Journal of Business Models (2016), Vol. 4, No. 1, pp. 63-83

JOBM
Journal of Business Models

Initial Configurations and Business Models in New Technology-based firms

Hanna Rydehell [1] and Anders Isaksson [2]

Abstract

Purpose: The purpose of the paper is to analyse founders' perceptions of initial configurations and business models in new technology-based firms (NTBFs).

Design: Case studies were performed using semi-structured interviews and interactive techniques involving open questions and activity cards to capture perceptions of activities that form the firms' business models.

Findings: The Business Model template, commonly referred to as the Business Model Canvas, is frequently used among these companies and seemed to have shaped the business model discourse in our case companies. Our findings also indicate that founders of NTBFs perceive their customer value proposition as the most valuable element of their business model. We also recognized signs of the influence of financial partners on the founders' perceptions of the initial business models. Furthermore, findings show that some NTBFs create parallel business models within their firms to ensure survival in the start-up phase.

Originality / Value: The paper adds value to business model research by describing how NTBFs' structure their initial business activities and the elements of their initial business models perceived to be as more crucial during the early years as well as how these perceptions change.

Keywords: Business Models; Initial Configurations; New Technology-based Firms, Founder Perception

Please cite this paper as: Rydehell & Isaksson (2016), Initial configurations and business models in new technology-based firms, *Journal of Business Models*, Vol. 4, No. 1, pp. 63-83

1 Technology Management and Economics, Chalmers University of Technology, Sweden; hanna.rydehell@chalmers.se

2 Chalmers University of Technology, Sweden; anders.isaksson@chalmers.se

Introduction

New technology-based firms (NTBFs) are important for the long-term development and growth of an economy (Storey & Tether, 1998; Spencer & Kirchhoff, 2006) through employment, research and development, and innovation (Bollinger et al., 1983). Yet, many of these firms do not succeed in the market during the first years of start-up. In order to better understand why some firms succeed and remain in the market while others fail, researchers have studied the impact of founding conditions on firm growth including, for example, social capital and knowledge acquisition of the founding team, resource management, and the business environment (e.g., Yli-Renko et al., 2001; Löfsten & Lindelöf, 2003; Brinckmann et al., 2011; Clarysse et al., 2011). Research has demonstrated that a firm's future prospects for development are affected by decisions made initially by founders and that configurations established in the early start-up phase are difficult to change later on (Boeker, 1989). Hence, understanding the initial configuration and structure of business activities becomes important to recognize the consequences that these decisions may have in the future. One way to capture the initial business configurations made by founders is to investigate their initial business models.

The business model of a firm is a way of structuring business activities to achieve corporate objectives (e.g., Amit & Zott, 2001; Chesbrough & Rosenbloom, 2002; Magretta, 2002; Teece, 2010; Zott et al., 2011) and is a simplified depiction of how the elements of the business work together (DaSilva & Trkman, 2014). The benefit of a good business model is that it delineates how all parts of the firm will work together to deliver an important advantage (Margetta, 2002), specifically, by capturing value from innovation (Chesbrough & Rosenbloom, 2002; Teece, 2010). Chesbrough and Rosenbloom (2002) showed that technology-based spin-offs capture economic value through evolving their business models and unlocking cognitive dimensions from previous and old business models. In this sense, the business model constitutes an important element for (new) technology-based ventures.

Furthermore, the business model has been recognized as a cognitive instrument for founders and managers (Baden-Fuller & Mangematin, 2013) to use in order to configure their businesses and to understand how the firm can create, deliver, and capture value.

The cognitive approach highlights that advantages of the business model lie not only in how it is developed, but also how founders are able to change it. Extant business model literature has demonstrated the importance of this for business model innovation (Chesbrough, 2010; Achtenhagen et al., 2013) and for the establishment of firms and start-ups. Experimentation and adaptation of early business models enhance the chances of business success (Morris et al., 2005; Andries & Debackere, 2007).

Andries and Debackere (2007) studied NTBFs and the relationship between business model adaptation and firm performance. They found that adaptation is valuable and reduces the frequency of failure in industries that are developing, rapidly changing, and capitally intensive, which are often the characteristics of industries with NTBFs. Concerning business model adaptation, founders need to perceive and recognize changes in the market to be able to adapt properly. Early perceptions that influence founders' decisions are important to emphasise in order to understand connections between the business model and firm success. However, we still do not know enough about founders' perceptions. How founders perceive their initial business models during start-up and how they configure and structure their business activities (what they focus on) have not been fully addressed by existing research, making it unclear how these perceptions might influence the success of NTBFs.

This study aims to address this research gap on initial business models. The main purpose of this study is to analyse founders' perceptions of initial configurations and business models in NTBFs.

The study is based on a case studies of Swedish NTBFs in the early years of their start-up, analysing founders' perceptions of their businesses and their configurations. The study contributes to the business model literature by exploring how founders perceive their businesses in the start-up phase and describing their focus in their initial business models. Moreover, the study gives input to and suggestions for future research on quantitative measurements of initial business models, which might contribute to clarifying the consequences of these initial configurations.

The remainder of the article is organized as follows. Section 2 presents a brief summary of the literature on the business model concept and how it has been studied within the entrepreneurial process. Section 3 describes the research methodology for the study and Section 4 presents the results and analysis. This is followed by a concluding discussion of the findings and recommendations for future research.

Theoretical Framework

A business model is an outline of the configuration of business activities, depicting how the value delivered to the customer can be converted into an economic value for the company (Chesbrough & Rosenbloom, 2002; Magretta, 2002; Baden-Fuller & Morgan, 2010). Such activities include: providing offers to customer segments; identifying how to reach customers and which distribution channels to use; structuring what resources are available internally and what is needed externally; and, understanding the company's costs (e.g., Chesbrough & Rosenbloom, 2002; Dubosson-Torbay et al., 2002; Magretta, 2002; George & Bock, 2011). In general, business models are defined through how firms create, deliver, and capture value (Chesbrough & Rosenbloom, 2002; Teece, 2010; Richardson, 2008; Zott et al., 2011). Thus, a business model is a current picture of how the different dimensions of a firm interact to create business value (DaSilva & Trkman, 2014). Accordingly, a business model can be viewed as the underlying architecture of the firm. This view of the business model provides a description of how firms are structured depending on their business environment (i.e., the context). From that perspective, the business model is more like a road map or plan of how different elements and linkages between them interact to create a customer offer (product or service) and how value is captured through payment. Approaching the business model as merely the architecture of the firm, consisting of the configuration and structure of different elements and the linkage between them, has engendered the development of several frameworks (see, e.g., Hedman & Kalling, 2003; Morris et al., 2005; Shafer et al., 2005). However, although most frameworks consist of similar elements, they also differ by including different aspects such as competitive strategy (Chesbrough & Rosenbloom, 2002; Morris et al., 2005). Table 1 presents a selection of business model elements in extant literature.

However, inclusion of a competitive strategy as an element of the business model has led to confusion about the terminology of the business model concept. Thus, while there is a consensus about the relevance of the business model in capturing value from a customer offering, "there is no universal consensus of what a business model actually is" (Lambert & Davidson, 2013, p. 669). Hence, researchers have used the concept of a business model for different purposes, referring to differing aspects of a business such as its strategy and revenue (Morris et al., 2005).

In terms of strategy, the business model comprises strategic elements such as how the firm will make money. However, this does not mean that a business model is the same as a strategy (Magretta, 2002; Morris et al., 2005; Shafer et al., 2005; George & Bock, 2011). The business model can be seen as a way of communicating a firm's strategic choices (Shafer et al., 2005; Richardson, 2008), focused on its opportunities, whereas its strategy aims to address how it will handle competition (Magretta, 2002; George and Bock, 2011). However, as the strategy deals with competition, the business model should fit with the strategy in order for the firm to perform well (Zott & Amit, 2008). The business model can be described as a reflection of what the firm is currently, while the strategy addresses what the firm wants to become (DaSilva & Trkman, 2014). The strategy is the way a firm positions itself in the market and where and how it decides to compete, whereas the business model seeks opportunities to exploit in its markets and how to achieve its strategy (Casadesus-Masanell & Ricart, 2010). Actually, as argued by George and Bock (2011), the business model only exists when there is a business opportunity to exploit.

Moreover, the business model is not the same as a revenue model, although they are complementary as described by Amit and Zott (2001): '*A business model refers primarily to value creation whereas a revenue model is primarily concerned with value appropriation*' (p. 515). Simply put, the revenue model can be seen as a sub-concept of the business model. The revenue model

Table 1: Business Model Elements	
Author (year)	**Business Model Elements**
Amit & Zott (2001)	Content of transactions, structure of transactions, governance of transactions, and value creation design
Chesbrough & Rosenbloom (2002)	Value proposition, market segment, value chain structure, cost structure and profit potential, value network, and competitive strategy
Morris et al. (2005)	Offering (value proposition), market, internal capability, competitive strategy, economy (cost, profit), and growth/exit
Osterwalder et al. (2005)	Value proposition, target customer, distribution channel, relationship, value configuration, capability and core competences, partnership (partner network), cost structure, revenue model
Tikkanen et al. (2005)	Strategy and structure, network, operations, finance and accounting, reputational rankings, industry recipe, boundary beliefs, products
Richardson (2008)	Value proposition (offering, target customer, competitive advantage), value creation and delivery system (resources and capabilities, value chain, value network), and value capture (revenues, costs)
Teece (2010)	Value proposition, market segment, revenue streams, cost structure, strategic engagement, 'isolating mechanism', resources/dynamic capabilities, value chain and value delivery
Baden-Fuller & Mangematin (2013)	Identifying the customer, customer engagement, monetization, and value chain and linkage

can be defined as the way the firm gets compensated for what it delivers and it consists of revenue streams describing how the firm is being paid.

The confusion that exists around interchangeable terms used for the business model concept could be argued to be the result of the different perceptions of founders and managers about what the business model is. Hence, the business model can be seen as not merely an architecture of the firm but as the configuration of the business in the mind of the founder; thus, emphasizing the business model as a cognitive instrument (see, e.g., Tikkanen et al., 2005; Baden-Fuller & Mangematin, 2013).

A cognitive perspective of the business model emphasizes that founders use the business model to make sense of their business within the business environment (Vargas & McCarthy, 2010). This perspective of business models further highlights the linkage between the business model and technology development and transfer (Baden-Fuller & Haefliger, 2013), which is of specific interest in the context of NTBFs since they build their businesses around commercializing a technology. The technology development is, thus, dependent on the decisions and focus within the business model based on the perspective of the founder. Moreover, for NTBF founders especially, the business model represents an on-going, changeable tool to use to structure their businesses to target perceived opportunities and achieve competitive advantage (strategy) over the long run. Further, cognition guides what founders perceive and believe to be an appropriate business model (Tripsas & Gavetti, 2000), influencing their decisions and the business activities that are focused on. Thus, this paper draws on the research regarding business models as the cognitive instruments of founders, facilitating the structure of business activities to create, deliver, and capture value.

Although business modelling is regarded as the cognitive process of founders in this paper, frameworks providing elements of the business model, such as the Business Model Canvas (Osterwalder & Pigneur, 2010) or the entrepreneur's business model (Morris et al., 2005), are still useful in understanding how entrepreneurs configure and form the underlying architecture of their firms to exploit opportunities in the market. Thus, using such frameworks could facilitate an understanding of where practitioners draw the line between strategy and the opportunity-centred business model (George & Bock, 2011), which might facilitate finding the answers to questions about how founders' perceptions of initial configurations and business models influence how they structure their business activities.

Business models and the entrepreneurial process

Examining the business model as a cognitive instrument, it appears that the development of the business model will change during the start-up phase as founders understand their business environment better and what and how they can create value. Experimenting with business models during start-up has been recognized as important for new firms in adapting their businesses to changes in the environment, thus influencing the success of their firms (e.g., Morris et al., 2005; Andries & Debackere, 2007; Chesbrough, 2010; Andries et al., 2013).

Andries et al. (2013) demonstrate that simultaneous experimentations are important for technology-based ventures to cope with uncertainty and for long-term survival. They also show that experimentation implies a heuristic logic and involves several business models that firms experiment with before settling on one. Hence, during the start-up phase, firms may not focus solely on one business, thus experimenting with the initial business model could result in parallel business models (Clausen & Rasmussen, 2013; Nenonen & Storbacka, 2010). Parallel business models would further facilitate founder experimentation with different options and enhance their competitiveness in the market. As argued by Markides and Charitou (2004), several business models can be used in the same market to adapt to changes and to introduce innovations creating a competitive advantage for the firm. Introducing new business models is a further way to handle changes created by competitors' innovations (Markides & Oyon, 2010). However, regarding technology-based ventures, which are usually outsiders disrupting established markets and creating new niches, elaborating on parallel business models is more of a way for founders to understand their businesses better – what value to create, how to create it, and for whom. Additionally, it is important to recognize that new ventures are experimenting and changing their business models in different ways compared to established firms (Ahokangas & Myllykoski, 2014; Iivari, 2015). Moreover, several business models offer different emphasis on the business activities, thus different perceptions of the initial business might affect the configuration of the start-up in different ways. With a cognitive approach to business models, decisions made when founders better understand their business and business environment could be studied through a different focus within the business model and changes within it could be detected as well as any changes that include experimentation with parallel business models.

The focus during the entrepreneurial process of a new firm may further change depending on external influences, thus suggesting that the external environment or external people (stakeholders) involved could impact the founder's perception and the focus in the business model.

Research has stressed the importance of focusing on customer development and relationships for firm success and the fit of firms' value propositions with customer needs (Blank & Dorf, 2012; Osterwalder et al., 2005; Osterwalder et al., 2014). Although several tools have been developed for entrepreneurs to use to configure business activities and develop their own business models, new firms still struggle to survive during the early years of start-up. Apparently, the value proposition and customer needs are not always the focus of founders. George and Bock (2011) studied how practitioners perceived a business model and how to use it, demonstrating a divided view on the concept with different understandings of the word. Thus, there are still gaps to be filled when it comes to founders' perceptions of their initial business models and how that influences how they structure their businesses during start-up. Further, with more knowledge about initial business model structures, researchers might be able to address unanswered questions about the early activities of start-ups such as 'Are unique business model characteristics correlated with improved survival or performance?' (George & Bock, 2011, p. 106).

Methodology

The study empirically investigates perceptions of initial configurations and business models in NTBFs in the first years of start-up. The topic is theoretically limited, but since the business model literature has been developed over the years, theory will be used for studying the initial configurations and the business models of NTBFs, for example, in understanding what questions to ask and in developing the interview guide. To dig deeper into the perceptions and initial business configurations a case study approach is appropriate. The case study approach makes it easier to analyse and compare data within and between cases, and is appropriate when the context is of a complex nature (Eisenhardt & Graebner, 2007). The later applies to the business model context (Baden-Fuller & Morgan, 2010).

Selection of cases

This study is interested in NTBFs due to their potential for long-term development and economic impact, as stated in the introduction. However, since NTBFs are highly technology-based they compete in highly uncertain environments (Brinckmann et al., 2011). Additionally these firms are based on assets such as technological knowledge (Vargas & McCarthy, 2010), may lack resources, and are dependent on interactions with stakeholders within their business environment. Thus, founders of these firms need to consider the configuration of their firms to be able to survive in the market, which implies adaptation of their initial business models (Andries & Debackere, 2007). In that sense, these founders are more likely to reflect on the development of their business models.

The selection of each case was based on three criteria: industry classification, age, and location. Initially, we used the Retriever Business database as a filtering tool to provide a list of potential NTBFs. Retriever Business is a database containing financial and legal information on all Swedish companies (Retriever Business, 2016). Based on the criteria, a search in the Retriever Business database filtered out firms that did not meet the criteria. First, for industry classification the Statistical Classification of Economic Activities in the European Community (NACE) codes (Eurostat, n.d.) were used to select firms that operate in high-tech and medium high-tech manufacturing or knowledge intensive industries. NACE codes have been used to classify high-tech firms such as NTBFs (see, e.g. Wennberg et al., 2012) and cover industries used in previous research (see, e.g., Yli-Renko et al., 2001).

Second, the age of the firms was used in order to identify firms that could be perceived as 'new' and in their early start-up phase. Firms selected for the study were founded and registered between the years 2010 to 2013. In our initial contact with the firms, we confirmed that the firms were newly established and not re-registered enterprises that existed for several years.

Third, to provide easy access to the case companies, firms were also selected based on their location in the Gothenburg region. The Gothenburg region is also an industry dense area with many technology-based start-ups related to both the University Hospital (Sahlgrenska) and Chalmers University of Technology.

Final selection was then made using convenience sampling, where firms were called and asked if they would consider participating in the study; if they said yes, the firm was included in the research. Table 2 presents the final eight firms selected for the study.

Table 2: Presentation of selected cases

Case	Founders interviewed	Description of NACE code	Year of founding	Empirical (Quantitative)
A	1	Engineering, technical testing and analysis	2012	Develops dental disposable saliva absorption under the tongue
B	2	Computer programming	2013	Develops software to streamline production: software that can manage production planning
C	1	Information services	2010	Develops software for companies to take advantage of online products. In the area of "Internet of things"
D	1	Video and television program production	2011	Films and broadcasts live performances and concerts in movie theaters
E	1	Computer programming	2012	Helps photographer to make improvements by offering and developing an Internet-based community for social learning
F	1	Video and television program production	2010	Post production where services are provided to create products that customers can make money
G	1	Engineering, technical testing and analysis	2011	Develops computer-based simulator for training and maintenance of intubation skills
H	1	Advertising and market research	2013	Develops a terminal to easily collect customer feedback. Helps service industry to become better at customer satisfaction and customer service

Data construction

The study was based on semi-structured interviews (Bryman & Bell, 2011) to let the respondents explore the topics and explain their thoughts and business focus. The interviews were recorded for later transcription of the data.

To ensure that each interview captured the focus of the NTBFs' business models, an interactive interview guide was developed including both semi-structured questions as well as 'assignments' where respondents were asked to think about and consider the business activities they completed during start-up.

As already discussed, the business model concept is not a crystal clear concept (George & Bock, 2011; Lambert & Davidson, 2013; DaSilva & Trkman, 2014). Thus, only using interviews might make it difficult to capture the perceptions of the founders (Silverman, 2007) and the focus of their business models. Further, using the term 'business model' might be perceived as asking the firms to reveal their unique strategies and competitive advantage; meaning, this could be seen as a 'threat' to the respondent. Therefore, the term 'business model' was left out of the first part of the interview guide. Later it was used to let the respondents offer their own definitions of a business model. Hence, this enabled a better understanding as to how the founders perceived and defined the concept of a business model and how they talk about it when relating it to their own businesses.

The interviews could be seen as instrumental dialogues (Kvale, 2006) that provide descriptions and explanations of what we want to understand. However, when conducting case studies some bias in the results is unavoidable as this kind of research design is somewhat subjective. This concern is especially true in the interview situation where the researcher has to decide which questions to ask in a semi-structured interview as well as the way respondents' answers are interpreted. To avoid creating too much bias during the interview, and to ensure the respondents expressed their business in their own words, the interview guide started by asking the respondents open questions about their business; what they do; and, how far they have come. Subsequently, the respondents were given a sheet with a timeline and asked to fill in important activities during start-up and through today. During the timeline activity, questions were also asked about any difficulties in the process, what other actors had been involved, and if examples could be given explaining some activities in more detail. The timeline provided an understanding of the founders' perception of their business and also enabled the respondents to talk more openly about their business models without the words 'business model' being mentioned.

After filling in and talking about the timeline, the word 'business model' was mentioned for the first time, asking respondents about their perceptions of a business model. To proceed to the topic of the firm's specific business model, cards depicting different activities were used (see Figure 1). These activities build on the Business Model Canvas (Osterwalder & Pigneur, 2010) and to some extent the work of Morris et al. (2005). The Business Model Canvas was especially useful as it gives a clear visualisation of important business activities.

The cards were presented as different business activities that could form different business models, and the respondents were asked to review and think about them and then rank them according to what they spent most time and focus on during the start-up process. This procedure enabled the respondents to describe what they perceived as most important in the start-up phase and describe the mistakes they made in the beginning. After the first round of ranking the cards, questions were asked about what had been most time

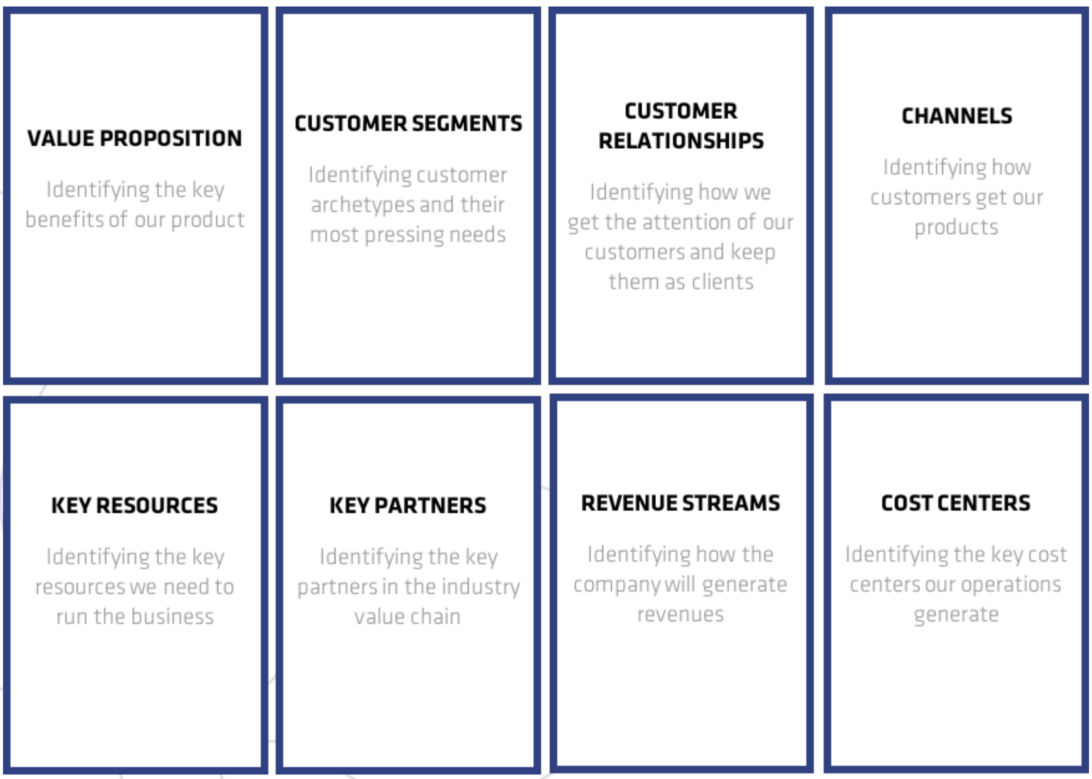

Figure 1: Business Model Activity Cards used in Interviews

consuming and difficult; if other actors had been involved during the different activities; and, what they did differently from their competitors (i.e., the uniqueness of their business models). The card ranking was photographed for later analysis.

The interviews ended with questions about the founders' expectations for their business progress in the next three years (the future), and closing questions about what they would have done differently if they could start over. The final questions aimed at getting more examples of early mistakes (some already mentioned) from new angles. In general, the average interview time was about 45 minutes.

Coding and analysis

When analysing the empirical data, the first step focused on transcribing the recorded interviews. Since parts of the interviews were focused on the timeline and the activity cards, the transcribing needed to include statements of what the respondents had written and how they structured the activity cards. The transcribing resulted in 67 pages of text, including statements from timelines and activity cards. After transcribing the interviews, it was coded based on thematic coding (Flick, 2009; Braun & Clarke, 2006). Thematic coding is used to identify patterns (i.e., themes) in the data and can be based on the purpose of a study or theory (Braun & Clarke, 2006). Specifically, thematic coding facilitates the comparison of people's perceptions and experiences (Flick, 2009) as well as a comparison between theory and practice. Based on the purpose of this paper and the theoretical assumptions of a business model being a cognitive instrument of the founders, themes were identified with this in mind. Thus, one theme identified was based on the cognitive perspective of the founders' perceptions of their business models. This included how words or concepts were used to describe their business, how they defined it, and if they were able to reflect on the value-creating and value-capturing process that constituted a business model.

Furthermore, cognition guides decisions made about the configuration of business activities and founders' focus in the business model (Baden-Fuller & Mangematin, 2013), such as customer relationships (Blank & Dorf, 2012; Osterwalder et al., 2014), which could provide inputs to aspects of success. In addition, the focus may change due to founders experimenting with their business models and learning from mistakes, which appear as patterns identified using thematic coding. Hence, themes captured were 'early focus in the business model', 'activities not focused on', and 'changes in the initial business model'.

During the process of thematic coding, patterns occurred around if and how the firms were selling their initial products; this pointed to the existence of parallel business models within the firms that supported other revenue generation. Thus, the theme 'parallel business models' was included in the coding and analysis of the data.

After identifying the relevant themes, coding and analysis were completed in two steps. First, within-case analysis (Eisenhardt, 1989) was conducted. Each interview transcript was read thoroughly and coded based on the themes in order to obtain a familiarity with it. To reduce the risk of missing important details in the data, the authors tried to keep an open mind during coding. When structuring the data into a table the different interviews were reviewed to examine if the labels occurred in several cases, and if these were related to any of the themes based on theory.

Second, the themes along with each interview were ordered in a table and the results from the cases within each theme were presented using pure descriptions, providing a rich overview of each case and facilitating the search for cross-case patterns (Eisenhardt, 1989).

Results and Analysis

Analysing the data resulted in five general themes. Table 3 gives an overview of the five themes used for structuring the analysis.

Emphasising a cognitive perspective of a business model includes the founders' perceptions of their initial business model, which implies how they define it and how they reflect on the value-creating process that constitutes the business model. Thus, when analysing perceptions it seems that perceptions, in some cases, include discussions and definitions of the Business Model Canvas, which are analysed and detailed more thoroughly under the 'Perceptions of the business

Table 3: Data analysis of case studies

Themes	Case A	Case B	Case C	Case D	Case E	Case F	Case G	Case H
Perception of business model concept	Ways to approach the market and how to sell	Business model canvas	How customers pay for the product - payment periodicity an important component	Business model canvas	Business plan	Provide services that both we and our customers can make money on	How to make money on the product and what the product is, knowing what the customer wants	Business model canvas
Early focus	Distribution channels, value proposition, customer segments and customer relationships	Customer segments and customer relationships	Identify customer segments and create customer relationships and customer partnerships. Costs were decisive.	Identify the need (most importantly), then find customers/customer segments, create relationships and distribution channels	Identify needs, find customers, distribution channels, create customer relationships, create access to resources (financial) and finding partners (investors)	Create relationships with customers, then find partners to work with, revenue streams and resources (human- and financial capital)	Identify customer needs and create customer relationships	Identify customer needs, identify customer segments and create relationships with customers, distribution channels
Activities not focused on	Partners (investors) are not important	Financial partners (investors), also revenue streams and distribution channels	Partners (investors)	Revenue streams	Costs and revenue streams	Identify customer segments and identify how to reach out to them (distribution channels)	Financing (resources) and partners (investors)	Financing (resources) and partners (investors)
Changes in the initial business model	More focus on customer involvement and sales, and relationships with distributors (partners in the value chain)	Iteration with how to involve the customer. More focus on revenue sources and distribution channels	Still focus on customer relationships	Focus on marketing and production, and how to make money. That means more focus on resources (partners), but all goes back to the customer's preferences	More focus on monetization models (revenue streams), and on customer involvement	More internal production and human resources	More involvement of the customer in the development process. More focus on sales and marketing and start looking for investors	More focus on finding partners who can provide resources (financial, human and socially). Focus on revenue streams
Parallel business model	Having parallel business model within the same firm: Shares of the revenues come from other activities (e.g. consultancy)	Having parallel business model within the same firm: Shares of the revenues come from other activities (e.g. consultancy)	Having parallel business model within the same firm: Shares of the revenues come from other activities (e.g. consultancy)	No	No	No	Having parallel business model within the same firm: Shares of the revenues come from other activities	Having parallel business model within the same firm: Shares of the revenues come from other activities (e.g. consultancy)

model concept'.

Further, since decisions about how to configure the business are based on founders' better understanding, activities that are (or are not) focused on within the business model could be analysed based on how founders reflect on and describe their business model. Additionally, changes made within the business model, specifically analysed from the timeline, could be used to understand how different elements and activities in the initial business model are changed to adapt to the founder's learning process and changed perception of the business. Thus, these could provide indications of relations between the initial business model and firm performance and survival. Related to model changes is the phenomenon of a parallel business model. These are analysed to provide an understanding of how founders handle uncertainty, which could relate to the success and survival of the NTBFs.

Perceptions of the business model concept

Viewing the business model as a cognitive instrument for founders to use to better understand their business environment and their overall business (Baden-Fuller & Mangematin, 2013), their perceptions represent important input regarding how they understand their business and accordingly, configure their business activities. Hence, the perception of their initial business model during the start-up phase would influence its structure.

When asking founders to describe their business activities during the early years of start-up, many of them defined a business model as the Business Model Canvas developed by Osterwalder and Pigneur (2010). Founders also described how they learned about the Business Model Canvas from business coaches at incubators and Science Parks; only one (Case F) out of the eight founders interviewed had not been in contact with incubators. The study can, therefore, recognize the Business Model Canvas as commonly used by incubators and Science Parks as a useful tool to describe business models. However, that is not to say that it is the same as the founder's perception of the concept, but since part of the coding of perception included definitions of business models, the Business Model Canvas could still partially reflect how business models are generally perceived.

Moreover, in some cases it was obvious that external investors had a huge influence on the founder's perception of a business model. Founder E viewed business models as out-dated based on his discussions with venture capitalists in financing the business.

> *This [business models] is something that is very outdated in our line of business [...] What they ask for is metrics, demographics, data, where users come from, how many do you have, how many are active, percent, percent, percent. That is what they are interested in. The vision, the team rather than a document on what you believe.* Founder E (referring to external investors)

Thus, one perception of the business model is that it is an instrument to be used to communicate with financial partners. However, founder E referenced parts of the value-creating elements of the firm, such as customers, relationships, and target segments, and further mentions that a physical document is not what builds the business model. Hence, this implies that a business model is more of a cognitive picture that exists in the mind of the founder but still needs to be communicated to partners and stakeholders.

Furthermore, perceptions about the business model also involved perceptions about business modelling, and how different business model components and their activities are perceived by the founders. George and Bock (2011) argue that practitioners have different perceptions of business models and they demonstrate this through the different words used to describe them. Analysing the perceptions of the founders of NTBFs of their business models, the contact with external people and organizations, such as incubators, indicates influences on their cognition and the use of visualising tools for business modelling. Thus, such influences could have an effect on the focus within the business model.

Early Focus of the Business Model

Drawing on the cognitive approach to understand what a business model is could possibly provide diversity in the perception of the elements that constitute it. In the empirical study here, this was demonstrated in various cases: First, concerning perceptions of customers and the value proposition, and second, concerning partners.

Customers and the value proposition

When describing their views on their business models during start-up, customer relationships and how to reach customers were pointed to as important aspects of the business model as well as how to receive payments for the products/services. The latter is especially interesting since almost none of the firms actually focused on this activity early on. This indicates that the revenue model is an important part of consideration in the business model, as often referenced in business model literature (see, e.g., Dubosson-Torbay et al., 2002; Morris et al., 2005). However, although research has explained the differences between the business model and the revenue model (Amit & Zott, 2001; Morris et al., 2005; Zott et al., 2011), considering the ways the founders spoke to this, practitioners seem to still perceive these as equivalent.

Extant literature on business models have emphasised that early focus in the business model should be on customers and establishing relationships with customers in order to match value propositions to their needs (see, e.g., Blank and Dorf, 2012; Osterwalder et al., 2014). The involvement of customers in the value-creating process has been emphasised as important for firm success, which includes openness to the surrounding environment and highlighting the customer's role in innovation and technology development (Nenonen & Storbacka, 2010; Baden-Fuller & Haefliger, 2013). However, based on the beliefs of the founders, their business models and the focus within them may differ depending on their perceptions influencing the models (Tripsas & Gavetti, 2000; Baden-Fuller & Haefliger, 2013).

In line with the extant research on the importance of customers, the empirical study shows that the majority of the founders described that initial attention was paid to the offering (value proposition) and identifying and creating relationships with key customers. Furthermore, the value proposition was the most valuable part of the firm's business model, which is consistent with extant research on customer relationship theory (e.g., Blank & Dorf, 2012; Osterwalder et al., 2014). Moreover, in relation to extant research, the study provide insights as to how a focus on customers includes, to some extent, close involvement with the offers, ultimately resulting in more customised business models. The following quotations demonstrate how the customer offer was developed together with potential customers to provide a more customised product:

> *[...] we built on it [the product] with some specific functionality to the customer in 2013 and early 2014, [...] then we started to build new modules to make it a little bigger, and to solve all customer problems.* Founder B

> *We developed the product very much after their [customer's] needs.* Founder C

As most of the founders frequently referred to their offerings when talking about customers' needs and the relationships with customers, this shows the close relation between the needs of customers and the offerings of the firms (see, e.g., Chesbrough & Rosenbloom, 2002; Magretta, 2002; Osterwalder et al., 2005; Blank & Dorf, 2012). Thus, the relation between these elements of a business model could be important to consider when developing questions for the quantitative study of business models. For example, structuring questions that measure the involvement of customers in the development of a product or service and the early focus on customer needs.

Partners

Concerning partners in the initial business model, founders had different opinions about what this referred to. For the founder in Case A, the partners were perceived as investors or venture capitalists and it was obvious that this founder perceived such partners as a way to access financial capital. In that sense, these partners were perceived as not necessarily relevant for the business model:

> *Partners [investors] are not that important. No, I cannot say that we have many partners.* Founder A

However, when it came to other partners in the value chain of the initial business model such as distributors, manufacturers, and other stakeholders providing necessary competence for the firms' operations, several of the founders expressed that they were involved in the early start-up phase. However, these firms were not regarded as partners but more as collaborators, and argued to be important to compete in the market:

> *In order to reach that [a strong market position], I believe in collaborations and it is much the way it works in our business; we help each other and share the risk.* Founder D

Following the differing perceptions of partners, it can still be argued that external people and organizations (stakeholders) are important for business modelling as they are part of important business functions for creating competitive advantage and for integrating different elements of the business model. Nevertheless, how partners are perceived reflect the different perceptions that founders have about their businesses (and how to model their business), indicating their cognitive perspectives.

Activities Not Focused On

Early focus was frequently stated to be on business model activities identifying how customers would get products (distribution channels), and identifying and creating access to resources needed to run the business. The latter was, however, expressed as focus on human rather than financial capital in the initial stages of the firms. This also relates to attention, unpaid initially, on identifying and finding key partners; thus, the reference to investors and venture capital firms described through founders' perceptions of business models and their elements. Only one of the cases (Case E) described an early focus on finding investors for access to financial resources, but it was not expressed as the most important activity initially performed. Otherwise, this activity was not clearly mentioned as important to the firms. One founder even expressed decisions about how to finance the business without investors:

> *[...] we took the surplus income and reinvested it. We took low wages and reinvested. We built with common sense, you could say, up to a certain point. It took maybe two years before we realized that you can do so but then we will never reach the goal. Then, we took the funding of certain parts of the equipment, which are the slightly more expensive pieces of equipment. [...] We have just taken the financing from the bank.* Founder F

Although partners (financial) and the revenue stream were not mentioned as a focus early on during start-up, some founders expressed that external funding might have helped:

> *We have not taken any external funding and one can consider whether it was right or not. It might have enabled more.* Founder H

Changes in the Business Model

In looking back, several founders indicated that they should have devoted more attention to the revenue stream and some have since started to look for venture capitalists. As revenues are necessary for firm survival, this stream has an effect on the success of new ventures. There is a correlation between creating relationships with customers and identifying their needs, and the revenue of firms (see, e.g., Chesbrough & Rosenbloom, 2002; Dubosson-Torbay et al., 2002; Osterwalder et al., 2005). However, this correlation is not always evident in the first years of new ventures. This can be due to a lack of resources and legitimacy (Brinckmann et al., 2011) and the business stage before trust is created within a larger customer segment.

Nevertheless, focus in the business model might change due to experimentation and adaptation representing the process of business modelling during the start-up phase (Morris et al., 2005; Andries & Debackere, 2007). In line with extant research demonstrating the importance of change and innovation in business models (Chesbrough, 2010), the analysis of the empirical data revealed indications of on-going changes and iterations of the initial business models of the NTBFs.
Coding for changes in the business models provided insights into the changes in the founders' focus and in the iterations of the initial business models. Several of the founders changed their focus on, merely, establishing relationships with customers in order to understand their needs, to focus more on involving customers in the development process for co-creation. This further demonstrates a change in the perceptions of founders as to what elements and activities are important for the development and commercialisation of their technology; in that sense, providing input for the cognitive perspective of business models as better understanding of the changing business environment (Baden-Fuller & Haefliger, 2013; Baden-Fuller & Mangematin,

2013). In one case (Case E), the founder expressed that not focusing enough on customers and involving them initially was clearly a mistake that made the business model too broad and unstructured in his mind. This is also in line with Nenonen and Storbacka (2010) who argue for co-creation as essential for creating value and to enable the business model to fit with the surrounding environment.

Moreover, changes in the initial business model indicate a clearer focus on revenue streams and establishing partnerships with stakeholders providing both financial and human capital resources. In examining research investigating the lack of resources, established relationships, and legitimacy of NTBFs (e.g., Yli-Renko et al., 2001; Brinckmann et al., 2011), revenue streams seem to fall into place when firms have established relationships with customers and have developed the technology into value propositions related to customer needs.

Parallel Business Models

When changing the initial business models, founders (entrepreneurs) often experiment with parallel business models (Andries et al., 2013; Clausen & Rasmussen, 2013). Consistent with the discussion on resource scarcity at technology-based ventures (Yli-Renko et al., 2001; Brinckmann et al., 2011; Vargas & McCarthy, 2010) and the uncertainty that these firms need to handle, experimenting with parallel business models have been argued as helping founders handle ambiguity and identify temporary revenue streams (Andries et al., 2013). Experimenting with several business models further facilitates the ability to identify paths to transfer and commercialise technology in the market, hence, influencing the success of the firms (Clausen & Rasmussen, 2013).

Analysing the empirical data of the eight NTBFs revealed changes within the business models, however, not specifically any experimentation with parallel business models. Instead, the changes demonstrated the changing focus of the founders caused by changes in the way they understood their business and learned from customers and partners as well as their own mistakes.

However, in describing their businesses, all the founders stated that they were still selling their initial main products or services. Only one, however, was actually making a living from it. Several of the founders indicated that they were unable to make a profit from their main product or service thus far, and needed to work outside the firm's main activities or create a consultancy business within the firm:

> *[...] when we started the company we knew that it will take time so we registered it so that he [one of the founders] could work with consulting in the firm and in that way bring in money. We cannot live on the product yet, but we can live off the company*. Founder A

> *We have to do consultancy work alongside to survive.* Founder B

The fact that several firms had other revenue generating businesses within their firms indicates that they were employing parallel business models in the start-up phase to ensure their survival.

In terms of parallel business models, Markides and Charitou (2004) argue that maintaining parallel business models may create or destroy value for the firm, depending on whether or not the new business model surpasses the existing one. However, this argument is based on the firm already being established with a specific target segment that is trying to innovate using parallel business models.

The changes to the business models of start-ups, such as NTBFs, are argued to be different from the changing process at established firms (Ahokangas & Myllykoski, 2014; Iivari, 2015). In that sense, for NTBFs, the problems mentioned by Markides and Charitou (2004) are not the same since they have not yet established a first business model but are rather experimenting with several business models to configure the business and make sense of the business environment by establishing relations with customers and partners to identify what value they can create. Hence, the analysis of the empirical data identifying if and how NTBFs utilise parallel business models reveals that founders often have parallel business models within the firm in order to ensure enough financial resources for the survival of the firm during the first years of start-up.

Concluding Discussion

The paper contributes to the research on business models and new ventures in high tech industries, providing a clearer description of how founders of NTBFs perceive the business model concept, their initial business models and the elements that receive the most attention, and what changes over time.

Consistent with previous research arguing that business models are cognitive tools for managers and founders (e.g., Tikkanen et al., 2005; Baden-Fuller & Mangematin, 2013), this research demonstrates that the configuration and change of the initial business models are guided by the changed perceptions and preferences of the founders.

Moreover, the research adds to the extant research on the perception of business models including the roles of stakeholders in these models. Thus, building on the business model literature, the research is able to provide insights as to how founders configure and structure their initial business models. Further, insights from the empirical study reveal that tools for visualizing business models, such as the Business Model Canvas (Osterwalder & Pigneur, 2010), are common and often used to define a business model, ultimately affecting the discourse of the founders towards a clearer understanding of the concept of business modelling. Thus, conceptualisations of business models in the form of the Business Model Canvas or the entrepreneurs' business model (Morris et al., 2005) facilitate the ability of founders to express their business models. Accordingly, even though business models are a representation of founders' perceptions and understanding of their businesses and the environment, these tools are needed to communicate the architecture of the firm, and facilitate structuring the business in the mind of the founder.

Furthermore, in analysing how founders perceive their initial configurations and business models, it becomes clear that the perceptions of what a business model is differs as demonstrated by George and Bock (2011). The interactive method used in the study created an opportunity to understand the founders' way of talking about their businesses, which activities they implemented and gave attention to initially, and, in looking back, what they would have done differently. Thus, the study provided insights from a different angle, not using the word 'business model' in the interviews but rather referring to activities within a business model. This approach made it easier for the respondents to express what they focused on. As several of the founders referred to the Business Model Canvas (Osterwalder & Pigneur, 2010), using business activities within the model created some familiarity for the respondents, reducing the risk of misunderstanding.

For future quantitative research on business models of new ventures, it will be essential to clearly state the business activities of business model elements rather than use the word 'business model' as it may be misinterpreted by company founders.

Further, the early activities given most attention by the founders during start-up, such as the focus on customers and customer needs to create greater opportunities for success (Blank & Dorf, 2012; Osterwalder & Pigneur, 2014), indicate that these might have an impact on the survival of NTBFs. However, all the parts of a business model are important to create and capture value for firms (see, e.g., Chesbrough & Rosenbloom, 2002; Dubosson-Torbay et al., 2002; Magretta, 2002). Nevertheless, the study demonstrates what new ventures in high-tech industries perceive as important for their business initially, hence, showing that not all parts are included in their initial business model.

In some cases, founders expressed that they should have paid more attention earlier to activities such as how to generate revenues including finding partners (investors) to create access to financial resources. However, experimentation with (Chesbrough, 2010) and adaptation of initial business models are an essential part of the start-up process (Andries & Debackere, 2007) and several of the founders changed focus during the start-up phase to address financial needs. Yet, how this early focus may have influenced the firms' future success could be an interesting topic to examine in future studies.

In terms of resources, the founders do mention these, but they have different meanings dependent on the context of the discussion. When they describe important resources that are the focus at the time of firm registration, they are referring to human capital such as know-how, their own previous experiences, and talent. However, in describing what was not the centre of attention initially, references are to financial capital, including investors as partners, and how to create revenue streams.

Further, when structuring questions for future quantitative research to measure the effects of initial business models, it will be important to divide question areas dependent on the activities of different parts of the business model. For example, the questions on resources of the business model should be divided into human resources and financial resources; and, financial resources should include financial partners, financial capital, and costs and revenue streams as financial parts of the business model.

Even though the firms struggled with similar issues due to facing problems that occur in initial phases of start-up, there were some differences between firms in different industry sectors. The differences are mostly dependent on the business environment, and thus need to be taken into consideration when studying these firms. Firms operating in the IT-sector were usually more eager to find investors (albeit not the initial focus) than firms operating in the medical technology industry, which might impact the difference in their growth rates during start-up; this correlates with different average growth rates of start-ups in different industries. Thus, it is important to remember this when examining the growth and survival of NTBFs.
Moreover, the study identifies the need for and existence of parallel business models during start-up in order to create enough profits for the firm to continue working on its main offering. Thus, making it important to ask questions that clearly distinguish which business model the founders are referencing when describing their business. Otherwise, bias may occur about how the initial business model, referring to the firm's main offering, influences firm survival.

This paper provides interesting insights into the perceptions of founders of NTBFs and how they structure their business activities and develop their initial business models. From this, the paper provides input for supporting future quantitative research on business models that might further examine how this focus in the early start-up phase influences the success of these high-tech firms.

Reference list

Achtenhagen, L., Melin, L., & Naldi, L. (2013). Dynamics of Business Models – Strategizing, Critical Capabilities and Activities for Sustained Value Creation. Long Range Planning, Vol. 46, No. 6, pp. 427-442.

Ahokangas, P., & Myllykoski, J. (2014). The practice of creating and transforming a business model. Journal of Business Models, Vol. 2, No. 1, pp. 6-18.

Amit, R., & Zott, C. (2001). Value creation in e-business. Strategic Management Journal, Vol. 22, No. 6-7, pp. 493-520.

Andries, P., & Debackere, K. (2007). Adaptation and Performance in New Businesses: Understanding the Moderating Effects of Independence and Industry. Small Business Economics, Vol. 29, No.1-2, pp. 81-99.

Andries, P., Debackere, K., & Looy, B. (2013). Simultaneous experimentation as a learning strategy: business model development under uncertainty. Strategic Entrepreneurship Journal, Vol. 7, No. 4, pp. 288-310.

Baden-Fuller, C., & Haefliger, S. (2013). Business models and technological innovation. Long range planning, Vol. 46, No. 6, pp.419-426.

Baden-Fuller, C., & Mangematin, V. (2013). Business models: A challenging agenda. Strategic Organization, Vol. 11, No. 4, pp. 418-427.

Baden-Fuller, C., & Morgan, M. S. (2010). Business Models vs Models. Long Range Planning, Vol. 43, No. 2-3, pp. 156-171.

Blank, S., & Dorf, B. (2012). The startup owner's manual. Pescadero: K&S Ranch, Inc.

Boeker, W. (1989). Strategic Change: The Effects of Founding and History. The Academy of Management Journal, Vol. 32, No. 3, pp. 489-515.

Bollinger, L., Hope , K., & Utterback, J. M. (1983). A review of literature and hypotheses on new technology-based firms. Research Policy, Vol. 12, pp. 1-14.

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. Qualitative research in psychology, Vol. 3, No. 2, pp. 77-101.

Brinckmann, J., Salomo, S., & Gemuenden, H. (2011). Financial Management Competence of Founding Teams and Growth of New Technology-Based Firms. Entrepreneurship Theory and Practice, Vol. 35, No. 2, pp., 217-243.

Bryman, A., & Bell, E. (2011). Business Research Methods. New York: Oxford University Press.

Casadesus-Masanell , R., & Ricart, J. E. (2010). From Strategy to Business Models and onto Tactics. Long Range Planning, Vol. 43, No. 2-3, pp. 195-215.

Chesbrough, H. (2010). Business Model Innovation: Opportunities and Barriers. Long Range Planning, Vol. 43, No. 2-3, pp. 354-363.

Chesbrough, H., & Rosenbloom, R. S. (2002). The role of the business model in capturing value from innovation: evidence from Xerox Corporation's technology spin-off companies. Industrial Corporate Change, Vol. 11, No. 3, pp.

529-555.

Clarysse, B., Bruneel, J., & Wright, M. (2011). Explaining growth paths of young technology-based firms: Structuring resource portfolios in different competitive environments. Strategic Entrepreneurship Journal, Vol. 5, No. 2, pp. 137-157.

Clausen, T. H., & Rasmussen, E. (2013). Parallel business models and the innovativeness of research-based spin-off ventures. The Journal of Technology Transfer, Vol. 38, No. 6, pp. 836–849.

DaSilva, C. M., & Trkman, P. (2014). Business model: What it is and what it is not. Long Range Planning, Vol. 47, No. 6, pp. 379-389.

Dubosson-Torbay, M., Osterwalder , A., & Pigneur, Y. (2002). E-Business Model Design, Classification, and Measurements. Thunderbird International Business Review, Vol. 44, No. 1, pp. 5-23.

Eisenhardt, K. M. (1989). Building Theories from Case Study Research. Academy of Management Review, Vol. 14, No. 4, pp. 532-550.

Eisenhardt, K. M., & Graebner, M. E. (2007). Theory Building from Cases: Opportunities and Challenges. Academy of Management Journal, Vol. 50, No. 1, pp. 25-32.

Eurostat. (n.d.), High-tech industry and knowledge-intensive services (htec), available at: http://ec.europa.eu/eurostat/cache/metadata/en/htec_esms.htm (accessed 2.6.2015).

Flick, U. (2009). An introduction to qualitative research. London: Sage Publications Ltd.

George, G., & Bock, A. J. (2011). The Business Model in Practice and its Implications for Entrepreneurship Research. Entrepreneurship Theory and Practice, Vol. 35, No. 1, pp. 83-111.

Hedman, J., & Kalling, T. (2003). The business model concept: theoretical underpinnings and empirical illustrations. European Journal of Information Systems, Vol. 12, No. 1, pp. 49-59.

Iivari, M. M. (2015). Dynamics of Openness in SMEs: A Business Model and Innovation Strategy Perspective. Journal of Business Models, Vol. 3, No. 2, pp. 30-50.

Kvale , S. (2006). Dominance Through Interviews and Dialogues. Qualitative Inquiry, Vol. 12, No. 3, pp. 480-500.

Lambert, S. C., & Davidson, R. A. (2013). Applications of the business model in studies of enterprise success, innovation and classification: An analysis of empirical research from 1996 to 2010. European Management Journal, Vol. 31, No. 6, pp. 668-681.

Löfsten, H., & Lindelöf, P. (2003). Determinants for an entrepreneurial milieu: Science Parks and business policy in growing firms. Technovation, Vol. 23, pp. 51-64.

Magretta, J. (2002). Why Business Models Matter. Harvard Business Review, Vol. 80, No. 5, pp. 86-92.

Markides, C., & Charitou, C. D. (2004). Competing with dual business models: A contingency approach. Academy of Management Executive, Vol. 18, pp. 22-36.

Markides, C., & Oyon, D. (2010). What to do against disruptive business models (when and how to play two games at once). MIT Sloan Management Review, Vol. 51, No. 4, pp. 25-32.

Morris, M., Schindehutte, M., & Allen, J. (2005). The entrepreneur's business model: Toward a unified perspective. Journal of Business Research, Vol. 58, No. 6, pp. 726-735.

Nenonen, S., & Storbacka, K. (2010). Business model design: conceptualizing networked value co-creation. International Journal of Quality and Service Sciences, Vol. 2, No. 1, pp. 43-59.

Osterwalder, A., & Pigneur, Y. (2010). Business Model Generation. New Jersey: John Wiley & Sons.

Osterwalder, A., Pigneur, Y., & Tucci, C. L. (2005). Clarifying Business Models: Origins, Present, and Future of the Concept. Communications of the Association for Information Systems, Vol. 16, pp. 1-25. Retrieved from http://aisel.aisnet.org/cais/vol16/iss1/1

Osterwalder, A., Pigneur, Y., Bernarda, G., & Smith, A. (2014). Value Proposition Design: How to Create Products and Services Customers Want. New Jersey: John Wiley & Sons, Inc.

Retriever Business, 2016, Retriever Business, available at: http://business.retriever.se/tjaenster/retriever-business (accessed 4. 3. 2016).

Richardson, J. (2008). The business model: an integrative framework for strategy execution. Strategic Change, Vol. 17, No. 5-6, pp. 133-144.

Shafer, S. M., Smith, H. J., & Linder, J. C. (2005). The power of business models. Business Horizons, Vol. 48, pp. 199-207.

Silverman, D. (2007). A very short, fairly interesting and reasonable cheap book about qualitative research. London: Sage Publications Ltd.

Spencer, A. S., & Kirchhoff, B. A. (2006). Schumpeter and new technology based firms: Towards a framework for how NTBFs cause creative destruction. International Entrepreneurship and Management Journal, Vol. 2, No. 2, pp. 145-156.

Storey , D. J., & Tether , B. S. (1998). New technology-based firms in the European union: An introduction. Research Policy, Vol. 26, pp. 933-946.

Teece, D. J. (2010). Business Models, Business Strategy and Innovation. Long Range Planning, Vol. 43, No. 2-3, 172-194.

Tikkanen, H., Lamberg , J.-A., Parvinen, P., & Kallunki, J.-P. (2005). Managerial cognition, action and the business model of the firm. Management Decision, Vol. 43, No. 6, pp. 789-809.

Tripsas, M., & Gavetti, G. (2000). Capabilities, cognition, and inertia: Evidence from digital imaging. Strategic Management Journal, Vol. 21, No. 10-11, pp. 1147-1161.

Vargas, R. A., & McCarthy, I. (2010). Business models in technology-based firms: A cognitive approach to regional differences. In Technology Management for Global Economic Growth (PICMET), 2010 (July) Proceedings of PICMET'10:

(pp. 1-10). IEEE.

Wennberg, K., Delmar, F., & Hellerstedt, K. (2012). Teknikintensivt nyföretagande och tillväxt i branscher och företag. Ekonomisk Debatt, Vol. 40, No. 6, pp. 36-49.

Yli-Renko, H., Autio, E., & Sapienza, H. J. (2001). Social capital, knowledge acquisition, and knowledge exploitation in young technology-based firms. Strategic Management Journal, Vol. 22, No. 6-7, pp. 587-613.

Zott , C., & Amit, R. (2008). The fit between product market strategy and business model: Implications for firm performance. Strategic Management Journal, Vol. 29, No. 1, pp. 1-26.

Zott, C., Amit, R., & Massa, L. (2011). The business model: recent developments and future research. Journal of Management, Vol. 37, No. 4, pp. 1019-1042.

Journal of Business Models (2016), Vol. 4, No. 1, pp. 63-83

About the Authors

Hanna Rydehell is a doctoral candidate at the department of Technology Management and Economics at Chalmers University of Technology, Sweden. Her research is focused on business models in technology-based start-ups, emphasising entrepreneurs' business model and stakeholder involvement. Hanna holds a Master's degree in Design and Product Development, and a Master's degree in Industrial Engineering and Management – both from Linköping University.

Anders Isaksson is a senior lecturer at Chalmers University of Technology. His research is mainly focusing on small business finance, with a special emphasis on the venture capital process and the relationship between venture capital firms and entrepreneurs. He also has a professional experience in the area as a special advisor on venture capital issues for the Swedish Ministry of Industry. Other areas of research have been firm growth, initial public offerings, corporate governance and ex-dividend stock price behaviour. Anders's previous work has been published in Venture capital, International Journal of Entrepreneurship and Small Business, Asian Journal of Finance & Accounting, Australasian Accounting Business and Finance Journal among others.