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Editorial: New Ways of Developing and Analyzing Business Model Innovation

Guest Editors: Dirk Lüttgens¹ and Marco Montemari²

The highly competitive, hyper-dynamic, and global business environment has tremendously increased companies' awareness of the relevance of Business Model (BM) innovation (Taran et al., 2016). Companies are forced to rethink and innovate their BMs more frequently and more radically because of ever-shorter life-cycles of products, services, competencies, and work tasks, on the one hand, and highly competitive conditions, on the other (Sosna et al., 2010; Achtenhagen et al., 2013).

Over the last few years, large and successful companies have been coming to the realization that their current BMs could rapidly become obsolete in the face of competitors who are adopting new and disruptive emerging technologies or BMs (Cavalcante, 2013). Despite the understanding that BM innovation is of great concern to managers and practitioners who aim to secure competitive positioning of their companies in the market place, many issues regarding how the existing BMs can be refined, redefined, and renewed need to be further investigated. The following questions were posed to potential contributors:

- How can companies identify disruptive BMs?
- What determines successful pioneer and follower strategies with BM innovations?
- How can companies use patterns as tools for developing BMs?
- How can a transformation of the existing BM be organized to lead companies to success?
- Which kind of tools, solutions, frameworks, organizational choices and managerial practices can be used to support BM innovation?

The aim of this Special Issue is to expand and advance the current knowledge on these aspects, highlighting work that makes significant theoretical and empirical advances on new ways of developing and analyzing BM innovation. Consistently with this aim, the papers included in this Special Issue address several different new facets and aspects of BM innovation, thus adding new perspectives to this research stream.

Beyond the question of how new BMs can be generated systematically, one of the biggest issues for companies is whether or not their BM still fits the market

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requirements. In particular, how can managers roughly gauge the performance of their company and their underlying BM? In the paper by Schüle et al. an assessment framework is developed with the support of six construction companies. It can be seen as a starting point for a deeper analysis of a company's BM and as an initial activity that helps to direct a change process within a company. The assessment consists of 19 different design fields which were additionally structured by means of Osterwalder and Pigneur's Business Model Canvas. Managers will be able to utilize the tool in the future as it allows them to conduct a "health check" of their company's BM.

Developing new BMs is a risky and uncertain task. If managers know that they have to change their BM, what often remains uncertain is how many and which elements of it they need to change. This question is the starting point of the paper by Lüttgens and Diener which aims, first, to shed light on how companies are able to overcome BM threats by using BM patterns and second, link these to the value dimensions of a BM. The idea is that innovative BMs can be created by rearranging and composing existing patterns. Based on the 55 different BM patterns identified by Gassmann et al. (2014), Lüttgens and Diener analyze the effect of such patterns against the threats to a BM by using Porter's five forces. The Porter framework describes the competitive forces within an industry and can help to analyze the strength of threats to a company. The quantitative study analyses how BM patterns can be combined in order to counteract Porter's five forces and to create successful BMs. As a result of this study, managers are able to not only react to different threats in a systematic way, but also to help companies use systematic combinations of these patterns to mitigate the threats.

Complementary to the already existing view of BM innovation as a singular and separate management task within one organizational unit, the paper by Sachsenhofer analyses the concept of BM portfolios in large firms. Large firms have to face several challenges when they start to change their BM logic. In particular, they must consider whether and how changing certain elements of BM A influences elements from BM B within the same company. Therefore, the management of BM portfolios opens up a wide range of managerial possi-

bilities. Managers of corporate BMs are no longer limited by an option space that comprises only restraint, incremental improvement, or abandonment of the existing BM. In order to map the opportunities of developing BM portfolios, Sachsenhofer looks at several automotive corporations and their operations. He evaluates the scope of their production in terms of what operations, in the wider ecosystem revolving around the car, are done within the firm and which ones are usually done outside it. In the end, for practical purposes and to show the different types of BM portfolio logics, the BMW AG case offers both a broadened scope of types of interrelation as well as a concise logic of how they interact. Based on this analysis, Sachsenhofer defines four different types of managerial actions for managing BM portfolios: BM reconfiguration, BM innovation, BM elimination, and BM coordination.

Finally, when it comes to designing and implementing a process of BM innovation, the demand-side can also play a relevant role. The paper by Zalewska-Kurek et al. aims to explore how both the market and potential customers can influence decisions concerning BM innovation. While the idea of involving consumers in the creation of value is not new and dates back to the 1980s, BM literature often sees the customers only as the addressees of products and services and, therefore, it does not keep up with the demand of firms to integrate customers in the development of BMs. By gathering data from nine firms through interviews and analyzing the data collected by using the grounded-theory method, the Authors identify two emerging themes: one regards engaging with the market and the other concerns experimentation with BMs and changes made after reviewing the situation on the market (the firm's responsiveness). Taken together, firm responsiveness and market engagement are used to establish four categories of firm types: passive, active, unfocused, and focused. The Authors observe that experimenting with BMs is high in the first phases of life and dwindles to nearly nothing in the market introduction phase. Engaging the market also changes over time, going from being less engaged at the start to having more interaction with customers and/or users at the end.

In closing, it can be stated that the field of research concerning BM innovation is currently in a consolidation phase; while it still contains several research gaps,

it also offers many possibilities for future research. In our opinion, the following four avenues for future research on BM innovation could be particularly fruitful:

- Developing and enriching the patterns library: further research is necessary in order to complete the library of BM patterns and to create a tool similar to the well-known TRIZ (“Theory of Inventive Problem Solving”) approach. TRIZ is a problem solving method based on logic and data, which relies on the study of patterns of problems and solutions. It is based on the assumption that “somebody somewhere has already solved this problem (or one very similar to it)”;
- Developing web-based applications: existing tools mostly exist in offline versions which hinder both communication and collaboration outside of entities as well as organizational implementation. Furthermore, both existing web-based applications and offline tools are, in most cases, stand-alone solutions. Further research should invest in developing integrative web-based applications for the development of new BMs. Therefore, BM researchers should learn from the OSS literature stream,

which offers several approaches for open development;

- Looking more closely at the performance implications of changing a company’s BM: our assumption for future research is that certain types of behavior in terms of BM innovation will lead to differences in performance (e.g., faster time to market, higher customer satisfaction, higher revenues, lower costs);
- Exploring the levers and the barriers that can enable or hinder the process of BM innovation: future research is needed in order to understand what actually happens in companies in which a process of BM innovation is implemented, to provide insight on what works and does not work, as well as on the reasons for negative or positive experiences.

We hope that the reader will find the papers included in this Special Issue of interest. We would also like to thank all of the reviewers who contributed with their time, effort, and comments to push the Authors to do their best. Our special thanks go to Professor Christian Nielsen, for his support during the production of this Special Issue.

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Development of an Assessment Tool to Evaluate and Improve SME Business Models

Stephan Schüle¹, Michael Schubert², Christian Hoyer³ and Klaus-Michael Dressel⁴

Abstract

Purpose: The approach presented in this paper addresses entrepreneurs and managers of SMEs in the construction sector that are willing to refine their current business model.

Design: The main scope for defining the assessment was the transformation of generic industry performance indicators into a framework that encompasses the needs of SMEs in the construction industry. The assessment comprises for example typical key success factors that are relevant in the construction sector. These are for instance aspects like project management capabilities, implementation of risk-management mechanisms or mastering the value network in the construction sector.

Findings: The set of indicators we identified is thematically aligned to the Osterwalder Business Model Canvas which means that nine aspects of a business model are distinguished and elaborated in the assessment. For each of the indicators questions and respective multiple-choice answers were formulated to identify the degree of performance achieved by companies conducting the assessment.

Originality / Value: The framework distinguishes from existing approaches concerning the complexity. The developed tool is the initial ignition for managers to start change projects in their companies. The idea is to help entrepreneurs in their strategic decision-making process and to enable them to control their complex and continuously progressing company environment. In the future, it is envisaged that the assessment, implemented as a self-assessment tool, will be part of a holistic approach.

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Keywords: Business Model; SME Self-assessment; Construction Industry

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Introduction

This paper aims at developing a business model assessment for locally acting medium-sized companies of the construction industry who offer solutions of high to medium complexity to their customers. In particular, this assessment should give first orientation especially to managers who want to adjust their business model to changed environment conditions. It is designed as a self-assessment, reviews the main aspects of a business model and has been created as lean as possible.

The assessment is based on a performance factor analysis, derived by comparing different literature sources. This initial assessment was reviewed and enhanced with experts from the construction industry.

The framework described in this paper is a helpful tool for managers of SME to roughly gauge the performance of their company and business model. It can be seen as a starting point for a deeper analysis of a company's business model and as initial activity that helps to direct a change process in a company.

The working structure of this paper is broken down into six chapters, as described in the figure below.



Figure 1: Working structure of this paper

Trends and the state of the art in business models for the construction industry is explained in chapter 2. The research approach used to develop the assessment is

described in chapter 3. Chapter 4 gives an insight into the different performance factors of the assessment framework. The conclusion, implications and next steps are reported in chapter 5.

Trends in business models of the construction industry

Since the economic recession has bottomed out in 2005, the European Construction Industry is still struggling. As opposed to other regions, Europe was not able to establish continuous growth in the construction industry during the last years (Statista 2015).

Facilitated by continuous instability during the last years, many building contractors need to reorient. Especially the European climate targets offer a high growth potential for companies focussing on the refurbishment of buildings (Saheb et. al. 2015). Adjusting to this situation, many companies have to change their competitive strategies or changed and adjusted their whole business model. The refurbishment of existing buildings is an attractive market for companies of all sizes. Additionally, large construction companies are expanding in emerging markets. Moreover, a change of strategy in the field of services has taken place (Schober 2011). This means that companies are not limited only to mere construction activities or services related to construction. In the future, the construction industry is expected not to increase as much as many years before but the growth trend promises improvement. The long-time image of being a risk sector does not exist anymore which is also visible through banks having increased the loan volume for the construction sector. However, not all weaknesses have been overcome so far. A time driven business rivalry has been existing for many years instead of a preferable competence-oriented competition.

Traditional business models like general contractors or total contractors are no longer the benchmark in the construction industry. During the last years and also today, new models like GMP-models, open books, IPI contracting (e.g. Performance or Energy contracting), OSS, Target costing and the consideration of the building cycle have gained more importance and are still developing (Gralla 2001, Mahapatra et al. 2011, Heilfort 2004, Bertoldi et al. 2014, Cabinet Office 2014).

The main goal of all models is to enable transparency, partnership and trust between all participants but most of all between customer and contractor. As a rule, for this purpose targets are set like cost targets, time lines but also corporate objectives like energy consumption targets or life-cycle costs of the renovated building.

So-called energy performance contracting is also highly attractive. The contractor commits to provide energy, including operation, maintenance and exchange of the corresponding infrastructure. The main contract is based on specific energy (cost) saving whereby measures for energy saving and for improving energy efficiency are taken. As guaranteed savings, these improvements include the systematic and overall optimization of facilities and building. The contractor receives these saved energy costs or bonus payments proportionately as a compensation for his investments and services for a defined period of time. Such energy saving contracting has the advantage that needs are adjustable in a highly flexible way to customer instructions (Decc 2015).

All new business models aim to improve the customer interface. However, the customer interface cannot be regarded separately but effects with all building blocks of the business models have to be considered. In this case the changes concern all companies in the construction industry, regardless of the size. Summarizing all aspects, it can be stated that in the future SMEs will collaborate to offer business models covering nearly the whole value chain and providing a holistic service portfolio to customers.

Research

The research covered the analysis of cross-industry performance factors and in particular those that are related to the construction sector. Industry performance factors were derived from various business model approaches and extracted from strategic management literature. A set of factors was derived from the work related to industry models by Kern in 2014 (Kern 2014). Some others can be found in literature related to business models (Osterwalder 2010; Hamel 2002; Pateli, Giaglis 2003; Johnson et al. 2008; Linder, Cantrell 2000; Bouwman et al. 2005; Teece 2010. Voelpel et al. 2005, Porter 2008) and finally there is also literature with a focus on the construction industry (AK Partner-

schaftsmodelle 2005; Girmscheid 2010a; Giesa 2010; Girmscheid 2010b) that proposes performance factors. The industry performance factors of the different literature sources were compared against each other and doublings eliminated. Finally, they have been discussed and prioritized with industry experts.

Based on those industry performance factors, design fields were derived and defined. The design fields are not overlapping and have been validated with academics and industry experts.

The next step comprises the identification and definition of different characteristic per design field, whereas the characteristics should be without any overlap against each other. The characteristics were defined in a way that they are representing different maturity levels of the corresponding design field. In the following, the list of the 19 design fields that have been defined for the self-assessment is presented:

- Competitive strategy (Porter 2008, Schober 2011)
- Efficiency and sustainability of business models (Schober 2011, Drucker 1963)
- Acquisition of projects (expert interview with a construction manager)
- Degree of the technological interweavement (Kern 2014, expert interview with a construction manager)
- Project management (Heilfort 2004, Girmscheid 2010b)
- Risk management (Girmscheid 2010a)
- Assets, resources and competences (Heilfort 2004, Ewald 2012)
- Appropriate offers (Heilfort 2004, Racky 2004)
- Environmental conditions of the market (Schober 2011)
- Power over suppliers (Porter 2008, Schober 2011)
- Customer orientation (Osterwalder 2010, Schober 2011)
- Corporate culture and human resource management (Lies 2014)
- Investment in knowledge base (Davenport 2000, expert interview with a construction manager)
- Power over buyers (Porter 2008, expert interview with a construction manager)
- Degree of network competence (Thorgren 2009, Schober 2011).

- Contracting models (Gralla 2001)
- Quality management (Girmscheid 2010a)
- Revenue streams of the company (Osterwalder 2010, expert interview with a construction manager).
- Project cost structure (Osterwalder 2010, expert interview with a construction manager)

It has to be emphasized that the number of maturity levels were restricted to three. The idea was to avoid complexity by developing a high number of maturity levels for each design field. Practitioners should be able to do the self-assessment in a short time. Several successful examples from different application areas and industry sectors show that frameworks with a low number of maturity levels can serve the needs of the industry (e.g. CMMI Framework (4 capability levels), Fraunhofer RnD-Assessment (4 maturity levels)).

With the support of six construction companies, the assessment was revised and adjusted. As a result, the mentioned 19 design fields were approved by the companies and the content revised to some extent. Since the assessment has been designed especially for medium-sized construction companies, this target group has also taken part in the validation process. Two medium-sized construction companies and one medium-sized consulting company from Germany have validated the assessment. Additionally, a company from Finland and one from Spain supported the beta-tests.

All companies did the self-assessment and identified gaps in the design field as well as unclear points in the description of the design fields and in the maturity levels. Strengths and weaknesses identified in this process were discussed with the project managers and CEOs in order to ensure that the assessment screens most important aspects in a coherent way. Summarizing, it can be stated that the assessment could be validated in different use cases.

Assessment Framework

The assessment consists of the above mentioned 19 different design fields which now will be illustrated in detail. These design fields have been structured additionally by means of the Osterwalder Business Model Canvas (see Figure 2).

This is intended to guarantee that all necessary aspects of a business model have been considered. The Osterwalder approach has been chosen due to the following arguments:

- The Osterwalder approach was used to describe business models in different sectors (e-business, discrete manufacturing, consumer goods, service companies) (Osterwalder et al 2010). This means that the approach is flexible and generic enough to be used also in the construction industry.
- The network perspective is a building block of the Osterwalder Canvas. Since this is truly becoming a

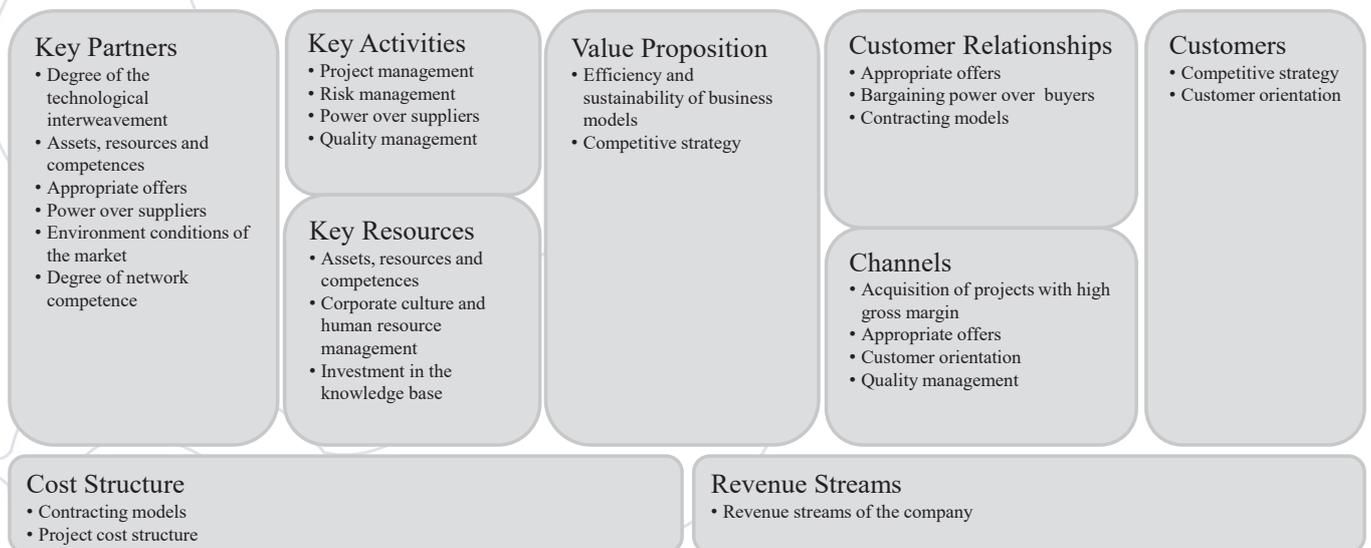


Figure 2: Assessment Structure

focal point for SMEs in the construction sector, it is an important criterion for the selection of an adequate modelling framework.

- The Osterwalder approach was applied regularly in the industry during the last years which means that it is proven to be appropriate for practitioners.
- All well-known approaches can be mapped with the building blocks of the Osterwalder model (Schuele, Sturm 2012).

The mapping of the 19 design fields also reveals key levers of a construction sector's business model. Both the partner network and the customer interface are influenced by many different aspects which have to be controlled. The structure and the management of the project network mainly influence the project success.

Due to thematic overlaps, some buildings blocks are multiply. However, design fields which have been mentioned two or three times are not more important than others but are of more generality as others. This applies to the design fields "Competitive strategy", "Assets, resources and competences", "Power over suppliers", "Needs-based offers" and "Quality management". In a first step, each design field being part of this assessment is explained clearly for the practitioner. The respective overall meaning is explained and, if possible, particularities or examples from the construction sector are added. Self-assessment of the company takes place based on maturity levels. For each view on the business model, two or three different maturity levels are defined.

Competitive strategy

Competitive strategies are strategies on company level in order to get or create competitive advantages on company level (Porter 2008). If the envisaged competitive advantage is only aimed for a submarket, we speak of a concentration on focus areas (niche strategy such as housing, local civil engineering or renovations). However, rapidly expanding companies still try to cover the entire design and construction process. Typical examples of the construction industry are companies with a broad product portfolio that have either a high vertical integration or act as a one stop shop in the market (Schober 2011). Based on a diversification of the product portfolio, demand fluctuations can be compensat-

ed and risks can be avoided. A good balance between customer value and price for the service offered should always be achieved. With the help of a good business model, a company can dominate its market segment. Thereby its competitive strategy is consciously developed, implemented and scrutinized regularly. Poorly elaborated business models in the construction industry are characterized by the fact that market shares are declining, competing products are preferred by customers and that the insolvency risk is increasing.

Derived maturity level:

- Good: The business model enables companies to be one of the leading actors in his market segment. The competitive strategy being the basis of the business model is developed consciously, realized and questioned on a regular base.
- Intermediate: The business model still ensures economic growth. Although the company responds to market changes, it will not dominate the market. The approach to strategic orientation and business model development has not been formalized.
- Bad: Market shares decline, competitor products are preferred by customers, the risk of insolvency exists. There is neither a deliberate competitive strategy nor a deduced business model.

Efficiency and sustainability of business models

The efficiency and sustainability of business models must always be considered in combination. A high flexibility of the company is needed to overcome projects and their challenges such as bureaucratic hurdles easily. In the foreground is the response time of the company to serve customer needs quickly with minimum effort (Schober 2011, Drucker 1963). Sustainability in the construction industry means that customers are satisfied permanently and that ecologically and economically integrated solutions are implemented for them. A high efficiency and sustainability is defined by the right balance of total costs for the value proposition and the company's profits, whereby customer loyalty is high. Efficiency and sustainability are low when the majority of completed projects are characterized by a negative balance and there is no customer loyalty.

Derived maturity level:

- High efficiency and sustainability: This is defined by the right balance of a company's total costs of

values and profits. Customer loyalty is high.

- Intermediate efficiency and sustainability: The company is still profitable, however, the margin compared to competitors is low due to high development and project costs. Customers move to competitors.
- No efficiency and sustainability: The majority of projects being handled has negative results. Company viability is endangered. There is no customer loyalty.

Acquisition of projects

One of the most important acquisition methods in the construction industry is still the word of mouth but, of course, an excellent reputation must exist. If this is not sufficient, additional marketing measures have to be initiated. For example, companies can selectively improve their profile and act as holistic, green or cheap construction companies on the market and thus address specific customer groups.

Meanwhile, new tender forms (e.g. internet auctions) are used. Although this results in transparent pricing mechanism, it usually affects also corporate profits in a negative way. In contrast to classical negotiations, proximity to customers is neglected (as one main focus of SMEs) through internet auctions. Independent of the company size, an above-average equity capital ratio helps if the company's goal is to participate in larger projects.

Derived maturity level:

- High success rate: It is easy for the company to acquire projects with large contribution margins.
- Intermediate success rate: The company has average success in the acquisition of projects with large contribution margins.
- Low success rate: Projects with large contribution margins are rarely acquired.

Degree of the technological interweavement

The degree of technological interweavement describes the interdependencies between network partners in a value chain due to components or trades or to the complexity growth by interweaved different technologies which require a common and early planning (Kern 2014). Especially in key trades, such as facades or the technical building orientation, it is important that part-

ners are involved at an early stage to help managing and optimizing the system parameters and to ensure process quality and process stability. In case of bad technological interdependence, the company provides primarily isolated solutions to the customers.

Derived maturity level:

- High: Large-scale projects being handled by a company usually have high technological interweavement. Complex structures and technical systems are realized with partners. In accordance with their task formulation, technological interdependence of smaller projects is mostly low.
- Low: Primarily, isolated applications having low technological interweavement are offered to the customer. This is independent from project size and thus applies to small and medium undertakings.

Project management

Project management is a key component in order to carry out a construction project within the contractual limits of time, cost and quality. Especially work covering overlapping trades is challenging for responsible project managers. A good project management works solution-oriented to counteract any problems as early as possible.

The range of tasks of project management includes, for example, professional purchasing- and partner management, tendering, construction site organization, project controlling or interface management (Heilfort 2004, Girmscheid 2010b).

Companies acting in networks need to synchronize their project portfolios when they want to succeed (multi-project management). Poorly managed projects exceed again and again the given time and budget or do not lead to a final result which corresponds to the expected quality.

Derived maturity level:

- Structured: Project managers or site managers in a company are able to coordinate value networks and to reach project goals agreed with the client. The experience of project managers or site managers within a company is high.
- Unstructured: Projects are managed without de-

tailed planning in accordance with arising requirements within the project. Projects exceed the given time and budget frame.

Risk management

Especially in pre-contact phases, corresponding risk management is often not done or not carefully enough performed. Problems occur during the project if risk analysis has not (sufficiently) been carried out. The overall objective is to increase customer benefits and to decrease the own risk. In addition to efficient project and cost controlling, an adequate equity base reduces the entrepreneurial risk in case of payment default/debt default in the construction sector. Each project manager should be able to establish a project-related risk management in his projects. Structured risk management makes risks and effects visible at an early stage and enables appropriate countermeasures. In this way, project cancellation can mainly be avoided (Girmscheid 2010a).

Derived maturity level:

- Structured: Project risks are managed in a structured way. As a result, risks are detected at an early stage, effects are made visible and measures are determined which are monitored continuously.
- Partially structured: Project risks are managed in a partially structured way. Most risks are detected at an early stage. Unrecognized risks do not cause project cancellation but are removed with great effort in the course of the project.
- Unstructured: Risk management is not part of project management. In the past, unrecognized, serious risks have caused project cancellation.

Assets, resources and competences

SMEs often do not have all necessary assets and competences for offering a service portfolio to customers. To manage and carry out larger renovation projects, complementary knowledge, competences and equipment are necessary which are covered by a partner network. Among other things, during the construction phase it is possible to call for tenders in the partner network and therefore jointly offer a solution in early project phases (Heilfort 2004). It is also most important to have access to experts and subcontractors which can master certain building trades, renovation or manufacture components. Approaches that include

the cooperation of all contract partners and project members (incl. the client) ensure that projects can be conducted cheaper, faster, qualitatively better and thus more satisfying for all partners. Iteration loops in the planning process are avoided and conflict potential is eliminated. This requires social competence as well as formal (guidelines and rules) and informal (not officially required) communication structures of the involved partners. Especially cross-company teams make it possible that appropriate professional skills are immediately available in each project phase (Ewald 2012). For big projects so-called temporary working teams are often used. An optimal status is developed if all required assets, resources and competences for the execution of the task are available in the own company or are provided by trusted partners.

Derived maturity level:

- Available: Usually all required assets, resources and competences for the realization of the task are available in the company itself or are directly provided by project partners. Networking between project partners is given.
- Rarely available: Not all required assets, resources and competences for the realization of various tasks are available. In some cases, projects could not be acquired or conducted due to unavailable resources. The networking of project partners is fragmented.

Appropriate offers

The basis for appropriate offers are always market analysis on a regular basis with internal and external references that consider actual trends and changes and thus extend the use for the client. Usually the architect or planner is the contact for the building contractor. The actual aim should be the direct contact with the client (resp. the contribution of the own competence). Nowadays, clients act more independently and often approach the company directly. To save time and costs, the client and – in case of investment projects – also his network should be included in the planning. The close cooperation with the client in the performance description leads to the consideration of all client expectations and strengthens the trust in the contractor (Heilfort 2004). More and more owners expect a continuous involvement in the building process or want to conduct many activities autonomously. Thus the value propo-

sition has to be appropriately scalable (Racky 2004). Nevertheless, from the perspective of the contractor the client can only be partly included in the proposal preparation as pricing pressure in the construction industry is very high. Finding a cheaper supplier is always possible for the client.

Derived maturity level:

- Well balanced: The value of an offer is well balanced in relation to pricing. The market is regularly analysed to understand customer requirements and to keep an eye on current trends and changes. The customer is actively involved in proposal preparation.
- Unbalanced: Price and customer benefits of the solution are unbalanced. There is no or insufficient customer orientation which is not or only partially focused on the market. Market analysis is only conducted once in a while, customer requirements are not considered for proposal preparation.

Environmental conditions of the market

Good companies that are established in the market are protected by entrance barriers. These are aspects like technological complexity, established and strong value added networks, client lock-in or capital intensity in the building material industry. Companies that try to overcome these barriers are currently from low-wage countries, e.g. from Eastern Europe. The long-term market trend to move from new construction to renovation of buildings requires an adapted service offer by the contractor. Tendencies to modular construction or the use of prefabricated components also change the parameters of the market (e.g. reduction of the vertical integration at the construction site). Especially for KMU, new markets often can only be opened with a strong partner network (Schober 2011).

Derived maturity level:

- High: The company is part of a powerful network or is itself a powerful player on the market. Competitors and new challengers are not able to gain market shares. New markets can be developed with the help of partners.
- Intermediate: The own market segment(s) could not be defended constantly against competitors in recent years. Nevertheless, the market position could be nearly maintained.

- Low: Competitors continually enter the own market segment. Market shares decline steadily.

Power over suppliers

In general, the factor “power over suppliers” describes the bargaining power towards the supplier (Porter 2008). This power over suppliers only exists partly in the construction industry. Due to high workload in specific craft businesses, a general contractor only has little power over companies with competences in mechanical services, electronic installations or the envelope construction. Indeed partner enterprises are often evaluated by criteria like expertise, capability or reliability, but there is no actual competition due to the current lack of capacity. For other crafts (e.g. stucco work, screed linings or door installation) the workload is much lower and thus the balance of power between contractors and suppliers is different.

Another example is the cooperation between building materials industry and construction companies. Due to the limited transportation options, on regional level for many building materials often no serious competitor exists (Schober 2011).

Derived maturity level:

- High: The companies control more than 70% of their suppliers and observe and measure regularly criteria to monitor the performance of their suppliers. These criteria are revised and updated regularly. Strategies are available preventing to be dependent on only one supplier (multi-sourcing).
- Intermediate: Approx. 50% of the suppliers are controlled whereas the other 50% cannot be controlled. Strategies for performance evaluation of suppliers are only used sporadically. Again and again single-sourcing relationships occur.
- Low: More than 70% of suppliers dictate the market, for example because of their products' competitive advantage. Furthermore, the company has no strategy to evaluate the performance of its supplier. In the past, single-sourcing relationships with some suppliers could not be prevented.

Customer orientation

Companies need to differentiate from its competitors in terms of the value proposition or customer channel resp. the customer interface (Osterwalder 2010). The

construction industry differentiates between specialists with custom-made solutions and generalists who offer customers everything from one source. This includes construction-services such as inspection, certification, testing and verification or communication with the respective authorities (Schober 2011). The definition of a target system between client and contractor should always be conducted. However, it must be kept in mind that not every customer is the same and each company has different customers. For example, the demands and requirements of a project developer are different from those of a company keeping the existing building stock or an investment company.

Derived maturity level:

- High customer orientation: The company has a unique selling proposition towards customers or differs from other competitors by means of the customer channel's layout.
- Low customer orientation: For the customer, no difference regarding benefit promises or customer channel is visible.

Corporate culture and human resource management

The staff must be regarded as the most important asset by the company's management. Excellent motivation, culture, skills and knowledge are a result of this appreciation and should be reciprocated by reward and promotion. A strong workforce has a high level of motivation. The skills of employees are increased by regular training and further education. Due to satisfaction there is small fluctuation (Lies 2014). As summary it can be stated that the corporate culture has a positive effect on each project results.

Good performing companies do not set-up uncontrolled capacities due to past, good order situations. Their image and mind-set makes it easy for them to find new qualified employees.

Derived maturity level:

- Strong staff: The motivation of employees is high and skills of employees are enhanced through constant trainings (strategic must). The corporate culture has a positive impact on project results. There is a low turnover due to high satisfaction.
- Weak staff: The motivation of employees is subject

to change. Skills and knowledge are not applicable and have a negative impact on project results. Trainings are rarely offered and new work content is not communicated appropriately. Furthermore, there is high fluctuation.

Investment in knowledge base

Investment in the knowledge base ensures that the knowledge in the enterprise is updated regularly (Davenport 2000). In the context of the construction industry this includes the latest developments and trends in the construction industry. Especially knowledge of lean on-site manufacturing methods, functional materials and technologies is of high importance. Dealing with intellectual property is also covered by this factor.

Derived maturity level:

- High: A process for the allocation, structuring and delivery of knowledge has been established, for example good monitoring of the business environment (DESTEP = demographic, social, technological, ecological and policy analysis; PESTL = sociological, technological, economic and political change; Technology Roadmap, Trend Radar; trainings for employees). Possibilities, e.g. networks for the informal exchange of knowledge, are offered. Employees are ready to share and transmit their knowledge. Mechanisms for explicit safeguarding of knowledge exist.
- Intermediate: Allocation, structuring and provision of knowledge is informal. From time to time, there is a monitoring of the business environment (DESTEP, PESTL, Technology Radar, Trend Radar ...); training programmes for staff members exist. Employees are ready to share and transmit their knowledge. Mechanisms for explicit safeguarding of knowledge exist.
- Low: Allocation, structuring and provision of knowledge are seldom realized.

Power over buyers

This factor describes the bargaining power of a company towards its customers (Porter 2008). Especially towards small private investors (e.g. construction of a detached house), contractors often have a high bargaining power since clients usually do not have the necessary knowledge. In contrast, the situation is often just the opposite of commercial clients who have

specialized e.g. in property management. In this case the client has a high power due to his own professionalization degree.

Derived maturity level:

- High: Companies dominate customers or there is a balanced (partnership) relationship between companies and customers, yielding benefits for both.
- Low: Customers have great influence on the company and the value offer.

Degree of network competence

The degree of network competence describes, on the one hand, the social competence and ability to interact in networks in order to achieve common goals and, on the other hand, the ability to bring expertise and experiences into collaborations.

Regional operating companies usually have a wide network from which all parties benefit, enabling also a strong diversification (Thorgren 2009, Schober 2011). Therefore, cooperation mechanisms (e.g. partnering, construction team approach, construction management contract) were developed in the past. However, in one's own network not only craftsmen and planners should be integrated but also other roles such as banks or facility managers.

Derived maturity level:

- High: High degree of social and technological competence. Networking partners are often actively involved as external specialists.
- Low: Low degree of social and technological competence. There is only irregular or no cooperation with partners.

Contracting Models

Contracting models describe the contractual relationship between the prime contractor and the client. The cooperation of the construction company with partners and subcontractors must also be regulated by contracts. The open books approach, the enterprise-wide disclosure of balance sheets along the value chain, creates transparency in the cost structure. With the help of this approach, changes to services after contract conclusion can also be handled transparently and conflicts caused by supplements can be reduced. Typically, construction overheads or costs of the shell are fully disclosed within this approach. Costs of finishing

trades are negotiated and contracted commonly but, in contrast to overhead costs, not fully disclosed. An important lever for reducing total project costs are so-called GMP contracts which means that a guaranteed maximum price is offered. When exceeding or falling below this GMP, the difference will be allocated according to the contracting parties depending on the contract (Gralla 2001).

Derived maturity level:

- Strong: If possible, new contracting models like GMP or open books principle are applied.
- Weak: Contracting models are not or only rarely applied.

Quality management

Key aspects of a quality management system are the control of the customer-customer process (translate customer requirements, generate customer satisfaction), the management of the resources involved, the designation of responsibility or the responsibility of management and continuous improvement of all processes (Girmscheid 2010a). Due to the high amount of needed resources for a certified quality management system, this is not always the best solution, especially for small enterprises. However, the continuous improvement and documentation of processes and structures are also of great importance for typical SMEs. In micro-enterprises, the degree of documentation must be questioned with respect to the efforts needed for it. It is important that in the construction process the quality of construction output is always agreed with the customer.

Derived maturity level:

- Strong: A suitable QM system or an appropriate CIP (continuous improvement process) has been implemented and is effective.
- Intermediate: A suitable QM system or an appropriate CIP (continuous improvement process) has been implemented but is only effective to some extent.
- Weak: A suitable QM system or an appropriate CIP (continuous improvement process) has not been implemented.

Revenue streams of the company

Revenue streams can be divided according to different

types, such as purchase price, instalments or shares of turnover (Osterwalder 2010). The latter is gaining more and more importance in the construction industry. The general rule in determining the price is that customers benefit and corporate interests should always be in balance. It is typical for the construction industry that construction companies have in many cases problems with payment delays or denials. The problem often arises in the early stage of the contract design, if instead of an agreement about supplements only partial payments are defined. Another problem is that often the liquidity of the client is not evaluated beforehand. A good measure to obtain revenue streams are third-party guarantees.

Derived maturity level:

- Strong: Sources of income are known for each project. Due to the good financial planning, profits are constantly obtained.
- Intermediate: Sources of income are known for each project but no constant profits are obtained.
- Weak: At contract signing, sources of income are only considered limitedly and therefore assets are only rarely obtained.

Project cost structure

The project cost structure determines the profit, as all fixed and variable costs incurred in the company, will be accounted accordingly (Osterwalder 2010). "Unavoidable costs" ("fixed costs") include rents or personnel costs. "Variable costs" (e.g. transport costs) are based on the quantity sold. Overhead costs should be distributed to the different projects in a construction company as in any company. Especially for smaller companies this is mainly done in a poor manner as a project cost structure persecution is not implemented.

Derived maturity level:

- Strong: The cost structure of projects is always mastered.
- Intermediate: The cost structure of projects is mostly mastered.
- Weak: In the past, pricing often has not been correct. Supplements or losses within the balance of projects become the standard.

Conclusion and next steps

Given the comprehensive literature review and the feedback from the industry, many aspects have been elaborated in detail. Since the assessment was aimed to be lean, only the main design fields in the construction industry were taken into account. It also represents the consensus on European level as this work has been created within a recently finished European research project. By establishing this, managers of medium-sized companies can take advantage of the tool in the future as it allows a "health check" of the business model in their company. The assessment framework aims to reduce the complexity of a business model and addresses managers (especially those with a technical background instead of an economic or management background) in construction companies and makes the user of our tool aware of significant levers in a typical business model. The tool should help practitioners to reduce the hurdle of business model assessment for them. However, it has to be pointed out that this framework can be only a starting point but is not able to replace a detailed assessment of the business model or professional consulting. The detailed assessment is needed in any case before changes and adoptions are made.

Now as the validation of design fields and assessment criteria is completed, a web-based application is being developed. The results of the assessment will be made available to the participants via a report function. An urgent need for action in relation to the individual building blocks of the Osterwalder Canvas will be highlighted by a colour code (red, yellow, green) in the report. In this way the web-based self-assessment is an easy and valuable tool to get first main levers in order to improve business models in the construction industry. In the future, a broader validation will be necessary. The broader validation will also allow receiving empirical data on the applicability of the presented approach.

A first version of the tool is already available on:

<http://plm.iao.fraunhofer.de/newbee/HomePage1.aspx>.

In the next stage of this process the web-tool will allow to test the solution with additional stakeholders, and thereby will help to refine the solution again.

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Business Model Patterns Used as a Tool for Creating (new) Innovative Business Models

Dirk Lüttgens¹ and Kathleen Diener²

Abstract

Purpose: As companies need to be able to identify whether their business model is under threat and also to make the right decisions concerning the development of a potential new business model, we have adopted Porter's five forces in order to analyze different threats to a business model. Furthermore, we have evaluated different business model patterns and rated them according to their impact on each of Porter's forces. By being aware of patterns, managers and decision makers can generate a new business model or adapt an existing one in a more systematic way.

Design: Data were gathered through surveys. Data were analyzed by median analysis.

Findings: We were able to identify clear trends in the performance of patterns against Porter's forces. The results can furthermore help companies to make systematic combinations of these patterns to mitigate the threats. For the forces "bargaining power of buyers", "bargaining power of suppliers", and "competitive rivalry" we were able to identify specific value dimensions of the BM patterns.

Research limitations / Implications: We have defined five steps for using business model patterns as a tool to counteract the pressure of any of Porter's five forces. Managers and decision makers can use these patterns to generate systematically a new business model or adapt an existing one.

Originality / Value: Scholars propose a pattern-based methodology in order to develop business models (Rudtsch et al., 2014). Therefore, the aim of this paper is to find out how companies are able to overcome business model threats by using business model patterns and linking these to the value dimensions of a business model

Keywords: Business Model Innovation; Business Model Patterns; Value Dimensions of Business Models; Porter's Five Forces

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Introduction

Over the last few decades, both professional practice and academic research have provided substantial insights into how to master new product and service development successfully. However, recent technological advances and economic challenges necessitate that established companies not only increasingly reshape their products (or continuously improve their processes), but also innovate their business model (BM) (Chesbrough, 2010; Burmeister et al., 2015). Not only recent challenges, such as “industrial internet”, but also more “traditional” threats, such as new suppliers or competitors (start-up scene), demand new business models. Therefore companies should not only be able to identify whether their business model is under threat, but also be able to make the right decisions concerning the development of a new business model. Where companies are failing to adapt their business models to changing environmental conditions is illustrated by, among other things, the example of the photography pioneer Kodak.

The identification and control of business (model) threats is one of the central issues in strategic management and to date not yet solved. Although in the past several approaches from the scientific field and professional practice to manage and control threats have been developed (Ansoff, 1975; Holopainen and Toivonen, 2012), companies today are often not able to recognize threats to their business model in time. The strategic management literature deals since its early days with the analysis of structures, strategies, and performance of companies in and between related industries. The “competitiveness” literature has considered internal factors and assumes that organizations define themselves within their environment because, for example, of their strategies (Porter, 1979), resources & capabilities (Wernerfelt, 1984; Teece et al., 1997; Eisenhardt and Martin, 2000), or core competencies (Prahalad and Hamel, 1990; Leonard-Barton, 1992; Barney, 1991) and that this is crucial for their performance. The contributions to weak signals (Ansoff, 1975, 1980; Rosset, 2011, 2012) and environmental dynamism (Bourgeois and Eisenhardt, 1988; Ginsberg, 1988; Tushman and Anderson, 1986; Saritas and Smith, 2011), in turn, put the focus on the far more complex external uncertainties and dynamics in the business environment which affect the company on a wide range. The concept of weak signals (a system developed by Ansoff)

is one of these concepts and can be assigned to the strategic foresight literature. In particular, companies need to increase their sensitivity to fuzzy information (weak signals) in order to identify possible threats at a very early stage.

Thus, so-called weak signals are extremely difficult for companies to identify, and without adequate tools it is almost impossible (e.g. lack of expertise in the assessment of the development of unrelated industries). Overall, the literature on strategic management has a variety of approaches and concepts, but these are less suitable for industrial adoption or daily business.

Phenomena such as digitalization and increasing globalization have enabled the emergence of entirely new business models and changing market conditions, resulting in both significant opportunities for new business models and in threats to already existing business models (Amit and Zott, 2001). At the same time, it is being observed that firms respond differently to these threats: While some companies have increased their value significantly with new business models (e.g. Apple, Google, Facebook, Amazon, and Cewe), others did not respond or responded too late and have suffered significantly in value (e.g. Nokia, RIM, Microsoft, Yahoo, Kodak, Neckermann, and Karstadt / Quelle) (Chesbrough, 2010; Dewald and Bowen, 2010; Doz and Kosonen, 2008; Stötzer and Mahler 2013). When analyzing this phenomenon, the business model perspective is helpful: it combines existing approaches and enables a holistic view and an extensive and differentiated analysis that goes beyond the traditional boundaries of the enterprise (Amit and Zott, 2001; Bock et al., 2012).

But how can companies find out whether their business model is under threat and, if so, to which intensity? To the best of our knowledge, there is no existing approach in the literature which helps companies to identify business model threats. Therefore we adopt Porter’s five forces in order to analyze different threats to the business model. Furthermore, also only little academic research has been published on dedicated methods and tools for business model innovation. One of the best known practitioner-oriented frameworks is the “business model canvas” of Osterwalder/Pigneur (2010), which fosters a creative workshop environment

analyzing as-is and defining to-be business models along a framework of nine elements (Burmeister et al., 2015). This and other canvas templates are also an important element of an iterative business model innovation process, as they can serve as easy prototypes to illustrate business models alternatives. Another dedicated tool is that of collections of business model patterns i.e., commonly used and proven configurations of specific business model components. The idea is that innovative business models can be created by rearranging and composing existing patterns. Gassmann et al. (2013), for example, propose a set of 55 business model patterns. Patterns can be used to enrich an existing business model with new elements (Rudtsch et al., 2014), as they help it to become more abstract and detached from existing (biasing) structures. By being aware of patterns, managers and decision makers may find it easier to generate a new business model or to adapt an existing one (Abdelkafi et al., 2013).

Scholars propose a pattern-based methodology in order to develop business models (Rudtsch et al., 2014). Therefore, the aim of this paper is to find out how companies are able to overcome business model threats by using business model patterns and linking these to the value dimensions of a business model. We used Porter's five forces as our underlying framework to analyze threats to business models. If it is possible to identify any trend in the performance of the value dimensions against Porter's forces, it will be possible to systematically generate business model innovations by combining different patterns.

The aim of this study is therefore to answer the following research questions:

- How can threats to businesses be overcome and opportunities detected in business models?
- How can business model patterns be combined in order to counteract Porter's five forces and to create successful business models?
- Which business model pattern is the most effective one in relation to Porter's five forces?

Background Business Model Generation

There are various scientific peer-reviewed articles that Managers can generate business model innovations

through three models: industry models, revenue models, and enterprise models. The first strategy – the industry model – innovates the industry value chain. This can be accomplished by moving horizontally from one industry to a new one or by reinventing an existing one. The revenue model strategy accomplishes business model innovation by introducing new pricing models or by reconfiguring the offers. Finally, in the enterprise model, a company's structure and the role it plays in the value chain are innovated (Abdelkafi et al., 2013).

Business model innovation is often created through a trial and error process and is rarely successful in the first approach. Due to fast-evolving markets and high uncertainty, it is difficult to predict the business environment during the development process. Additionally, environmental changes are often ambiguous. An enterprise's ability to adapt and predict is strongly affected by a manager's judgment and interpretation skills, which are again influenced by existing organizational routines and behavioral norms and values. The owner-manager's cognition and sense making are therefore the most important inputs for the initial business model design (Sosna et al., 2010). The challenges are to recognize threats on time and to relocate resources in order to address the concerns (McGrath, 2010). Experimentation is useful for overcoming the uncertainty in business model innovation. The experimental conditions, however, need to be representative of the larger market, and the experiments require a high investment. Direct costs are high, and there is always a risk that an experiment will not result in the expected outcomes and learnings (Chesbrough, 2010).

Value Dimension Framework and Business Model Pattern

One task of a business model is to provide an overview of how a company generates value in a profitable manner (Baden-Fuller and Morgan, 2010). Five value dimensions can be identified: value proposition, value creation, value communication, distribution channels, and value capture. The value proposition refers to the combination of products and services which are of interest for customers. Value creation is an irreversible process which gives a resource's 'order' greater usefulness to others (humans/organizations) (Beinhocker, 2007). Value communication ensures the delivery of the value proposition through a message. The dimen-

sion of distribution channels describes through which channels customers are reached and value delivered. Finally, value capture describes how the value proposition is transformed into revenue and captured as a profit (Abdelkafi et al., 2013). By improving these five value dimensions, a competitive business model can be developed.

About 90% of business model innovation is the result of re-combinations of already existing business models. Furthermore, these kinds of combination are repetitive, showing the existence of a pattern (Gassmann et al. 2013). Business model patterns can therefore be used to improve the five value dimensions of a business model. The patterns can be seen as business model building blocks which share similar characteristics or behaviors (Osterwalder and Pigneur, 2010). The combination of the patterns can lead to a systematic method for generating business model innovations (Abdelkafi et al., 2013). Business model patterns address particular characteristics and/or business relationships which can be evaluated and used as a pool of ideas (Rudtsch et al., 2014). Companies can make use of three ways to generate business model innovations with patterns: (1) Identifying successful business model patterns in the own industry and trying to adapt them to the context. (2) Adapting and transferring business model patterns from outside the industry. (3) Implementing business model patterns in the company or combining different business model patterns (Abdelkafi et al. 2013).

Gassmann created a business model pattern library consisting of 55 business model patterns. He furthermore defined four value dimensions which are equivalent to the above-mentioned five value dimensions. Gassmann's "what?" dimension refers to the product that is offered to the customer and is equivalent to the value proposition. His "how?" dimension is equivalent to the dimensions of value creation, value communication, and distribution channels. It describes how to build and distribute the value proposition. Finally, the dimension "why?" explains the viability of being profitable. This is equivalent to the value capture dimension proposed by Abdelkafi et al. (2013). The business model patterns can be assigned to these value dimensions. The combination of different patterns can lead to more radical innovations, since different value dimensions can be improved (Abdelkafi et al. 2013). Understanding

the underlying structure of the different patterns furthermore helps to minimize the cognitive effort in the development of innovative business models (Abdelkafi and Täuscher, 2014). Figure 1 gives an overview of the allocation of the business model patterns to the five value dimensions defined by Gassmann.

Failure of Business Models

The need to develop innovative business models is intensified by fierce competition among enterprises, the need to satisfy increasing customer requirements, and the rapidly changing environmental conditions (Beqiri, 2014). Yet despite their efforts, many companies will not survive in the long term. Business failure was defined by Honjo as "a situation in which firms cannot meet their liabilities and hence cannot conduct economy activities anymore" (Honjo, 2000). It furthermore does not only affect the interests of the stakeholders but also the general development of the economy and society (Wu, 2010). Nowadays, strong global players, such as AEG, Kodak, and Quelle, are vanishing from the business landscape. The question arises of why companies steer – despite their innovative capabilities – in the direction of failure. The answer is simple: the companies have failed to adapt their business model to the changing environmental conditions. Companies do not compete anymore between products and services but between business models (Gassmann et al. 2013). Therefore, if a company does not invest in developing or adapting its business model, the risk of failure increases. Reasons why managers fail to innovate their business models are, for example, a lack of experience and the ease of staying in a comfort zone (Gassmann et al., 2013). However, one of the main reasons is probably the fact that companies are not completely aware of what the aim of their business is. Very few managers are able to explain the business model of their company, although it is the basis for successful business model innovation (Gassmann et al., 2013).

According to Beqiri, the following points must be taken into account in order to avoid business failure (Beqiri, 2014):

- The business model must be revised periodically with a higher priority in comparison to product and services. Product and services can be easily replicated whereas the business model is typical of the way in which a company operates.

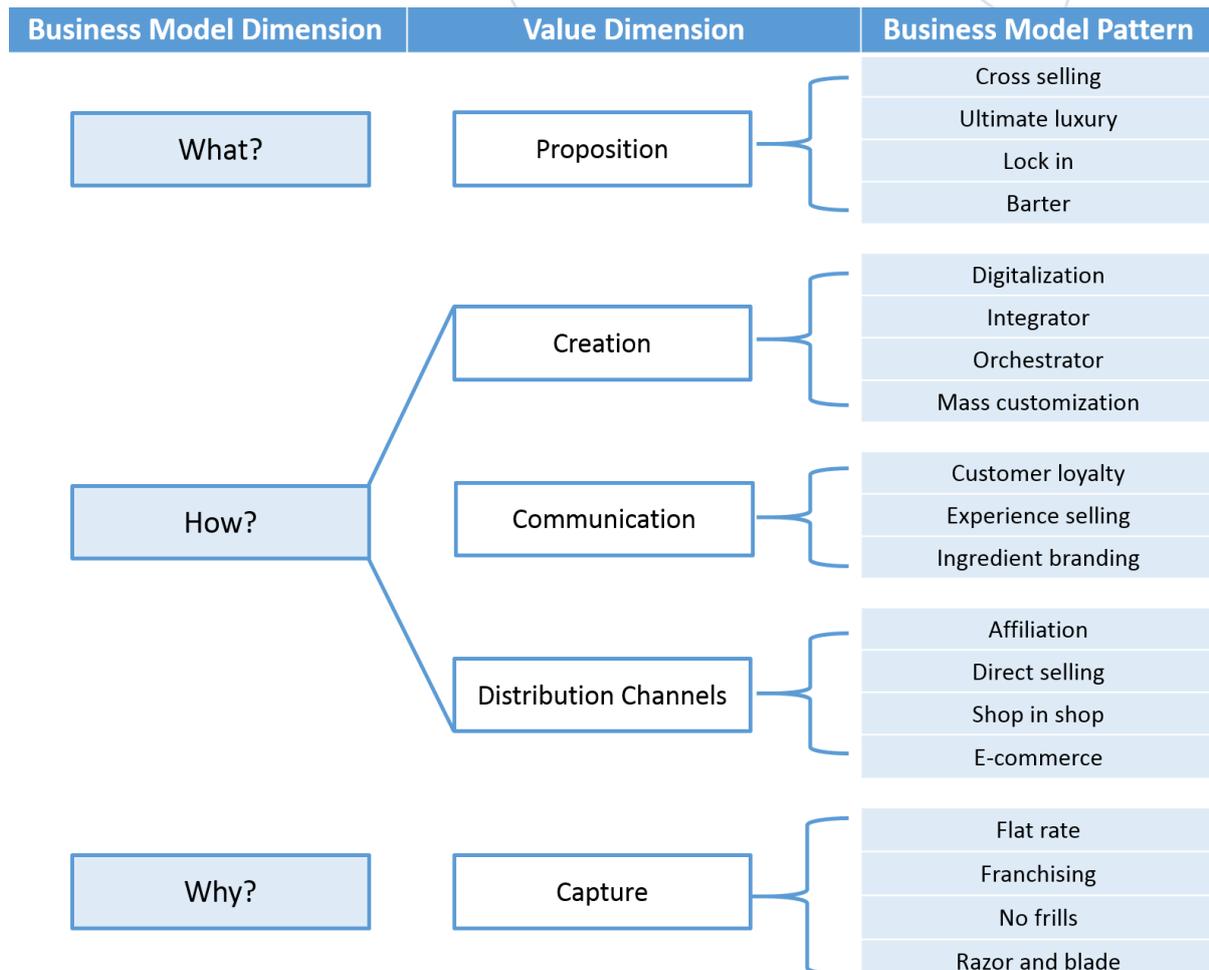


Figure 1: Allocation of the Business Model Patterns (Gassmann et al., 2013)

- Companies must be ready to adapt their business model according to changes in the environment. A fast response to these changes is crucial.
- Customer needs are a priority in the operation of a company. Therefore, it is vital that before designing a business model, the enterprise knows its customers perfectly and involves them in the whole business cycle, from product design to customer service.
- Competition usually comes from existing players in the market, rather than from new entrants. In this way, it is important to learn from existing players who already have the experience, know the market, and are capable of recognizing more easily any changes in the environment.

Threats to Business Models – Porter’s Five Forces

Porter’s five forces describe the competitive forces within an industry and can help to analyze the strength of threats to a company. The identification of these threats – or at the same time of opportunities – can help organizations to develop appropriate strategies that maximize profit gains and ensure a long-term survival of a company (Shariatmadari et al., 2013, p. 886). Porter defined the following five factors: bargaining power of buyers, bargaining power of suppliers, competitive rivalry, threats of new entrants, and threats of substitutes. The stronger a factor is, the more the business models within this industry are at risk. Hence, the five forces can be used by companies as an early warning system to analyze the threats to business models within industrial sectors.

The force “bargaining power of buyers” describes the influence that consumers can have over the company. They can, for example, compel companies to lower their prices or to improve the quality or quantity of their products (Porter, 2008). This affects companies, since profit margins are reduced and competition among the market participants is increased. The consumers’ influence is especially high for price-sensitive products (Porter, 2008, p. 30). How powerful the buyers are also depends on the amount of buyers who are interested in the product and how important a customer is for the company. Bargaining power of buyers is also increased when buyers purchase from the same supplier in larger quantities (Alrawashdeh, 2012). Big companies, e.g. Walmart, are able to negotiate prices and enforce lower prices from product suppliers. An essential part of the business model of those consumers is to buy large quantities at lower prices. This poses a threat to the suppliers. Buyers are furthermore especially powerful in industries where the production fixed costs are high and marginal costs are low or when the customers face low switching costs (Porter, 2008). The bargaining power of buyers can also be influenced by other factors, such as governments, patterns, and policies. These can act either in a positive or a negative way for the companies and also determine the success of a business.

On the other hand, also suppliers have a bargaining power over participants in an industry. They are able to set higher prices or limit the quality and quantity of the products offered (Porter, 1979). Powerful suppliers can therefore squeeze profitability out of an industry which is unable to pass on the increasing costs in its own prices (Porter, 1979). The bargaining power of suppliers is strongly influenced by their number. If there is only a small number of suppliers dominating the market, they are more powerful than if there were a lot of different suppliers (Porter, 2008, p. 29). If the product that a supplier offers is unique, or if a supplier has built up high switching costs, the supplier is also in a stronger position and poses a higher threat to companies (Porter, 1979).

Porter furthermore defined “competitive rivalry” as a factor which influences the competitive forces within an industry. It describes the rivalry among existing competitors and is present in many forms, e.g. new product introductions, advertising campaigns, service improve-

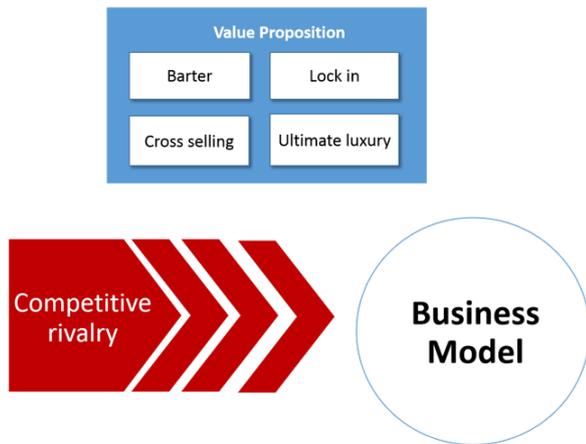
ments, or price discounting (Porter, 2008). If a market is profitable, rivalry in the market will increase as firms are encouraged to participate (Lüttgens, 2015). The degree of rivalry within the market depends on many factors, such as the number of competitors, exit barriers, resources availability, capacities, and costs (Porter, 2008).

The fourth factor defined by Porter is the “threat of substitutes”. A substitute is a product that can offer the same function or service in a similar way but by different means. One example would be microwave ovens as a substitute for conventional ovens. The threat of substitutes often shifts, as advances in technology create new substitutes or the price-performance comparison changes (Porter, 2008). Substitutes can limit the profits of economies and reduce the prosperity which an industry can have in good times. They can, however, also be positive if the company itself is able to develop or use an improved substitute. One example taken from the automobile industry was the development of new plastic materials which enabled the industry to reduce the utilization of metallic materials and consequently the reduction of the total weight of a vehicle (Porter, 2008).

The last factor of Porter’s five forces is the “threat of new entrants”. The success of industries is influenced by potential and existing competitors. New entrants aim to gain a market share, put pressure on costs and prices, and raise the investments needed to be able to compete (Porter, 2008). Companies can erect entry barriers that hinder companies from entering the market and hence mitigate the risk of new entrants. The most common entry barriers, besides physical and legal obstacles, are the scale and investment required to enter the market as an efficient competitor (Karagianopoulos et al., 2005).

In this study we examine how business model patterns can be used in an effective way to mitigate the threat of competitive forces within an industry (Figure 2). To analyze the threats, Porter’s five forces are used as a framework. We predict that the influence of business model patterns on Porter’s five forces is the same regardless of the value dimension to which they belong.

1. Porter's 5 forces threaten the existing business model



2. Business model patterns can reduce the threat of Porter's forces

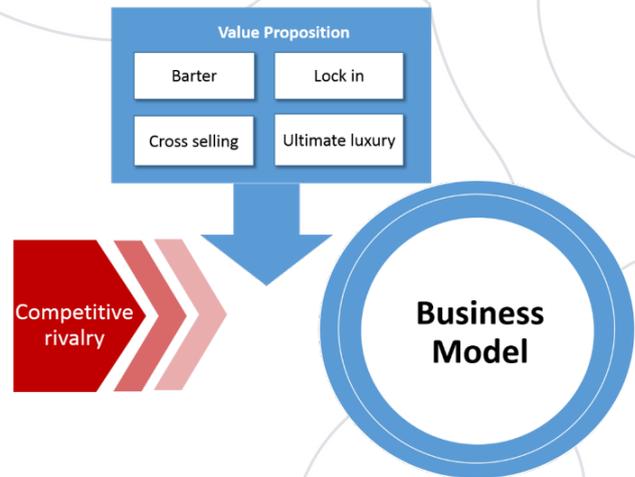


Figure 2: Mean values of the value dimensions against Porter's 5 forces

Method

Research Design

We conducted a systematic query via EBSCOhost using We conducted an exploratory research study, the aim of which was to answer the question of how business model patterns can be combined and used to reduce business model threats. Furthermore, which business model pattern is the most effective one to counteract which of Porter's five forces? We chose a quantitative survey, since it provides enough flexibility to reach the different experts in the field of business administration at lower costs. Experts from RWTH Aachen University were mainly chosen because that university's School of Business and Economics has an excellent reputation. The School has been accredited by the AACSB (Association to Advance Collegiate Schools of Business). For reasons of simplification, we grouped the business model patterns according to the 5 value dimensions and measured their effect against the different business model threats.

Population and Sample

As a unit of analysis we chose experts from the field of business administration (research associates, post docs and external partners from R&D projects of the TIM Group at RWTH Aachen University). This field was selected because the experts are familiar with the way in which a business works; they know how to manage

resources, and their field of expertise is that of how to achieve stability, growth, and profitability in businesses. Furthermore, they are familiar with Porter's five forces.

The target sample size was 80 in order to have 4 respondents per business model pattern and to be able to analyze 4 different business model patterns per value dimension. This sample size was also chosen to increase the internal validity and to minimize the single information bias.

Measurement

To collect the data, a quantitative survey was set up. To establish internal validity, comparable groups were created randomly. Participants were assigned to these groups and answered one of the different surveys. By doing so, any biased strategy was eliminated and equivalent groups were created (Beins and McCarthy, 2012). Mood's median test was used to examine whether the medians from two or more populations were identical. The aim was to show whether a common behavior of the business model patterns within each value dimension exists.

Data Collection

The web-based survey was sent to the identified experts. Each of them received a survey to complete. The target was to evaluate an amount of 76 surveys and to

collect a total of 1900 answers, 25 answers per survey. Before implementing the surveys, a pretest was executed to ensure a good understanding of the questions and to adapt the questionnaire where necessary.

The survey consisted of five sections corresponding to Porter's five forces: bargaining power of buyers, bargaining power of suppliers, competitive rivalry, threats of new entrants, and threats of substitutes. Each one of these sections again contained five different variables as a unit of analysis over Porter's forces. The variables had been allocated to the five forces in a previous study and enabled us to observe the competitive intensity in more detail. An example of a variable is the growth of "governmental regulation, property rights, and patents" which measures Porter's forces of "bargaining power of buyers" and "threat of new entrants". Another example is the variable growth of the "number of suppliers for the specific product", which acts again as an indicator for the "bargaining power of suppliers". A complete list of the different variables and their allocation to Porter's forces can be extracted from Appendix 1.

The questionnaire used a Likert scale to measure the effect of the business model pattern against the different Porter's forces and the variables. The Likert scale has a range from 1 - 7 to evaluate the intensity of an effect, with 1 being as a low positive effect and 7 being the strongest positive effect over a force of Porter's. A high value indicates that a Porter force has been reduced, and consequently there is a higher success rate for a business model if this business model pattern is applied.

Data Analysis

As stated before, we used Gassmann's list of identified patterns. In a first step, we created a library of patterns, grouping them according to their value dimension (Gassmann et al. 2013). In a second step, we selected 19 patterns in order to implement the analysis and find any possible common behavior between the business model patterns and their specific performance over Porter's forces (compare Table 1 for an overview of the selected patterns). Finally, we conducted surveys and gathered data to show the intensity of the positive effect of the business model patterns against Porter's forces. The aim was to extract guidelines for how to

create reliable combinations of business model patterns in order to counteract Porter's forces.

Results

A Mood's median test was run to evaluate how the business model patterns performed against Porter's forces. By doing this, it was possible for us to detect which of the forces was mitigated the greatest. The results of the test showed that 4 out of the 5 value propositions had a significance level of 0.05. Thus, it can be concluded for these four value propositions that the business model patterns share a common behavior according to the value dimension they are allocated to. This holds true for value creation, value capture, value communication, and distribution channels. Only for the dimension of value proposition does not enough evidence exist.

Additionally, after calculating the mean values of the different business model patterns, it was possible for us to identify a common behavior according to the value dimension to which the business model patterns are allocated. As a reference point to decide whether a value dimension has a strong effect or not, we chose 5, because 5 was the overall median of four out of five value dimensions. All business model patterns with a value above 5 can be interpreted as having a sufficiently positive influence over the respective Porter's force. Therefore, this pattern can be recommended for overcoming threats in this area. The patterns (belonging to the value proposition) showed the strongest positive effects against the "competitive rivalry" force. The dimensions of "value creation" and "value capture" showed a good performance against the "bargaining power of suppliers"; the patterns from the dimensions of "value communication" and "distribution channels" against the "bargaining power of buyers". All these results were confirmed by the Mood's median test. For the forces "threat of new entrants" and "threat of substitutes" no value dimension showed an overall value above 5. In this case, it is possible to recognize some patterns that have a value above 5. For the force "threat of new entrants", we have the patterns "ultimate luxury", "mass customization" and "direct selling". For the force "threat of substitutes" the unique business model pattern with a value above 5 is that of the "lock-in" pattern. Table 1 gives an overview of all the results we obtained from the surveys. Figure

		Bargaining power of buyers	Bargaining power of suppliers	Competitive rivalry	Threat of new entrants	Threat of substitutes
Proposition	Cross selling	4.5	4.65	5.05	3.55	3.85
	Ultimate luxury	4.9	4.5	5.75	5.1	4.65
	Lock in	5.3	0	5.05	4.6	5.10
	Barter	5.25	4.65	5.33	4.58	4.37
	Overall	4.99	4.60	5.23	4.43	4.46
Creation	Digitalization	4.95	5	4.8	4.55	3.8
	Integrator	5.5	5.5	4.75	4.75	4.65
	Orchestrator	4.75	5.35	4.19	4.2	3.875
	Mass customization	4.5	5.55	4.10	5.15	4.45
	Overall	4.925	5.35	4.50	4.66	4.24
Communication	Customer loyalty	5.5	5.4	3.62	3.66	4.8
	Experience selling	5.2	4.6	4.24	4.08	3.84
	Ingredient branding	5.75	4.95	4.9	5	3.83
	Overall	5.46	4.95	3.82	4.26	3.91
Distribution Channels	Affiliation	5.2	4.25	3.75	4.75	4.85
	Direct selling	5.7	4.41	4.2	5.375	4.81
	Shop in shop	5.25	4.5	4.25	4	3.4
	e-commerce	5.44	5.68	4.8	4.8	4.44
	Overall	5.40	4.85	4.33	4.85	4.35
Capture	Flat rate	5.25	5.35	3.75	4.13	5.00
	Franchising	5.10	6.25	3.85	3.94	3.85
	No frills	4.65	5.40	4.20	3.90	4.95
	Razor and blade	4.65	4.85	4.25	4.00	3.63
	Overall	4.91	5.46	4.01	3.99	4.36

Table 1: Mean values of the value dimensions against Porter's 5 forces

3 summarizes the overall performance of the value dimensions related to Porter's forces.

Besides collecting the data, the aim of this study was to examine how existing tools, such as business model patterns, can be used for business model innovation as a reaction to identified/potential upcoming business

models threats. After completion of data collection it was possible to determine which value dimension performs best to counteract Porter's forces. Table 1 shows the performance of each business model pattern, whereby the patterns are arranged according to the dimension they belong to, and it indicates which business model pattern is the most appropriate one for

—●— Proposition —●— Creation —●— Communication —●— Delivery —●— Capture

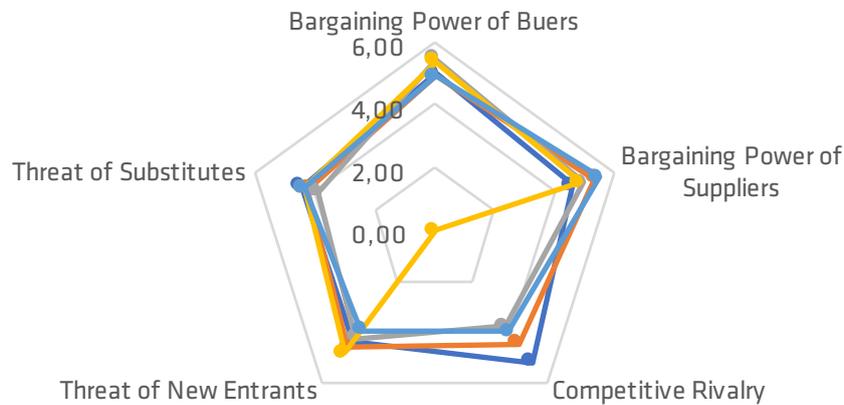


Figure 3: Overall performance of the value dimensions of a business model against Porter's 5 forces

counteracting a specific force of Porter's. A higher number indicates a good performance against that force. Patterns with a number higher than 5 (highlighted in green) are recommended for use in mitigating the corresponding force. Some patterns proved to be effective against several forces, e.g. "franchising" and "lock in". As explained earlier, patterns from the dimensions "value communication" and "distribution channels" work well against the power of buyers; patterns from the dimensions "value creation" and "value capture" can be applied against the threat of "bargaining power of suppliers", and patterns from the dimension "value proposition" work well against the threat of "competitive rivalry". Furthermore, it is possible to create combinations of these factors. In two domains, no value dimension proved to be effective in counteracting the threats of any of Porter's five forces. This was the case for "new entrants" and "substitutes".

Discussion

The findings from our study show that business model patterns can constitute an approach to overcoming threats to businesses and to generating successful business models. Gassmann identified 40 different patterns, 19 of which we analyzed and assessed ac-

ording to their impact on threats within the industry. To assess threats we used the well-established five forces of Porter. They can be seen as an early warning system for companies and can help to analyze the level of competition within the industry. The results of the study can help companies to use the business model patterns in a systematic way in order to react to identified or potential threats.

Bargaining Power of Buyers

Porter identified buyers as a potential threat to companies. Buyers have bargaining power and can force companies to reduce their prices or to improve the quality of their product, which can result in lower profit margins for companies (Porter, 2008, p.30). Five variables were used to determine the effect of business model patterns against the bargaining power of buyers. One example is the variable "number and distribution of buyers".

The results from the study show that patterns which can be assigned to the value dimensions "communication" and "distribution channels" are especially effective for addressing the threat of the bargaining power of buyers. The two value dimensions interact well and

are both visible to the customer and affect customers directly. Hence, patterns such as “customer loyalty” or “direct selling” can be applied. It is necessary to communicate to buyers that their needs are being addressed and also to communicate the value proposition of a product properly. Customer loyalty, for example, can be increased by creating an emotional bonding or by rewarding loyalty with special offers (Gassmann et al., 2013). If a customer is loyal to a company, the threat that she or he will use their bargaining power is reduced.

Bargaining Power of Suppliers

The bargaining power of suppliers is also identified as a risk in the business environment. Suppliers can influence prices and limit the quality and/or quantity of the supplied products. This squeezes profitability and can even force companies to exit the market (Porter, 2008). Factors for this force are “number of suppliers for the specific product” or “own possibility to use substitutes”. We identified business model patterns from the dimension of “value creation” and “value capture” as being effective against this threat. Improved resource management and new, innovative developing processes can reduce dependency on suppliers. Managers can use, for example, the business model pattern “mass customization” to address this threat. Gassman defined this pattern as an approach of modular products and productions systems that enables an efficient individualization of products at competitive prices (Gassmann et al., 2013). A further pattern which was identified to reduce the bargaining power of suppliers is that of “integrator”. Here, control of all resources and capabilities in terms of value creation should lie with a company. Hence, dependencies on suppliers can be reduced and costs decreased (Gassmann et al., 2013). Patterns which can be applied from the dimension of “value capture” are “franchising” or “flat rate”.

By having efficient processes and increasing its profit margins, a company can respond better to rapid changes in the environment, such as an unexpected change of price, lack of resources from a supplier, or even the exit of one supplier. Applying patterns from the dimensions “value capture” and “value creation” increase the ability of companies to react to unexpected changes in business environments and to reduce the power of their suppliers.

Competitive Rivalry

Business model patterns from the dimension “value proposition” proved to be adequate to deal with competitive rivalry. This seems natural, since value proposition focuses on what makes a product or service superior to that of the competitors. Furthermore, it addresses the question “Why do customers buy our products?”. Rivalry is present in many forms and depends on different factors, such as the number of competitors, resources, costs etc. (Porter, 2008).

The identified patterns were “cross selling”, “ultimate luxury”, “lock in”, and “barter”. All four were assessed to work well in addressing the degree of competitive rivalry within a company. Applying, for example, the “lock in” pattern, consumers are prevented from switching to the competition by high switching costs. Lock in can be generated, for example, by technological mechanisms or by substantial interdependencies of products or services (Gassmann et al., 2013).

Threat of New Entrants

The profitability of the whole industry sector depends, amongst other things, on the number of potential and existing competitors. Hence, monitoring the threat of entrants can help to develop strategies against new competitors. Entry barriers, for example, make it difficult for an outsider to replicate a business model (Kara-giannopoulos, 2005). However, usually in a business model environment it is difficult for a firm to control the entrance of a competitor. Although we were able to identify some business model patterns which are appropriate for addressing the threat of new entrants, these are diversified and are from different value dimensions. Our results show no evidence of a specific value dimension which reduces the threat of new entrants.

Although it is in general difficult for companies to prevent new market entrants at all, the question is: How can companies protect their market against new entrants? We found that the business model patterns “mass customization” (value creation), “direct selling” (distribution channels), and “ultimate luxury” (value proposition) can be applied. In the direct selling pattern, for example, a company’s products are not sold through intermediary channels. Thus by reducing the supply chain, profits can be increased. The savings can

pose a price advantage and the close contact to the customer can improve customer relationships (Gassmann et al. 2013). The effect in all three identified patterns is similar: the threats of new entrants can be tackled by cost advantages, by addressing customers' needs better than the competition, and/or by improved customer relationships.

Threat of Substitutes

Porter defined substitutes as products or services that offer the same service or function in a similar way but by different means. Substitutes can be from the same family of products or from a different one (Porter, 2008). They threaten business models because consumers can choose to purchase the substitute instead of the industry's product. In our study, no value dimension was found that reduces the threat of substitutes in particular. It is hard to control the factor of competitors developing substitute products or consumers choosing to buy substitutes. The only pattern that appears to have a positive effect against the threat of substitutes is the "lock in" pattern. Here, changing to another vendor is accompanied by high switching costs, and thus customers are discouraged from switching to a substitute product (Gassmann et al., 2013). Our study did not consider all the business model patterns that were identified by Gassmann. Further research should be conducted in order to examine whether another pattern can mitigate the threat of substitutes within an industry.

Managerial Implications

Overall, we could confirm that if business model patterns have a similar impact on value dimensions, it is possible to systematically innovate business models by combining different patterns from different value dimensions.

The utilization of business model patterns as a tool for creating innovative business models offer a wide range of opportunities. It enables companies to react systematically against external shocks or threats, by combining two different perspectives: (1) The "internal" business model perspective with its five elements like value creation, proposition, capture, communication, and distribution channels and (2) the external perspective using Porter's 5 forces with its five elements

like bargaining power of buyers, bargaining power of suppliers, competitive rivalry, threat of new entrants and threat of substitutes. Using business model patterns allows companies to reduce the effort of developing business models, and the patterns library increases the possibilities of innovation in a reliable way. Furthermore, one of the main concerns of companies when developing new business models or changing existing ones is to develop a "not useful" or ineffective (dysfunctional) business model. With our approach we reduce the likelihood of developing a business model which does not work; nevertheless, our approach will not guarantee the development of the best business model. Another advantage is that by using patterns in a systematic way, the development costs and time can be reduced, which allows companies to react more quickly to changing market conditions by developing faster business model prototypes (which means combining patterns in a new way).

We have defined five steps for using business model patterns as a tool to counteract the pressure of any of Porter's five forces:

1. Identify those forces of Porter's that pose the highest risk for the business model and, depending on priority, start looking for possible solutions to deal with the identified forces.
2. Go through the list of business model innovations based on specific patterns and choose the recommended patterns that were identified as capable of counteracting the pressure of a specific force of Porter's.
3. Select different business model patterns and run a brainstorming session in order to decide which might be a suitable combination of different business model patterns from the different business value dimensions.
4. If necessary, go through the business model patterns library and use it as a pool of ideas in order to find new possibilities for innovation.
5. Implement a business tool for analysis, such as CANVAS, to analyze the different advantages and disadvantages of the new business model.

For example, how can companies reduce the likelihood of Porter's force of new market entrants? Looking at Table 1, we see that there are three possible business model patterns related to value proposition, value

creation, and the distribution channels: ultimate luxury, mass customization and direct selling. Companies which implement at least one of these business model patterns can reduce the likelihood of new market entrants, and therefore counteract Porter's force of new market entrants. Combining different business model patterns, which means using perhaps both ultimate luxury and mass customization will have at least a higher likelihood of counteracting Porter's force, but a company which sells luxury goods is less likely to mass produce its products, less likely to have fixed costs, and less likely to develop economies of scale. Hence, if the factor "economies of scale" already exists, it does not seem useful to implement the pattern of "ultimate luxury" in order to counteract the threat of new entrants. Nevertheless, it is possible to use the pattern "mass customization" in combination with direct selling, as it works perfectly well and also helps to reduce the threat of new entrants. It might be an interesting opportunity to think about the combination of two business model patterns which do not really fit together at first glance. If companies are able to develop and overcome these counter-effects, they might develop a rather new (radical) business model which is robust against external effects/threats. Summarizing, combining different business model patterns both with complementary or supplementary effects is a great opportunity to identify "white spaces", which are the starting point for any new business model opportunities.

Conclusion

Companies have gained substantial experience in the last years with regard to how to master new product and service development. However, recent technological advances and economic challenges necessitate that they increasingly not only reshape their products (or continuously improve their processes), but that they also innovate their business model. Academic research has contributed to this issue by developing tools that aim to analyze the elements of a business model. One example is the business model canvas. It is a strategic management template for developing new or illustrating existing business models by outlining the way that a business model creates, captures, delivers, and communicates value out of a value proposition.

Another approach is that of business model patterns. Managers and decision makers can use these patterns

to generate systematically a new business model or adapt an existing one. The idea is that innovative BMs can be created by rearranging and composing existing patterns. Gassmann et al. (2013) identified 55 different BM patterns which can be used to enrich an existing BM with new elements. We analyzed the effect of such patterns against the threats to a BM by using Porter's five forces. These forces describe the competitive forces within an industry and can help to analyze the strength of threats to a company. We selected 19 BM patterns and evaluated their effect against each of the Porter's forces. In a quantitative study with experts from RWTH Aachen University, each BM pattern was assessed by the potential effect.

We were able to identify clear trends in the performance of patterns against Porter's forces. The results can furthermore help companies to make systematic combinations of these patterns to mitigate the threats. For the forces "bargaining power of buyers", "bargaining power of suppliers", and "competitive rivalry" we were able to identify specific value dimensions of the BM patterns. For the forces "threat of new entrants" and "threat of substitutes" the results are less distinct. Further research is needed in order to identify more BM patterns which might have a positive effect against those threats.

Further research is necessary in order to complete the library of business model patterns and to create a tool similar to the famous TRIZ. TRIZ ("Theory of Inventive Problem Solving") is a problem solving method based on logic and data, which relies on the study of patterns of problems and solutions. It is based on the assumption that "somebody somewhere has already solved this problem (or one very similar to it.)." Creativity is now finding that solution and adapting it to this particular problem (TRIZ JOURNAL, 2016). In our study we were able to extract recommendations for actions on how to react to business threats. The results can also help decision makers to innovate better business models and researchers to better understand the effects of business model elements on threat factors.

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Appendix

Appendix 1: Variables for measuring/ operationalizing the 5 forces of Porter's

Bargaining Power of Buyers

B1- Number and distribution of buyers

B2- Governmental regulation, property rights, and patents

B3- Flexibility to change to a new product or price sensitivity of buyers

B4- Share of customers' turnover/profits

B5- Own strategic competitive advantage (cost leadership, differentiation, innovation, or operational)

Bargaining Power of Suppliers

S1- Number of suppliers for the specific product

S2- Importance as a buyer/ supplier loyalty

S3- Own possibility to use substitutes

S4- Governmental regulation

S5- Own strategic competitive advantage (cost leadership, differentiation, innovation, or operational)

Competitive Rivalry

R1- Product/ Service differentiation

R2- Market profitability and potential

R3- Completeness of information about the product

R4- Surplus capacity

R5- Government investment in development of new products and services

Threat of New Entrants

NE1- Existing economies of scale and scope

NE2- Capital intensity of market entrance

NE3- Governmental regulation, property rights and patents

NE4- Access to trade channels

NE5- Firm's/Brand's reputation

Threat of Substitutes

SUB1- Costs and risks of a return for buyers from a substitute product

SUB2- Quality and benefits of the substitute

SUB3- Buyers' resources

SUB4- Governmental regulation

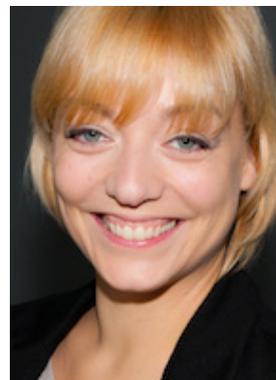
SUB5- Technological improvements

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Leveraging Business Model Components as Drivers of Business Model Portfolios

Wolfgang Sachsenhofer¹

Abstract

Purpose: The paper develops a systematic overview of business model portfolios and links it to the diversification literature. It conceptualizes the firm as consisting of multiple, different business models, with the purpose of advancing the structural, organizational and strategic understanding of business models and corporations.

Design: The research design is an in-depth case study focusing on a large European incumbent firm in the automotive industry, secondary data is supported with primary sources.

Findings: Despite its inherently limited nature as single case study, the paper shows important findings in the study of corporations: A new way thinking of the business model architecture within the firm.

Practical Implications: For practitioners, the paper offers a new toolkit in conceptualizing their firm and shows strategic options in creating, managing and discarding different business models.

Originality / Value: The concept of interlocked business model components as drivers of value creation within business model portfolios offers a new explanation for strategic portfolio creation.

Keywords: Business Model Innovation; Portfolio Strategy; Business Model Management; Diversification; Disruptive Technology

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Introduction

So far, no generally accepted definition of the term business model (BM) has emerged, a notion that is shared by a majority of researchers within the academic field studying business models (e.g. Chesbrough, 2010; Zott, Amit & Massa, 2011). Consent though exists in the description of a BM; that it is a cognitive device that creates value and allows the capturing of the created value. The concept of a business model outlines (1) how to create sustainable value in an increasingly interconnected and fast moving world and (2) how to protect this value from being captured by competition (Chesbrough, 2010; Teece, 2010). This paper understands the business model as consisting of discreet components (activities & resources) connected by profit formula creating customer value (Johnson et al., 2008). This component view (discreet and systemic) can be observed in many other theoretical musings about the business model (Sabatier, 2010; Zott, Amit & Massa, 2011).

The firm today is a collection of different business models interrelated and interacting with each other (Sabatier, 2010; Casadesus-Masanell & Ricart, 2010; Kim & Min, 2015; Sohl & Vroom, 2016). This conceptualization of business models opens a wide range of managerial possibilities. Managers of corporate business models are not limited any longer by an option space that comprises only restraint, incremental improvement or abandonment of the existing business model. In fact, business model management becomes a critical strategic task - to be carefully managed. Sohl & Vroom (2014) show that relatedness of business models is a greater determinant of performance than industry relatedness when expanding. Furthermore, Casadesus-Masanell and Ricart (2010, 2011) studied interrelations between several business models within one firm. In observing the airline industry, they show the example of a Chilean airline which incorporates two business models at the same time: One carrying passengers and another one carrying freight. Similarly, Kim and Min (2015) observe the retail industry and the propensity of incumbent retailers in adding new online business models. Both works argue that firms add new business models when they see it fit to do so as potent strategic move. Previous work on business model portfolios, for example by Sabatier et al. (2010), introduced this portfolio thinking into the business model community. However, existing scholarly work does not provide a proper and satisfac-

tory definition of a BMP and does not differentiate between simply operating multiple business models within and across the boundaries of a firm and the intended management of a bundle of business models. Further, existing literature is silent when it comes to the elements and dimensions of BMPs and BMP management.

Though, whereas Casadesus-Masanell and Ricart (2011) view mostly efficiency gains as impetus for the operation of two business models, Kim and Min (2015) investigate the antecedents of business model portfolios. They view the incumbent asset basis as an independent variable in their research by distinguishing between complementary assets (Teece, 1986) and conflicting assets, what they define as the opposite of complementary.

These papers constitute important additions to business model innovation research: Innovating business models not by changing the internal dynamics of the existing business model, but by adding a new one. At the same time, there is a noted absence of a systematic overview of this new field. Attempting to understand the new research (sub-)field in the business model innovation stream contributes in answering fundamental questions of business strategy and business model research: Kim and Min (2015) have identified corporations that add new business models to their old one(s). Whereas Casadesus-Masanell and Ricart (2010) describe existing firms operating at least two business models at the same time. Therefore, implicitly there are different options as to how several business models are operated in the same firm. For instance, potentially a new business model might just be added to the existing portfolio of BMs in the firm, or it might be swallowed by one of the existing models. Meaning, we ask the questions of: How can business model portfolios be managed in fundamentally disruptive environments?

To answer these questions, this paper attempts a two-folded approach. The paper reviews the existing literature on multiple business models as well as the literature on corporate diversification as a basis to find theoretical constructs aiding in understanding the phenomenon of multiple business models within one firm. Then, exemplarily, this paper conducts a case study of

BMW AG, a German Original Equipment Manufacturer (OEM) to highlight the different business model interactions of a business model portfolio within a single firm. Also, the different origins of multiple business models and the challenges of multiple business model management are discussed. The data collected in the case study is the result of several in-depth interview conducted with employees of different BMW business models, as well as data obtained from desk research. BMW as a whole corporation is divided into different business models, following the logic of Johnson et al. (2008), who identify a business model as possessing a distinct customer value proposition, a profit formula and operating resources and activities. The resulting business models and components are then analysed for their interaction. This paper explains the logic of business model portfolio architectures as a static concept, then uses four identified disruptive trends to illustrate the dynamics of managing a business model portfolio in the face of fundamental change within different business models using the aforementioned case of BMW. The case and literature overview serve as the basis for theory on the use of business model portfolios; how both practitioners and academics can perceive the business model as a construct of components that interact with each other. It also shows that four different options exist for managing business model portfolios; Business model reconfiguration, Business model innovation, Business model elimination and Business model coordination for successfully operating a business models portfolio depending on internal and the wider strategic environment.

Theory: Diversification of Business Models

Fundamentally, diversification presents itself as a rational move, when corporations possess specialized knowledge or strategic assets, as is argued by Markides (1996). Teece observes that managers naturally possess systematic knowledge advantages over investors and therefore should be better at diversifying into new product lines than investors (Teece, 2010). The initial

impetus for diversification stems from economics – creating economies of scope and reducing fixed costs. Markides and Williamson (1996) argue that a more important factor is to derive long-term benefits by looking for types of “dynamic relatedness” to pursue asset sharing (Markides & Williamson, 1996). Tanriverdi and Venkatraman (2005) show, that the concept of relatedness does not only matter when discussing resources or assets just as well with different knowledge dimensions. R&D relatedness, customer relatedness even managerial processes show relatedness that when combined yield positive results (Tanriverdi & Venkatraman, 2010). What follows is that synergies from diversification exist in several different dimensions within a business. When combining the positive effects (synergies or economies of scope), on the component level the entire corporation profits.

This logic works just as well for business models. Considering the often more complex nature of business models vs. products – this component view ought to be true for firms diversifying their business models as well. Diversification in the context of BMI means, that a corporation is able to leverage its components strategic or otherwise¹ of one business model and combine it with the component(s) of another business model. Thereby the new business model not only profits from the same specific advantages inherent in the component(s), the sometimes considerable portion of fixed costs that a standalone business model would have to operate under, is reduced as well. Depending on the depth of leverage, the fixed costs portion and the general competitive environment, this sometimes results in a significant inherent advantage. The cost advantage and the advantage of possessing a potential bottleneck result in the accrual of a greater share of profit over the standalone Corporation B (without possession of these strategic assets). Markides and Williamson (1994) also show, it is not the product or service as outcome of a set of assets or capabilities, but the inner workings of the process of how these are created that are the source of at least temporary competitive advantage².

1 Strategic assets (Markides & Williamson, 1994): A firm's asset under control that cannot be accessed / replicated / substituted quickly and cheaply by other competitors. Strategic assets form the basis of the profit formula as they are the driving force behind differentiation and quasi-monopoly rents

2 Assuming that in a market economy no asset offers permanent / sustainable competitive advantage

This translates into the business model logic as following: It is neither a single business model component that leads to temporary competitive advantage. Instead it is the system that is behind creating a strong customer value proposition (being a product or service), the profit formula of a business model and of course the resources (asset based) and activities (knowledge based) that drive value capture through diversification of business models.

Ecosystems and platforms as foundation for business model portfolios

Today's developments in the individual mobility space are – from a strategic and competitive point of view – fundamentally different from traditional notions of competition and strategy. Over the past 50 years OEMs derived their profits from either being technology or cost leaders. Differentiation happened within the industry through product innovation (e.g. automatic steering, engine efficiency) (Bakker, Van Lente & Meeus, 2011); Tillemann, 2014) and process innovation (e.g. Ford's conveyor belt) (Tillemann, 2014). The car as such did not undergo major breakthrough developments – with the described technology disruptions, this is likely going to change. Besides technology and business model innovation within the traditional automotive industry, similar developments appear outside the automotive industry. Major technology corporations that have previously only stayed at the margins of the automotive industry are entering. These developments are the more relevant as Adner and Kapoor (2010) point out – they therefore argue that the concept "ecosystem", ought to take the place that was previously reserved for the industry concept to take account of these developments.

Value creation and delivery in most industries is critically dependent on a network of corporations in the ecosystem. An ecosystem today is a complex web of interdependent layers of corporations that contribute towards a solution solving a customer need. In more and more differentiated economies³ these allow greater specialization between firms. Value generation and capture mechanisms therefore occur within that space. All the same, this leads to greater interdependencies

between firms. These interdependencies are made apparent when using the business model lens: Shared business model components within firms and beyond act as glue in the creation of related business models that ultimately make up entire ecosystems.

Exemplary for such a complex web of interdependencies is the ecosystem that is forming around the individual mobility services and beyond. There, these effects are visible in the value chain and solution differentiation. The ecosystem consists of a complex web of secondary and tertiary suppliers, who themselves often possess supplier subsystems. Large cooperation networks enable firms to further reduce costs and participate in R&D that would on standalone basis to costly and / or risky. Furthermore, networks organizing after sales service, repair, maintenance and upkeep (fuel industries) are following after the OEM's value add. In addition to the core system, the automotive industry is part of a wider ecosystem, consisting of for example in-drive information provision, entertainment, mapping and parking services, but also the railways, rental car firms or city authorities planning to reduce traffic in inner cities.

This has important implications for corporations and their perspective on the business model as a concept as well as a strategic tool. Choosing to focus on the ecosystem, rather than purely on the immediate environment of innovation, changes the prioritization of opportunities and threats, thinking about market timing and positioning, defining and measuring success (Iansiti & Levien, 2004) and strategic decision making.

Disruptive technologies as drivers of business model dynamics

Potentially, traditional OEMs face four distinct exogenous drivers of change, each with the possibility of disrupting the current business model:

- *Autonomous driving* (The Economist, 2012) – The developments have been noted remaking the use of the car – instead of being one an objectified symbol of freedom, it might lose its branding edge. Technical features of the car might become less important, instead of the possibilities associated with having from individual time and a second living / working space outside the house.

³ Coase's (1937) theory of falling transaction costs powerfully explains value chain differentiation

- *Digitalization of the car* – data in the car poses great opportunities for data management firms such as Amazon, Google and Facebook to tailor the driving experience and capture great parts of the value associated with mobility spent. Conversely this poses a threat for traditional automotive firms, as differentiation potential diminishes.
- *Ownership of the car* – owning a car is becoming much less attractive with the increasing diversity of different car sharing options as well as increasing national regulation by cities around the globe (most prominent example is London, The Economist, 2002). Business models like the ones from car2go or UBER offer constant availability of cars to urbanites – making individual ownership of cars less attractive. OEMs business models might come under threat through stagnant revenue and lower profits.
- *Power train* (Bakker, Van Lente & Meeus, 2011) – the modern car is a technology system centred around the internal combustion engine that established itself as dominant design. With both Electric Vehicles (EV) and Fuel Cell Vehicle (FCV) technologies on the rise, this hegemony is threatened; with possibly grave effects on business models in the individual mobility ecosystems.

The fourth described disruptions (FCV and EV power train systems) are most likely the most fundamental challenge for several of the current business models of traditional OEMs. The entire mobility ecosystems might change from being based on hydro-carbonates to a more diverse and potentially exclusively electric power-based source. Fundamental technology transitions such as these usually impact much wider fields than just the immediate competing technology, such as the transition from horse-drawn carriage to the internal combustion engine driven vehicle at beginning of the 20th century (Tillemann, 2014).

Management of Business Models Portfolios

To be able understand business model additions, this paper looks at several automotive corporations and their operations. We evaluated the scope of their production – effectively what parts and which operations

in the wider ecosystem around the car are done within the firm and which operations are usually done outside it. In the end, for practical purposes and to best demonstrate the different types of business model portfolio logics, the BMW AG case offers both a widened scope of interrelation types as well as a concise logic in how they interact.

BMW Group Case

BMW Group comprises BMW AG and all subsidiaries controlled directly or indirectly by BMW AG. BMW was founded in 1916 as a manufacturer for airplane engines. 1923 the first motorbike was built by BMW and in 1928 the production of cars started. Today BMW Group is a manufacturer of cars and motorbikes and provider of related services. BMW Group is represented in more than 140 countries, employs more than 116.000 people, and has an annual revenue of 80.401 €million in 2014. The company is among the largest industrial companies in Germany.

Following the argument that the value proposition is the unit of analysis to identify a BM, four BMs of the BMW Group were selected for further investigation: BMW (cars), BMW Group Financial Services, BMW i and DriveNow.

A corporation such as BMW AG might colloquially be termed as a “car company” operating a “premium car business model” (a comparison would be Ryanair in the airline industry “low cost carrier business model”). Despite its general truth, this paper argues it to be an oversimplification of what the business model concept both in terms of its descriptive power of the firm in its entirety and beyond as well as a tool to contribute to increased performance.

The Business Model as an expression of a corporation's architecture

The exemplary statement above equates the concept of the business model with the initial definition of the concept by Margretta (2002); being a narrative or story. With that perspective, business models of incumbent automotive firms are much less clear cut as will be demonstrated using the case of BMW AG:

- (A) BMW AG's electric vehicle operation “BMW i”
- (B) BMW AG's financial services operation

As a result of technology developments coming from the wider ecosystem (power train: in particular the standard Lithium-Ion battery enhanced through the development of the Cobalt-Cathode), BMW AG has created a new initiative, BMWi. This initiative has grown to satisfy customers' needs for individual mobility by harnessing the new technology of electric mobility. This, by opening a joint-venture based battery production facility, by establishing an entirely new sub-brand; by planning, developing and producing a carbon-based chassis (lower weight). Furthermore, BMW AG develops partnerships with other firms to source new transmission technologies, in-car electronics, and using utilities' grids to supply electricity and building electric refueling stations.

BMW AG does not just diversify its portfolio of automobiles, but creates a new business model besides the old, incumbent business model, effectively operating two BMs. Although BMW AG serves a different customer group in general, it sometimes consciously cannibalizes (at least some of) its existing revenues. More fundamentally, for that move to happen successfully, it established entirely new factories, hired new staff and adapted its corporate culture. In fact, BMW AG operates a different business model beside the traditional one, building and selling premium cars. The rationale behind the business model portfolio is fundamentally linked to the principles of related diversification (Markides & Williamson, 1994; Tanriverdi & Venkatraman, 2005). BMW AG's existing - in fact all firms' - business model are composed of components, namely resources (e.g. factories); activities (lean management); a customer value proposition (exciting, unlimited driving in a branded German automobile) and a profit formula describing the overall costs and benefits for the firm (Johnson et al., 2008). The new business model is critically linked through one or more components to the existing model(s), leveraging economies of scale and scope. The move of establishing a new business model by serving different customers / markets in this paper is classified as vertical business model link. BMW AG'S customers rarely pay cash when acquiring a new car, but usually finance it using a financing solution. That solution requires a financial institution as backing (in many cases a bank license) and has traditionally been performed by banks or other asset managing firms (and still is to some degree). BMW AG

though has moved into that space as well, now providing several leasing and credit solutions for which it needs specialized financial services personnel; furthermore it has established relations to the financial services community to partner with a reinsurance firm insure credit risk, also it instructs its dealers how to sell the developed financing solutions directly (besides offering them online as well); and they brand it under their BMW brand.

In the existing literature on firm boundaries (e.g. Lafontaine & Slade, 2007), BMW AG would be seen as integrating downwards along the value chain. This, without differentiating between fairly simple integrations: e.g. instead of exclusive partnerships with car dealers. In this case though, BMW AG operates a different system of activities downstream. It has to acquire a banking license, needs financial services specialists, create and manage relationships with car dealerships to sell its financial products. At the same time, it ensures financing by capital markets and re-insurance of its portfolio risks. The different business models are - just as in the case of the vertical business model link, linked by its components. BMW AG manages to use its brand and its dealerships as a platform to establish different business models at the same time. BMW financial services profits from the critical resources of the existing business model: the brand and the access to potential customers through dealerships as fundamental components of the financial services business model. The paper understands this therefore to be a different business model developed on the value chain, naming it horizontal business model link. This would apply in the same way to upstream integration; if BMW AG were to start operating an aluminum smelter it would constitute a new and different horizontal business model link.

The Business Model as a Tool

This paper defines four different types of managerial actions to manage business model portfolios. These actions have already been discussed in literature related to the management of single business models (e.g. Massa & Tucci, 2013) and adapted to the arena of multiple business models:

- (1) Business model reconfiguration
- (2) Business model innovation

- (3) Business model elimination
- (4) Business model coordination

(1) *Business model reconfiguration* is an action for managers to increase the overall value in BMPs. It means to reconfigure existing business models, i.e. to adapt one or more components of a business model. Adaptation might be necessary due to evolution of the components and / or the ecosystem of a certain business model. Assets of a portfolio can decrease in value and thus need to be substituted. The environment might change, e.g. related to technology or consumer preferences, so that a reconfiguration of the profit formula is necessary. Resources, such as financial resources, might also be redistributed from less value generating to higher value generating business models e.g. in order to expand the business model by adding new assets. For BMW AG, for instance, business models are under constant scrutiny due to the increased competitive pressure due to digitalization, power train re-design (battery / fuel cell), and automation. From a portfolio perspective this implies that the overall number of business models in the portfolio stays the same. If business models in a portfolio are highly interrelated, however, the reconfiguration of selected business models might create positive or negative repercussions for related business models. The determining factor for a reconfiguration decision is the net increase in the overall portfolio value, meaning, by how much does the potential value created, outperform the potential costs in related business models.

(2) *Business model innovation* means the reconfiguration of business models within a portfolio, depending on the radicalness of reconfiguration and the level of novelty of the existing business model after reconfiguration (Massa & Tucci, 2013). However, business model innovation might also occur when a new business model is added (for example through M&A) or created from scratch. The differentiating element to business model innovation from business model reconfiguration from a portfolio perspective is that the number of business models in the portfolio increases. Triggers for business model innovation are the same as for business model configuration, however, with the difference that the environmental changes cannot be fully absorbed by a simple reconfiguration of existing business models. For example, BMW AG is faced with a phase of dynamism mainly through the efforts related to mitigate climate

change. Exemplary is the increasing popularity of electric and hybrid vehicles, which will decrease the demand for standard combustion engine powered vehicles, eventually rendering this business model obsolete. For adequate adoption of alternative products (i.e. EVs) new business models need to be created. Business model innovation might create additional super-additive effects e.g. through new complementary business models or sub-additive effects through decreasing costs due to scale effects across business models.

(3) *Business model elimination* is the task of terminating a business model within a portfolio that generates value below the performance threshold of the firm. In order to compensate for eliminated business models, new business models might be created or acquired. Business models also follow life cycles similar to products, technologies or industries (Abernathy & Utterback, 1978; Klepper, 1997). During the life cycle of the business models, business model reconfiguration is more appropriate in order to revive it and to increase an existing business model's value. However, if one of BMW AG's business models reaches the end of its life cycle, it is likely to be terminated due to profitability loss and falling below the threshold of their expected value contribution set by management. Business model elimination leads to a decrease in the number of portfolio elements in the business model portfolio.

(4) *Business model coordination* relates to the day-to-day coordination and optimization activities of BMP managers to increase the overall BMP value without changing the overall number of business models in the portfolio and without changing components of the standalone business models in the portfolio. Business model coordination activities are for instance the optimization of business processes, the transfer to managerial best practices, cross fertilization of ideas.

Implications

To acknowledging that most OEMs operate several business models also means to acknowledge its implications: Business models of an OEM are depending on managerial choice and therefore are able to be managed and strategically deployed. In particular, this becomes relevant in rapidly changing business environ-

ments – for example triggered by technology changes. Managers can, by applying the described business model logic to their corporation and by developing an understanding of its critical components, steer the corporate business model portfolio. This, in combination with a well-thought out strategy, can indeed lead to superior performance and strategic competitive advantage, in particular in turbulent business environments. Besides professionals, this paper also clarifies and develops a distinct question within the community of business model researchers. Corporations are more than one anecdotal business model, indeed, they operate different ones at the same time. A closer look therefore at the diversification literature, dynamic capabilities and potentially alliance literature in connection with the concept and theories of business models and business model innovation is therefore recommended.

At the same time, this paper has distinct limitations. The case study is representative of rather traditional corporations operating business model portfolios. More advanced, mostly software & data driven firms might yield different results, as do different industries in different cycles of innovation. Also, this concept is based on firms operating in a position enabling direct or at least close contact with customers. B2B business models might look differently again.

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Development of Market-Driven Business Models in the IT Industry. How Firms Experiment with Their Business Models?

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Abstract

Purpose: The purpose of this research is to explore the role of market in the development of young entrepreneurial startups business models and their subsequent experimentation with business models. We focus on the demand-side to analyze how the market and (potential) customers can influence decisions to develop or innovate a firm's business model.

Design: Data were gathered from firms through interviews with open-ended questions about the evolution of their business model over time. Data were analyzed by using grounded-theory method.

Findings: Two themes emerged, one regarding engaging with the market and another concerning experimentation with business models and changes made after reviewing the situation on the market (firm's responsiveness). Taken together, firm responsiveness and market engagement were used to establish four categories of firm types: passive, active, unfocused, and focused firms. We observe that experimenting with business models is high initially and diminishes over time.

Practical Implications: Changing the business model is essential for success and survival. Firms will be able to take advantage of new opportunities and expand their products and services. Other firms may pivot into different market spaces than originally intended but by doing so rapidly decrease the time to market.

Originality / Value: Our research fills a gap in the literature by exploring the role of market in the development of young entrepreneurial IT startups' business models over time. We propose a framework allowing an analysis of business model innovation in different stages of firm's development.

Keywords: Business Model Innovation, Market Engagement, Startups

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Introduction

New firms often enough collide their ideal products or services with reality, i.e. the market. The acceptance of new products and needs of customers might differ from what firms first have imagined. Commercializing an idea in a situation where there is no need for firm's value proposition is costly thus to avoid a failure new firms develop their strategies and business models incrementally in a discovery driven (McGrath, 2010) or lean startup method (Ries, 2011) rather than in a planned, deliberate manner. The former assumes iteration of business models after testing different business propositions with the market.

Whereas the idea of involving consumers in the creation of value is not new and traces back to the concept of lead users by von Hippel (1986), little research has been found on engaging customers in the development of strategies or business models. Yet firms more and more use "crowdsourcing", i.e. a network of people (Howe, 2006) or customer participation (Vargo and Lusch, 2008; Hoyer, Chandy, Dorotic, Krafft, Singh, 2010; Verhees and Meulenbergh, 2004) to develop innovative business models. Take Threadless as an example of a firm who generated a platform for the user community to create products: artistic T-shirts (or canvases). Cisco went even further and incorporated customers into their organization by outsourcing help desk to them. Platforms are also interesting examples of making consumers part of the firm's business model (e.g. AppStore).

In a recent article, Priem, Butler and Li (2013) observe that the strategic management literature does not sufficiently focus on the consumer-driven business models emphasizing value for customers. Since the 1990's the pendulum in strategy research has been swinging very much towards the Resource Based View (RBV) and internal organization of the firm (Hoskisson, Hitt and Yiu, 1999) focusing more on value capture than on creating value for customers (Priem, et al. 2013). The business model literature that sees customers only as addressees of products and services, therefore, does not keep up with the demand of firms to integrate customers in the development of business models. In this paper we aim to fill this gap by exploring the role of market (especially customers) in the development of young entrepreneurial IT startups' business models

and experimentation with business models. We focus on the demand-side to analyze how the market and (potential) customers can influence decisions to develop or change a firm's business model. We systematically analyze the elements of business models of these firms, i.e. value proposition, value architecture, value network, and value finances as defined by Al-Debei and Avison (2010). Interviews with 9 entrepreneurs allowed us to identify two themes characterizing firm's behavior: market engagement and firm responsiveness. These two themes give a basis for a taxonomy of the behavior of firms in developing business models over various stages of development. We observe that experimenting with business models is high initially and diminishes over time.

This research is part of a larger project that aims at explaining to what extent business model change and market engagement affect the success of a company. The paper reports on an exploratory study that identifies dimensions of market-driven business model development and proposes a framework of business model development over different business development stages.

We firstly discuss previous studies and literature on business model innovation and market engagement our study builds on. Then we outline the method of data collection and analysis applied in the study. The methodology chapter is followed by the results of interviews and our analysis that of the firm's behavior over different stages of development. We conclude the paper with a discussion on our results and their relation to the existing literature. We also provide argument why and how this study is relevant for both practitioners and theory.

Theoretical background

To achieve sustainable value creation, firms must adapt their business models to cope with changes in the competitive environment or else they risk failing in the market (Doz and Kosonen, 2010; Achtenhagen, Melin, and Naldi, 2013). According to many authors, a business model is not static but a dynamic concept requiring shaping, adapting and renewing a firm's business model on a regular basis (e.g. Osterwalder and Pigneur, 2009; Chesbrough, 2010; Teece, 2010). Such a dynamic

approach to business models means reconfiguring the business model elements in a new way and allowing interaction between resources, competencies, organization, and value proposition of the firm to capture value from a technological innovation (Chesbrough, 2010; Demil and Lecocq, 2010). Firm's orientation towards experimenting and exploiting new business opportunities is one of the critical capabilities that lead to business model changes (Achtenhagen et al., 2013). A study of Lehoux et al. (2014) shows that technology startups usually start with a vague value proposition and business model evolving over time validated by stakeholders such as e.g. investors.

A firm that continues exploiting the established business model and is afraid of experimenting, might miss the potential value of an innovated business model (Chesbrough, 2010). Barriers to business model innovation (or adaptation) can be overcome by effectuation and experimentation (Chesbrough, 2010) that triggers business activity through the generation of new data from interactions with potential customers or through real-world experiments with new products (Saravathy, 2008). Such effectuation processes are similar to discovery-driven planning (McGrath, 2010), which enables companies to evaluate key assumptions that have been made in a business model by further experimentation and adapting the initial business model (Chesbrough, 2010). This process is driven by updated information concerning the economic viability of previous assumptions made in constructing the current business model (McGrath, 2010). Other work concerning "lean startup" methods stresses testing business-hypotheses, product iteration and validated learning as the means to shorten the product development cycle and reduce market risks before moving into the next stages of business development (Ries, 2011). A core conclusion of these perspectives is that firms need to find a way to replace the old, reliable business model with a new one in order to be profitable in a turbulent market by experimenting and learning from their environment. They do it in different stages: initial business model design and testing, business model development, scaling up the refined business model and sustaining growth through organizational learning as showed by Sosna, Trevinjo-Rodrigues, and Velamuri (2010). Innovating on a business model is a (dynamic) capability of a company to react to market changes (Sosna, et al, 2010).

To observe the dynamics of business models we observe four primary dimensions or components of a business model: value proposition (description of product/service and market segment), value architecture (organizational and technological infrastructure of an organization), value network (inter-firm relationships of an organization and its position in the value chain), and value finance (costs and revenue models) recognized by Al-Debei and Avison (2010) as the most occurring in the business model literature. Business model innovation (or adaptation) can thus result from reinventing the established (of an existing firm or established in industry) value proposition, existing customer base, deconstructing traditional value networks or the firm's role in the existing value chain (Magretta, 2002; Govindarajan and Gupta, 2001).

Most of the definitions of the concept of business model view customers as an audience for the firm's value proposition and not as a valuable "actor" to be involved in the process of helping firms define their product offering, revenue model, value network or value architecture (e.g., Osterwalder, 2004; Al-Debei and Avison, 2010). To the best of our knowledge, only the study of Plé, Lecocq and Angot (2010) integrates customers into the business model concept. Their Customer Integrated Business Model (CIBM) incorporates customers as resources of the firm that affects its organization and value proposition. The emergent approach to developing a business model suggests that a business model should be evaluated against its current ecosystem of suppliers, competitors and customers and against how the ecosystem may evolve (Tece, 2010; Lehoux et al., 2014). Thomke and von Hippel (2002) recommend integrating users into the new product development process, while Pynnonen, Hallikas, and Ritala (2012) go even further and propose customer-driven business model innovation that involves testing business hypotheses in customer research and then implementing them into the business model.

Market engagement

To explore how startups engage the market in developing their business models in more details, we rely on the concepts of market orientation and customer involvement. We use the term "market engagement" to capture the activities related to both the market and customers. In this way we integrate two sepa-

rate literature streams to capture an inclusive view on how firms engage the market and use customer and competitor information in developing their business model. Market orientation is a firm's ability to understand and make use of the knowledge it holds about its customers, competitors and markets (Hakala, 2010). Market orientated firms analyze and react to changes in the behavior of both customers and competitors in the market (Hakala, 2010). Down the road, knowledge about the market is turned into actions and exploiting new market opportunities (Hakala, 2010; Narver and Slater, 1990).

Two approaches to studying market orientation have dominated the literature to date. One approach splits market orientation into three different elements: customer orientation, competitor orientation and inter-functional coordination (Narver and Slater, 1990). The second approach considers market orientation as intelligence generation, intelligence dissemination and responsiveness (Jaworski and Kohli, 1993). The most notable difference between these two approaches toward market orientation is that Jaworski and Kohli (1993) include firm responsiveness in the market orientation construct. In contrast to later work (Narver, Slater, MacLachlan, 2004), responsiveness does not distinguish between expressed or latent customer needs. Responsiveness is concerned with taking action and reacting to market intelligence by selecting target markets, offering new products to customers or changing the way firms produce or distribute their products (Jaworski and Kohli, 1990). Homburg et al. (2007) have studied the mechanisms that drive the responsiveness of customer oriented and competitor oriented firms. These researchers measure firm responsiveness as the speed of reaction to customer or competitor information. The impact of firm responsiveness on the business model remains an underexplored area in the business model literature.

The notion of customer involvement is mainly concerned with information exchange between customers and firms during various stages of new product development (NPD) stages in order to achieve a more favorable cost vs. time development curve and to reduce risks inherent with the innovation process (Lundkvist and Yakhlef, 2004). Customer involvement includes customer co-creation (Von Hippel and Katz, 2002,

Von Hippel, 2005; Hoyer et al., 2010; O'Hern and Rindfleisch, 2009) and customer participation (Vargo and Lusch, 2008). Von Hippel (2005) stresses the importance of information asymmetry in the NPD process. Ideally, customers have the most accurate information about their needs, whereas manufacturers potentially have the most accurate knowledge of how to satisfy those needs. Thomke and Von Hippel (2002) argue that a firm can reduce this information asymmetry by engaging customers more proactively in the NPD process. Innovation by customers occurs mostly through the efforts of lead users (Oliveira and Von Hippel, 2011). Lead users are characterized as being ahead of the rest of the market with regard to the product domain and related problems that customers encounter (Oliveira and Von Hippel, 2011). Lead users are particularly important for high-tech firms that are operating in highly dynamic and complex environments (Von Hippel, 1986). Other research confirms the importance of customer involvement in the NPD process and its value as an important way to reduce time and expense (e.g., Hoyer et al., 2010), and maps the most appropriate types of input as a function of NPD stage (e.g., Kaulio, 1998). O'Hern and Rindfleisch (2009) proposed a typology of customer contributions that identifies four types of NPD contributions: collaborating, tinkering, submitting and co-designing. Collaborating is defined as a process in which customers have the power collectively to develop the core components of a product. Tinkering is a process in which customers make small modifications to a commercially available product. Submitting means the direct communication of new product ideas between the customer and the firm. Finally, co-designing is a process in which a small group of customers provides a firm with new product designs (O'Hern and Rindfleisch, 2009).

Thus, these two literature streams agree on the importance of customer involvement and firm's responsiveness on the other hand in the new product development. However, research on market orientation and customer involvement in changing business models is limited. In this paper we implement the ideas of engaging customers and responding to market knowledge to look into the insights of business model dynamics in various phases of business development. Using this emphasis, we hope to provide a framework for understanding activities that are necessary for successfully

managing business model change over time.

Data collection and analysis

Data for this study were collected at six relatively young high-tech software startups and three established software SMEs. The IT industry was chosen because of the relative flexibility in adjusting software products to the needs of the customers and because IT companies are examples of value co-creation companies (the AGILE concept of working). These particular companies

were selected based on the diversity of their products as well as the level of innovativeness of the ideas or already existing products. The companies in the sample serve different market segments. As shown in Table 1, the products and served markets ranged from professional soccer teams to procurement organizations, facility management software for hotels, customer intelligence for retailers, location-based advertising for retailers, hiking and cycling software, indoor navigation for hospitals and office buildings and driver intelligence systems for taxi drivers. Although all of the

Name/ Status	FTE	Company profile
Marker startup	2	Marker is a firm that specializes in detecting and locating smartphones. Marker's technology enables to detect the presence and/or localization of smartphones with superior accuracy. /B2C
River Startup	2	River puts taxi drivers in the right place at the right time. River helps to locate passengers, improve occupancy and increase fare revenue of professional drivers. /B2C
Sporter Startup	3	Sporter converges scientific models to intuitive tools in sports. Their first product is the WSSA-model which helps scouts with the selection of new players. /B2B
Cooler startup	30	Cooler allows users to replace the old concept of collecting physical coupons with a mobile application so you can collect and redeem the coupons that you have nearby specific locations of businesses. /B2B
ITech Established	10	ITech provides its customers with motion tracking and vibration monitoring tools. /B2B
Motile Startup	3	Motile provides hotels with standard software-as-a service facility management apps to increase their quality of service and revenue. /B2B
Alife Established	8	Alife has developed an application that provides routes for hiking and cycling enthusiasts. /B2C
E-Proc Established	11	E-Proc specializes in developing and selling e-procurement software to a broad range of actors in the value chain. /B2B
Smarts Startup	7	Smarts dynamic and personal way finding within buildings and surrounding environments. /B2B

Table 1: Company profiles

companies studied are SMEs, they ranged in size from 2 to 30 FTEs. (Nb. The names of the companies have been replaced by fictitious names in order to provide anonymity to respondents.)

Most of the companies were past research and development and market introduction phases. Some had already started scaling up their business model, whereas others had recently introduced their product on the market. One startup was still in the prototyping phase. This feature of the dataset is particularly valuable for analyzing business model dynamics in different business model development phases.

Data were gathered through interviews with key members of the firms and from secondary sources (e.g., company websites, archival records, etc.). Respondents were either CEOs or business development managers. Information obtained from company websites and news articles was used to tailor interview questions appropriately for each firm. Nine in-depth interviews were conducted, with duration of at least an hour. Respondents were asked a series of open-ended questions and appropriate probes about the evolution of their business model over time and what factors played an important role in this process.

The interview guide used in this research consisted of four sections: The interview began with grand-tour questions and discussion about how the product and target market of the company had evolved over time. This was followed by questions and discussion that focused on the firm's openness to business model experimentation. The third section was dedicated to exploring how the firm engaged the market in developing its business model. The final part of the interview involved discussion of the firm's openness to scaling up the business and the future vision of respondents.

The interview data were analyzed by employing the coding techniques and grounded-theory method proposed by Strauss et al. (1998). This process started with open coding which led to the initial identification of concepts, properties and dimensions. Underdeveloped codes that could not be found in most cases were then eliminated in order to focus on the prominent codes that would allow for better comparison of cases. Axial coding was used to relate categories to their subcategories and to gain additional insight in how

properties and dimensions of the concepts are linked to each other. We coded the interview data to capture what the companies in the sample did to gather information from the market and the extent they changed their business models in relation to feedback from the market.

Results

As we focused on market engagement we specifically looked at how the companies we interviewed created their ideas for businesses, how they gathered information in the process of developing their businesses, how they dealt with the feedback they got from the market, and how they changed during the business development process in various stages of development. Two major themes emerged from the analysis, one regarding engaging with the market (market engagement) and another one concerning experimentation with business models and changes made after reviewing the situation on the market (firm's responsiveness).

Market engagement

When talking about the beginnings of their companies and product development, respondents told us how they tested their ideas with customers or potential customers. Some of those companies did desk research on the competitive situation on the market and industry. Sometimes they performed formal market research. As an example, one of the CEOs mentioned,

"What I needed to learn was mostly how to quantify a market size (...) and find out whether my assumptions were correct to validate what I had in mind. Partly that's desk checking or searching. Just using research data about the size of the market." (River)

Other data shows that some companies monitor technology and their competition.

"Delivering standardized and end-to-end solutions is an ongoing trend in the ICT industry. Firms don't want a lot of hassle in their own ICT infrastructure". In addition, another manager mentioned, "We are also moving from saying we will install a server to saying we will provide a server in the cloud. Service in the cloud is 'in' right now". (E-Proc)

"We keep track of them (competitors: expl. authors) as much as we can at the international level. We use the Internet and visit fairs." (Marker)

"It was researching the market purely, I would say. Being a quite technology driven software engineer, I know exactly what is possible to build with the technology that surrounds us. For me it's more a learning journey of defining a product or problem the market has, understand the market and understand the size of that market and what they need to solve their problem." (River)

If the firms talked to customers or potential customers, they would do it in an informal way not necessarily with a large and formal research such as focus groups or conjoint analysis. They engaged in conversations with customers. Some companies were approached by people who had heard about their products. These interactions with the customer were similar to what Saravathy (2008) suggests.

"We actually got a request for our firm a couple of times to build a hotel management application. We've talked about different features for the app with parties that were interested". (Motile)

"But then somebody from hospitals came to us and asked us for our product when we were not ready to sell yet." (Smarts)

Some companies are being more proactive and engage in product pilot programs. They engaged their customers in the development of a prototype. This is consistent with the expectations of Oliveira and Von Hippel (2011).

"Our app is in a pilot phase at the moment. We are looking to validate that and our targets for user engagement to be able to scale it further. We should have testimonial information from our pilot customers". (River)

This quote already indicates that the company intends to grow and the growth is very much dependent on the success of the product testing.

The results show different levels of engagement with the market that could be seen as two extremes of a continuum. One end of the continuum indicates low

level of engagement with the market seen in engaging in desk research. The other end: high market engagement, involves conversation with customers and formal product testing.

Firm responsiveness

The companies also told us about how they changed their businesses over time. From this the theme of firm's responsiveness emerged. This theme indicates how the companies reacted to the voice of the consumer. Since we used the elements of a business model proposed by Al-Debei and Avison (2010), we paid special attention when the respondents mentioned their products and/or customers (value proposition), revenue models (value finance), way they organize the company (value architecture), and their relationships with partners (value network).

Some of the companies changed or adjusted their products or shifted to other markets. We list a few examples of firms' reactions. They will be discussed in more detail later in the paper. Here is an example of a change of the market:

"I wouldn't say that the market size really informed or led to decisions of the functionality that we had. It certainly was developed hand in hand with the target market that we wanted to go on and pursue. When we looked initially at more ride sharing type of product, I was looking at some of the user numbers that existing services had, I was looking at the competitors around us. I wouldn't say it was a market size analysis at such, but at that point we moved away initially from ride sharing, because that was quite a crowded space and it had been tried a number of times before. I felt even though we had potentially a strong technical innovation to bring to the market, it was still a very crowded space." (River)

Another example indicates a change in their initial idea for a value proposition and indicated that:

"We decided to continue with our first idea. However, people in the football world our second idea much easier. You have to look at what concepts and ideas the market understands and what they are used to. We sell our first idea as an additional feature. We were talking to some scouts and it appeared that they didn't have a very high educational level. These people have to use your product

and understand how it works. You have to make sure that the software you build works seamlessly so that they don't switch over to other alternatives. We've delayed our first idea for six months to test and see if our first idea is going to work." (Sporter).

An interesting observation is that the change of the product was heavily influenced by both experts in the field and regular customers to the point that the market introduction phase was delayed. This confirms an observation of Christensen (1997) that the market is not always ready for innovation.

This company changed also the way a company would charge its customers (i.e. their value finance). After talking to some potential clients and experts in the industry, they realized that the initial price would have been too low.

"Then we talked to some football players and they've told us that taking 1% of the transfer sum was a very low price, so we increased our percentage to 3 plus another 3% if a player gets sold by another club and the selling party makes a profit." (Sporter)

Another company also had to revise their revenue model.

"So according to our initial concept, we would charge them around 100.000 euro per year. That's serious

money. The retailers were asking: how do you know that Cooler actually works and how do you know that you can execute your idea? The retailers were not willing to participate for this amount of money". (Cooler)

Another quote confirmed the value of getting information from the market (Hakala, 2010).

"We saw the effect that offering something for free wasn't being valued by our customers. (...) We are not doing it for free anymore, we are doing it for a fixed amount of 99 euro per year" (Cooler)

The latter exemplar is interesting as it shows that the company realized that their success was related to the value they deliver to customers. Revenue model was one of the business model elements that have changed in the business model of this particular firm after engaging with the market.

Taxonomy of firm's behavior

Those two themes combined result in a two-by-two matrix that describes the behavior of companies in developing business models as reaction (or no) to the market. Figure 1 shows this taxonomy. Firm responsiveness varies from low to high responsiveness. Firms that are not responsive make few changes in one or two components of their business model (e.g., adjust their value proposition to the needs of customers), whereas firms with high responsiveness show more frequent

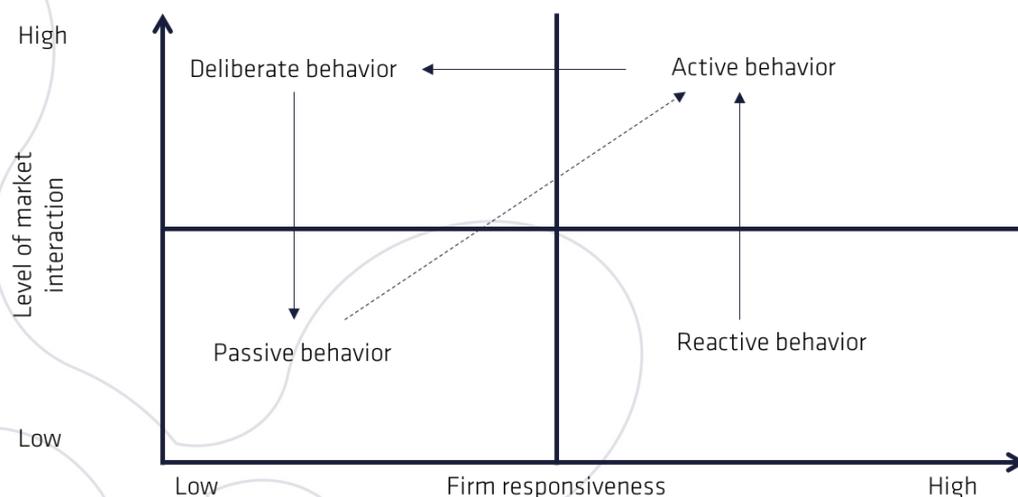


Figure 1. Taxonomy of firm's behavior based on the level of market engagement and firm responsiveness

changes in different elements of their business model (more than just in value proposition). High responsive behavior is indicated by e.g., moving from one market to another and adjusting the product and revenue model accordingly. The concept of market engagement has been discussed above and is concerned with the level of involving customers in providing feedback about the product. Taken together, firm responsiveness and market engagement were used to establish four categories of firm types: passive, active, reactive and deliberate firms.

Passive behavior is characterized by a low to normal level of market engagement by relying on intelligence generating mechanisms such as desk checking, reading publications and monitoring trends. However, firms that engage in this behavior typically do not react to the information generated from these methods, which suggests that these firms may generate market information just to check on market conditions as a kind of “defense mechanism” and only react to the information if it is absolutely necessary.

For example ITech had conducted a small-scale market research project, but the reaction of the firm to this information was not evident. E-Proc also conducted a small-scale formal market research, but the CEO mentioned that the firm did not formulate any new course of action based on information. Although Smarts conducted formal market research and the data suggested that the firm should target the hotel market, the firm did not follow through on the data. The firm instead targeted the hospital market because customers from the hospital market approached the firm to build software for them and because Smarts thought it would be easier to execute against the hospital market’s requirements.

Active behavior is characterized by a medium to high level of market engagement by relying on intelligence generating mechanisms such as customer meetings, small-scale product testing and using customer case studies. These firms react to the information they obtain from these intelligence generation methods, which suggests that these firms change their business model or continuously fine-tune their product offering. We classified River, Sporter, Marker, Cooler and E-Proc as active firms in the market validation, product devel-

opment and business-scaling phases. River has revised their product features and revenue model according to customer case studies and small-scale product testing. Cooler engaged in rigorous customer discussions and adapted its value finance two times on the basis of customer feedback of consumers (first quote) and customers (second quote).

“We saw the effect that offering something for free wasn’t being valued by our customers. (...) We are not doing it for free anymore, we are doing it for a fixed amount of 99 euro per year” (Cooler)

“So according to our initial concept, we would charge them around 100,000 euro per year. That’s serious money. The retailers were asking: how do you know that Cooler actually works and how do you know that you can execute your idea? The retailers were not willing to participate for this amount of money”. (Cooler)

Marker responded to the idea of the market, customers and strategic partners and changed their initial product concept development.

“We noticed that indoor navigation is difficult (...). In these though economic circumstances it is hard to sell ‘nice-to-have’ things. (...) Yes. We have heard it from customers and also from companies that help us in delivering our product. For instance, companies that sell our product, like installation firms and firms that sell office space. We noticed that the market for our initial idea was not really feasible”

Marker engaged in multiple customer discussions to validate interest expressed by retailers and acted on the information by targeting the retail market with a different product.

Reactive behavior is characterized by a low level of market engagement and a high level of firm responsiveness. This means that these firms react to information gained from desk checking and formal market research. These firms mainly use to this kind of broader market information to determine the viability of the market before moving into it and to bring focus to their product concept. However, constantly reacting to information generated from desk checking may not be always be a wise idea, since it can lead to many new un-

tested (with customers) business models. Firms that do not test their business model in the market through customer meetings remain reactive, since they change their initial business model frequently without making the decision to pursue one specific business model. An example from the interview data is the firm River that reacted to information generated by desk checking to move away from their initial target market into another market that was less crowded with competitors. This event occurred in the idea generation phase.

"I looked at the market and found that doing ride sharing groups is difficult, it's been attempted before. Technology-wise it was an interesting step in innovation to make there, but I looked at the market forces and basically decided that it would be quite difficult to execute if not impossible, so I've looked for other area in this sector to solve problems. You might hear this a lot, but we've moved through a few different iterations of the idea from when I first came up with things in my head to when I actually started to write code and develop a product". (River)

However, this firm didn't dwell too long in the idea generation phase and moved into the market validation phase.

Deliberate behavior is characterized by a high level of market engagement by using small-scale product test-

ing and no react to the information obtained from this activity unless it is not absolutely necessary. The reasons for not reacting may be that the firm is currently executing a well-established product strategy and has no room to consider alternatives. This could lead to very small changes in a firm's business model component if it is necessary. Smarts is an example of a deliberate behavior. It was in the product development phase and nearing the market introduction phase when the firm learned from a lead user that the user interface was not appropriate for that category of user. Smarts decided last-minute to change the user interface of the program, because otherwise, the product would likely receive negative feedback after launching it in the market.

"One month before the opening of the hospitals our interfaces were ready, everything was approved. And we got this email from somebody we never heard of before saying: this will not work, and lots of criticism. (...) He said the interface was for an IT company, would not work for a nurse. (...) We made an interface for nurses". (Smarts)

Development of market-oriented business models over different stages of development

We observed a pattern of behavior over various stages of development as seen in figure 2.

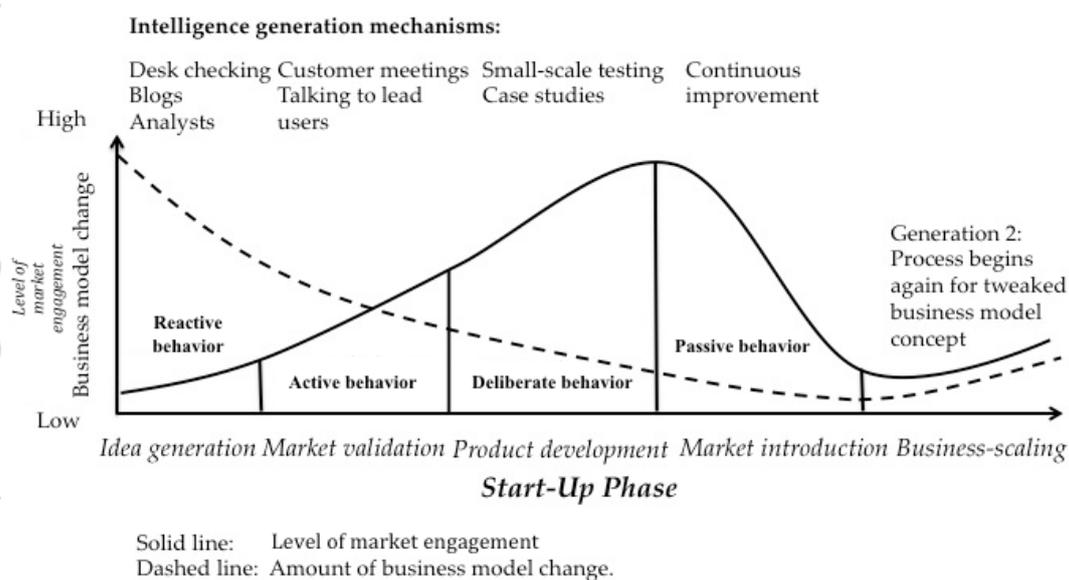


Figure 2 Integrated framework of business model dynamics

We found that the behavior of firms changes over time from first being reactive and finding the right idea for a product and a business model that would capture value from it. We observe that experimenting with business models is high in the first phases and to almost diminish in the market introduction phase. Also engaging the market changes over time from first being less engaged towards more interaction with customers and/or users.

In the idea generation phase firms are rather developing ideas within the firm and experiment with their business model that might lead to changes in all four components of the business model, including the value proposition, value architecture, value finance and value network. Here, firms interacted with the market to determine their entire business model, instead of limiting market engagement to construct one component. This type of firms was classified as a reactive firm that is at the beginning of constructing its business idea or business model. Typically, these firms did not engage the market on a high level, because they did not have a fixed business model to validate in the market. These firms mainly used desk-checking techniques to see whether it was viable to pursue an opportunity with a new business model. If it turned out as not viable to exploit an opportunity with a business model that the firm had in mind in the first place, firms chose to pursue a different market opportunity with an entirely different business model. Firms could change their business model so drastically in this phase, because they did not make a commitment to their business model by executing it. The interview data suggests that the firm River fits this profile. River went through different ideas and concepts in the idea generation phase, which also led the firm to reconsider their value proposition, value finance, value architecture and value network. Other firms did not change their entire business model so drastically in the idea generation phase.

Later in the process, we saw firms change one or two components of their business model driven by reaction to medium market engagement. Firms tried to validate their initial idea of a business model by engaging in interactions with customers. Marker, Sporter and Motile changed their business model in terms of the value proposition in the market validation phase, which was mainly influenced by arranging customer

meetings and discussing product features. Sporter and Motile also changed their value finance in the market validation phase, since some customers gave feedback on the charging methods used by both companies. We found that the more active companies became in interacting with the market, the more detailed information they can get to fine-tune their initial business model. The components that changed the most in the market validation phase were the value proposition and value finance.

In the product development phase firms would typically develop their product further that has probably been revised already after interactions with customers. In this phase startups tend to engage their customers to further tweak their offering or revenue model. They might get feedback through small-scale testing on product details or on specific charging methods that the company was using. That was the case with River, Cooler and Smarts. River iterated their product in terms of product features by using small-scale pilot testing. Furthermore, River's CEO mentioned that changes in product features might also influence changes in the firm's revenue model. The company was still revising its revenue model based on small-scale testing. Cooler fine-tuned their revenue model through rigorous customer discussions. Smarts tweaked their product by replacing the old user interface by a different user interface, which would be better suitable for their target market according to customer feedback. After the market introduction phase Cooler worked on a version 2.0 of their app and fine-tuned their value proposition. Alife also made small revision in the revenue model by selling individual hiking routes rather than bundles, because customers didn't prefer to pay the price for bundled routes. An interesting case was ITech who their product portfolio by introducing vibration monitoring as a result of customer feedback and information exchange during product fairs. In this way they expanded into a new market and needed to adapt their value architecture and value network. They did not change their business model but rather developed a new one thus started the process of market engagement and responsiveness all over again.

Established companies in the business-scaling phase did not experiment with their business models much as observed in E-Proc and Alife. We only saw tweak-

ing the value proposition element by these companies. The reason for this phenomenon could be that young startups, which do not have a product that has been validated yet by the market, adjust and fine-tune their

product offering, while established companies adapt an existing business model that needs refinement, because of changing market conditions or legal barriers, like the case of the company IT.

Table 2: Firms' actions in various development stage.

Development stage	Examples of actions	Firm
Idea generation	<p>Market engagement</p> <ul style="list-style-type: none"> • River used desk-checking and research data to quantify the market size and number of competitors in the market. • Motile before expanding into a new market, searched the Internet for market data. • Smarts have conducted formal market research on a small scale to keep track of industry trends. • Sporter has used news blogs and social media to keep track of industry trends. 	River, Motile, Sporter, Smarts
	<p>Business model experimentation</p> <ul style="list-style-type: none"> • Developing value proposition based on scientific projects (Smarts on smart cities; ITech on motion sensor) or master's thesis project (Sporter on selecting football players). • Getting ideas what potential competitors do and what they charge for similar products • Scanning the market for products fulfilling similar needs • Alife's value proposition was a result of a gap on the market. • River changed its value proposition from ride sharing to a taxi driver intelligence system targeting taxi drivers. 	Smarts, Sporter, Alife, River, ITech
Market validation	<p>Market engagement</p> <ul style="list-style-type: none"> • Marker, River, Sporter, Motile and Cooler arranged meetings with potential customers and talked to lead users about product features and gained insight in how customers want to be charged for the product. 	Marker, Sporter, Cooler, Motile, River
	<p>Business model experimentation</p> <ul style="list-style-type: none"> • Determining customer interests by targeting initial customer segments and bringing focus to the product. • Sporter decided to postpone the initial idea (selecting football players in a club's transfer list that would fit a football team's characteristics in the most appropriate way) and work on a new value proposition, which was about determining an initial transfer list for football clubs. • Sporter revised their revenue model during the early market validation phase and increased the re-sale value percentage of football players • Cooler's revenue model changed from an initial monthly subscription-based revenue model in combination with activation fees to a one time fixed fee without activation fees to an entirely free service for the first couple of advertisements and eventually a model that is similar to online advertising models where customers are being charged on the basis of cost per list view, cost per e-mail and cost per detail view. As they grew they hired more employees (value architecture) The business model required a change in value network: new investors and advertising partners. 	Sporter, Cooler

Product development	<p>Market engagement</p> <ul style="list-style-type: none"> River and Alife used small-scale testing/ prototyping to fine-tune product details. River used a case-study approach to determine what to precisely charge customers. The CEO of Smarts mentioned that they were approached last-minute by a customer who gave feedback on the user interface. 	River, Alife, Smarts
	<p>Business model experimentation</p> <ul style="list-style-type: none"> Fine-tuning product features by small-scale product testing. Using a 'dummy app' to convince potential customers before market introduction. Finding the right pricing model according to a case study approach. River's revenue model is subject to continuous change influenced by the product's feature set and the results of its ongoing case study. 	Sporter, River
Market introduction	<p>Market engagement</p> <ul style="list-style-type: none"> Sporter used small-scale testing of software updates. ITech gets continuous feedback from users. Alife used app store reviews to reconsider their offering on trials and charging methods. Cooler used blind tests and focus groups to fine-tune the app after market introduction. 	Cooler, ITech, Sporter, Alife
	<p>Business model experimentation</p> <ul style="list-style-type: none"> Sporter refused to build custom apps for certain customers after the market introduction phase, because of potential scalability issues. Cooler's value proposition did not see a drastic change, other than added product features after launching the app in the market. Smarts intends to grow and to make tailor-made solutions for customers to test new possible markets (value proposition & value finance). 	Sporter, Cooler, Smarts
Business scaling	<p>Market engagement</p> <ul style="list-style-type: none"> ITech conducted formal market research on a small-scale to monitor industry trends. E-Proc started with internal discussions to refine their business model and talked with potential customers to validate the new business model and also engaged in small-scale testing after this process. Cooler started with internal discussions about new product features and charging methods for the 2.0 version of the app. Developing initial prototypes to let potential customers test it. ITech started testing a new value proposition with new customers (after introducing new business model the process of market engagement started again). 	E-Proc, Alife, ITech, Cooler
	<p>Business model experimentation</p> <ul style="list-style-type: none"> E-Proc still provides its customer with procurement software, but has added new product features to its value proposition and a new customer segment as they have an ambition to grow. The company now serves the entire value chain from supplier to buyer with a newly develop E-Proc Network. Also, it now provides basic, plus and complete software-as-a-service packages to different types of customers. E-Proc initially charged its customers a high fixed price for a software module in the form of a server license and a yearly maintenance fee. It has changed this model into a pay-as-you-go/ pay-per-use model without an initial start-up fee. To expand (their current market is growing very slowly), ITech needed a new business model with new value proposition and new market (industrial applications). They also expanded their value network to new partners. 	E-Proc, ITech

Discussion

In this paper we examined whether young (startups and established) entrepreneurial IT firms change not only their value proposition but also other elements of their business models. We looked at a specific industry that is very close to the market and often works with the principles of a lean startup. One of the main aims of this research was to explore to what degree reacting to market information and engaging with the market actually led to changes in a firm's business model as suggested previous research (Al-Debei and Avison, 2010; Hakala, 2010; Osterwalder, 2004; Plé, Lecocq and Angot, 2010). To analyze this behavior we propose taxonomy based on the dimensions of market engagement and firm responsiveness resulting in four types of behavior: reactive, active, deliberate, and passive.

Our study shows that firms change certain business model components and the impact of the change in business model varied for different firms and in different phases of business model development confirming previous research (i.e., Sosna et al., 2010; Bigdeli, Li, and Shi, 2015). Although the interviewed companies did not all change their business model in one specific business model development stage, it can be observed that most of the interviewed startups made adjustments to their business model in the market validation phase.

The most distinguishable business model changes in the companies occurred in the value proposition and value finance components. Examples of business model change in these companies were for instance adding requested features to the product according to customer suggestions, adjusting product details according to small-scale testing of software updates, changing the target market of the company, positioning the product away from the competition or revising product price and the method that companies use to charge customer e.g. monthly subscription fees, fixed fees or activity-based online revenue models. These findings suggest that software startups focus mainly on getting the value proposition and value finance right in the market validation phase. A reason for this might be that startups develop their value network and value architecture after the core product and target market were made valid in terms of financial viability. For the reason of financial viability it is important to involve

the market in the first stages of business development to target the right market with the right value proposition. Also the value proposition might influence which partners and which competences are necessary to deliver the validated value proposition to customers. Changes in terms of the value network and value architecture, as a direct result of market engagement did not occur as often as changes in terms of value proposition and value finance. In other words, while market engagement might not have a direct impact on the value architecture and value network, these elements of the business model are still subject to change due to the interdependent nature of the value proposition and value finance with these components. However, it was observed that mostly established companies expanded on the number of full time employees over time, whereas startups generally consisted of three to five full time employees until at least the market introduction phase.

Implications for practitioners

IT companies that adapt their value propositions and their business models based on market engagement are likely to have higher levels of performance in terms of operation success and reducing time to market than those that do not. The results of our research have practical implications, particularly for companies that operate in rapidly changing competitive environments like the IT industry. Our research shows that business models do change over time (Demil and Lecocq, 2010). The extent of business model change depends on the types of behaviors the firm adopts (passive, active, deliberate and reactive) and where in the phase of development the firm is. Firms can use different behaviors over time as they move through these phases of development.

Changing the business model is essential for success and survival. Firms will be able to take advantage of new opportunities and expand their products and services. Other firms may pivot into different market spaces than originally intended (Smarts) but by doing so, rapidly decrease the time to market. By understanding the broad changes in the level of sophistication and technology that consumers have, firms can find different paths to market (i.e., app vs. PDA, Alife) that have a less expensive and more efficient business model. By changing mode of delivery, Alife also increased its

market segment from a narrow niche to a mass market. Revenue models and value propositions can also change based on feedback from experts and customers (Sporter). In sum, Figure 2 shows some useful business intelligence mechanisms that can be employed depending on which phase of development the firm is. It can serve as a toolbox for firms that want to experiment with their business models to fit into their markets. We anticipate that this cycle will ebb and flow as new products are introduced and the firm moves into new market spaces.

Implications for theory

Our research fills a gap in the literature by exploring the role of market in the development of young entrepreneurial IT startups' business models over time. We propose a framework allowing an analysis of business model changes in different stages of firm's development. This framework of market-driven business models delivers a set of conditions for firms to experiment with business models. Previous studies have shown that market orientation increases firm's performance (Narver and Slater, 1990; Han et al., 1998; Grinstein, 2008); however, these studies focused on new product development and not on the development of business models. This paper also answers the call for research of Priem et al. (2013) on consumer-driven business models that focus on strategies of firms emphasizing value for customers. The results of this research support previous studies (Achtenhagen et al., 2013; Chesborough, 2010; Demil and Lecocq, 2010; McGrath, 2010; Teece, 2010) that business models are dynamic and change over time. We follow up on the idea of CIBM by Plé et al. (2010) and add to the research of Sosna et al. (2010) by exploring the stages of business model development and focusing on including the voice of the customer into the process. We observe and report on the different patterns of behavior of companies in different stages of development. As the literature on business models often deals with established firms (even though the concept is used for startups by practitioners), we shy the light into the development of business models by startups as the majority in our sample are startups. So far, few studies analyze how business models of startups evolve over time (Bigdeli et al., 2015).

Our conclusion based on the results is that young entrepreneurial IT startups should involve their market

in the development of their business models early in the development phase. This conclusion goes back to Moore (1991) who advocated involving customers and creating relationships with customers in developing high tech products or services. In view of a recent study by Bigdeli et al. (2015), an interesting observation is that firms in our sample change their business models most in the early phases of the development. Bigdeli et al. (2015) analyzed university spinoffs and found that these spinoffs were changing their business models over longer time – until the scale up phase. This difference can be explained by differences in products and industries, but it can also be explained by the early engagement of the market in the development of business models. As we claim in this paper, any startup should validate their ideas before making investments.

Limitations and future research

This study has several limitations. Firstly, the sample size restricts generalizability of the results. We observed various changes in the behavior of IT startups, however, to falsify our results a larger study should be performed. We suggest that future research build on our findings to include larger samples of firms capable of handling different analysis, and different methods of collecting customer and market input. For the same reason, generalizability of the results to other contexts cannot be claimed. Our sample consisted of IT startups. In different industries, the dynamics are likely different. In the IT industry where change is rampant and is likely to be more significant whereas in a mature industry like food, change is more likely to be incremental. We suggest that other industries including low and high technology will be included in future research.

The change of business models seems to impact performance. Besides increasing sales, firms can get to market quicker, make their business models more efficient, and if they are quick enough in changing, they can take advantage of being the first mover in the new market space. Future research should look more closely at the performance implications of changing business models. Our assumption for future research is that certain types of behavior will lead to differences in performance this being e.g. faster time to market, success. Zott and Amit (2008) showed that strategy and business model can predict perceived firm's performance. We also acknowledge the lack of longitudinal data col-

lection. More longitudinal research such as Achtenhagen et al. (2013) and quantitative is called for that should more closely examine the business model change and subsequent impact on firm performance.

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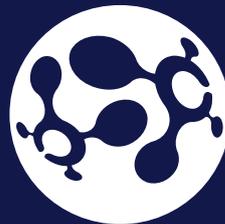


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