implemented through various resources, i.e. as a business-model-in-practice (DaSilva & Trkman, 2014). The value preservation side of the model relates to the traditional, value preservation approaches on BC. As we have discussed above, these BC approaches may also create value (hence the overlap in Fig. 1). Despite this, in the illustration, we have structured the value preservation around six generic methodological steps (Niemimaa, 2015b; Pitt & Goyal, 2004); companies may opt for their combination of preferred methodologies to establish a BCM within their organisation. The primary purpose of these methodologies is to *sustain* the continuity of those resources that implement the current business model. These BC models have been covered broadly in the literature (Niemimaa, 2015b), so we will focus on the value creation side, which is our primary and novel contribution to BC and business models.

The value creation part of the approach focuses on *evaluating* contingencies that threaten the current business model, and *modifying* the existing model based on the analysis. The first two steps of the methodology reflect business model stress testing (e.g. Bouwman et al., 2017; Haaker et al., 2017), and the last three steps focus on evaluating the impact of the identified uncertainties and preparing to respond to these uncertainties. As the abstract steps of the value creation phase of the SBCM show, the steps we propose should feel rather intuitive to any

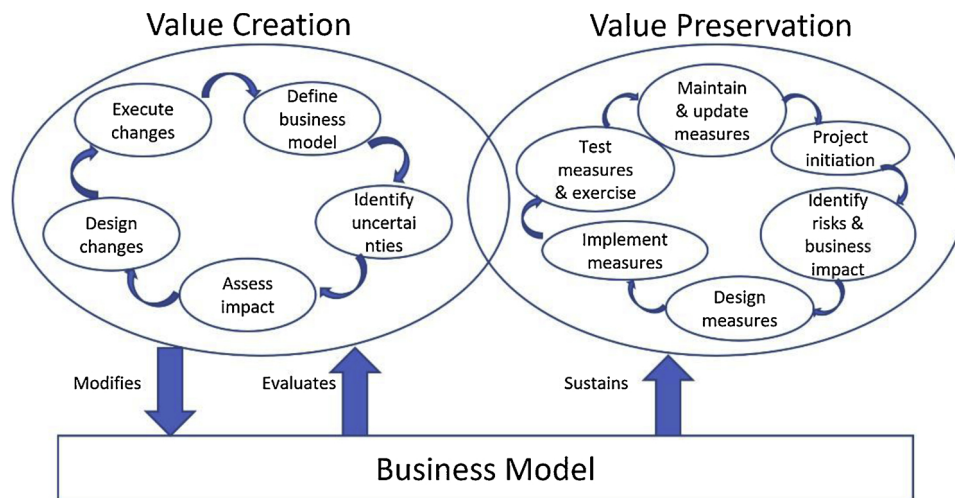


Fig. 1. Strategic Business Continuity Management Framework.

BC expert. The most significant part of the approach is in the content rather than in the structure. By proposing an approach that uses business model concepts in the BC context, the business model itself is seen as a potential threat to the company's BC. That is, it changes our perspective on business models and on BC. We tend to see and be able to describe those threats we already have concepts for (Weick & Putnam, 2006), so it is no wonder that these considerations have not easily emerged from the traditional BCM methods. Next, we describe the five phases of the proposed approach.

3.1. Define the business model

In case the organisation has not already explicitly articulated its business logic, it should be done in this step. Articulating the business model can be a thorny quest for organisations that do not have earlier experience in explicitly considering their business model, and they may therefore require help from experts in this area. Articulating the business model can be done by building on any of the available (formal) business model languages (Haaker et al., 2017), or organisations may stick to a simpler option by freely describing the components of the business model (see above).

3.2. Identify uncertainties

Identifying uncertainties requires determining the potential challenges that may compromise the current business model or parts of it. Thus, the focus should be on the business model and on the components that constitute it rather than on the current processes and resources through which the business model is implemented in practice. Traditionally, identifying uncertainties for BC would focus on risks that threaten operations, such as the probability and frequency of a risk of losing a server facility (e.g. because of a flood, etc.), the business impact of losing (all/part of) the data collected during a day (or in two days, in a week, etc.), how alternative customer service processes can be set up promptly, and the (absolute) minimum level of service that needs to be delivered and how long it will suffice. As these issues demonstrate, they focus on the operation-level resources/processes through which the current business-model-in-practice is performed. Relating the concept of the business model to BC considerations results in new questions that threaten the whole business model or parts of it and thus would not flow easily from the value preservation approach. For instance, a design company whose specialty is graphics and logos should identify that the emerging threats provided by crowdsourcing pose significant uncertainty. Potential clients may prefer crowdsourcing platforms to design their new logos, as crowdsourcing can allow them to harvest

potential ideas from hundreds or even thousands of designers across the globe. As such, companies are required to not only consider already existing competitors whose business models radically differ from theirs as uncertainties but also to understand emerging technologies that pose uncertainties for the current business model, which should rest on market intelligence and expertise.

Identifying uncertainties can be built on ready-made scenarios, such as SWOT analysis (Haaker et al., 2017) and on brainstorming. Given the wide range of threats, the identify uncertainties phase benefits from a heterogeneous group of participants with diverse backgrounds and interests (Kendall, Kendall, & Lee, 2005). Also, organizational strategic and tactical directives should serve as an input to the process (Gibb & Buchanan, 2006). In particular, technology-savvy employees should be engaged. Several new business model contingencies have emerged because of technological development, including crowdsourcing, cloud computing, sharing economy and big data. These advancements that are founded largely on technological progress have severely impaired the business models of some of the largest incumbents on different markets. Thus, organisations should identify the latest radical business model innovations applied by such technology-driven companies as Uber or Amazon and consider them as sources of uncertainties (we will illustrate this in the next chapter).

Any organisation is likely to identify a number of uncertainties, and analysing all of them is unfeasible. However, some uncertainties can be evaluated to be more likely than others. This assessment does not have to have any scientific precision but can be founded on estimated likelihood. Qualitative risk analysis methods are well documented and often well known among organisational planners. Instead of enumerating and estimating the consequences of the uncertainties for organisational resources and processes, companies should focus on the level of the business model—the risks that the uncertainty poses to the components of the business model (or to the business model as a whole).

3.3. Assess the impact

Assessing the impact of the identified uncertainties is dependent on their type. For instance, if a legislative change is identified as an uncertainty for a business, then the impact of the change on the business model should be evaluated. This can be done by considering systematically the impact of the legislative change across the business model component parts (e.g. how it affects the customer base, how it changes the value proposition, whether changes to the technologies that deliver the product/service are needed).

As discussed above, the uncertainties can also relate to a new-comer's impact on the market. In this case, the identified business

models of the entrant should be described in a similar manner as the company's own business model but based on *available* information, which is likely not perfect. The details of the different business models a company has are often confidential. Indeed, we often only find out a posteriori the business models that companies, such as Google or Facebook, have adopted as regards the use of our privacy data through revelations and court cases (Zuboff, 2015). However, this should not hamper the analysis and lead to contemplation. Organisations should make use of the best available information and ground their analysis on it. Important sources are newspaper articles, blog writings and published research. Organisations should also not neglect sources that show weaknesses in the identified business model. For instance, the demonstrations that have emerged around Uber in countries such as France² can provide meaningful data when building the business model.

After the identified new business model is described, it can be juxtaposed with the company's current business model. This juxtaposing will provide meaningful data that show how the identified business model relates to the company's own business model. When these business models are represented in tabulated form, planners can start comprehending the potential impact. For instance, if the business model relies on an employment-based workforce and crowdsourcing, we can easily start documenting the potential impact. For instance, it is easy to see that relying on crowdsourcing is likely to yield lower labour costs, greater flexibility and per project-based (or even task-based) contracting, as well as an almost unlimited available workforce. Quite naturally, this kind of workforce is certainly not a preferred option for most companies, but at this point in the process, companies should have already identified those business models that they deem to have the most potential for disrupting their own business. By systematically going through the different components of the business model, the company will get a clear picture of the threat that the identified business model poses. All identified impacts should be documented for consideration in the next phase.

3.4. Design changes

After the potential impact has been documented, strategies for change can be developed. Whilst some impacts can be addressed easily, some may require significant effort and take a long time to implement, or they may even turn out to be impossible to address. For instance, developing a smartphone app can be considered relatively easy, but integrating this app with an organisation's existing infrastructure and resource planning systems can be a thornier task. Some strategies to mitigate the impact could even include changes to legislation, which may take years to implement or may turn out to be unfeasible. However, at this point in the process, the emphasis is to develop tentative strategies rather than estimate their feasibility. Choosing and executing changes will follow in the next phase.

When designing changes, one should not forget the BC of the planned changes (where applicable). One should not lose BC from the planning horizon, as such runs the risk of BC becoming a concern only as an afterthought. The challenge at this point is to be generic enough and not go into too much details. Yet, the considerations should be precise enough such that these concerns do not fade in the background. A good option is to define the changes in such a way that BC is addressed (at least partly) in the strategies with the help of such terms as *redundant*, *resilient*, *backup*, and *alternative*, which remind of the high-availability requirements. What these terms mean in practice will need to be determined when they are actually implemented, and this implementation should be founded on standard BC methods that account for the risks and the business impacts.

² See for instance: <https://www.theguardian.com/world/2016/jan/26/french-taxi-drivers-block-paris-roads-in-uber-protest> [2018-01-05]

3.5. Execute changes

Executing the business model should not be taken lightly, as the changes may have a significant impact on the way the company operates and makes revenue (Chesbrough, 2010). At the same time, businesses face the dilemma that by not making the changes, their existing business model may become obsolete and their BC severely threatened. Some advocate a trial-and-error approach to business models (McGrath, 2010). In any case, the decision on which changes to execute and which *fights to fight* on the markets is largely a decision for senior management. The strategies for changes defined in the previous phase provide important input for this decision process. Senior management ought to select the strategies they feel most compelling to implement, which is often based on a combination of economic calculations and intuition. For the actual implementation of the planned changes, standard project management methods that carefully designate the resources and responsibilities needed for carrying out the projects should be applied.

4. Illustrating strategic business continuity management

To illustrate SBCM, we use the case of an incumbent, ATaxi cooperative, which revised its business model under the circumstances of the deregulation of the taxi market in Finland in 2018. For simplicity, the use of SBCM is depicted in comparison with the well-known Uber business model by using the most salient elements of business model attributes (Haaker et al., 2017). The case study is based on data from public sources, such as company web pages, but we have also verified some data by observing the taxi service as a customer and through informal discussions with taxi drivers.

4.1. Define the business model: the ATaxi case

ATaxi is a taxi drivers' cooperative that has operated over 100 years—the last 30 years of which as a limited liability company, with 100% of the cooperative being owned by the taxi drivers—in the highly regulated taxi market in Finland. During these 30 years, the authorities admitted taxi licenses on a regional needs basis. In the beginning of 2018, ATaxi's 1500 entrepreneurs and drivers served customers with a fleet of 600 cars. All entrepreneurs and drivers went through formal and demanding training as required by law, provided locally by ATaxi. The examination for taxi drivers assessed their knowledge of locations, landmarks and important destinations in the area within which they operate, and criminal records were checked before licenses were granted. With its high standards, ATaxi has created locally a well-known brand image of quality, credibility and safety that (high) paying customers were accustomed to during the regulated era. As taxis are exempt from the Finnish vehicle tax of 30% (before 50%) on top of cars' cost, insurance and freight prices, entrepreneurs could buy quality cars and equip them with proprietary ATaxi technology that enabled drivers to receive and accept orders and debit/credit payments, being amongst the first in the world to do so. Customers could order ATaxis by calling a centralised call centre which forwarded the request to the nearest drivers, the fastest of whom then took the order, previously via radio and then later via mobile Internet. In practice, ATaxi had a monopoly position in the local market for almost a century, and the situation was basically the same in other regions in Finland.

4.2. Identify uncertainties: the ATaxi case

Some years ago, the business environment faced radical changes. The authority in charge of regulation, the Finnish Ministry of Transport and Communications, announced in autumn 2016 that the taxi business will be deregulated. From autumn 2018, there will be no more quotas for the licences of taxi service. In addition, the license will be national (instead of regional), official requirements on vocational competence and local knowledge will be omitted (passing a simplified test will

suffice) and pricing will be liberated. This was expected to open the taxi business to new entrants and boost innovation in transportation services.

This change in regulations posed significant uncertainty to traditional taxi companies, such as ATaxi, because of platform entrants, such as Uber, or bigger overseas taxi companies. To prepare for the environmental contingency, ATaxi sought to evaluate the BC of its business model against the threat. As Uber is the leading example of a platform-based sharing economy of the field, we compare ATaxi's response to Uber's business model.

In Uber, each driver is expected to own a car used to render the service, and the driver is not employed by Uber; instead, he/she is paid per gig. There is no centralised dispatch service centre, but service requests are automatically processed by Uber's algorithm; drivers can use their smartphones to receive and respond to service requests from users through an app. This application allows customers to place orders through it, which likewise locates customers automatically for the driver. Customers can follow in real time the location of the ordered driver such that they know when to expect the car to arrive. Payment is handled automatically through the smartphone app at the end of the ride, when customers also rate the service publicly with the application.

4.3. Assess the impact: the ATaxi case

Table 1 shows how ATaxi can respond to the specific contingencies emerging from Uber's business model on the deregulated market. Legal consultants helped ATaxi evaluate the kinds of changes it can make, not abusing its significant market powers³, which ATaxi still possesses.

4.4. Plan the changes: the ATaxi case

ATaxi decided not to change its original value proposition but instead make it even stronger—ATaxi offers *reliable, safe and high-quality* taxi services. In order to provide this value proposition, the company balanced supply to serve the market demand well and still give sufficient earnings to its drivers. Thus, instead of competing in terms of price, it aggregated regional taxi data and estimated the number of taxis required to meet its service proposition. In addition, it saw as a necessity the introduction of a new brand and new channels through which customers can identify, order and interact with the service.

4.5. Execute the changes: the ATaxi case

ATaxi continues to select and train its drivers as before, but now, ATaxi brand image coaching is included in the training. A new mobile app for ordering a taxi was developed and launched at the same time when the deregulation of taxi services was introduced. The app can automatically position the customer in a map and show the location of the taxi arriving to collect the customer. The customer and the driver can interact using the app. This app also provides an estimate of the price, if the customer selects the destination from it. This way, the customer can opt to hail a taxi, get it at a stand or call a service centre or any other taxi service app in Finland. The customer can pay with cash, credit card or with the ATaxi app, which also sends the receipt to the customer's mailbox.

The rules of membership for drivers of ATaxi, including rules for determining the number of drivers, are openly available from the company's web pages. These rules are revisited biannually or in case ATaxi members see it necessary to ensure objective and transparent service.

³ As layers point out, monopoly itself is not against law, whereas using the monopoly power to hinder entrance of competitors is illegal.

5. Discussion and conclusions

In this article, we have proposed an extension to BC approaches that aim to increase the scope of BC and its organisational significance by focusing on business model contingencies. This extension matches the aims of other scholars that have argued for holistic and strategic BC (Gerber & von Solms, 2005; Gibb & Buchanan, 2006; Herbane et al., 2004; Niemimaa, 2015b; Zuccato, 2007). However, the discussions have largely focused on arguing how value preservation can be viewed as strategic (Herbane et al., 2004; Richardson, 1994; Wong, 2009; 2018), and increased the scope by broadening the range of threats covered by BC approaches that threaten the value creation. These contributions have made significant improvements to ensure the BC of companies, but they do not sufficiently pay attention to strategic BC risks that threaten the business model of an organisation. These contingencies are particularly contemporary and current, as technological progress has enabled organisations to innovate new, radical business models that can render obsolete in an instant any incumbent's value creation logic (Eggers & Park, 2017). What we see happening is that new technology-driven companies that use instantiations of the Internet of things, crowdsourcing, sharing economy and big data have not only changed the relative positions within an established market space but have completely reoriented the market space and reconfigured its boundaries.

Rapid technological changes, combined with new innovative business models, have become a serious threat to organisations' BC to a degree that was unfathomable or at least a rare occasion a decade ago. The question of why some incumbents do well and adapt whereas others struggle under these technology-driven changes has become a key question of our time (Eggers & Park, 2017). When viewed from the perspective of BC, new business models represent (abrupt) contingencies in the environment that appear as risks threatening the BC of a company and that consequently require organisations to make necessary preparations. One man's business model is another man's threat.

New tools and concepts that address this area of BC threats are needed to respond to such changes. We can see that as long as business model innovations and the technologies that drive innovations are considered merely as positive capital (e.g. Baden-Fuller & Haefliger, 2013), the managers on the responder side who suddenly find themselves under threat are left without the necessary tools and guidance to navigate towards the blue ocean. When business models are viewed as a source of potential threat, important new considerations are opened to facilitate a proactive culture (Herbane et al., 2004) that does not neglect or downplay potential business model disruptions but seeks for solutions that cater to and address the threats. Here, interdisciplinary efforts from BC and business model experts can find most fruitful grounds.

We argue that the key to successful BC is ensuring that the business model is resilient against environmental contingencies (Bouwman et al., 2017; Haaker et al., 2017). Sometimes, responding to these contingencies requires not just incremental changes but reconsidering as a whole what is it that the company is actually doing and rethinking in what business does it actually operate. When cars started to appear, companies that were in the business of manufacturing horse carriages would have done little good to secure their BC by merely producing more effective horse carriages or ensuring that the production lines are continuously operating. Responding to these sources of BC threats requires a different mindset and different concepts, and it necessitates even radical changes to the logic through which a company creates value (i.e. business model innovations). In this article, we have provided an illustrative case example to show what the analysis and the preparations could look like in practice.

The proposed two-part approach of SBCM differentiates between BC activities that focus on value preservation and those that focus on value creation. Whilst value preservation focuses on sustaining those

Table 1
Analysis of the Business Continuity of ATaxi's Business Model.

	ATaxi original BM (before deregulation)	Uber's BM (example of a competitor's BM)	Impact on ATaxi's original BM	ATaxi's new BM
Customers	Anyone requiring passenger transportation in the region and feels that using his/her own car or public transportation is inconvenient	Cheap and convenient transportation	Price competition will start (no longer a fixed fare).	Promote reliable trustworthy, high(er)-quality service
Value proposition	Safe, high-quality and reliable transportation			
Resources	Limited number of taxis owned by the company and limited number of drivers employed by the company. Service is available 24/7. Drivers are expected to have expertise in local geography (i.e. to know the streets and other locations).	No limitations on offering. Anyone owning a car can offer service. Drivers are free to work when they want. They are not expected to have expertise in local geography (GPS-based location finding).	More available cars at least in city areas and during peak demand times. Uber drivers may not be interested in offering rides from/to rural areas. Potential drivers may choose to go to Uber because of lower requirements.	Focus on the quality of resources: provide training, manage branding and keep drivers motivated by giving the possibility of a sufficient income.
Channels	Ordering service is done by calling the dispatch centre. Hailing for a taxi on the street	Ordering service is done via a smartphone app.	Convenient to order a taxi via a smartphone app, but this requires a smartphone for customers	Allow multiple channels. Develop a smartphone app for customers, and make a deal with apps from other regions.
Technical design	Technologies are specifically designed for ATaxi internal use (communication and order dispatch). No applications are available for customers.	Smartphone app for taxi drivers (communications and order dispatch). Smartphone app for customers (placing orders, identifying the customer location, tracking the driver, rating the driver and paying).	High initial costs, as the proprietary technologies required for taxis are expensive compared to smartphones. A GPS-based location is less error prone than communicating one's address verbally (especially when the driver is non-native). Mobile payment enables a smoother customer experience and faster customer turnaround times.	Develop a smartphone app with GPS service to locate the customer and provide information on the driver's location.
Payment methods	Payment via debit/credit card or cash	Payment via the mobile app automatically		Use new payment methods (e.g. mobile payment). Make a deal with local municipalities on taxi services that are eligible for reimbursement (trips to public or private healthcare providers in connection with treatment, pregnancy or childbirth)
Costs	Training, Dispatch service, Cars, Employees (drivers and dispatch service)	App development and maintenance, Automated dispatching	Human-based order dispatch service more expensive than automated dispatching	Develop automated dispatching service
Revenues	Regulated list prices	Free pricing	Customers often prefer lower prices. Free pricing allows having lower rates, but it also allows higher rates, for example, during night time.	Continue using taximeters and pricing consisting of the base fee (day/night) and travel fees (per km/person).

processes and resources that implement a particular business model, the value creation part focuses on exploring the threats to the current business model and innovating business model changes that can directly contribute to how the organisation creates (more) value. When BC becomes a part of the company's strategic, value-creating activities, we expect that it can secure more resources and gain management buy-in more easily; these are both needed for effective value preservation but are often recognised as significant challenges (Lindström & Hägerfors, 2009; Seow, 2009). What we would like to emphasise here is that the importance of value preservation has not diminished, nor have we sought to reduce its importance. When the implementation of the new business model through technologies, resources and processes is designed, the value preservation part of SBCM should be used to ensure that they meet the organisation's BC targets (e.g. maximum time to recovery). Furthermore, we see that BC scholars and practitioners are in a privileged position and can make an important contribution to business model development because of their expertise in identifying uncertainties and developing responses.

Finally, we have merely started to explore this area emerging at the intersection of BC and business models. We call for more contributions from the scholars and practitioners working in these areas. Indeed, this study is an outcome of a fruitful collaboration between scholars from both camps who share a mutual interest. We argue that such interdisciplinary efforts are needed to prepare organisations and respond to the significant technology-driven reconfigurations that are happening both at the organisational and societal levels.

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