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The development of a portfolio of business models: a longitudinal case study of a building material company

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Dynamic aspects of intended company change can be related to the development and management of a portfolio of business models with regard to competence deployment and to performance. A portfolio of business models is seen as a reflection of the realized strategy of a company, and the dynamics aspects of company change are connected to internal and external critical strategic incidents. The business model elements considered in this research are market position, offering, and operational platform enabling a differentiation between strategic and operational effectiveness. The evolution of a Swedish supplier of building components and systems during a 15-year period is examined. The process data consists of temporal phases where a shift of phase is defined as a change of a specific portfolio of business models. The concept of a portfolio of business models helped to discover new and conflicting standardized or customized business models that were not always intended by the company. The findings indicate that unawareness of intended actions led to unintended allocation of resources or integration mechanisms that negatively affected company performance. On the other hand gains can be achieved if a strategy is deliberately managed as a portfolio of business models which then also can be a tool for managing change in a company.

Keywords: Business model; management; multiple business models; management of change; portfolio of business models

Introduction

Over the last 10 to 15 years, the concept of business models has become more and more dominant in the field of strategy (Baden-Fuller and Mangematin, 2013), a development that has been much slower regarding research within the building and construction sector (Pan and Goodier, 2012). The increasing amount of research on business models is grounded in different theoretical perspectives and consequently there is no single view on how to define or build theoretical foundations in this new area of research (Amit and Zott, 2001; Teece, 2010). However, regardless of theoretical perspectives, business models are commonly defined as a sort of formula for value creation and asset and resource deployment (Morris *et al.*, 2005; Baden-Fuller and Morgan, 2010). The 'owner' of a business model can appear on different intra- and inter-organizational levels (Wikström *et al.*, 2010) ranging from business areas within companies to inter-organizational business networks. Business model constructs could also be used for different purposes, i.e., as a means for scientific classification or as a more practical analytical tool for studying the relation between a specific business model and different types of performance (cf. Baden-Fuller and Morgan, 2010; Kindström, 2010). The development and use of appropriate business models can offer companies significant strategic advantages (Zott and Amit, 2008), but it has also been argued that in practice business models are often poorly understood, and that companies often fail commercially due to a lack of attention to their business models (Teece, 2010).

Two recent studies within the building and construction sector have used (different) business model constructs as analytical tools for classification and analysis of different kinds of performance: in offsite house construction in the UK (Pan and Goodier,

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2012) and industrialized house construction in Sweden (Brege *et al.*, 2014). Both studies show the practical and academic relevance in using a business model approach, the richness of strategic and also operational aspects included in the business model construct which lays the ground for detailed descriptions and multiple types of analysis. Brege *et al.* (2014) also present a business model construct that is adapted to industrialized building of multistorey housing, regarding relevant choices of business model parameters.

Linking the concepts of strategy and business model to each other is a complex task and basically it is a matter of definition. One way to divide the two concepts is to exclude competition from the business model concept, where the latter is more focused upon customer value creation (Magretta, 2002; Stähler, 2002). Another way to look at it, a perspective which is adopted in this article, is to view strategy as a long-term direction of the company and that strategy at any point in time can be seen as a portfolio of business models (Casadesus-Masanell and Ricart, 2010; Sabatier *et al.*, 2010). Following this way of reasoning, strategic change will be the change of the business model portfolio.

Research on change aspects is important in future agendas on business models, to go beyond rather static classifications of business models (Actenhagen *et al.*, 2013). How do business models change over time (and when do they change from one business model to another) and also how is it possible to manage different business models in parallel? These are important questions to be addressed in this article. The aim is of this article is thus to describe and analyse the dynamic aspects of business model development and the management of multiple business models, which are implemented in parallel. More specifically the following research questions could be put forward:

- To identify different business models within an overall component strategy of a building materials company (this also includes a refinement of the business model construct as defined by Brege *et al.*, 2014).
- To describe and analyse the development of multiple business models in parallel (a portfolio of business models) in a longitudinal perspective with special attention to the rationale for change of portfolio. What parts or aspects of change are deliberate/intentional and what are emergent/unintentional?
- To discuss some major issues that could become problems in the management of a portfolio of business models. How are new business models related to the established core competences of the company and what new competences need to be added? How are multiple business models implemented: to what degree are they organizationally integrated or separated?
- To relate the different business models to economic performance (growth, cost, profitability).

The exploration of the dynamics aspects of business model change is in this research connected to longitudinal phases of how specific critical strategic incidents (events) are related to the development and management of the portfolio of business models. Critical strategic incidents are defined as firm (internal or external) dilemmas (e.g. changes in the macro-economic situation or new trends within the building industry or new owners with new ideas) leading to deliberate strategic decisions. As a consequence of this definition, strategic incidents (events) are considered factors that influence business models and not components of the business model in itself.

The empirical data in this research covers the evolution, over a 15-year period, of a supplier of prefabricated components and component systems within the Swedish construction industry, analysing how critical strategic incidents can lead to intentional decisions and intentional and unintentional changes from a management of a portfolio of business models perspective. The company is a manufacturer in a construction context, meaning that the company internally focuses on a rational and cost efficient production process, and at the same time tries to satisfy both volume customers and customers in customized construction projects. Furthermore, the building components can be used in all types of buildings, making the market even more complex. Based on this overall component strategy, the company came to apply between one and four business models in parallel, which can be seen as consequences of intentional or unintentional changes also influenced by external environmental conditions. The definition of intentional versus unintentional follows the view of MacKey and Chia (2013) stating that intended actions interacting with chance environmental circumstances can result in changes that produce unintended consequences.

Frame of reference

There are differing views in the literature regarding the constitutive elements of a business model (Morris *et al.*, 2005; Osterwalder and Pigneur, 2005), but the creation and delivery of value are commonly held aspects (e.g. Linder and Cantrell, 2000; Teece, 2010). In a wide-ranging study, Morris *et al.* (2005) found that the most frequently cited elements of business models (in any industry) are: value offering, economic models, customer interface/relationships, partner networks/roles,

internal infrastructure/connected activities and target markets. More recently, Baden-Fuller and Mangematin (2013) have stressed four elements: customers, customer engagement (value proposition), monetization, and value chain and linkages (governance system). In contrast Casadesus-Masanell and Ricart (2010) avoid the predefinition of business model elements, and state that the specific business situation defines what the important aspects of a business model are.

Both definitions and theoretical underpinnings of business models cover a wide range in breadth and depth. Osterwalder and Pigneur (2005) and Zott and Amit (2008) use short definitions viewing business models as mechanisms whereby a company's strategy is translated into a blueprint for overall logic for earning money. Similarly, Casadesus-Masanell and Ricart (2010) view business models as a reflection of the realized strategy of a company. A somewhat different view is to understand business models as the way technology and technological innovation are capitalized upon (Baden-Fuller and Haeflinger, 2013).

Business models are often handled as meta-models in the literature, reflecting a view that it is generally difficult for companies to implement them operationally, although all companies employ business models, either intentionally or unintentionally. Their rooting in strategy and economic theory also continues to be questioned (Teece, 2010). Nevertheless, their popularity among business managers has increased recently, partly because of their potential to provide a holistic view of how companies do business (Kindström, 2010; George and Bock, 2011). Furthermore, if a holistic business model construct is used in a structured manner it can provide a high degree of descriptive detail and analytical potential. Thus, business models can be very effective analytical tools for developing and understanding companies.

Brege *et al*. (2014) present a business model construct that has been adapted to industrialized housebuilding of multistorey houses. Their general business model contains three major elements: offering, market position and operational platform. The rationale for using this three-element model is the ambition to differentiate between strategic and operational effectiveness (cf. Porter, 1996; Abrahamsson and Brege, 2004). Strategic effectiveness ('doing the right things') is documented in the market positions (measured by premium prices, market shares, etc.), by the ability to create value for customers but also by the ability to be a legitimate actor in the business and institutional networks in the market. Operational effectiveness ('doing things right') is documented in the operational platforms (measured by costs, quality, lead-times, etc.). Offerings are seen as bundles of hardware, software, services, together with financial solutions and revenue models. Market positions are related to customers but also to the business network and the surrounding institutional network. At the centre of market position is value creation for customers and customer satisfaction. Operational platforms are resources and activities, both internal and external, that produce and deliver the offering. Included in operational platforms are different external factors, such as partners, suppliers and distributors.

When applying the framework of Brege *et al*. (2014) on a component supplier of building materials, the following features are accentuated:

- Offering: The delivery is basically a components system and the supplier takes the role of a supplier, taking no responsibility as a subcontractor in the building process. Included in the offering could be consultancy services regarding design and construction issues (but no real responsibility).
- Market position: The component system could be used all over the market: single-family houses, multistorey houses and other types of buildings. Also when dividing the market according to different quality or price levels or to different degrees of customer adaptation, the component system could find applications within all segments.
- Operational platform: The resources are invested in production facilities and to some extent in the design of a building system. Resources for onsite production are very scarce.

When further adapting the Brege *et al*. framework to identify different business models within a component systems business model or strategy, other differentiating factors have to be taken into account. In line with Casadesus-Masanell and Ricart (2010) this identification process will be inductive, i.e. the analysis of empirical data will show the factors or elements that are important and which also differentiate between different business models (on a component sub-level).

Management of multiple business models

One key aspect in management of a portfolio of business models is that different market segments should be consciously managed to avoid conflict. A common solution to this problem found in the literature is to house different business models in separate business units (e.g. Porter, 1996; Christensen, 1997). However, such solutions are not risk-free, as more recent research has shown. Notably, Day *et al*. (2001) argue that strict separation between business models can prevent certain ventures from obtaining valuable resources. Markides and Charitou (2004) identify further potential conflicts,

such as customer base cannibalization and undermining of the existing distribution network.

However, alternatives to strict separation have emerged, including separation of units linked by integrating mechanisms (e.g., O'Reilly and Tushman, 2004), and management of a portfolio of business models (e.g., Sabatier *et al.*, 2010). Markides and Charitou (2004) further explore how companies can adopt two different business models in the same market simultaneously. They point out that the challenge is to balance the benefits of keeping the two business models separate while simultaneously integrating them to exploit synergies. This implies that the firm has to achieve a balance between creating enough distance between the two business models to avoid them suffocating each other and keeping them sufficiently aligned to exploit synergies. Similarly: Ghoshal and Gratton (2003) favour the creation of incentives that encourage cooperation among the separate units; Govindarajan and Trimble (2005) advocate the establishment of systems and cultures that allow parent and separate units to cooperate while maintaining their independence; and O'Reilly and Tushman (2004) suggest that separate units should be integrated into the existing management hierarchy of the firm. Literature thus indicates the importance of understanding the management of multiple business models through separate units linked by *integration mechanisms* (IMs).

The notion of a business model portfolio proposed by Sabatier *et al.* (2010) describes the application of multiple business models by a firm within the remit of a single strategy. In this sense this definition follows the view in this research and that by Casadesus-Masanell and Ricart (2010) that strategic change will be the change of the business model portfolio. Therefore, viewing a portfolio of business models as a strategic tool can potentially help to improve the coherence of a firm's resource and capability allocations between activities to deliver value propositions. The concept of a portfolio relates to corporate strategy as a way to combine market, business and associated activities to address different clients and markets. The case studies in Sabatier *et al.* (2010) on how small biotechnology firms use different business models reveal that when addressing new markets firms tend to add activities that relate to some aspect of their existing ventures, based on either the same core competence or competence developed to exploit common technological and market characteristics. Grounded in knowledge-based theory of the firm, Söderlund and Tell (2009) see the firm as an institution for integrating knowledge that faces two principal challenges: exploring new possibilities and exploiting what it already knows. Thus, these findings illustrate two managerial tasks to organizationally integrate the portfolio of business models: *core competence extension* (CCE) to enlarge markets and address additional customers, and *core competence redeployment* (CCR) to serve new markets with the same core competence. Thus, adopting careful management of a portfolio of multiple business models or as articulated by Söderlund and Tell (2009, p. 103) 'a key management task is the improvement of the architecture of the capabilities of the firm' theoretically permits a firm to diversify within its operational sector and extend its operational range (Sabatier *et al.*, 2010).

Model of analysis

Our model of analysis has been synthesized from different theoretical frameworks to picture the dynamic development of a business model portfolio in a long-term perspective (about 15 years). At the centre of our model of analysis is the portfolio of business models based on Casadesus-Masanell and Ricart (2010) and Sabatier *et al.* (2010) together with a business model construct from Brege *et al.* (2014). This portfolio of business models has been developed and changed under influence from important triggers which we call critical strategic incidents. In our analysis these critical strategic incidents most often have the character of overall decisions of investments into different kinds of resources or change of company ownership. In close interaction with the development of the business model portfolio are the 'tools' for managing the portfolio, in our model labelled as core competence extension, core competence redeployment, and integration mechanisms. The dynamic character of our model is 'closed' by adding the variable *economic performance* as the result of the implementation of a business model portfolio for one time period and where at the same time the economic performance serves as an input to new critical strategic incidents and change of management tools in the next period (see Figure 1).

Methods and theoretical reflections

This research is based on an explorative longitudinal case study of one company: Masonite Beams. The overall aim is to increase the understanding of the management of existing and emergent business models, with a long-term perspective. Qualitative process research methods were applied to capture the business context in terms of apparent phenomena (Cronbach, 1972; Yin, 1994) and specifically the progression of events and consequences in, and external to, the case company following Langley *et al.* (2013). The building component supplier Masonite Beams was selected as a case company because it had three particularly relevant characteristics. The company is a typical manufacturer

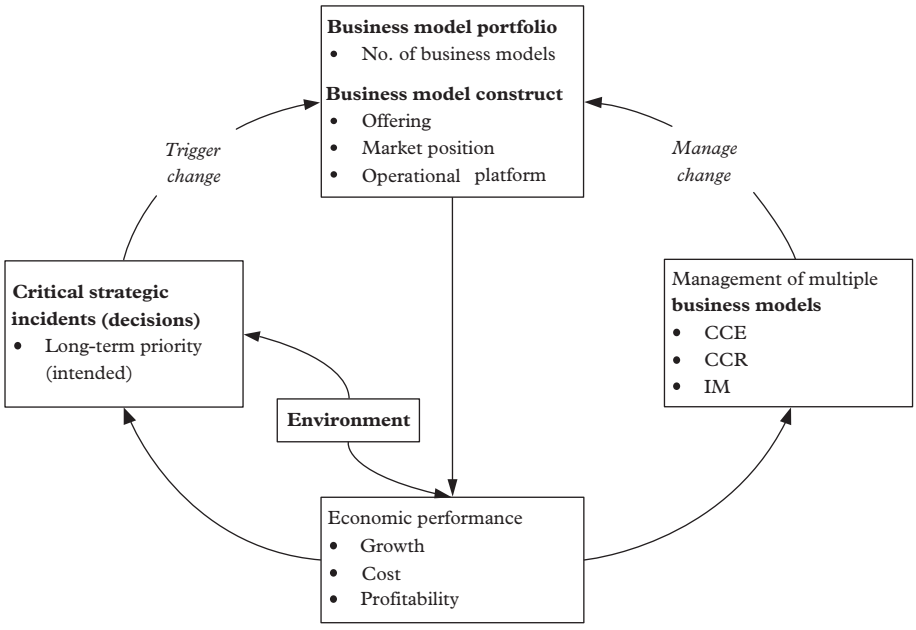

Figure 1 Model of analysis

in the construction industry, where volume production has to be managed together with various customized building projects. This has led to conflicts related to management of resources and deployment of firm core competences and a fit of several concurrent business models to their markets. The case company also expressed willingness to participate in the research to assist its efforts to understand how it could combine standardized and low cost volume production with customized production and differentiation to specific building projects. Furthermore the first author has an affiliation with the company, facilitating access to unpublished information regarding key historical and current critical incidents and financial data. The study period started in 1997 because Masonite Beams then became a separate business unit, with separate accounting of finances and traceable strategic decisions mentioned in management protocols. The data was gathered until the end of 2013 and analysed during 2014.

The gathered data largely consists of chronological stories about what happened in the form of critical strategic incidents and the outcomes in the form of activities and choices for developing or managing existing or new business models. These settings can be related to 'process data' (e.g. Van de Ven and Huber, 1990) as process theories provide explanations in terms of the sequence of events leading to an outcome. The process was first represented using the visual mapping procedure of Langley (1999) and the qualitative data was decomposed by 'temporal bracketing' (Langley, 1999; Langley *et al.*, 2013) to construct phases as a progression of critical strategic incidents. The notion of phases or temporal bracketing based on theoretical mechanisms has been utilized by several authors to show temporal evidence of process data. Söderlund and Tell (2009) investigated how Asea/ABB developed organizational capabilities to execute projects drawing on the idea that during certain periods of time, called project epochs, a particular logic of project organization could explain capabilities to execute projects. From a process data point of view, Klarner and Raisch (2013) identified events defined as frequency and duration between changes to identify initiation of and the pace of change in long-term firm performance. MacKey and Chia (2013) created a case history and traced strategic choices and the consequences of them through time using their specific 'phase' logic of so-called unowned processes.

The power of temporal bracketing lies principally in its capacity to enable the identification of these specific theoretical mechanisms recurring over time (Langley *et al.*, 2013). This research is grounded in the idea of identification of phases, and the emergence and change of a portfolio of business models over time, and how this change can be explained and associated to firm performance over time. A phase is defined as a specific business model portfolio including a discernible set of parallel business models operated by the company. Hence, shift of phases is defined as a change of that portfolio to another specific set of parallel business models.

Five workshops were held with the in-house management, in which different phases of the company's 15-year development were discussed to understand how critical incidents and decisions affected the company. A workshop lasted around two hours and included open questions related to the business model constructs (offering, market position and operational platform) during the time period. An overview of each part of the constructs was drawn by the workshop participants on a whiteboard, based on discussions around what had happened, and why, in these areas over the years. Results from the workshops were then combined to a longitudinal map utilizing the visual process mapping technique proposed by Langley (1999) where offerings, market position and operational platforms clearly could be understood over time. The longitudinal map was thereafter complemented with financial data and changes and decisions described in management protocols from 1997 to 2013, and the total map was discussed in a final workshop. The five workshops were held during a period of six months and where the in-house management developed a deeper understanding of business models and also expressed an 'aha experience' in the complexity of the management of a portfolio of them. A consequence of the workshops was that the in-house management decided to split the company into two separate business units in 2013.

Secondary data sources included structured interviews, also based on the business model constructs, held with Masonite Beams' production manager, purchasing manager, product developer and CFO, all of whom had been working in the company since at least 1997.

The data analysis was done, using the model of analysis in Figure 1, in five semi-parallel efforts to:

(1) Identify critical strategic incidents at the company level as deliberate decisions or changes and critical external (environmental) circumstances.
(2) Identify chronological/temporal phases separated by a change in the portfolio of business models triggered by critical strategic incidents. The identified phases are illustrated in Figure 2.
(3) Identify the elements in the separate business models based on the framework proposed by Brege *et al.* (2014).
(4) Interpret whether and how the critical strategic incidents had intentional or unintentional outcomes that refer to outcomes that are neither expected nor intended by the equivocality actors face in a response to a perceived uncertainty (MacKey and Chia, 2013; Hedgren and Stehn, 2014).
(5) Evaluate the management of the portfolio of parallel business models in a retro perspective to identify CCE, CCR and IM. Results of this evaluation are summarized in Figure 2 and Table 5.

Our theoretical contribution is a model to facilitate further understanding on how critical strategic incidents can trigger changes in a portfolio of business models and the management of that portfolio. The unit of analysis is the business model, the setting in its constructs and the management of the concurrent business models. This offered the researchers the opportunity to discover distinct phases and a management of business models that were not always obvious or even intended by the company. The data shows that actions taken by the company can probably be based on behaviour consistent with *rational choice theory*, which encompasses the notion of trying to maximize benefits while minimizing costs, based on the perceived likelihood of a potential outcome (Schacter *et al.*, 2011). The data also shows evidence of change initiated to outpace or copy rivals instead of taking decisions considering the firm's resource base as pointed out by Klarner and Raisch (2013). Also, the view of MacKey and Chia (2013) that unowned processes have an integrated internal (e.g. decisions) and external (environment) influence that yields consequences is acknowledged in this study as intended or unintended business models and unintended management, i.e., competences employed or integration mechanisms, of the portfolio of multiple business models. Therefore, we chose to interpret the critical strategic incidents as *intentional*. Similarly, we interpret outcomes that were in line with a taken decision to be intentional and interpret outcomes that were not in line with an intentional decision as *unintentional.* This corresponds by analogy to the proposition by Hedgren and Stehn (2014) based on the theoretical fields of decision-making and organizational information processing that if no exchanges of subjective views and perceptions are made, or even allowed, decision-makers will likely rely on cognitive rules of thumb based on past experience that do not apply to the novel decision situation.

We have applied several approaches to elucidate the company's organizational behaviour rather than seeking causal and general relationships. Such a 'multi-setting' where different approaches are used to provide a richer understanding is advocated by Dainty (2008) as a potentially powerful exploratory research design for construction management studies. There are however inherent challenges in a multi-setting perspective that need to be articulated: the general difficulty of obtaining internal company data

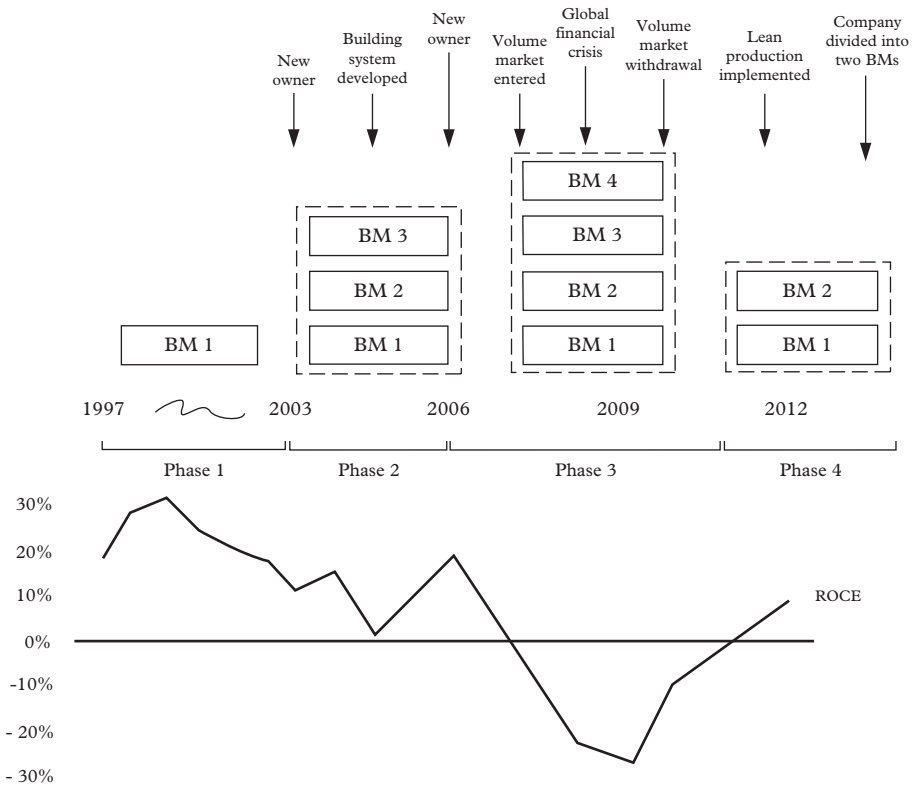

Figure 2 The portfolio of business models and ROCE performance

and the specific question of bias connected to the first author's affiliation with the company. The question of bias and reduced reliability due to this affiliation with the company is acknowledged. However, the empirical data in this study could most likely only be obtained by a researcher having the full trust of the company members. In order to validate the analysis and findings and to tackle the question of bias and reliability, data was gathered using multiple sources. The process for analysis in steps 2–4 (see above) was performed by the first two authors partly independently and the proposed results were then compared and discussed by all three authors. Furthermore, we validated the data by triangulation, i.e., checking the consistency of data by several methods (Rothbauer, 2008), including interviews and workshops with several members of the company's staff. In addition, we took an interpretive viewpoint when analysing the data to find unintentional outcomes as described in step 4 above. Thus, we are confident that we have accurately controlled the eventual bias and identified and validated the critical strategic incidents and phases.

Constructs and phases of business models portfolios

The main focus in this section is to discuss findings in relation to the second research question, i.e., to describe and analyse the development of a portfolio of business models with special attention to which changes can be seen as internal deliberate and which are unintentional and emergent. Results obtained from examining relevant documents and the transcripts of workshops and interviews concerning Masonite Beams' strategic decisions, associated incidents, business models and performance during four identified phases are described below, and both summarized and visually mapped in Figure 2. Eight observed critical strategic incidents triggered changes in Masonite Beams' portfolio of business models that distinguish the four phases in the 15-year study period. As illustrated in Figure 2, the critical strategic incidents included two ownership changes, five decisions/actions and one major environmental incident. The critical incidents were: to develop the building system, to enter new export volume markets, the global financial crisis occurred, to withdraw

from volume markets, to implement Lean production philosophy and to divide the company into two units with separate business models. The parallel business models in different phases are marked with a dashed line.

Return On Capital Employed (ROCE) is used as an economic indicator to identify how strategic decisions affected the case company's performance in each of the phases. It should be noted that ROCE should be used cautiously in this context, as it may be influenced by underlying external as well as internal business and economic factors and considerations (see descriptions below of actions taken that affected the company's ROCE in Phases 2 and 3). A historical overview of Masonite Beams before 1997 is given below to better understand the background and setting of the company.

Masonite Beams before 1997

The product of Masonite Beams was developed in 1974 as a result of the parent company that saw a fall in demand for its hardboard plates. A need for further refinement was clear and the world's first industrial producer of I-beams with hardboard in the web and structural timber in flanges emerged. The production and sales increased steadily during the 1980s, and the profit margin was very good, due to the uniqueness of the product and the product launch during the 1970s energy crisis where the thin web of the I-beam gave low thermal bridges. Masonite Beams became a separate business unit in 1997.

Phase 1

In 1997 the company focused on producing standardized I-beams in a broad product set at a low price. Major customers were industrial housebuilders, and the company only produced through direct customer orders, using two old production lines and a small administrative unit, thereby keeping costs at a moderate level. The ROCE was positive with a relatively low turnover, sales increased by about 36% per year and earnings approximately doubled over six years. Much of the profit increase was attributed to greater exploitation of current production capacity with the same fixed costs. At this time, Masonite Beams had a strong focus on value with a targeted customer base, focused marketing activities, appropriate resources and high business model awareness. The company had taken strategic decisions and actions regarding its customer base, required resources, etc. that collectively realized the business model and thus secured intended outcomes and performance. In Phase 1 only one business model (designated BM 1) was distinguished, briefly described, based on the framework presented by Brege *et al.* (2014), in Table 1. In Phase 1 no specific internal deliberate, or unintentional and emergent business model could be found.

Phase 2

In 2003 a new owner changed the focus from the production of standardized I-beams to their customization. Masonite Beams could then offer products with higher initial prices through a higher degree of prefabrication. The organization was expanded, as the offered products needed higher technical expertise to provide support to its customers. The company also invested in a modern saw line to cope with the customization. For three years sales increased by 60% per year on average, but profits grew substantially more slowly. The changes during the beginning of this phase can be seen as a deliberate outcome of a strategic action of a new owner with a new market focus. Awareness of BM 1 and the new BM 2 was present and the organization was expanded to cope with customer needs associated with BM 2.

During the middle of the phase, industrial building became a popular concept in Sweden, and Masonite Beams followed the trend and developed 'Masonite Beams Flexible Building system'. The system included innovative and patented technical solutions such as floor hangers and other solutions facilitating erection of prefabricated houses. Target customers were existing single-family house manufacturers. To demonstrate this new building system to the market the company engaged in a major construction project. However, only one new resource, a salesman with the sole target of increasing sales of the building system, was brought in. No other specific resources were secured to handle the business and operational logistics of housing

Table 1 BM setting in Phase 1

BM 1: 'Standard customer order production'	
Offering	Standard products in a broad product set
Market position	Industrialized housebuilders
Operational platform	Old production lines for customer order production of standard products with low prices and costs

construction, and specifically the technical designers had to split their focus between coordination of the new value chain and their ordinary tasks in BM 2. When the building system was subsequently developed as an outcome of the industrial building trend that led to a deliberate strategic decision, another concurrent business model (BM 3) was developed. However, there was no awareness of this business model as a parallel business model, and hence BM 3 can be seen as an unintentional outcome of a deliberate change that was founded in an external condition.

For BM 3 core competence was insufficiently extended to meet the need for new capabilities regarding housing construction. Instead resources from the operational platform of BM 2 were used, which can be seen as an unintentional action (and which also, unintentionally, weakened the resources available for BM 2).

Parallel to the development of the building system the company also decided to invest in an additional plant for customization of the standard product. During the end of this phase a relatively high upturn of the ROCE occurred despite low profits from the product sales because assets were revalued to show a higher profit before another sale of the company. This shows that ROCE is only an indicative measure of performance, but it can still indicate the outcome of changes in business models and business model elements. In Phase 2 three concurrent business models and critical change triggers and unintentional outcomes (marked in italics) were discerned using the model of analysis, depicted in Table 2 below.

Phase 3

Phase 3 was initiated following a sequence of strategic changes as another new owner bought the company and issued new directives to invest in a new production line for standard products to replace the two older production lines. The new board hastened the development of the new production line, but as in Phase 2 (for the building system development) the company's core business resources were utilized to develop its specifications. The in-house leaders were however still oriented towards customer order production and customization when the new production line was designed. Thus the intentional strategic decision of the company board was to increase the production rate of standard products, but the unintentional outcome was that the in-house leaders developed a production line for customer order production. To cover the investment, the board decided to expand into large-scale export markets, i.e., an intentional strategic decision to enter a new market niche. The outcome of this decision was that another parallel business model (BM 4) was unintentionally created (see Table 3). Investments in both production and sales organization were made for BM 4, but the focus of all the existing BMs was split or (in the case of BM 3) completely lost. Owing to the combined stresses imposed by large-volume customer demands for low prices, the complexities of maintaining a production line designed for customer order production, the ongoing development of the building system, and a simultaneous global financial crisis with a decreasing construction market, the ROCE dived. To significantly cut costs, a deliberate decision was made to reduce sales resources related to BM 2, because the company board thought that existing resources in other companies of the group could manage sales. However, the unintentional outcome was that sales of products linked to BM 2 rapidly declined as a result of loss of core competence related to BM 2's specific market segment.

Table 2 BM settings, change triggers and outcomes in Phase 2

BM 1: 'Standard customer order production'	
Business model settings as in Phase 1	
BM 2: 'Customized production'	
Offering	Customized products
Market position	Vendors and contractors
Operational platform	New saw line for product customization and broadened organization for sales and technical support with increased costs and prices
External conditions	*Industrialized building is a strong and new trend in Sweden*
BM 3: 'Building system'	
Offering	Building system development
Market position	House manufacturers
Operational platform	Replacement of core competence and system sales with high financial risks and low income
Unintentional outcomes	*BM3 is an unintentional parallel business modelWeakened resources for BM 2*

Table 3 BM settings, change triggers and outcomes in Phase 3

BM 1: 'Standard customer order production'	
The operational platform of this business model was amended (by installing a new production line and reducing the sales organization), but the other settings remained the same as in Phase 2	
BM 2: 'Customized production'	
The operational platform of this business model was developed (by installing a new saw line for customization), but the other settings remained the same as in Phase 2	
BM 3: 'Building system'	
The business model settings remained the same as in Phase 2	
External conditions	*Global financial crisis*
Internal deliberate change	*Investment in new production line* *Enter new export volume market niche* *Reduce sales organization for BM 2*
Unintentional outcomes	*The in-house management developed a production line for customer order production* *Another new and parallel business model (BM 4)* *Weakened resources for BM 2* *Decline in sales for BM 2*
BM 4: 'Volume production'	
Offering	Standard product in broad product set
Market position	Volume export customers
Operational platform	Production line for volume production, with low pricing and increased costs
Internal deliberate change	*Withdraw from large-scale export market*
Unintentional outcomes	*Remaining customers demand customer order production leading to costly high material wastage and long downtimes*

Table 4 BM settings, change triggers and outcomes in Phase 4

BM 1: 'Standard customer order production'	
Offering	As in previous phases
Market position	Shifted to industrialized housebuilders
Operational platform	Production line adjustment with further cost reductions
Internal deliberate change	*Implement Lean philosophy* *Split into two distinct business models*
BM 2: 'Customized production'	
Offering	As in previous phases
Market position	As in previous phases
Operational platform	Increased sales organization

Problems with the new production line emerged, and eventually the company decided to replace the newly installed line with another brand new line, completely adapted for volume production. The new plant worked much more efficiently, but the board eventually decided to withdraw from the large-scale volume export market, because the venture had been unprofitable due to the price cuts made to enter it. Furthermore, at this point remaining customers demanded small batches, and shifting between products took a long time with a material wastage of up to 14%. Summing up, a number of deliberate decisions and changes, together with external conditions, led to unintentional outcomes as the available resources no longer matched demands of remaining customers. In Phase 3 four concurrent business models together with change triggers and unintentional outcomes were discerned using the model of analysis.

Phase 4

In 2011 the company board decided to implement a Lean production philosophy. Slowly the company started to change its production approach to maintenance of small stock and used customer order management to minimize waste and costs, while simultaneously implementing practices to increase production flexibility. However, a decline in the construction market in 2012 had a negative impact on the ROCE.

In 2013 (after the five workshops were held) the organization became aware of the parallel BMs being applied, and the board decided to split the company into two units with distinct BMs, one focused on production of standard products and the other focused on customization. The two units were separated financially, but the company also saw synergistic benefits of keeping them within the same company. Specific resources and development work were shared, allowing the company to respond flexibly to shifts in demand for quantities and types of products by sharing resources between the two parts operating under different business models. The sales organization of BM 2 was also strengthened to cope with customer demands. In Phase 4 the company thus came to a new understanding of the reasons for the internal problems and losses of performance during Phases 2 and 3, and then acted to rectify previous mistakes, with focus on BM 1 (with some adjustments) and increased focus on BM 2. In Phase 4 depicted in Table 4, two concurrent business models and some internal deliberate and external changes were discerned using the model of analysis.

Managing multiple business models

The main focus in this section is to explain and discuss the third and fourth research questions. The company initially had a strong focus on value and awareness of the existing business model. However, during Phase 2 the company unintentionally attempted to apply three parallel business models, but failed to align them. When only BM 1 and BM 2 were present, Masonite Beams expanded the organization which can be regarded as an application of core competence extension (CCE) to manage the parallel business models. When the building system was subsequently developed a third business model was developed. The decisions following the building system development had the aim of developing a complete building system with new technical solutions and a building process control scheme was, in retrospect, clearly just following the 'building system development hype' present in Sweden at that time. Many competitors in the building projects market opted for customized complete systems. According to Sabatier *et al.* (2010), CCE is needed when a company enters a new position in a value chain, particularly if it does not extend its competence in the new value chain. This explains the consequences reported by the study participants: 'the company entered a new position in value chain with its new building system to act as a coordinator instead of the internally and externally acknowledged position of a component supplier'. Masonite Beams did not intentionally expand its competence accordingly. Instead unintentional core competence redeployment (CCR) occurred when technical designers linked to BM 2 instead were forced to act as coordinators in the new value chain targeted on BM 3. This eventually strained valuable resources critical for BM 2 that led to an unintentional loss of resources for BM 2. From an overall company viewpoint the existing staff was expected to handle all three business models. Instead unintended focus was kept on BM 1 and BM 2 that ultimately yielded deviations in all three business models. During Phase 2, BM 1 and BM 2 were tightly linked, while BM 3 relied on inadequate, unfocused and cannibalizing resources. During the progress of developing the building system, many technical in-house solutions and competence for product development emanated. However, neither the technical solutions nor the competence were employed in BM 2 (which could have been), and thus an integrating mechanism that could have been used to strengthen both business models (BM 2 and BM 3) was never utilized.

Phase 3 was obvious following a sequence of strategic incidents as another new owner bought the company and issued new directives to invest in a new production line for standard products. The intentional strategic decision of the company board was to increase the production rate of standard products, but the unintended outcome was that the in-house middle management developed a production line for customer order production still keeping the focus on BM 2 and even more diverting attention from the existence of BM 3. The investment was covered by an intentional strategic decision to enter a new market niche. The unintentional outcome of this decision was the emergence of yet another business model, BM 4. Investments in production and sales personnel as a CCE were made for BM 4. No managerial actions or decisions were made to manage all the existing business models. In fact attention to BM 3 was completely lost. In addition, sales resources related to BM 2 were significantly reduced to cut costs because the company board thought that existing resources in other companies of the group could manage sales. This is evidence of intentional CCR and prospective integrating mechanisms (IMs) with other resources in the company group. However, the unintentional outcome was that sales of products linked to BM 2 rapidly declined due to loss of core competence and available resources related to BM 2's specific market segment.

The company board however came to a new understanding for management of multiple business models in Phase 4. This relates to the awareness created by

participating in the workshops of parallel business models, a neglected long-term prioritization of some business models and lack of managerial actions to integrate, share or redeploy competence and resources between the business models. To enable management of the present business models (BM 1 with some adjustments and BM 2) in parallel, two units with distinct business models were created, with intentional use of synergies (intentional integrating mechanisms (IMs)) between the two business models. The split addressed, for example, the need for CCE to develop new sales and technical resources for BM 2 to remain competitive in its focal market segment.

The actions of allocation of resources and/or IMs, or lack of these actions (interpreted as unintentional awareness), that followed the critical strategic incidents affected the management of the portfolio of business models and the performance of Masonite Beams. In Phases 2 and 3 decisions were clearly taken not from the perspective of managing a portfolio of business models, but rather as general strategic responses to topical market conditions. While the strategic decisions were intentional, they caused the emergence of unintentional business models. These unintentional models (primarily BM 3 and BM 4; Table 5) were not appropriately addressed and prioritized, as evidenced by the lack of significant action (such as core competency strengthening, CCE) to support their associated market positioning. Consequently, BM 3 was unsuccessful, a general effect of inadequate core competence extension and/or redeployment also demonstrated by Sabatier *et al.* (2010) and pointed out as the key managerial action by Söderlund and Tell (2009). The salient evidence is that optimization of the money-earning logic of BM 3 was not acknowledged or addressed. The temporal empirical perspective of the data shows the anticipated link in this research of critical strategic incidents as factors that influence business models and not a part of the business model constructs in terms of the need to align business models in a portfolio. When multiple business models were recognized in Phase 4 the company decided to split the company and manage the two parts as separate units, but with integration mechanisms, in accordance with proposals by O'Reilly and Tushman (2004) and Markides and Charitou (2004). This 'aha experience', triggered by the internal workshops, of a new understanding about the lock-in effects in the portfolio of business models created by earlier actions taken is very much in line with MacKey and Chia (2013, p. 209) stating that 'the organizations very act of choosing a particular course of action generated the unintended consequences it subsequently faced'. A summarization of the main findings, regarding synergies, interactions and outcomes (in italic) in the management of the BM portfolio is shown in Table 5.

Table 5 Phases related to management of multiple business models

	Phase 1 (BM 1)	Phase 2 (BMs 1, 2 and 3)	Phase 3 (BMs 1, 2, 3 and 4)	Phase 4 (BMs 1and 2)
Long-term priority (intended)	Initial strategic decisions regarding targeted customers, marketing and resources *(Adequate management of existing BM)*	Awareness of BM 1 and BM 2 Lost focus on BM 3 *(Unintentional attempt at three parallel BMs)*	Unintentional new BM 4 parallel to BMs 1–3 Split focus on BMs Lost focus on BM 3 *(Unintentional attempt at four parallel BMs)*	Intentional focus on BM 1 Increased focus on BM 2 *(Adequate management of existing BMs)*
Core competence extension (CCE)		CCE for new market niche No CCE for BM 3 *(Adequate resources are missing for BM 3)*	Production and sales CCE for BM 4 Decrease of sales resources for BM 2 *(Adequate resources are missing for BM 2)*	CCE in sales for BM 2
Core competence redeployment (CCR)		CCR from BM 2 to BM 3 *(Unintentional loss of resources)*	CCR from BM 1 and BM 2 to BM 4 *(Unintentional development of machinery not in line with new BM)*	
Integrating mechanisms (IMs)		BM 1 and BM 2: tightly linked BM 3: stand-alone *(Developed competences are not integrated between BM 3 and BM 2)*	Prospective IM in core competence from other companies *(Unintentional loss of sales due to missing adequate sales core competence when IMs are used)*	BMs 1 and 2 split while retaining synergies *(Intentional use of IMs to strengthen BMs)*

Discussion

Several management approaches inform the model of analysis. The multi-method approach (theoretical interactions and multiple methods of data gathering and analysis) used in this paper is *primarily* based on the approaches of Casadesus-Masanell and Ricart (2010) on strategy vs business models; Brege *et al.* (2014) on business model constructs; MacKey and Chia (2013) on intended and unintended actions; Sabatier *et al.* (2010) on management of a business model portfolio; Langley (1999) and Langley *et al.* (2013) on process data analysis and decomposition.

Masonite Beams, active in the construction industry, tried to combine standardization of production with various customized building projects. The results presented point to conflicts regarding several parallel business models. From a temporal process view on a portfolio of business models perspective the four phases are quite distinct. Critical strategic incidents triggered the extension of old business models, and unintentionally created new ones. The case company was insufficiently aware of the fact that strategic decisions and events led to the development of new business models and eventually to a portfolio of diverse business models that was not purposefully prioritized in the long term. Accordingly, this study shows that critical strategic incidents can (intentionally or unintentionally) trigger changes in business models and the management of a portfolio of business models. This follows the reasoning in Casadesus-Masanell and Ricart (2010) that 'strategy' should be considered a factor that influences business models, rather than a construct of the models. Notably, several authors question the inclusion of strategy in the business model concept (e.g. Stähler, 2002).

Instead of refining and prioritizing a business model, several business models with different value logics were treated under the belief of the handling of one common building component strategy. The empirical evidence demonstrates that instead of refining and prioritizing separated business models, signs of unintentional management of the portfolio of business models related to CCE, CCR and IMs are visible in the changes in ROCE illustrated in Figure 2. When unintentional CCE, CCR and IMs became intentional for Masonite Beams, ROCE increased, indicating an improvement in company performance. Klarner and Raisch (2013) studied initiation of strategic change, not consequences of strategic incidents (changes) as presented herein. However their study indicates that repeat change and the timing of initiating change have an effect on performance. In this terminology, Masonite Beams evidently initiated irregular business models changes as responses to incidents. Thus, leaning to the explanation of Klarner and Raisch (2013) that frequent and irregular change is negatively associated with long-term performance helps clarify the decreasing RCOE performance. Clearly, further theoretical grounding and empirical validation are required to enhance the theoretical rigour for the third research question on how management of a portfolio of business models is related to the established core competences (CCR) of the company and what new competences (CCE) need to be added and to which and to what degree business models are organizationally integrated or separated (IMs).

Conclusions

The management of multiple business models touches upon a classical problem within strategy, that could be expressed as 'what is the proper size of a strategic business unit within larger companies?' A strategic business unit is an organizational unit that is in control of its own strategy, preferably with own customers, own competitors, etc. (cf. Porter, 1985). A mismatch between strategy and organization can lead to weakened performance, which at the level of large corporations was first shown by Chandler (1962) pointing out the problem with running a conglomerate strategy within a basically functionally organized corporate organizational structure.

What is interesting is that our case company, Masonite Beams, could be said to follow the advice of Chandler and Porter and others to create business units focusing on one strategy per unit, in this case a component strategy of wooden building material. The problem is that this component strategy could be further broken down into different business models that needed to be handled differentially within this same organizational unit (which was functionally organized). The problem was really, that the board of directors and the management team thought they were managing one strategy, when in reality the challenge was to manage a portfolio of business models. As a result of that lack of insight, a number of deliberate decisions regarding investments in new product lines and in new competences as well as divestments led to unintended consequences. The mismatch between intended decisions and unintended consequences was so big during Phases 2 and 3 that we have chosen to regard (interpret) the introduction of both BM 3 and BM 4 as unintended (emergent). We also saw business models cannibalizing on resources and overall a lack of strategic focus.

When looking at the performance of specific business models we can clearly see that the lack of a business model portfolio perspective led to a set of 'unbalanced' business models with different kinds of

misfit between market positions, offerings and operational platforms. In terms of Mintzberg (1983) there was a lack of congruence between the environment and the business model (principle of congruence) and especially there was a lack of configuration between the different business model elements (principle of configuration). Both BM 2 and BM 4 had recurrent problems in matching standardized versus customer adapted. BM 2 delivered customization at a high cost and BM 4 ended up with a production platform for large-scale standardized offerings and a customer base that wanted customer adaption in small volumes. The unintentional development of BM 3 experienced drawbacks in demand and profitability due to inadequate resources in technical development but also marketing. The most robust business model over time was BM 1 with a standard product line directed to customers that settled for standard instead of more prefabricated customer adapted components.

Another empirically drawn conclusion is that management attention to the portfolio perspective can be of great help. In our case, when management finally took the notion of business models in a portfolio context to their hearts, positive change occurred. Two business models were abandoned and the two remaining were fine-tuned for better internal fit between business model elements and also organizationally separated. It was also a positive move to further adapt to the principles of Lean, which helped improve the fit between the operational platforms on one side and the offering and market position on the other. An increased awareness of the need for integration mechanisms was also important, both the organizational separation between the business models but also the need for an integrative use of resources in the operational platforms.

In summary, our case study shows both the pitfalls when overlooking that one strategy can contain different business models and also the gains when a strategy is deliberately managed as a portfolio of business models.

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