

Stockholm School of Economics

## Thesis

To Obtain the Academic Degree

Master of Science

# The Influence of Business Model Changes on Competitive Advantage: A Case Study among Start-ups

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### Abstract

**Purpose** – The purpose of this paper is to explore and to explain how changes in business models, as reflected in business model ontologies, influence the competitive advantages of firms.

**Design/methodology/approach** – Drawing on the resource-based view, we build upon an intra-organizational perspective of competitive advantage. Six Internet start-ups in Stockholm and the Silicon Valley were analysed using a multiple-case design with single-units of analysis.

**Findings** – Changes in business model alter the competitive advantage through changes in resources and capabilities. Further, four types of changes have been identified that explain how competitive advantages are sustained.

**Practical implications** – A retrospective analysis, as conducted, can be insightful for practitioners to understand how the competitive advantage of their firm changed. A forward-looking analysis can be useful to understand which business model changes are necessary to sustain a competitive advantage.

**Originality/value** – The paper contributes to the idea of business models as useful units of analysis and the research stream of competitive advantage. We offer a new perspective by showing how changes in the resources and capabilities inherent to the business model result in changes in the competitive advantage.

**Keywords** – Sustainable competitive advantage, Resource-based view, Business model changes, Business model ontologies

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<b>List of Abbreviations.....</b>	<b>i</b>
<b>List of Figures and Tables .....</b>	<b>ii</b>
<b>1 Introduction .....</b>	<b>1</b>
1.1 Problem Definition and Objective .....	1
1.2 Concepts of Business Models .....	1
1.3 Definition of Business Model .....	3
1.4 Research Question.....	4
1.5 Course of Investigation .....	6
<b>2 Theoretical Foundation.....</b>	<b>7</b>
2.1 A Theory of Competitive Advantage.....	8
2.1.1 Definition of Sustainable Competitive Advantage.....	8
2.1.2 Elements of the Resource-Based View .....	9
2.1.2.1 Resources.....	9
2.1.2.2 Capabilities .....	9
2.1.3 Analysing the Competitive Advantage of a Firm.....	11
2.2 Capturing Changes in the Business Model .....	13
2.2.1 Business Model Changes.....	13
2.2.2 Selection of a Business Model Ontology .....	14
2.2.3 Osterwalder's Business Model Canvas .....	15
2.2.4 Operationalization of the Business Model Canvas.....	17
<b>3 Methodology.....</b>	<b>18</b>
3.1 Study Design .....	18
3.2 Data Sources .....	19
3.2.1 Case Studies .....	19
3.2.1.1 Sampling of the Cases .....	19
3.2.1.2 Interviews in Start-Ups.....	21
3.2.1.3 Secondary Data.....	23
3.2.2 Validation with Experts.....	24
3.3 Case Preparation .....	24
3.4 Data Analysis .....	25
<b>4 Overview of the Cases .....</b>	<b>27</b>
4.1 Betahigh .....	27
4.1.1 Overview .....	27
4.1.2 Betahigh's Business Model at $t_0$ and $t_1$ .....	27
4.1.3 Resources and Capabilities of Betahigh's Business Model at $t_0$ and $t_1$ .....	29
4.2 Tescom.....	30
4.2.1 Overview .....	30
4.2.2 Tescom's Business Model at $t_0$ and $t_1$ .....	31
4.2.3 Resources and Capabilities of Tescom's Business Model at $t_0$ and $t_1$ .....	33
4.3 Additional Cases .....	34
4.3.1 Zoomstrip .....	34
4.3.2 Haytech.....	35
4.3.3 Keylex .....	35
4.3.4 Alphadom.....	36

<b>5 Observations .....</b>	<b>36</b>
5.1 Core and Supporting Elements .....	36
5.2 Implications.....	37
5.3 Illustration with Cases.....	37
5.3.1 Case of Betahigh .....	38
5.3.2 Case of Tescom .....	39
<b>6 Analysis.....</b>	<b>40</b>
6.1 Analysis of Explicit Changes .....	41
6.1.1 Analysis of Inimitability and Non-Substitutability of Core Elements .....	42
6.1.1.1 Betahigh.....	42
6.1.1.1.1 Type 1 Change: The Platform as Extended Core Resource.....	43
6.1.1.1.2 Type 2 Change: Financial Management as New Core Capability.....	44
6.1.1.1.3 Type 3 Change: Customer Data as Extended Supporting Resource.....	44
6.1.1.2 Tescom.....	45
6.1.1.2.1 Type 1 Change: Brand Image as Extended Core Resource .....	46
6.1.1.2.2 Type 2 Change: Partner Management as New Capability .....	47
6.1.1.2.3 Type 3 Change: Content Providers as New Supporting Resource .....	47
6.1.2 Analysis of Value and Rareness.....	48
6.2 Analysis of Implicit Changes .....	49
6.2.1 Betahigh.....	49
6.2.2 Tescom .....	51
6.3 Additional Cases .....	51
6.3.1 Zoomstrip .....	51
6.3.2 Haytech.....	53
6.3.3 Keylex .....	54
6.3.4 Alphadom .....	56
<b>7 Discussion .....</b>	<b>56</b>
7.1 General Findings .....	56
7.2 Negative Influence on the Competitive Advantage .....	58
7.3 The Need for Continuous Changes in Resources and Capabilities.....	58
7.4 The Role of Supporting Elements.....	60
7.5 The Role of Partnerships on Competitive Advantage.....	61
7.6 Business Model Ontologies .....	62
<b>8 Conclusion.....</b>	<b>63</b>
8.1 Practical Implications.....	63
8.1.1 Business Model Ontologies as Tools .....	63
8.1.2 Retrospective Evaluation of Changes in Competitive Advantage .....	63
8.1.3 Forward-Looking Evaluation of Planned Changes .....	64
8.1.4 Considerations for a Practical Analysis.....	65
8.2 Limitations .....	66
8.3 Summary .....	67
8.4 Further Research .....	69
<b>Acknowledgements.....</b>	<b>70</b>
<b>List of References .....</b>	<b>70</b>

<b>9 Appendix .....</b>	<b>78</b>
9.1 Theoretical Foundation .....	78
9.2 Methodology .....	85
9.3 Additional Case Information.....	87
9.3.1 Betahigh.....	87
9.3.2 Tescom .....	91
9.3.3 Zoomstrip .....	95
9.3.4 Haytech.....	97
9.3.5 Keylex .....	99
9.3.6 Alphadom .....	101

## **List of Abbreviations**

RBV: Resource-Based View of the firm

SCA: Sustainable Competitive Advantage

VRIN: Valuable, Rare, Inimitable, Non-substitutable

**List of Figures and Tables**

Figure 1. Taxonomies, typologies, and ideal types of business models.....	2
Figure 2. Business model canvas .....	15
Figure 3. Overall research design.....	19
Figure 4. Analysis procedure .....	26
Figure 5. Business model canvas of Betahigh at $t_1$ .....	29
Figure 6. Business model canvas of Tescom at $t_1$ .....	33
Figure 7. Influence of business model changes on competitive advantage .....	57
Figure 8. “Cheat sheet” as used in the interviews .....	85
Figure 9. Interview script as used in explorative interviews.....	86
Figure 10. Interview script as used in structured interviews.....	86
Figure 11. Business model canvas of Betahigh at $t_0$ .....	87
Figure 12. Business model canvas of Tescom at $t_0$ .....	91
Figure 13. Business model canvas of Zoomstrip at $t_0$ .....	95
Figure 14. Business model canvas of Zoomstrip at $t_1$ .....	95
Figure 15. Business model canvas of Haytech at $t_0$ .....	97
Figure 16. Business model canvas of Haytech at $t_1$ .....	97
Figure 17. Business model canvas of Keylex at $t_0$ .....	99
Figure 18. Business model canvas of Keylex at $t_1$ .....	99
Figure 19. Business model canvas of Alphadom at $t_0$ .....	101
Figure 20. Business model canvas of Alphadom at $t_1$ .....	101
Table 1. List of firms studied .....	21
Table 2. Resources and capabilities of Betahigh at $t_0$ and $t_1$ .....	30
Table 3. Resources and capabilities of Tescom at $t_0$ and $t_1$ .....	34
Table 4. Core and supporting elements of Betahigh at $t_0$ and $t_1$ .....	38
Table 5. Core and supporting elements of Tescom at $t_0$ and $t_1$ .....	40
Table 6. Overview of the observed changes at Betahigh .....	42
Table 7. Overview of the observed changes at Tescom.....	45
Table 8. Overview of the observed changes at Zoomstrip.....	52
Table 9. Overview of the observed changes at Haytech .....	53
Table 10. Overview of the observed changes at Keylex .....	55
Table 11. Overview of the observed changes at Alphadom.....	56
Table 12. Definitions of business models .....	78
Table 13. Components of business models .....	79

Table 14. Categorization of components in different business model compositions.....	81
Table 15. Definition, sources, and similar elements of Osterwalder's canvas.....	82
Table 16. Summary of complete Betahigh VRIN analysis .....	87
Table 17. Summary of complete Tescom VRIN analysis.....	91
Table 18. Resources and capabilities of Zoomstrip at $t_0$ and $t_1$ .....	96
Table 19. Core and supporting elements of Zoomstrip at $t_0$ and $t_1$ .....	96
Table 20. Resources and capabilities of Haytech at $t_0$ and $t_1$ .....	98
Table 21. Core and supporting elements of Haytech at $t_0$ and $t_1$ .....	98
Table 22. Resources and capabilities of Keylex at $t_0$ and $t_1$ .....	100
Table 23. Core and supporting elements of Keylex at $t_0$ and $t_1$ .....	100
Table 24. Resources and capabilities of Alphadom at $t_0$ and $t_1$ .....	102
Table 25. Core and supporting elements of Alphadom at $t_0$ and $t_1$ .....	102

## 1 Introduction

### 1.1 Problem Definition and Objective

Over the last years, *business models* received substantial attention from scholars. While from 1980 until 2000 only 148 academic papers were published, this number increased to a total of 1,753 papers until 2012<sup>1</sup>. In a recent review of business model literature, Zott, Amit, and Massa (2011) conclude that the business model concept is a *useful unit of analysis* that can play a central role as “a unifying construct for explaining competitive advantage” (p. 1030). Following Barney (1991, p. 102), we define that a firm possesses a competitive advantage whenever it is implementing a value creating strategy that no other current or potential competitor is implementing at the same time.

Competitive advantages, however, do not last forever, and firms need to change to sustain their competitive advantage (Barney, 1991; Collis & Montgomery, 2008). At the same time, changes in business models are omnipresent. A survey revealed that 98 percent of the firms want to change their business model at least to some extent (Casadesus-Masanell & Ricart, 2011, p. 101). Whether the changes in business models have an influence on the competitive advantage of a firm, what the influence of those changes exactly is, and whether they help to sustain the competitive advantage is largely unexplored. Those questions will be at the focus of this thesis.

Empirical data through interviews was used to build single-unit case studies of six Internet start-ups in Stockholm and the Silicon Valley. Osterwalder’s business model canvas (Osterwalder, 2004) was applied to collect the data, to capture the changes, and to translate them into modifications of the firms’ resources and capabilities. With this data, we analysed the influence of changes in resources and capabilities on the competitive advantage.

The finding is that each of the observed changes in the resources and capabilities has an impact on the competitive advantage of the firms. This leads to new exploratively derived knowledge in the field of business models and competitive advantage.

Before the research question is introduced, two clarifications concerning business models are required because inconsistent understandings of the business model concept exist (Zott et al., 2011).

### 1.2 Concepts of Business Models

There are three basic concepts of how the term business models can be understood: as taxonomy, as typology, and as ontology (Baden-Fuller & Morgan, 2010; Zott et al., 2011).

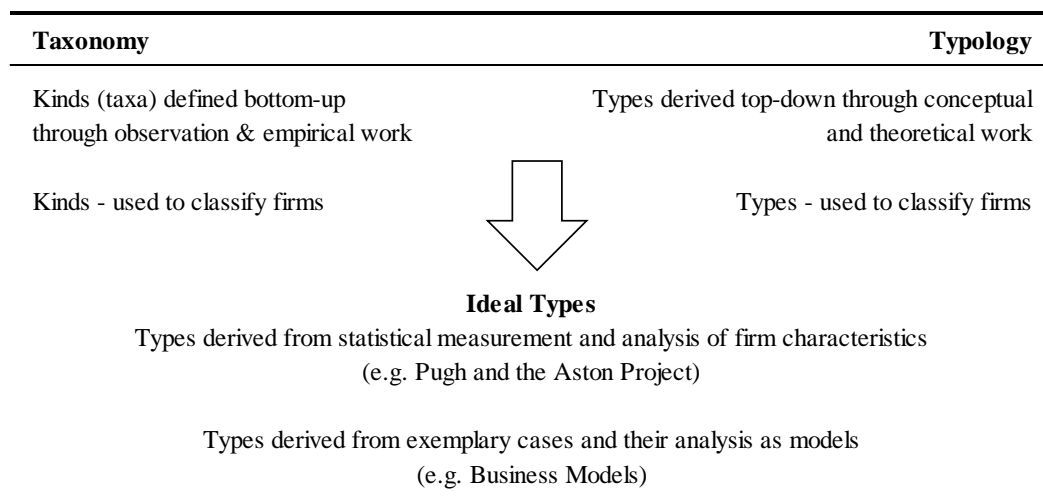
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<sup>1</sup> Search in ABI/Inform Global Database for the term business model in the abstract of peer review journals.



*Business model taxonomies* describe typical kinds of organizations and behaviours of firms. Examples for such kinds of models are the low cost airline business model used by Easy Jet, the freemium business model used by Skype, or the franchise business model used by McDonalds (Baden-Fuller & Morgan, 2010, p. 157; Teece, 2010, pp. 177, 179). This level of abstraction allows to determine generic kinds of firms, which are distinctly different because taxonomies distinguish the main differences but are not explicit enough to cover every detail of the firm (Baden-Fuller & Morgan, 2010, p. 159).

While taxonomies are derived from real cases, *business model typologies* are pure theoretical concepts fulfilling the role of Max Weber’s ideal types and, hence, describe how business models should be (Baden-Fuller & Morgan, 2010). Ideal types unify the bottom-up approach of taxonomies with the top-down approach of typologies. Hence, ideal types are based on observation and theorizing (Baden-Fuller & Morgan, 2010, p. 162). The difference between those two concepts is depicted in Figure 1.



**Figure 1.** Taxonomies, typologies, and ideal types of business models (Source: Baden-Fuller and Morgan (2010, p. 161))

Neither of them, however, allows an analysis on firm level to study changes which firms make to their business models because they are not firm specific but generic. Therefore, a third concept of business models has been developed: *Business model ontologies* are “a conceptualization and formalization of the elements, relationships, vocabulary, and semantics” (Zott et al., 2011, p. 1026). Based on several levels of decomposition, business model ontologies enable a more structured analysis of business models by depicting the business model of a firm with different building blocks, so-called components, which contain firm specific items (Zott et al., 2011). For example, a business model ontology of Apple’s

business model contains *items* such as the product design or the iTunes platform management in an activity *component*.

Hence, the only feasible concept to study the business model of a firm is the concept of ontologies. In the following, if not noted otherwise, the concept of business models is used in the sense of a business model ontology.

### 1.3 Definition of Business Model

Understanding business models as ontologies, the term business model can be defined more closely. Yet, definitions of business model are not only diverse, but in their meta-analysis Zott et al. (2011, p. 1026) often found no definition at all making. Hence, it is often difficult to grasp what scholars are referring to. To avoid such a misunderstanding, different definitions must be considered carefully. Table 12 in the appendix summarizes the prevailing definitions in the field.

We defined business models “as an unifying construct for explaining competitive advantage” (Zott et al., 2011, p. 1030). This understanding must be reflected in the definition of a business model that is applied. Therefore, a business model is in the following understood as a “method by which a firm builds and uses its resources to offer its customer better value and to make money in doing so” (Afuah & Tucci, 2001, p. 3). This definition implicitly assumes a relationship between the business model and competitive advantage because the firms offer a better value (Zott et al., 2011, p. 1030). Further, this is in line with the idea of business model ontologies, since both explain business models as a firm-specific construct.

Finally, some ideas what a business model is *not*, have to be discussed to avoid potential misunderstandings. In the context of this thesis, the term business model should not be set equal to value propositions, revenue models, economic models, or networks of relationships. Yet, each of them can represent a part of a business model. Moreover, a business model is not a strategy because it always reflects one strategic choice made by a firm even though it might help to “validate the cause-and-effect relationships that flow from the strategic choices” (Shafer, Smith, & Linder, 2005). According to the prevailing definitions, a business model should be interpreted as the totality or combination of all those aspects (Casadesus-Masanell & Ricart, 2010, p. 107; Morris, Schindehutte, & Allen, 2005, p. 726; Teece, 2010, pp. 179-180; Zott et al., 2011, p. 1027).

Concluding, this means that business models are used as *firm-specific* constructs which explain how companies *create value for customers by exploiting and developing their resources* with the ultimate goal to generate *profits*.

## 1.4 Research Question

As explained, the business model is understood as a unifying construct of competitive advantage, and it is assumed that changes in the business model might have an influence on the competitive advantage of the firm.

When it comes to changes and development of business models, Yip (2004) and Teece (2007) already pointed out that the concept of business models is mobilized to discuss changes in the firm rather than to discuss the change or development of business models. Moreover, the relationship between business models and time is rarely discussed despite the fact that business models often change rapidly (Osterwalder & Pigneur, 2005, p. 15). Only a small number of papers discuss the development of business models over time. Yet, these papers solely focus on one specific component of the business model that is changed. Raff (2000) discusses capabilities, Johnson, Christensen, and Kagermann (2008) discuss changing value propositions, and Winter and Szulanski (2001) discuss the role of routines. Yet, each of them misses a holistic view on the business model and its components. This holistic view, however, is the advantage of the business model as a unit of analysis (Tikkanen, Lamberg, Parvinen, & Kallunki, 2005, p. 805). While we do not believe that changes must affect all business model components, we assume that it is more useful to study changes among all components. Under the assumption that each component of the business model could influence the competitive advantage, this enables us to take advantage of the business model as a holistic unit of analysis.

While those papers deal with changes in the business model, they do not relate the changes in any form to competitive advantage. On the other hand, some papers deal with competitive advantages and business models. Afuah and Tucci (2001, pp. 3-4) propose the business model as “unifying construct for explaining competitive advantage” but stay on a conceptual level (Zott et al., 2011, p. 1030). More concepts on business models and competitive advantage are provided by Morris et al. (2005) as well as Casadesus-Masanell and Ricart (2010). All those papers, however, remain on a conceptual level without empirical evidence and do not concretise a relationship between changes in business models and competitive advantage.

Nevertheless, two papers in this area consider changes in the business models and competitive advantages and, thus, deserve more attention in regard to our research question. Demil and Lecocq (2010) describe the process of changes in the business model. Yet, their goal is to reconcile a static and transformational approach of business models. They only draw indirectly on competitive advantages arising from the business model changes and simply

conclude that competitive advantages must be protected. Sosna, Trevinyo-Rodríguez, and Velamuri (2010) analyse the relation between business model development and learning. Their finding is that “trial-and-error” learning of organisations is an important mechanism for business model development, but they do not draw any specific conclusions to competitive advantages either.

To sum up, this means that there is currently no explanation whether changes in business models are linked to the competitive advantage of a firm. This leads to our research question:

*How do changes in a business model, as reflected in a business model ontology, influence the competitive advantage of a firm?*

The research question has four implications: First, it is assumed that such a link exists which could be disproved by the analysis.

Second, it is important to note that the changes in the business model might be the result of an intended business model development process or strategic change. This process and the isolated changes are not the focus of this thesis but the results of this process as the sum of changes.

Third, even though the research question stems from the business model field, the business model concept is only mobilized as a sub-ordinate concept. It is used to capture the changes in the business model. The *concept of business models* is not useful to explain a competitive advantage of a firm due to the lack of theoretical underpinnings (Demil & Lecocq, 2010, p. 243). This means that business models are not derived from a theoretical foundation (Zott et al., 2011, p. 1038). Therefore, to conduct an analysis of changes in competitive advantage, a theory of competitive advantage is necessary. This theory of competitive advantage is the main concept used. Drawing on this theory, we analyse the changes in competitive advantage in relation to changes in business models.

Fourth, it is crucial to note that it is not assessed to which extent a firm possesses a competitive advantage because this would incur an external analysis of the competitive environment. This study, however, employs an intra-organizational perspective on competitive advantage. Moreover, it is only assessed how the changes in the business model alter the competitive advantage relative to a specific point in time. This means that we will suggest whether the competitive advantage relative to a fixed point in time was unchanged, enhanced, or decreased.

Concluding, in a more figurative sense, this means to put on “business model glasses” and to look through those glasses at a firm. Then one should be able to observe changes in the components of the business model ontology. The question is whether those changes have an influence on the competitive advantage on the firm.

## **1.5 Course of Investigation**

The course of investigation shortly summarizes the steps that are performed to answer our research question. So far, the concept of the business models has been clarified and a definition of how a business model is understood was made. Afterwards the research question was introduced and it was outlined that a theory of competitive advantage is needed.

In the following section, we will argue, that we first need to make a clear definition of the term competitive advantage, and why we decided to draw on the resource-based view (RBV) as theory of competitive advantage. Moreover, the concept of valuable, rare, inimitable, and non-substitutable (VRIN) resources and capabilities is explained. This concept will be the main analysis tool used in the analysis section in order to determine whether changes have an influence on the competitive advantage.

To capture the changes in business models, a business model ontology is necessary. A business model ontology depicts the business model of a firm with different building blocks, so-called components. The components contain firm specific items and, hence, basically represent a snapshot of a firm’s business model at a given point in time. By taking two snapshots at different but specific points in time, the changes in the business model can be observed. We decided to use the ontology of Osterwalder (2004), that consists of nine components: value proposition, customer segments, distribution channels, customer relationships, key resources, key activities, key partners, cost structure, and revenue model. Eventually, at the end of the theoretical foundation the concept of operationalization is explained. It describes the process of how corresponding resources and capabilities of the RBV can be derived from a business model ontology.

The following part specifies the methodology that is applied to obtain and to evaluate the empirical data. First, the overall study design is described: Based on two initial explorative case studies, the results from those cases are replicated with four more cases. We explain how the cases were sampled and which different interview types were used. The subsequent part describes the preparation of the cases the data analysis procedure.

Two out of six cases were used as exemplary cases to allow the reader to follow the analysis and conclusions. Therefore, the next section explains the business models and the changes those firms underwent in detail, allowing the reader a thorough understanding.

Before the data is analysed, two observations that were made during the analysis of the explorative cases are outlined because they concretize the analysis procedure: The observation is that resources and capabilities of firms can be grouped into supporting and core elements, depending on their importance for the value proposition. After the observations are explained and related to theory, the implications for the analysis are outlined. The implication is that all observed changes can be classified into four distinguishable types. Finally, the two exemplary cases are used to illustrate the identification of core and supporting elements and to classify their changes into the four types.

Subsequently, the analysis of the changes on the competitive advantage follows, applying the explained VRIN framework on the previously identified core elements. The analysis part exhibits again the two exemplary cases and structures the analysis along the four types of changes, as described in the observations.

The discussion part concludes the analysis and discusses findings and implications. First, the general findings and the answer to the research question are presented and summarized in a model. Afterwards, the need for continuous change to sustain a competitive advantage is discussed. The second part of the discussion focuses on the explanation of how changes in business model influence the competitive advantage. We discuss the role of supporting elements, which has been disregarded in the theory so far, and illustrate the empirical evidence of partnerships for competitive advantage. Subsequently, a few short remarks are made on business model ontologies as representation of a firm.

The thesis ends with a conclusion that contains practical implications and limitations of the thesis. Finally, we summarize the findings and suggest further research.

## **2 Theoretical Foundation**

The theoretical foundation consists of two different parts: First, the RBV as theory of competitive advantage with the VRIN framework as main analysis concept is introduced. The VRIN framework is needed to analyse the influence changes in resources and capabilities have on competitive advantage. Afterwards, the concept of a business model ontology is introduced that is solely used to capture changes in business models. Hence, it provides the data required for the analysis. To arrive at the resources and capabilities from the business model ontology, the process of operationalization is described.

## 2.1 A Theory of Competitive Advantage

First of all, the concept of competitive advantage has to be defined. Based on this understanding, it will be explained why the RBV was chosen as theory of competitive advantage.

### 2.1.1 Definition of Sustainable Competitive Advantage

We assume firms to be profit-maximizing entities which are striving for superior performance through a competitive advantage that is sustainable (Barney & Arian, 2001, p. 157). One of the most influential definitions of a sustainable competitive advantage (SCA) comes from Porter (1985) describing a SCA as above-average performance in the long run. This definition is widely applied because scholars related SCAs to the performance of firms. Barney (1991) explains that a SCA exists, when a firm “is implementing a value creating strategy not simultaneously being implemented by any current or potential competitors and when these other firms are unable to duplicate the benefits of this strategy” (Barney, 1991, p. 102).

Those two definitions have their origins in two streams of theory: on the one hand there is an outside-in perspective often also called market-based view, stating that the position of a firm in the industry determines performance. On the other hand, there is an inside-out perspective of which the most prominent theory is the RBV, declaring that the internal resources and capabilities of a firm determine performance (Spanos & Lioukas, 2001).

In our case, there are three reasons why the RBV and, thus, an intra-organizational perspective on competitive advantage, is superior to explain the influence of business model changes on the competitive advantage of a firm: First, business models refer to the firm and not to the position of a firm in an industry or the environment a firm operates in. Business models always represent a strategic choice a firm made. This strategic choice may have been or not have been the *result* of an external analysis (Shafer et al., 2005). Nevertheless, this makes only an intra-organizational perspective feasible as the business model does not promote an external perspective. Second, as part of our definition, the RBV is consistent with viewing firms as a bundle of resources which are exploited to generate profits (Morris et al., 2005, p. 729). It is important to note that even though the RBV has a connection to a firm’s strategy (Grant, 1991), it was developed as theory of competitive advantage (Barney, 1991; Peteraf, 1993; Wernerfelt, 1984) and, hence, also found notable applications such as creating and sustaining a competitive advantage through human resource management (Wright, McMahan, & McWilliams, 1994), cognitive abilities of entrepreneurs (Alvarez & Busenitz, 2001), or strategic alliances (Das & Bing-Sheng, 2000). This shows that the RBV is often

used as a tool to understand the competitive implications of certain phenomena. Hence, the RBV was chosen as the theory to analyse whether changes in the business model result in changes in competitive advantage of a firm.

### **2.1.2 Elements of the Resource-Based View**

From Barney's (1991) definition of a SCA, it follows that the competitive advantage of a firm is given when the resources a firm possesses are valuable, rare, inimitable, and non-substitutable. Therefore, before the VRIN framework is explained in detail, the concept of resources has to be clarified.

Even though none of the four historical foundations of the RBV (Barney, 1986; Dierickx & Cool, 1989; Rumelt, 1984; Wernerfelt, 1984) differentiates between resources and capabilities, later publications strictly makes this differentiation (Amit & Schoemaker, 1993; Hoopes, Hadsen, & Walker, 2003; Makadok, 2001b). We decided to differentiate between resources and capabilities, as the data that is obtained with the business model ontology also differentiates between resources and activities. Moreover, resources and capabilities could affect the competitive advantage in different ways. Therefore, the distinction is useful.

#### **2.1.2.1 Resources**

Some papers simply define resources as tangible and intangible assets categorized in groups such as financial assets, physical assets, intellectual property, and organizational assets (Galbreath, 2005, pp. 980-981; Grant, 1991, p. 119). Yet, those concepts conflict with a clear distinction of resources and capabilities. While there will always be overlaps between resources and capabilities and difficult cases to distinguish between the two categories, the concept of Makadok (2001b) and Amit and Schoemaker (1993) proposes a useful origin: resources are observable but not necessarily tangible assets that a) are possessed or controlled by a firm, b) can be valued and, c) thus, can be traded (Amit & Schoemaker, 1993, p. 35; Hoopes et al., 2003, p. 980; Makadok, 2001b, pp. 389-390).

This means that all of the following examples are treated as resources: Lufthansa's fleet of airplanes, McDonald's brand, Intel's pool of patents, Facebook's knowledge about its user's preferences, Apple's platform iTunes, and even the skilled McKinsey consultant. All of them are possessed or controlled by the firms. They are not necessarily tangible but still observable and a certain value can be attached to each of them.

#### **2.1.2.2 Capabilities**

Literature about capabilities is even more diverse than literature about resources. Not only different terms such as core competencies, collective skills, or complex routines are used



but often the definitions are vague or focus only on certain dimensions (Schreyögg & Kliesch-Eberl, 2007, pp. 914-915).

Grant (1991, p. 119) suggests that capabilities are the tasks or activities that are performed by a team. Those tasks and activities are rarely of simple nature such as assembling parts but involve complex and collective organizational problem solving (Schreyögg & Kliesch-Eberl, 2007, p. 915). This is why capabilities are often found in functional areas such as brand management in the marketing department (Amit & Schoemaker, 1993, p. 35). Simply put, resources are what a firm *has*; capabilities are what a firm *does*.

The crucial underlying logic behind this is that the skills of an individual are a resource because this individual can be easily replaced or transferred and a certain value can be attached to the skills (Grant, 1991, p. 118). Combining individuals, however, embeds the individual's skills in routines or processes of the company (Makadok, 2001b, pp. 388-389). This explains why capabilities cannot be bought but must be built (Teece, Pisano, & Shuen, 1997, p. 529). Consider the following example of brand management at The Coca Cola Company (based on Amit & Schoemaker, 1993; analog to Makadok, 2001a): If The Coca Cola Company would be completely dissolved, the Coca Cola brand as resource would still exist in the hands of the new owner, but the capability of managing the brand would become extinct. Hence, capabilities are not observable and, thus, always intangible (Hoopes et al., 2003, p. 890).

Such a capability is obviously valuable for a company, even though a measurement in monetary terms is not possible. Moreover, in this special case, the capability is used to enhance the value of the brand as a resource (Hoopes et al., 2003, p. 890).

Consequently, all of the following examples are treated as capabilities: Lufthansa's yield management, McDonald's ability to standardize products, Intel's capacity to design microprocessors, or Apple's skills of product design and marketing. All those examples involve complex organizational problem solving, deeply embedded in the firm, and carried out in teams.

A direct comparison with attributes of resources reveals that a) capabilities are not possessed and controlled by a firm but are deeply embedded in the firm; b) due to their unobservability, no monetary value can be attached; c) they cannot be traded because of the missing value; d) capabilities must not always be valuable on their own but can be used to enhance the value of a resource.

With the understanding of the firm as a bundle of resources and capabilities and the definition of those elements, the competitive advantage of a firm can be assessed.

### 2.1.3 Analysing the Competitive Advantage of a Firm

With the definitions of SCAs, resources, and capabilities, it is explained how a competitive advantage can be created and sustained using the VRIN framework<sup>2</sup>. To hold the potential of a SCA, a resource or capability must have the four specific attributes of being a) valuable, b) rare, c) inimitable, and d) non-substitutable. Those attributes are often referred to as the VRIN framework.

*Valuable* is the pre-requisite for any resource or capability<sup>3</sup> to generate a competitive advantage. Valuable means that a resource does not only increase the efficiency or effectiveness of a firm but that the resource also helps a firm to capture and exploit an opportunity and / or neutralizes a threat in the firm's environment (Barney, 1991, p. 106). In the context of the business model, valuable means that a resource helps to capture the opportunity of the value proposition or to neutralize threats towards the value proposition.

*Rare* terms resources that are not possessed by many firms (Barney, 1991, p. 106). While many companies obviously own valuable resources, those valuable resources themselves do not lead to a competitive advantage because each firm can exploit the value of the resources. If a valuable resource is only owned by few or even one firm, they will have an opportunity to implement this rare resource in their value creating strategy. Hence, the strategy cannot be simultaneously implemented by a competitor (Barney, 1991, p. 106).

*Inimitable* resources are of importance because valuable and rare resources can be the source of a competitive advantage but they never can be the source of a SCA as competitors could copy them (Barney, 1991, p. 107). This relates back to the definition of a SCA that stated that other firms are unable to duplicate it. To be inimitable, resources have to be characterized by one or more of the following four attributes: The first one is *physical uniqueness*. Examples are a physical location of a building or patents. Many resources, however, do not fall into this category, and many of them, such as patents, are not long lasting (Collis & Montgomery, 2008, p. 144). The second characteristic is *path dependency* which means that resources have experienced unique historical conditions during the time they have been accumulated and developed (Barney, 1991, pp. 107-108). The result is that firms cannot simply buy those resources but need to build them (Collis & Montgomery, 2008, p. 144). While this also affects resources as of the made definition above, this also is especially true for capabilities as they must be developed. The third characteristic is *causal ambiguity* which exists if competitors are unable to understand what the valuable resource is or how this

<sup>2</sup> As we conduct a retrospective analysis, the use of the VRIO (value, rare, inimitable, organization) framework (Barney, 1995) is not feasible since this framework aims to assess the firm's ability to implement a value creating strategy.

<sup>3</sup> In this part, resources and capabilities will only be termed resources, otherwise a distinction is made.

valuable resource was created (Collis & Montgomery, 2008, p. 145). In contrast to path dependency, causal ambiguity focuses on the logic of the development. Causal ambiguity also includes the characteristic of social complexity. This is especially important for cultural aspects of a firm and the relationships of employees (Dierickx & Cool, 1989). The fourth characteristic is *economic deterrence*. It describes the effect that competitors can be pre-empted by making a sizable investment in a limited market (Collis & Montgomery, 2008, p. 145).

*Non-substitutability* is the final attribute. As inimitability, non-substitutability is related to the sustainability of the competitive advantage because if a resource is inimitable it does not mean it is not substitutable by a strategically equivalent resource (Barney, 1991, pp. 111-112). If a resource is non-substitutable, the second part of the definition of a SCA is fulfilled: A competitor cannot duplicate the resources and capabilities that would be necessary to duplicate the value creating strategy.

Other papers suggest extensions to the VRIN framework (Amit & Schoemaker, 1993; Collis & Montgomery, 2008; Grant, 1991; Kristandl & Bontis, 2007). Yet, most of those concepts rephrase one of the VRIN factors in a different way or are covered by the definitions of resources and capabilities. Therefore, they are not treated separately.

Finally, it is important to understand the concept of *limits to competition* of those four factors (Peteraf, 1993). While valuable and rare resources are responsible for the competitive advantage in the short run, only inimitable and non-substitutable resources can sustain a competitive advantage. This, however, also implies that valuable and rare are *ex ante* limits to competition: Before a company decides to obtain a valuable and rare resources, it must know the value and rareness of this resource (Peteraf, 1993). Inimitability and non-substitutability are *ex post* limits of competition because firms will only discover whether a resource was inimitable or non-substitutable after the implementation of this resource (Peteraf, 1993). There are two further implications: First, resources that are non-substitutable sustain the value of a resource because they cannot be replaced by a strategically equivalent resource. Second, resources that are inimitable ensure that a resource stays rare because other firms cannot copy them (Wade & Hulland, 2004, pp. 117-119).

The VRIN framework explains how a firm can obtain a competitive advantage with valuable and rare resources and the limits to competition explain how this competitive advantage might be sustained through inimitable and non-substitutable resources. The bottom line is that the VRIN framework, hence, allows us to analyse how the competitive advantage of a firm changes when the VRIN attributes of the firm's resources and capabilities change.

Nevertheless, for the application of the VRIN framework to a real firm and the firm's business model changes, a few more steps are necessary: First, an understanding of what changes in business models are and how those changes can be captured. Second, as the VRIN framework takes resources and capabilities as "input" for the analysis, one has to arrive from the business model ontology at the inherent resources and capabilities of the firm. Those steps are explained in the following.

This also explains why the business model ontology as a sub-ordinate concept is necessary: We somehow have to determine which resources and capabilities are necessary for a firm to operate and a business model ontology provides a frame to identify those resources and capabilities.

## **2.2 Capturing Changes in the Business Model**

### **2.2.1 Business Model Changes**

With the understanding of business models as ontologies that describe business models through different components, the concept of business model changes can be explained:

*Business model changes encompass all emergent or intended introductions and modifications of single or multiple items in the components of a firm's existing business model that have been realized between two points in time named  $t_0$  and  $t_1$ .*

This definition is based on a synthesis of two definitions from Demil and Lecocq (2010) and Morris et al. (2005). Demil and Lecocq (2010, p. 230) define business model changes "as a fine-tuning process involving intended and emergent changes both between and within its core components", while Morris et al. (2005) define them as "periods of specification, refinement, adaptation, revision, and reformulation" (p. 733). Demil and Lecocq (2010) propose that changes can be emergent or intended which is essential as not all firms actively change their business models. They miss, however, to include other processes of change that are considered by Morris et al. (2005). Yet, our definition goes beyond Morris et al. (2005). We included specifications, refinements, adaptations, revisions, or reformulations as modifications. Additionally, our definition includes the introduction of new items in the components.

Using this definition to identify suitable changes, a business model ontology can be used to take a snapshot of a firm at two points in time. The changes become visible by comparing those two snapshots as they are just the differences: For example, Apple introduced an additional service named iBooks, which is a reader for digital books on the

iPad. Hence, taking a snapshot of Apple's business model before and after the introduction of iBooks would yield two different business models. Changes in the business model would become visible in the extended value proposition that now relates to iBooks and in the revenue model that exhibits the sale of e-books as a new revenue stream.

A counter-example would be the introduction of the new iPhone 4S which is not considered as business model change. It did not change any of the component's items of Apple's business model. All the items have already been in place at least since the introduction of the iPhone 4.

Our definition of business model changes is dependent on the components of the business model ontology. Therefore, it is necessary to discuss which components should be part of our composition.

### **2.2.2 Selection of a Business Model Ontology**

Business model ontologies consist of different buildings blocks or so-called components. There are differences in what exactly is included in such a setup of components called composition. The used composition must be aligned with the definition of business models made in "1.3 Definition of Business Model".

A two-step process was conducted to identify a suitable composition: First, prevailing compositions were researched as listed in Table 13 in the appendix. Second, based on the definition of a business model, the composition must exhibit elements in four dimensions: 1) a resource dimension, 2) a value offering dimension, 3) a customer dimension, and 4) a financial dimension<sup>4</sup>. For each of the compositions the covered dimensions were analysed. The result is shown in Table 14 with a more detailed view on the dimensions: The financial dimension was split into a) cost structure or b) revenue structure. The resource dimension was split into a) activities, b) resources, and c) partners and networks. Shafer et al. (2005) conducted a similar analysis with fewer definitions but more categories yielding similar results. As for Shafer et al. (2005), our bottom line is that no composition covers all categories to the same extent and that some models are more specific while others are more generic. One recent composition presented by Osterwalder, Pigneur, and Clark (2010) covers a broad range of the discussed component categories, and, thus, is fairly comprehensive. As stated in "1.4 Research Question", a wide range of components is necessary to capture all potential changes that might have an influence on the competitive advantage. Hence, in the following, the model proposed by Osterwalder et al. (2010) will be used and explained.

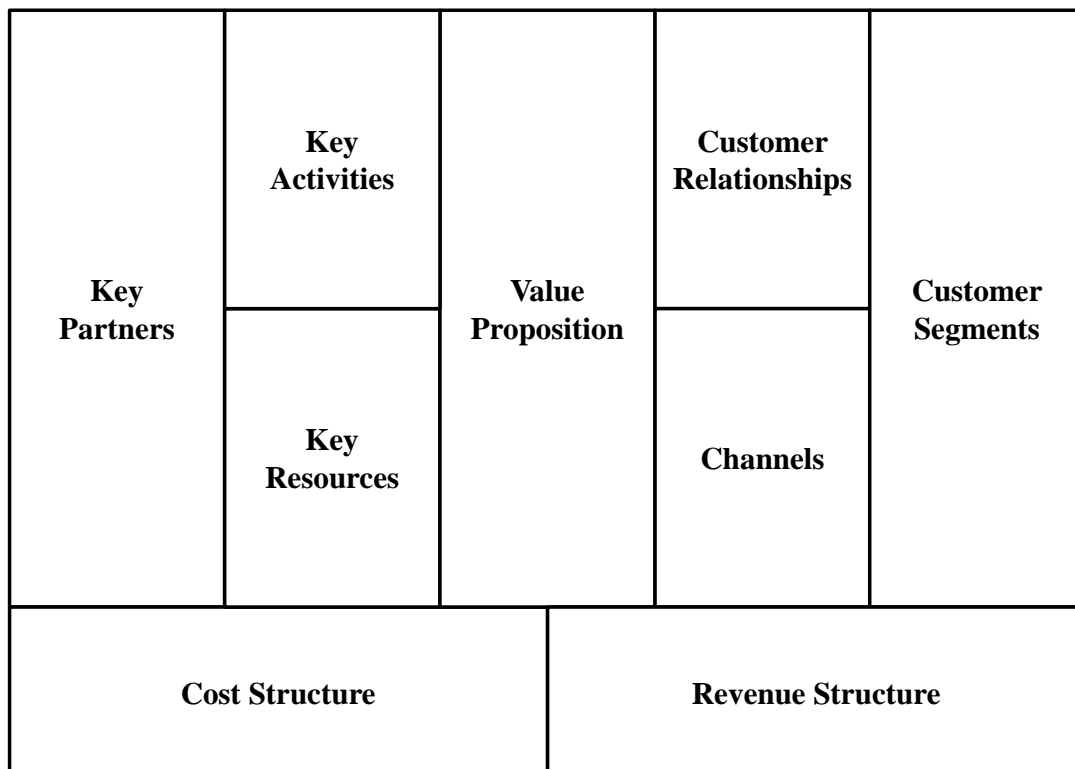
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<sup>4</sup> This relates to our definition of a business model as "a method by which a firm builds and uses its resources to offer its customer better value and to make money in doing so" (Afuah & Tucci, 2001, p. 3).

### 2.2.3 Osterwalder's Business Model Canvas

In the following, the business model ontology, called business model canvas, developed by Osterwalder et al. (2010) will be explained in detail. The canvas was already developed several years ago by Osterwalder in his PhD thesis at the University of Lausanne (Osterwalder, 2004). Osterwalder (2004) synthesized components from different compositions of other scholars making it a summary of previous research. Moreover, each of the components was based on other research and concepts. Table 15 in the appendix shows those additional sources and outlines, which other compositions exhibit similar components as Osterwalder's canvas does.

Osterwalder (2004) arrives at an ontology with nine components that reflect the four dimensions derived from the definition of a business model: 1) a resource dimension with key resources, key activities, and key partners, 2) a customer dimension with distribution channels, customer relationships, and customer segments, 3) a value offering dimension with a value proposition, and 4) a financial dimension with a revenue model and a cost structure. In the following, those nine components are explained in detail.



*Figure 2.* Business model canvas  
(Source: Osterwalder (2004))

The *value proposition* describes the value, this means the bundle of products or services, a firm creates for its customers. Thus, the value proposition should explain which

customer problem is solved or satisfied. Moreover, the value proposition is the reason why customers buy from a specific firm and not from another firm (Osterwalder, 2004, p. 50; Osterwalder et al., 2010, p. 23).

The customer interface consolidates the targeted customers, the relationships, and channels: *Customer segments* summarize groups of people or organizations in segments that a firm wants to address, to reach, and to serve. The *customer relationship* component describes how the firm establishes a relationship with those customers. For example, generic types could be self-services such as a gas station where people fuel up themselves, automated services like check-in machines of airlines, or dedicated personal assistance, for instance, a banker in private wealth banking services. Finally, *distribution channels* explain how the product or service is delivered to the customer, for example, wholesale channels for companies selling their products through retailers or direct channels. An examples could be a web shop directly owned by the manufacturer (Osterwalder, 2004, pp. 58-78; Osterwalder et al., 2010, pp. 20-29). Delivering the products or services to the customers creates so-called revenue streams in the *revenue model*. The combination of all revenue streams is the total revenue a firm generates (Osterwalder, 2004, pp. 95-101; Osterwalder et al., 2010, pp. 30-31).

While this is the external side, the internal side depicts the required resources, activities, and partners that are needed to deliver the value proposition. *Key resources* are the *most important* assets that a firm requires to make the business model work. While a microchip manufacturer needs production facilities, a microchip designer needs human resources. Key resources can be of different nature such as physical, intellectual, human, or financial assets (Osterwalder, 2004, pp. 81-82; Osterwalder et al., 2010, pp. 35-36). *Key activities* are the *most important* activities a firm performs to make the business model work. As key resources, key activities can be of different nature and involve, for example, production, problem solving, or platform management activities (Osterwalder, 2004, pp. 85-87; Osterwalder et al., 2010, pp. 36-37). Finally, *key partners* describe the *most important* partners or suppliers that make the business model work. Those partnerships provide, for instance, efficiency effects, diversification of risk, or particular key resources or key activities (Osterwalder, 2004, pp. 89-92; Osterwalder et al., 2010, pp. 38-39). All those internal activities incur costs, which are noted in the *cost structure* (Osterwalder, 2004, pp. 101-102; Osterwalder et al., 2010, pp. 40-41).

Business model changes can be identified by comparing two snapshots of the business model as depicted in a business model canvas. The last step is about “translating” the business model canvas data into a form the VRIN analysis can be applied on.

#### 2.2.4 Operationalization of the Business Model Canvas

The business model canvas is used to gather the required data about changes in the business model. Yet, the VRIN framework needs to be applied to resources and capabilities.

To arrive at the resources and capabilities of a firm, we consider the items in the business model components and portray them as resources or capabilities. This is called operationalization (Demil & Lecocq, 2010). An operationalization of the business model must not necessarily be based on resources and capabilities. Other, for instance, operationalize the conception of the business model with contracts or transactions. In our case, however, we operationalize the concept through resources and capabilities as required by the RBV and as proposed and done by others (Demil & Lecocq, 2010; Hedman & Kalling, 2003; Morris et al., 2005; Richardson, 2008; Zott & Amit, 2001)<sup>5</sup>. The bottom line of the operationalization is simply to use the business model ontology's content to determine which resources and capabilities are essential for the firm to deliver the value proposition.

The process of operationalization works as follows: Each of the components in the canvas, for example, key partners, key resources, or distribution channels, acts as a container for items. Each of the items is checked against the definition of resources and capabilities. Then, the corresponding resource or capability is derived. In the following, this process is explained with several examples

First, resources can operationalize the business model. For example, Lufthansa's fleet of airplanes, McDonald's brand, or Intel's pool of patents are *key resources* in the business model canvas. They are operationalized with resources. While resources are predestined to operationalize the *key resources* component which Osterwalder (2004) already defined in a RBV sense (Grant, 1991; Wernerfelt, 1984), this is not necessarily the case. The items of other components can also be operationalized through resources. For example, Spotify's partnership with Facebook is a resource derived from the *key partner* component. The direct selling approach of Tupperware is a resource derived from the *distribution channel* component. Each of those items is valuable as well as possessed or controlled by the firm.

Capabilities can also operationalize components of the business model canvas. Due to the choice of Osterwalder et al. (2010), capabilities seem to be predestined to operationalize the *key activities* component. As presented above, Apple's skills of product design and marketing and Intel's capacity to design microprocessors are essential to deliver their value proposition. Hence, those are items of the key activities component and are operationalized as

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<sup>5</sup> It is important to note that the business model ontology, in this case the canvas, will be operationalized and not the business model. The business model is abstract. Only the canvas specifies items that can be operationalized.



capabilities. Regarding Lufthansa's yield management, however, it is less obvious. While yield management is definitely a capability, it is not directly related to the value proposition and, hence, could also be a capability that is derived from the *revenue model* component.

Eventually, it is important to note that not each item in the business model component must correspond to a resource or capability because they might not be consistent with the definition of resource or capabilities. For example, a *customer segment* might not directly be a resource as it cannot be traded by a firm. This contradicts our definition of resources. Further, not all resources and capabilities that necessarily constitute a firm may be found within this composition as the business model can act as a filter depicting only the most important items as described in "2.2.3 Osterwalder's Business Model Canvas". If changes occur in those items, they have to be treated in a separate analysis.

The bottom line is that after the operationalization of the business model canvas, the resources and capabilities that constitute a firm from a business model perspective are obtained. Now, the VRIN analysis can be conducted with those resources and capabilities.

### **3 Methodology**

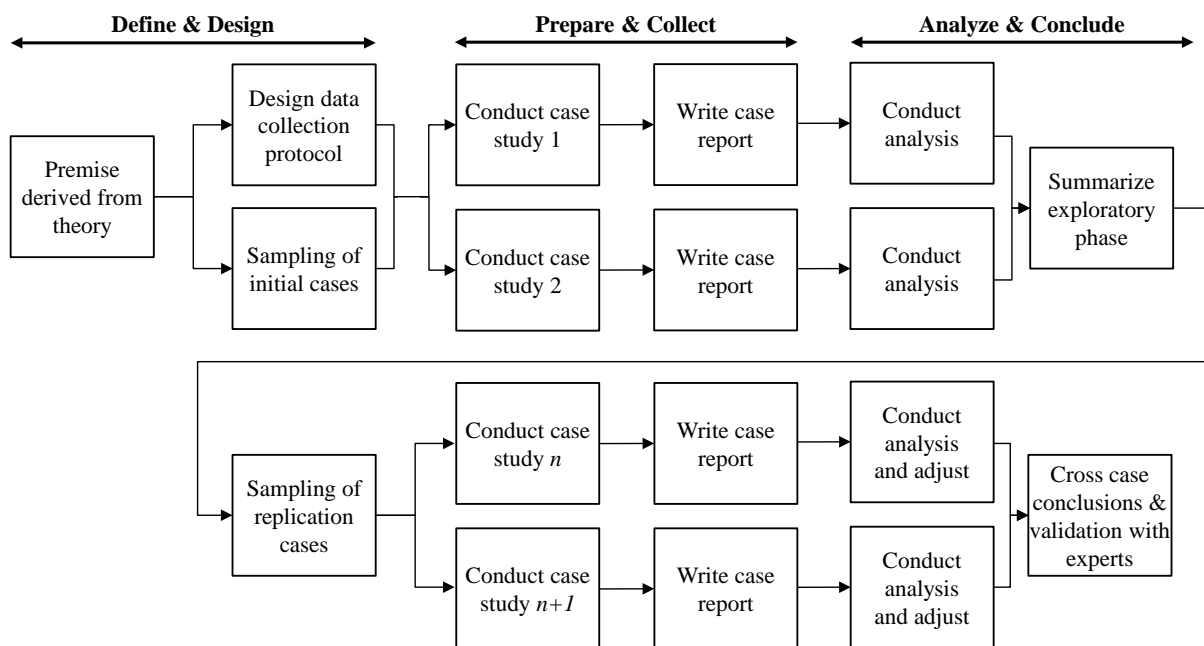
#### **3.1 Study Design**

The goal of the empirical study is twofold: First, it has to confirm or disconfirm whether business model changes have an influence on the competitive advantage. Second, if this is confirmed, we have to answer the explanatory question of how business model changes influence the competitive advantage.

Yin (2003) proposes five different research strategies. The only feasible strategies for an explanatory question are experiments, history, and case studies. As the events observed are out of the behavioural control of the researchers because changes of firms are studied retrospectively, an experiment is not feasible. Case studies are a feasible research strategy as the access to the data is possible since the events do not deal with the "dead" past, (Yin, 2003, pp. 5-8).

The *unit of analysis* is in this case the firm and, more specifically, the business model of a firm at two different points of time (Yin, 2003, pp. 24-26). Hence, the study was designed as a holistic, single-unit of analysis case study (Yin, 2003, p. 40). Similar to Bourgeois and Eisenhardt (1988), a multiple-case study design is employed. Multiple-case studies do not only have more robust findings (Herriott & Firestone, 1983) but allow a replication logic (Yin, 2003, pp. 44-47). This replication logic allows treating a series of cases like experiments because each of the sequential studies "serves to confirm or disconfirm the interferences drawn from the previous one" (Bourgeois & Eisenhardt, 1988, p. 818). The finding of

whether business model changes have an influence on the competitive advantage will be tried to replicate with other cases. Afterwards, the question of how business model changes influences to competitive advantage is addressed. This makes the findings more robust and transferable by increasing *external validity* (Yin, 2003, p. 37). Two initial cases, Betahigh and Haytech, were set up. Other sequential cases were conducted to replicate the findings. Finally, to validate the findings, interviews with two experts were conducted. A complete overview of our process, which is adapted from Yin (2003, p. 50), can be found in Figure 3.



**Figure 3.** Overall research design  
(Source: Adapted from Yin (2003, p. 50))

## 3.2 Data Sources

### 3.2.1 Case Studies

#### 3.2.1.1 Sampling of the Cases

In a first step, feasible types of companies must be identified. Feasible refers to the fact that the companies must exhibit observable changes in the business model as defined in the concept of business model changes. Those changes should have occurred recently. The advantage is that the interviewees can better remember the details. This reduces the recall bias (Yin, 2003). Such conditions can be found in high-velocity environments which incur rapid change in demand, technology, and, competitors (Bourgeois & Eisenhardt, 1988). In the 1980s, those conditions were prevalent in the microprocessor industry (Bourgeois & Eisenhardt, 1988; Eisenhardt, 1989b). Today, they can be observed in the environment of

Internet start-ups (Forbes, 2005). A further advantage of start-ups is that the analysis of business model can be conducted on a firm level rather than on a business unit level. Start-ups firms are rather small resulting in a less complex analysis. The focus for the sampling was put on two regions: The Stockholm area in Sweden and the Silicon Valley in the US (Forbes, 2005). The selection of two different countries helps to minimize cultural biases.

The case selection, called sampling, differs strongly from a random sampling process. Eisenhardt (1989a) and Pettigrew (1990) recommend to sample cases rather for theoretical fit than for statistical reasons. Hence, several criteria to create such a theoretical fit were developed: Firms had to be at least one year old such that the company is established in the market place with products and services. Since founding, there must have been changes in the business model that match our definition of business model changes. Furthermore, Eisenhardt (1989a, p. 537) and Pettigrew (1990, pp. 275-276) propose to sample extreme and polar cases. Extreme cases are cases where “the progress is *transparently observable*” (Pettigrew, 1990, p. 275). Thus, cases with major changes that could be observed before the interviews were sampled. We looked for such changes in news publications and websites. Polar cases involve sampling cases that seem to “disconfirm patterns from early case studies” (Pettigrew, 1990, p. 276) which also controls for the bias to select only cases that seem to prove current findings. Several attributes such as size, growth, and unusual other characteristics of the firms were used to identify such cases<sup>6</sup>. This also increases the variance in the sample and leads to a higher chance of encountering changes in all different business model components. This would make the findings more transferable to similar firms.

For Stockholm, we could rely on the SSE business lab to provide us with a list of promising companies. For the Silicon Valley, CrunchBase, a database that lists technology companies, was used. As all the firms had websites, a sample of several hundred companies could easily be looked through to identify suitable firms for our study. Moreover, it turned out to be helpful to look at the funding firms received. Venture capital firms employ strict criteria including assessments of competitive advantages and venture development stage. Those are good indicators to look for potential changes in business models (MacMillan, Siegel, & Subba Narasimha, 1985; Poindexter, 1976; Suksriwong, 2003; Wells, 1974). Hence, the additional criterion that each of the firms must have received at least a series A funding was added. Eventually, it was tried to obtain a range of firms with different ages to see whether the age of a firm has an influence on business model changes.

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<sup>6</sup> A detailed explanation why each case was selected is presented in “4 Overview of the Cases”.

This left us with nine potentially interesting start-ups in Stockholm of which two agreed to participate in our study. In the Silicon Valley, due to the sheer amount of firms, compiling a complete list of interesting start-ups was not possible. Yet, 70 companies were sampled and contacted of which four agreed to participate in our study. This left us in total with six different cases. After conducting those six cases and evaluating them, we reached theoretical saturation from a replication perspective (Eisenhardt, 1989a, p. 545). Each case confirmed the finding that business model changes had an influence on the competitive advantage. Moreover, each case showed the same mechanism of how business model changes influence the competitive advantage. Therefore, closure was reached. An overview of the firms studied is provided in Table 1.

Company*	Industry	Founded	Country	Sales	Funding	Employees	Interviewee
Betahigh	E-Payment	2005	Sweden	400m SEK (2011)	> 160m USD	600	Founder / CFO
Tescom	Photo & Sharing Software	2006	USA	<i>Confidential</i>	>25m USD	36	Co-Founder
Zoomstrip	App Development	2007	USA / Taiwan	200,000 USD (2010)	Series A (undisclosed)	7	Co-Founder / CEO
Haytech	E-Learning	2008	Sweden	4.3m SEK (2008)	Series A (undisclosed)	12	Founder / CEO
Keylex	E-Advertising	2009	USA	450,000 USD (2011)	>1.5m USD	7	Founder / CEO
Alphadom	Contact Management	2010	USA	< 1m USD (2011)	>500k USD	2	Founder / Head of User Growth

\* Company names are pseudonyms

**Table 1.** List of firms studied  
(Source: Own creation)

### 3.2.1.2 Interviews in Start-Ups

Interviews were chosen as the primary method of data collection because they are a) targeted, allowing to focus directly on the topic, and b) insightful, due to perceived causal interferences (Yin, 2003, p. 86). To deal with the associated biases of interviews, several additional techniques were employed as described below.

One interview was conducted with each company to achieve the desired width rather than to have a single deep case. A single deep case would not have yielded much further insights as the phenomenon studied is not of invisible nature. All interviewees had to be either founder or co-founder of the firm and had to hold a C-level position. This ensured that they did not only have a certain influence on the changes but also the necessary insights into those changes. The small number of feasible interviewees per company also explains why it was difficult to obtain a large number of cases or a second interview with another C-level employee.

Due to our study design with replication logic, two different interview techniques were employed: The two first interviews were of exploratory nature to build the initial cases. The four last ones were structured interviews. The exploratory interviews were open and allowed to introduce the topic. Then we could follow up on the interviewee's answers to discover new

information about business model changes and their influences on competitive advantage (Kvale & Brinkmann, 2009, p. 106). After the two interviews, cases were built and data was evaluated to adjust for the found evidence and to allow replication of findings (Yin, 2003, p. 59). Hence, for the second round of interviews, new questions were developed which were more structured and standardized in order to replicate the findings from the first two cases (Kvale & Brinkmann, 2009, p. 106). Even though the second round interviews were focused interviews, open-ended questions were employed (Yin, 2003, pp. 90-91). The interviews especially differed in length as the exploratory interviews lasted up to 150 minutes while the structured interviews lasted only up to 90 minutes.

When it comes to interview structure and setting, both interview types were similar: Each of the participants had received a short description of the study and basic information about the interview length and process. To adjust for reflexivity bias, however, no detailed questions were sent out to the interviewees beforehand such that they could not prepare answers (Yin, 2003). We prepared the interviews by gathering information about the company such that we understood what the company was doing.

In each interview, the first block of questions referred to the interviewee and his tasks within the company. Afterwards, the business model canvas was presented by the interviewer and was then completed collaboratively for  $t_1$ . As the interviewee is able to recall the most information about the current situation of the firm,  $t_1$  was always set as the current point of time. Subsequently, the interviewee was probed for changes that occurred in the company over the last years. Each of those changes had to fulfil the concept of business model changes. The impact of each change on the business model was jointly discussed, and, subsequently, the change with the greatest impact on the business model was identified. The point of time  $t_0$  was set in such a way that it embraces this change. From a theoretical point of view, this means that  $t_0$  and  $t_1$  were set according to our definition of business model changes. Moreover, one has to note that between  $t_0$  and  $t_1$  not only the change with the greatest impact but also other changes occurred. Those other changes will also be part of the analysis as they match the concept of business model changes and might influence the competitive advantage. As for  $t_1$ , the business model was drafted collaboratively for  $t_0$ .

In the main part of each interview, the changes in the business model and the resources and capabilities between the two points in time were discussed. This means that the operationalization of the business model was partly developed with the interviewees. Finally, the interviewees were asked about reflections concerning those changes. While in the exploratory interviews the interviewees had more room to talk and we, as interviewers, were

more listening, in the more structured interviews previously found evidence was tested. Both interview scripts can be found in the appendix.

Each interview was conducted in a tandem of two investigators and took place in the office of each firm. One interviewer was the lead interviewer while the other interviewer was the backup interviewer, filling gaps and observing (Bourgeois & Eisenhardt, 1988, p. 819). Each interviewer was equipped with a script of the interview and a “cheat sheet” that contained specific definitions of terms used during the interview. This helped to achieve consistency among the definitions used in the interviews. This sheet can be found in the appendix. Most interviewees allowed taping the interviews but also most of them required us to disguise the company name. Immediately after the interview, we conducted a cross check session during which impressions and facts were compared. Moreover, we applied the “24 hour” rule of making interview protocols within one day (Eisenhardt, 1989b, p. 548). Additionally, all interview notes were enriched by the impressions made during the interview (Eisenhardt, 1989b, p. 548).

It is assumed that the bias of the interviewees is rather low as the data collected was not of personal nature or sensitive. Nevertheless, we tried to control for the inherent weakness of interviews. Yin (2003, p. 86) lists four different weaknesses of interviews: bias due to poor questions, response bias, inaccuracies due to weak recall, and reflexivity. To control for bias due to poor questions and response bias, the questions were pre-tested whether they are genuinely-open questions following the guide from Patton (1990, pp. 298-300). Genuinely open questions also prevent reflexivity, since it is more difficult for the interviewee to infer what the interviewer wants to hear. Moreover, reflexivity was reduced by not sending out the questions beforehand. This was especially important for the exploratory interviews during which the interviewees could have easily determined the direction of the interview. Finally, one has to note that only three out of six interviewees have a business education. This means that especially in the more theory-focused part of the interviews, the interviewees were probably less biased due to their unfamiliarity with the VRIN framework. The bias for recall is hard to adjust for due to its physical nature, however, it is one reason why recent changes in the business model were preferred.

### **3.2.1.3 Secondary Data**

Each case was enriched with secondary data from other sources than the interviews (Eisenhardt, 1989a, p. 541). This enriching helped to understand the bigger picture the firm operates within, and also helped to create a chain of evidence. Hence, it increased the *construct validity* of the cases (Yin, 2003, pp. 34; 101-106). Such other sources included news

and other information that could be gathered through Factiva, a business information database as well as other data that could be obtained from the company's website. Moreover, information about competitors was collected.

Those sources are, however, not separately disclosed due to the confidentiality agreements with the interviewed companies as the sources would allow a disclosure.

### **3.2.2 Validation with Experts**

In a final round, the findings were discussed with two experts: The first one is Alexander Osterwalder who developed the business model canvas. He is a consultant to start-ups and a scholar in the field of business models (Dubosson-Torbay, Osterwalder, & Pigneur, 2002; Osterwalder & Pigneur, 2005).

The second expert is Alexander Fries who is the president of Ecosystem Ventures LLC, a Silicon Valley based venture capital and strategic consulting firm that focuses on technology start-ups. Amongst others, his company invested in SVOX AG a text-to-speech software company which was sold to Nuance and PlaySpan Inc. which was sold to Visa Inc. Moreover, his company also invested in Facebook five years ago.

The major goal in the discussion with those two experts was to validate findings on a higher level: How do the findings apply in practice? What is their opinion about the practical implications of the study? Moreover, the usefulness of business models as a tool was discussed. There are no interview sheets attached because we had rather informal discussions than structured interviews.

### **3.3 Case Preparation**

In the next step, all the data collected for the cases was prepared to build case reports. Those case reports were used in the analysis phase.

The case study report for each company consists of several sections (Yin, 2003): First, it contains a general description of the company. The second part contains the snapshots of the business models in form of two business model canvases at the two points of time  $t_0$  and  $t_1$ . Each of the two business models had to be operationalized with resources and capabilities to assess the changes in the competitive advantage. While this operationalization was already partly discussed in the interviews, it was necessary to review the construct and to complete it if necessary. It is important to note that the operationalization is solely based on the empirical data. Hence, interview partners were asked what they consider as an important resource or capability. This explains why the operationalization of some business models exhibits "standard" resources or capabilities such as human resources, marketing, or sales and others do not. Eventually, impressions of the researchers conclude the case study reports. There are

large extracts of the case reports of two firms<sup>7</sup> exhibited in “4 Overview of the Cases” which allow diving into the data and building a chain of evidence to increase *construct validity* (Yin, 2003, p. 34). Moreover, the case study reports serve as the base of the data analysis. They increase *reliability* and allow a third person to replicate the study (Yin, 2003, p. 37). Finally, more extracts of the case study reports are presented in the appendix in “10.3 Additional Case Information”.

### 3.4 Data Analysis

Yin (2003, pp. 109-111) emphasizes the significance of a general analysis strategy to obtain useful results. The most preferred strategy is to follow the theoretical propositions which led to the case study. In this case, the theoretical proposition is the assumed link between business model changes and changes in the competitive advantage. Moreover, it is important to understand that there are no generic formulas, recipes, or tools available to analyse case studies. Thus, an individual tailored procedure for every empirical study is needed to arrive at analytically derived conclusions that relate to theory (Yin, 2003, pp. 109-110). Therefore, we tailored an analysis process for our needs. The analysis consists of two steps: First, the analysis of whether changes in business models change the competitive advantage. Second, the analysis of how changes in business models affect the competitive advantage. The second analysis can only be conducted if the assumption of the first analysis is proven.

As explained, we conducted two explorative interviews and, hence, had two explorative cases: Betahigh and Haytech. Before the next interviews were conducted, we analysed the data from those cases and could conclude that the concept of core and supporting elements with the four types of changes as presented in chapter “5 Observations” was necessary to perform an in-depth analysis of competitive advantage.

After the initial analysis of the explorative cases, we developed an analysis procedure in order to analyse whether the changes in business models influence the competitive advantage:

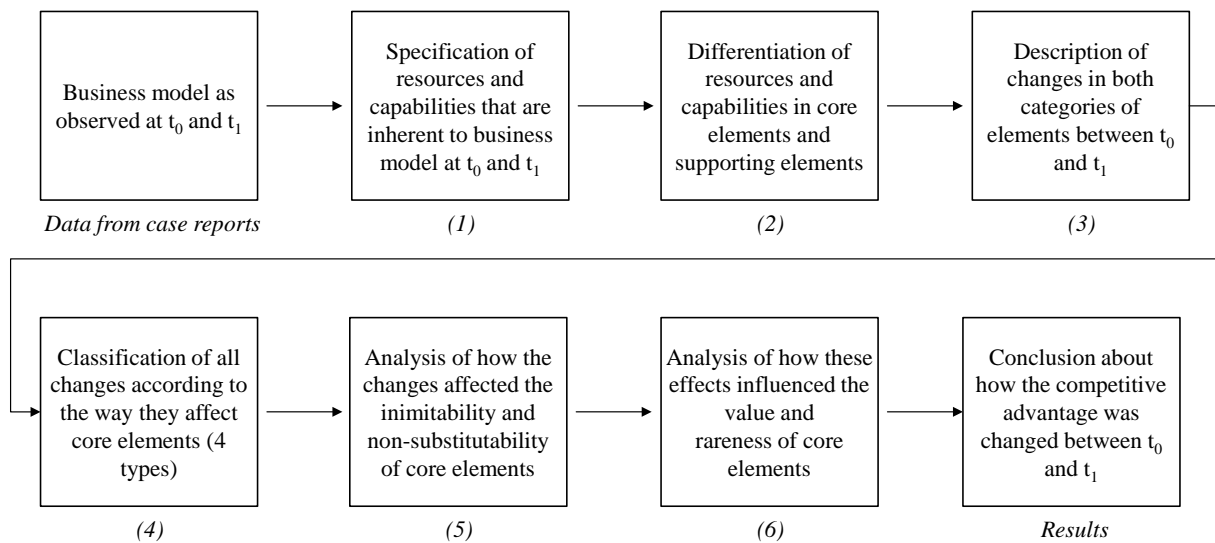
- 1) We used the data of the case reports to specify the resources and capabilities that are inherent to the firms’ business models.
- 2) For each point  $t_0$  and  $t_1$ , we classified the resources and capabilities in core and supporting elements.
- 3) We determined which of these elements have been modified or newly introduced between  $t_0$  and  $t_1$ .
- 4) We classified the observed changes into four different types that are based on how they affect the core elements of a firm.
- 5) According to the type of change, we conducted the VRIN analysis by evaluating the concrete changes in the inimitability and the non-substitutability of core elements.
- 6)

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<sup>7</sup> Due to the size limitations, only two firms are exhibited in length.



Following Peteraf (1993), we examined how those two attributes sustain the value and rareness of the core elements. An overview of this procedure is summarized in Figure 4.



**Figure 4.** Analysis procedure  
(Source: Own creation)

In case the VRIN attributes are affected in a positive way, it is said that the competitive advantage at  $t_1$  is enhanced relative to  $t_0$ . This means the elements become more inimitable which sustains the value and that elements become more non-substitutable which sustains the rareness. There are two things to note: First, elements that do not change between  $t_0$  and  $t_1$ , are not considered as they have no influence the competitive advantage due to unchanged VRIN attributes. Second, the analysis is relative to any, or even none, competitive advantage the firm possessed at  $t_0$ . This concludes the first part of the analysis whether changes in business models influence the competitive advantage. This part is presented in “6 Analysis”.

To conduct this second analysis, it was played with the data and the results of the first part of the analysis by putting it in different graphical formats and by condensing it into more handy and more descriptive pieces, as advised by Yin (2003, pp. 110-111). Subsequently, a deep within case analysis of the changes in the business model’s components between  $t_0$  and  $t_1$  was conducted for each case. The process had to be repeated after each case added to adjust for eventual new findings. This was an iterative and time consuming process which resembles the process of *explanation building*, as proposed by Yin (2003, pp. 120-122).

Finally, the results are cross-compared to find similarities among the case reports. The results of how the changes of business models influence the competitive advantage are presented in “7 Discussion”.

## 4 Overview of the Cases

### 4.1 Betahigh

#### 4.1.1 Overview

Betahigh was founded in 2005 as an E-payment provider. The firm received two series of financing, amongst others from Sequoia Capital totalling in more than \$160 million. This helped Betahigh to rapidly grow in the market for E-payment solutions. In 2011, Betahigh had more than 600 employees and held a two-digit market share in Scandinavia's E-payment market. The company is the Swedish market leader, handling annual transactions worth more than \$2.5 billion. Betahigh's business model relies on offering secure and convenient online payments for online shops. The company offers a payment platform, which manages the whole payment process: for the merchant, who is selling products, and for the end-customer, who is ordering products online. The value proposition of Betahigh is to guarantee direct payments to the merchants before the good is shipped and to enable end-customers to pay the ordered item via invoice after delivery. Therefore, Betahigh, as an intermediary, reduces the risk for merchants through guaranteed and timely payment and for end-customers through payments after receiving the goods.

The Betahigh case was sampled and used because it demonstrates an outstanding example when it comes to growth. Betahigh grew within four years to a company of more than 600 employees in several countries. Moreover, Betahigh's business model underwent some interesting change with the introduction of a financing service.

#### 4.1.2 Betahigh's Business Model at $t_0$ and $t_1$

In order to understand the changes in Betahigh's business model over time, two points in time have been chosen:  $t_0$  in December 2009 and  $t_1$  in June 2011. Between 2009 and 2011, Betahigh introduced a financing service such that customers can pay in instalments. This will be the analysed change.

Betahigh's business model at  $t_0$  is illustrated with the business model canvas. It can be found in Figure 11 in the appendix. The business model builds around the value proposition which is to offer secure and convenient online payments for end-customers and merchants. The key activities to deliver this value proposition are the development and maintenance of the platform, the risk management to minimize potential defaults of customers, and general sales activities. The platform, the customer data, the employees, and the brand image are considered as they key resources. Our interview partner stated that Betahigh is depending on several key partners: the merchants who are partners and customers at the same time, producers of software for online-shops who technically integrate Betahigh's payment-

platform, and collection companies who help collecting outstanding payments from end-customers. The firm's cost structure results from those key activities and key resources. It mainly consists of personnel costs and costs connected to the technical infrastructure of the platform. Defaults of end-customers also lead to considerable costs, since Betahigh guarantees the payment for the merchants.

Betahigh has two customer segments: Online merchants in Nordic countries and the end-customers of these online shops. The merchants are approached via direct contacts and Betahigh's web representation; the end-customers are indirectly approached through Betahigh's online platform, which is typically embedded in the merchants' online shops. The merchants generate the company's revenue: Betahigh charges them a one-time application fee, monthly fees, and, finally, small transaction fees.

Betahigh's business model at  $t_1$  in summer 2011 is depicted below in Figure 5. The firm's value proposition is still based on the idea to offer a secure and convenient E-payment platform. Yet, there has been an addition that makes the offering more attractive for merchants and end-customers. Betahigh introduced the option to pay with instalments. For end-customers, the new financing option enables delayed payments. For merchants, it adds new potential customers who favour instalment payments. Betahigh benefits from a higher transaction volume and generates additional revenues and profits with the interest gains of the financing option.

To conduct the new value proposition, several changes in the business model were necessary: Betahigh introduced financial management as a new key activity, accompanied by a stricter risk management, and relies on extended customer data as key resource. This addition has become essential for Betahigh, since the company now also bears the higher risk of defaults on instalment payments and, thus, is more concerned with liquidity issues. Since the merchants still receive direct payments for ordered goods – they are not part of the financing solution – Betahigh also needs a higher securitization, this means more underlying capital, and faces higher interest costs for financing.

Besides the changes that are directly related to the value proposition, Betahigh expanded to Germany, which added German merchants and end-customers as new customer segments.

<b>Key Partners</b> <ul style="list-style-type: none"> <li>• Merchants</li> <li>• Online shop producers</li> <li>• Collection companies</li> <li>• <u>Financial institutions</u></li> </ul>	<b>Key Activities</b> <ul style="list-style-type: none"> <li>• Platform development</li> <li>• <u>Risk management</u></li> <li>• Sales</li> <li>• <u>Financial management</u></li> </ul>	<b>Value Proposition</b> <p>Secure and convenient online payments for</p> <p>a) End customers (pay after receiving)</p> <p>b) Merchants (immediately paid)</p> <p><u>Offering installment payments for customers</u></p>	<b>Customer Relationships</b> <ul style="list-style-type: none"> <li>• Merchants: direct contact through sales force and support</li> <li>• Customers: indirect through platform</li> </ul>	<b>Customer Segments</b> <ul style="list-style-type: none"> <li>• Merchants (Nordic countries and <u>Germany</u>)</li> <li>• End customers (Nordic countries and <u>Germany</u>)</li> </ul>
	<b>Key Resources</b> <ul style="list-style-type: none"> <li>• <u>Platform</u></li> <li>• <u>Customer data</u></li> <li>• Human resources</li> <li>• Brand</li> </ul>		<b>Channels</b> <ul style="list-style-type: none"> <li>• Merchants: direct and internet</li> <li>• End customers: internet</li> </ul>	
<b>Cost Structure</b> <ul style="list-style-type: none"> <li>• Personnel costs</li> <li>• Default of end customers</li> <li>• Platform maintenance</li> <li>• <u>Interest costs from financing</u></li> </ul>			<b>Revenue Structure</b> <ul style="list-style-type: none"> <li>• One time application fee from merchants</li> <li>• Monthly fee for merchants</li> <li>• Transaction fee for merchants</li> <li>• <u>Interest revenues from financing</u></li> </ul>	

--- = new, ..... = modified

*Figure 5.* Business model canvas of Betahigh at  $t_1$   
(Source: Own creation)

#### 4.1.3 Resources and Capabilities of Betahigh’s Business Model at $t_0$ and $t_1$

The business model of Betahigh at  $t_0$  can be operationalized with resources and capabilities as shown below in Table 2. The web platform is one of the main resources of Betahigh. According to the definition of resources it is possessed and controlled by Betahigh and has a certain monetary value as it is observable. Simply, it is nothing else than a piece of software and, thus, can be traded<sup>8</sup>. Accordingly, the partnerships with collection companies and merchants are resources. They are tightly linked with the platform. Moreover, the brand image of Betahigh is an additional resource that makes the platform well-known. To maintain, to develop, and to operate the platform, several activities are necessary: 1) Sales to sell the services of the platform to merchants, 2) platform development to implement new features and to keep the platform reliable, and, 3) risk management to avoid a high amount of defaults among customers. According to our definition, all those activities are capabilities. They involve complex organizational problem solving and are deeply embedded in the firm. This means Betahigh could not sell its capability of platform development or risk management, and, eventually, they increase the value of another resource: the platform. The platform development is also dependent on the resource of the partnership with online shop producers

<sup>8</sup> The application of the definition is not explicitly written down for each operationalization.

that implement an interface with Betahigh. Finally, the risk management requires customer data as an input.

As the business model at  $t_0$ , the business model at  $t_1$  can be operationalized through resources and capabilities. The result is shown below in Table 2. To provide the new service, Betahigh has added a capability of financial management and a new resource: partnerships with financial institutions. Moreover, Betahigh had to modify the platform to include the new features and to make those features accessible. The risk management had to be extended and required more customer data.

$t_0$		$t_1$	
Resources	Capabilities	Resources	Capabilities
Platform	Platform development	Platform	Platform development
Partnership with online shop producers	Risk management	Partnership with online shop producers	<u>Risk management</u>
Customer data	Sales	Customer data	Sales
Human resources		Human resources	<u>Financial management</u>
Brand image		Brand image	
Partnership with collection companies		Partnership with collection companies	
Partnership with merchants		Partnership with merchants	
		<u>Partnership with financial institutions</u>	

--- = new, ..... = modified

*Table 2.* Resources and capabilities of Betahigh at  $t_0$  and  $t_1$   
(Source: Own creation)

## 4.2 Tescom

### 4.2.1 Overview

Tescom was founded in 2006 and received a series A funding in 2007, a series B funding in 2009, and a series C funding in 2011. All of the three series total in more than \$25 million.

Tescom is a business-to-consumer software company offering web browser enhancements and mobile apps. The firm focuses on simplicity and exceptional design for a delightful consumer experience. Tescom started by offering web browser enhancements which allow an enhanced browsing experience especially with media such as pictures and videos. As of today, Tescom offers a picture and video sharing ecosystem that allows users to

instantly share pictures and videos not only in social networks such as Facebook or Twitter but also with other groups, in public streams, or via email. Tescom offers other software and apps that also include enhanced content discovery techniques.

It was chosen as an exemplarily case because it shows how a company can completely change its value proposition due to external changes but still stick to a similar business model.

#### **4.2.2 Tescom's Business Model at $t_0$ and $t_1$**

In order to analyse changes of Tescom's business model, two points in time have been chosen:  $t_0$  in end of 2010 and  $t_1$  in August 2011. During this time, Tescom underwent a major change by switching their core products of web browser enhancement to an ecosystem of media sharing.

Tescom's business model at  $t_0$  is built around the value proposition of offering enhanced web browsing experience. The business model at  $t_0$  is depicted in Figure 12 in the appendix. The key activities Tescom performs are product design to achieve well-designed products and programming to implement these products. An important step to achieve the delightful consumer experience is to understand the consumer. This makes heavy testing of the products and customer research further key activities. Therefore, over the years, Tescom has accumulated a large amount of knowledge about consumer needs, listed as customer experience, and created several patented technologies, listed as intellectual property. All of them are key resources. At  $t_0$ , Tescom conducted only small amounts of marketing relying mainly on third parties promoting their products. Nevertheless, when it comes to human resources, Tescom has always been highly selective. New employees have to undergo a rigorous recruiting process involving two months of trial employment before five to ten people of the team decide whether someone becomes fully employed. Especially important is the cultural fit of the new employees with the existing team. This makes human resource management one of the key activities and human resources one of the key resources. The main source for recruiting is Stanford University of which Tescom never moved further away than a ten minutes bike ride. This makes Stanford a key partner. Moreover, Tescom cares a lot about its employees: They offer benefits such as free lunch and create a relaxed atmosphere in the office. Those internal activities incur several costs such as personnel costs, marketing costs, and costs for the employee benefits.

Tescom has always been looking for direct contact with its customers, answering emails individually making sure they understand what customers really need. Their website and emails are the main channels. Back in  $t_0$ , Tescom did not segment its customers and monetized its products only through advertising that is displayed in the products.

In 2010, Tescom started to realize that the Internet is not only about content discovery as the existing products focused on but also about content sharing and mobile applications. Hence, Tescom started to modify its value proposition to offer delightful consumer experiences for content sharing and content discovery, resulting in the modified business model of 2011, as depicted below in Figure 6. They created an app that allows users to share videos and pictures live through a system which our interview partner called ecosystem. This ecosystem can be integrated in many other platforms such as Facebook, Twitter, LinkedIn, or use other channels such as email or just a secure website. It can release the content in the form of streams on those platforms or channels. Moreover, the applications that are provided by the ecosystem make heavy use of the previously content discovery technologies. Considering the key activities and resources, only small changes were necessary: Increased marketing efforts were required to push out the app to as many consumers as possible and the ecosystem, which consists of different software applications at different places, became a key resource. One new activity, however, was the management of new partners. The new partners were required to distribute the app, create content, and to help to market the product. Tescom partnered up with several carriers such as AT&T, Verizon, and T-Mobile to have the app pre-installed on the shipped smartphones and made agreements with sport teams, concert organizers, and bands to promote and to use the app. Moreover, they made agreements with several celebrities and brands such that they use the app to share content. While the costs are mainly the same, Tescom now needs to provide some larger infrastructure for the whole ecosystem to store the data. This incurs infrastructure costs. Finally, several channels were added to interact with customers: App stores such as Android Market and Apple's App Store as well as Facebook and Twitter which are also used for marketing efforts. Eventually, Tescom also decided to divide the customers by geographical regions. They started to focus on the West Coast and continued on the East Coast before moving to other markets.

<p><b>Key Partners</b></p> <ul style="list-style-type: none"> <li>• Stanford</li> <li>• <u>Distribution</u>: <ul style="list-style-type: none"> <li>• Carriers (AT&amp;T, Verizon, T-Mobile)</li> </ul> </li> <li>• <u>Content</u>: <ul style="list-style-type: none"> <li>• Sport teams</li> <li>• Concert companies</li> </ul> </li> <li>• <u>Brands</u>: <ul style="list-style-type: none"> <li>• Paris Hilton</li> <li>• Taylor Swift</li> <li>• Maybelline</li> <li>• L'Oreal</li> </ul> </li> </ul>	<p><b>Key Activities</b></p> <ul style="list-style-type: none"> <li>• Programming</li> <li>• Product design</li> <li>• Testing</li> <li>• Human resource management</li> <li>• Marketing</li> <li>• Partner management</li> </ul>	<p><b>Value Proposition</b></p> <p><u>Delightful consumer experiences for content sharing and content discovery</u></p>	<p><b>Customer Relationships</b></p> <ul style="list-style-type: none"> <li>• Direct contact</li> </ul>	<p><b>Customer Segments</b></p> <ul style="list-style-type: none"> <li>• <u>Geographical focus</u> (east and west coast)</li> </ul>
<p><b>Key Resources</b></p> <ul style="list-style-type: none"> <li>• Ecosystem</li> <li>• Human resources</li> <li>• Brand image</li> <li>• Customer experience</li> <li>• Intellectual property</li> </ul>			<p><b>Channels</b></p> <ul style="list-style-type: none"> <li>• Webpage</li> <li>• Email</li> <li>• App-stores</li> <li>• Social networks (Twitter, Facebook)</li> </ul>	
<p><b>Cost Structure</b></p> <ul style="list-style-type: none"> <li>• Personnel costs</li> <li>• Marketing costs</li> <li>• Infrastructure cost</li> <li>• Employee benefits</li> </ul>			<p><b>Revenue Structure</b></p> <ul style="list-style-type: none"> <li>• Advertising</li> <li>• Premium features</li> </ul>	

--- = new, ..... = modified

Figure 6. Business model canvas of Tescom at t<sub>1</sub>  
(Source: Own creation)

### 4.2.3 Resources and Capabilities of Tescom’s Business Model at t<sub>0</sub> and t<sub>1</sub>

The business model of Tescom at t<sub>0</sub> can be operationalized with resources and capabilities as shown below in Table 3.

As our interview partner stated, the most important resource for Tescom are its employees. Hence, the resource of human resources and the capability of human resource management are two important elements. Moreover, Stanford is an important source of new employees making this partnership a resource. Three important capabilities to deliver the value proposition are 1) the product design, 2) the programming of the software, and, 3) the testing of the products with users. The capabilities of product design and programming can each rely on a further resource: Previous experience with designing applications to satisfy and excite customers, represented as customer experience; and several previously developed technologies which are patented, represented as intellectual properties. Moreover, marketing is also a capability that was used to develop the resource of brand image. Finally, the web browser enhancements in the form of software are also a resource named applications.

The operationalization of the business model in t<sub>1</sub> shows a similar constellation as the operationalization at t<sub>0</sub>. Nevertheless, there are changes of existing elements and introductions of new elements. First of all, due to the shift in the value proposition, the application resource was transformed into an ecosystem resource that bundles the software applications and



services Tescom offers. Tescom acquired a large range of partners to promote the ecosystem, to fill the ecosystem with content, and to distribute the apps. All those partnerships are treated as resources. To manage all those partners and to acquire new partners, partner management was necessary making it a new capability. Finally, the capability marketing was adapted to work with the brand partners and the brand image was developed further.

$t_0$		$t_1$	
Resources	Capabilities	Resources	Capabilities
Brand image	Marketing	Brand image	Marketing
Human resources	Human resources management	Human resources	Human resources management
Partnership with Stanford	Programming	Partnership with Stanford	Programming
Intellectual property	Product design	Intellectual property	Product design
Customer experience	Product testing	Customer experience	Product testing
Applications		<u>Ecosystem</u>	<u>Partner management</u>
		<u>Partnerships with content providers</u>	
		<u>Partnerships with distributors</u>	
		<u>Partnerships with brands</u>	

--- = new, ..... = modified

*Table 3.* Resources and capabilities of Tescom at  $t_0$  and  $t_1$   
(Source: Own creation)

### 4.3 Additional Cases

As stated before, six case studies were conducted. Yet, only two cases are presented in length due to length restrictions. As we still refer to the other four cases and outline implications, we briefly outline them in this section. A full overview of the business models as depicted with the business model canvas as well as the resources and capabilities for those cases can be found in the appendix.

#### 4.3.1 Zoomstrip

Zoomstrip was founded in 2007 and started to program applications in the form of social games for Facebook. As of today, however, they are one of the leading developers for smartphone apps releasing several apps, one of them being in the top 10 of Apple's App Store. Hence, the business model change that was analysed was the switch from Facebook apps to smartphone apps. While  $t_0$  was defined as mid-2010,  $t_1$  was defined as fall 2011.

There are two reasons why Zoomstrip was sampled: First, similarly as Tescom, Zoomstrip underwent a transformation. Zoomstrip switched the type of products from Facebook apps to smartphone and tablet apps. Second, despite the low number of seven employees, Zoomstrip has two permanent offices: One in Taiwan and one in the Silicon Valley. This allows Zoomstrip to work 24 hours a day due to the different time zones. Thus, there might be implications of shorter time-to-market periods for new products and services and faster business development.

#### **4.3.2 Haytech**

Haytech was founded in 2008 and has its focus on E-learning solutions. They offer an application that can be used to create E-learning content and applications. Between  $t_0$  in late 2010 and  $t_1$  in late 2011, Haytech started to develop and introduce a web platform that allows sharing the created E-learning applications through this web platform. The changes observed involved not only the introduction of the platform but also fine-tuning activities over the last months to make the platform ready for the public launch. While all other platform-centric business models already had the platform in place at the respective  $t_0$ , Haytech was about to introduce it. This is the reason why Haytech was sampled.

#### **4.3.3 Keylex**

Keylex was founded in 2009, and offers an optimizing tool for text-based online ads such as displayed on Google AdWords. Keylex is connected to a large network of pay-per-click copywriters who improve the text-based ads of the customers. Keylex does not only provide the platform to bring together advertisers and copywriters but also offers developed algorithms that allow automated testing of those new ads such that the advertisers can select the most efficient ads.

The changes that were observed took place between  $t_0$  in the end of 2010 and  $t_1$  in fall 2011. In addition to Google AdWords, Keylex formed a new and exclusive partnership with Facebook, improved its platform in functionality, and added a service of auditing. Auditing is concerned with an in-depth analysis of existing advertising campaigns where Keylex plays due to the accumulated experience a role as consultant. Moreover, they partnered up with bid management system companies to integrate their platform and ad agents to sell their services. Eventually, they gained access to advertising performance data from Spyfu.

The Keylex case was sampled because the firm underwent some major changes by partnering up with several other companies.

#### 4.3.4 Alphadom

Alphadom was founded in 2010 and is the youngest company in our sample. They offer a web-based contact aggregation application that pulls all the data about a person from many different sources, such as Facebook, Twitter, LinkedIn, and Google Mail, and summarizes the data per person. This ensures that all relevant data about one person can be found in one place. This makes it a helpful tool for professional networkers. Due to the age of the company, not many changes have occurred yet. Still, the introduction of new partners between  $t_0$  in January 2011 and  $t_1$  in fall 2011 was observed.

Out of all sampled cases, Alphadom's business model is the most partner-dependent one making the changes in the partner component interesting to study.

## 5 Observations

Interestingly, each of the cases showed similar configurations of resources and capabilities as always some resource or capability seemed to be central while others seemed to be more peripheral with respect to the value proposition. This has an impact on the later analysis which is why it is explained before the analysis. First, the observations and implications are presented before the observations are illustrated with the two exemplary cases.

### 5.1 Core and Supporting Elements

In the following, those central elements will be termed core resources or core capabilities and the peripheral elements are called supporting resources or supporting capabilities. Based on our observations of the resources and capabilities, each operationalized business model exhibits some core resources and core capabilities and several supporting resources and supporting capabilities.

Core elements are tightly interwoven in configurations with other resources and capabilities. This definition goes back to Hannan, Burton, and Baron (1996, p. 506), "coreness means connectedness, elements in the core are linked in complicated webs of relations with each other and with peripheral elements". Moreover, core elements are not only connected but also interact. Hence, in the presence of another core element, they can mutually reinforce their values because they are complementary (Siggelkow, 2002, pp. 127-128). Valuable means that such an element helps to capture a business opportunity or to neutralize a threat towards the value proposition (Barney, 1991, p. 106). This implies that core elements are closely related to the value proposition. Eventually, it is important to note that the core elements do not have to be constant over time as firms might change, add, or delete core elements (Siggelkow, 2002, p. 127).

Evaluated in isolation, supporting resources and supporting capabilities often do not provide a lot of value to a company but only when they are evaluated with respect to the core elements. This means, they can enhance the value of core elements but their own value is not reinforced (Nelson & Winter, 1982; Teece, 1986; Tripsas, 1997). Nevertheless, it is crucial to note that we do not suppose that supporting resources and capabilities are *superfluous* or *abundant*. Firms cannot deliver the value proposition without those supporting resources and capabilities. Still, those supporting elements play a sub-ordinate role when it comes to assessing the competitive advantage of a firm.

## 5.2 Implications

This has several implications for the analysis of the competitive advantage through the VRIN attributes. First, as supporting resources and capabilities may not be valuable on their own, they will not be valuable according to the VRIN definition because resources or capabilities are only valuable when they help to capture a business opportunity or to eliminate a threat towards the value proposition (Barney, 1991). Second, the only elements that are valuable for the value proposition are the core resources and capabilities. Only those core elements are valuable as defined by the VRIN attributes. Thus, they will also have a major impact on the competitive advantage. This implies that the core resources and capabilities need an in-depth analysis of their own VRIN attributes with respect to the value proposition. Additionally, their influence on the VRIN attributes of other core elements must be evaluated because those elements mutually reinforce each other.

Nevertheless, the supporting resources and capabilities also need a specific analysis: yet, not with respect to other supporting elements but with respect to the core elements. Supporting elements might influence the VRIN attributes of the core elements.

Concluding, three different types of changes in elements that influence the competitive advantage can be identified: 1) changes of the core elements themselves, 2) changes in core elements that affect other core elements, 3) changes of supporting elements that affect the core elements.

## 5.3 Illustration with Cases

In the following, the core and supporting elements for the two exemplary cases will be illustrated. While there are several of those elements, not all of them will be analysed later on. As explained, we will only analyse those elements that changed to assess the relative change in competitive advantage. All unchanged elements will not exhibit any changes in VRIN attributes and, hence, will not change the competitive advantage.

### 5.3.1 Case of Betahigh

In Betahigh's case, the platform, which is connecting the end-customers with the merchants, is clearly the core resource of the business model. Tightly linked to the platform is the risk management which can be identified as a core capability of Betahigh. Together with the platform, they represent the core of Betahigh's business model. Moreover, platform development is an essential capability. All those core elements represent the critical elements that are necessary such that Betahigh can deliver its value proposition. There are supporting resources and capabilities around those central elements which are also important. Yet, those elements, such as the customer data or the brand image, merely help the core elements to deliver the value proposition. Moreover, most of those supporting elements have only one connection. For example, the partnership with online shop producers is only important for the platform development and sales are solely related to the platform. Furthermore, those supporting elements can also increase the value of core elements: For example, the partnership with merchants increases the value of the platform for Betahigh as more merchants attract more customers that can use the payment platform. The partnership with merchants itself, this means without the platform, is not valuable for Betahigh. At  $t_1$ , financial management is added as a new core capability as it is tightly connected with the platform, risk management, and customer data. Moreover, financial management and risk management mutually increase in value as only the combination of both enables Betahigh to deliver the new service of instalment payments at a tolerable risk. Table 4 shows the results of the classification of all Betahigh elements.

$t_0$		$t_1$	
Core Elements	Supporting Elements	Core Elements	Supporting Elements
Platform	Sales	Platform	Sales
Risk management	Partnership with online shop producers	Risk management	Partnership with online shop producers
Platform development	Human resources	Platform development	Human resources
	Brand image	<u>Financial management</u>	Brand image
	Partnership with collection companies		Partnership with collection companies
	Partnership with merchants		Partnership with merchants
	Customer data		<u>Partnership with financial institutions</u>
			<u>Customer data</u>

--- = new, ---- = modified

**Table 4.** Core and supporting elements of Betahigh at  $t_0$  and  $t_1$   
(Source: Own creation)

### 5.3.2 Case of Tescom

In contrast to Betahigh, Tescom has not a platform-centric business model and, hence, the core elements differ. The resource of human resources is at the core of the business model at both points in time as our interview partner classified it as the most important resource. Product design, programming, and product testing are with respect to the value proposition the most essential activities Tescom performs. Yet, as revealed in the interview, Tescom considers product design as the most important capability manifested in the fact that all employees, even programmers, need to have some design background. This makes product design probably the most important activity with respect to the value proposition because only with a compelling design Tescom can sell a delightful experience.

All the other resources and capabilities are definitely essential to run the business but with respect to the value proposition, they are of less importance. Considering human resource management, one could argue that it is definitely important for the firm itself to keep the good workforce but it is not directly necessary to deliver the value proposition. The same yields for the newly acquired partners. They support the marketing and the content production but are not required to deliver the value proposition. Hence, all other resources and capabilities are of supporting nature. Most of them also exhibit a low level of connectedness. For example, Stanford as a partner is solely related to the human resources and the intellectual property is solely related to the programming.

Tescom changed its value proposition and the product focus. The core elements exhibit some changes. Partner management is a new capability that is tightly connected to 1) the new partners, 2) the ecosystem, as there are content partners, and 3) marketing, as there are brand partners. A list of all core elements and their category of Tescom is shown in Table 5.

$t_0$		$t_1$	
Core Elements	Supporting Elements	Core Elements	Supporting Elements
Human resources	Brand image	Human resources	Human resources management
Product design	Human resources management	Product design	Partnership with Stanford
Application	Partnership with Stanford	<u>Ecosystem</u>	Intellectual property
	Intellectual property	<u>Partner management</u>	Customer experience
	Customer experience	Brand image	<u>Marketing</u>
	Marketing		Programming
	Programming		Product testing
	Product testing		Product design
	Product design		<u>Partnerships with content providers</u>
			<u>Partnerships with distributors</u>
			<u>Partnerships with brands</u>

.... = new, ..... = modified

**Table 5.** Core and supporting elements of Tescom at  $t_0$  and  $t_1$   
(Source: Own creation)

## 6 Analysis

The comparison of the resources and capabilities at  $t_0$  and  $t_1$  has shown that the resources and capabilities of Betahigh’s and Tescom’s business model have changed. Through an analysis of the VRIN attributes, it is assessed what consequences those changes have on the competitive advantage of a firm. This answers the question whether business model changes have an influence on the competitive advantage.

Based on the implications of the previously made observations that resources and capabilities can be classified into two categories of core and supporting elements, three different types of changes were identified that relate directly to the changes in resources and capabilities:

*Type 1 changes: Modifications of core resources and core capabilities that lead to changes in their own VRIN attributes.*

*Type 2 changes: Modifications or introductions of core resources and core capabilities that lead to changes in the VRIN attributes of other core elements.*

*Type 3 changes: Modifications or introductions of supporting resources and supporting capabilities that lead to changes in the VRIN attributes of core elements.*

While there might be changes in the VRIN attributes of supporting elements, they will not be considered. These supporting elements do, by definition, not contribute to the competitive advantage of a firm because they are not valuable on their own.

Eventually, there is a fourth type of change. As described earlier, not all items from the business model components directly operationalize to resources and capabilities. Thus, those changes need to be considered separately as they still might influence the VRIN attributes of resources and capabilities.

*Type 4 changes: Changes in the business model, which do not directly relate to the modification or the introduction of resources or capabilities but influence the VRIN attributes of core elements.*

For both, Betahigh and Tescom, changes of all four different types have been observed. In the following, one change of each type will be discussed in-depth. Changes of the types 1 to 3 are discussed in the chapter of explicit changes. Changes of the type 4 are discussed in the chapter of implicit changes. A full summary of all changes can be found in the appendix. Afterwards, for each of the additional cases interesting changes are briefly presented and evaluated.

Finally, one limitation has to be considered. The analysis at hand focuses exclusively on the relative changes in the competitive advantage between  $t_0$  and  $t_1$ . This means only the elements that have changed are considered. The rationale is that only those elements can have an influence on changes in the competitive advantage. Hence, the analysis of the changes is relative to any competitive advantage the firm possessed at point  $t_0$ . The absolute competitive advantage which would include a full comparison to competitors in the market is not part of this analysis. In fact, it could be the case, that the VRIN analysis indicates a relatively improved position at  $t_1$  compared to  $t_0$ . Yet, the company could find itself in a weaker position because competitors changed their business model, resources, and capabilities in a superior manner.

## **6.1 Analysis of Explicit Changes**

This section is concerned with the analysis of the types 1 to 3. The analysis applies the VRIN framework and structures the analysis following the concept of *limits to competition* (Peteraf, 1993). Limits to competition state that resources that are non-substitutable sustain the value of a resource and resources that are inimitable ensure that a resource stays rare (Wade & Hulland, 2004). Therefore, the first part is concerned with how the different kind of



changes in resources and capabilities affected the inimitability and non-substitutability of core resources and core capabilities over time. In the second part, it will be analysed how these changes in inimitability and non-substitutability are reflected in sustained value and rareness of core resources and core capabilities. The underlying assumption is that changes in VRIN attributes of core resources and core capabilities ultimately determine the change of competitive advantage. The first part of the analysis is concerned with the inimitability and non-substitutability. It requires an isolated analysis for each single change. The second part of the analysis is concerned with value and rareness. This second part is summarized since the consequences of single changes in the inimitability and non-substitutability have generalizable effects on the value and rareness of core elements.

### 6.1.1 Analysis of Inimitability and Non-Substitutability of Core Elements

We examined ex-post how new or modified resources and capabilities affected the inimitability and non-substitutability by comparing  $t_1$  relative to  $t_0$ . In the following analysis, the effects of the first three identified types of changes will be examined in detail.

#### 6.1.1.1 Betahigh

For Betahigh's case, we observed and categorized relevant changes in resources and capabilities as shown in Table 6.

Type 1	Type 2	Type 3	Type 4
Platform	Risk management	Partnership with financial institutions	New customer segment
Risk management	Financial management	Customer data	

*Table 6.* Overview of the observed changes at Betahigh  
(Source: Own creation)

Betahigh implemented essential changes in its core resource platform and core capability risk management between  $t_0$  and  $t_1$ . These changes affected the inimitability and non-substitutability of those elements without any external influence from newly introduced or modified resources and capabilities. They are consequently considered as type 1 changes. The newly introduced core capability financial management and the extended core capability risk management also affect the inimitability and non-substitutability of other core elements such as the platform. The change is a type 2 change. The extension of the capability risk management has changed the capability's VRIN attributes. We do not preclude that the change cannot have consequences for the VRIN attributes of other core elements. An example

of a type 3 change is the customer data as extended supporting resource. It affects the inimitability and non-substitutability of the core capabilities risk management and financial management. Another type 3 change is the partnership with financial institutions as new supporting resource. It affects the core capability financial management.

In the following, one change of each type will be discussed in detail, in order to enable a better understanding how the changes affects the inimitability and non-substitutability of Betahigh's core elements. A detailed overview regarding the remaining changes can be found in Table 16 in the appendix.

#### **6.1.1.1.1 Type 1 Change: The Platform as Extended Core Resource**

In the two years between  $t_0$  and  $t_1$ , Betahigh made important additions to its core resource platform. The most important change was the introduction of a financing option, enabling end-customers to pay ordered products with instalment-payments. This extension has affected the inimitability and the non-substitutability of the platform itself.

First of all, the new service has increased the path dependency of the platform. The newest addition to the functionality was the latest step of a process our interview partner called an "evolution over time" with reference to the development of the platform. This development occurred in small, incremental steps, and was bound to the unique history of the company. It depends on numerous capabilities and resources such as the platform development, the risk management, the financial management, and several partners.

We argue that the platform at  $t_1$  as opposed to  $t_0$  has become more causal ambiguous. It is extremely difficult for a competitor to understand, which steps led to what development of the platform. Further, our interview partner explained that the platform can be seen as an entry barrier for smaller competitors. It would be costly to copy such a complex system which is able to manage millions of transactions per year. This refers to a growing economic deterrence of the platform: Competitors might be hesitant to make the essential investment to imitate an already existing solution. Together with the aforementioned changes in path dependency and in causal ambiguity of the platform, the economic deterrence increased the inimitability of the platform.

Second, the recently introduced financing option as new function added another layer of complexity to the platform. This increased range of features, together with the rapidly growing size, makes it more difficult to substitute.

#### **6.1.1.1.2 Type 2 Change: Financial Management as New Core Capability**

The introduction of the new core capability financial management affected the inimitability and non-substitutability of 1) the platform as core resource and 2) the risk management as core capability:

1) Regarding the inimitability, one can argue that the capability financial management added an additional layer to the development of the platform as a core resource. This further development of the platform is clearly path dependent. It is based on Betahigh's unique history. Due to the company size and the required financial investment, the addition of financial services increased the economic deterrence of the platform. Social complexity and causal ambiguity as other potential sources of non-substitutability are of neglectable nature for this change.

The introduction of financial management also affected the non-substitutability of the platform. This kind of services could be completely outsourced to financial institutions. Yet, such a solution is less economically sound, since the financial institutions would demand a large share of the profits.

2) The core capability risk management also benefits from a higher degree of inimitability that relates to the introduction of the financial management as new capability. The path dependency of the new risk management system is much higher. It developed over time and grew substantially with integrating financial management as new functionality. Moreover, the causal ambiguity of risk management as core capability is higher. Due to the increased complexity of the system, it is difficult to determine how the new interface between financial management and risk management works. Our interview partner emphasized the difficulty of finding the right mix of employees to run this complex system. It can be argued that the current team of risk financial managers increased the social complexity of Betahigh's risk management.

The extended core capability risk management is more difficult to substitute as in  $t_0$ . Compared to an in-house solution, it would be much more difficult for an external solution to align the risk management with the existing knowledge about internal risk management and internal customer data.

#### **6.1.1.1.3 Type 3 Change: Customer Data as Extended Supporting Resource**

Compared to  $t_0$ , Betahigh is now relying on substantially extended customer data both, in quality and quantity. The new customer data has implications for the inimitability and non-substitutability of the core capabilities 1) platform development, 2) risk management, and 3) financial management.

1) The further development of the platform heavily relies on customer data. Information about shopping behaviour and preferences help Betahigh’s developers to create a better platform. This development of the platform is clearly path dependent. The platform evolved slowly over the last five years. In its current form, it is difficult to imitate for competitors because of this evolutionary process. Moreover, the causal ambiguity of the platform is closely tied to its development based on customer data. Increased quality and quantity of customer data are essential for the development process. How this process works in detail is difficult to understand for Betahigh’s competitors. It is highly ambiguous, which customer data lead to what kind of change in the platform development, and if the changes enhanced the value of the platform.

Customer data like those of Betahigh can theoretically be bought on the market. It is, however, not likely that the required data for the specific purpose of running a complex E-payment platform in the Scandinavian region will be available on the market. There would at least be a considerable time-delay for producing the needed data. Considering these facts, it can be said that the extended customer data made the platform development as core capability - and indirectly also the platform itself - less substitutable.

2) and 3) Most of arguments for increased path dependency, causal ambiguity, and limited substitutability of 1) also apply for the core capabilities of financial and risk management. For the latter, the on-going refinement, based on reliable customer data leverages the causal ambiguity and path dependency. According to our interview partner at Betahigh, the risk management system heavily relies on proper inferences that are based on available customer data. To his understanding, this process creates a unique competitive advantage for Betahigh.

**6.1.1.2 Tescom**

In Tescom’s case, we observed and classified the relevant changes in resources and capabilities as summarized in Table 7.

<b>Type 1</b>	<b>Type 2</b>	<b>Type 3</b>	<b>Type 4</b>
Brand image	Partner management	Marketing	New channels (app stores, social networks)
Ecosystem		Partnerships with content providers	
		Partnerships with distributors	
		Partnerships with brands	

*Table 7.* Overview of the observed changes at Tescom  
(Source: Own creation)

Many changes in Tescom's resources and capabilities are related to the brand image as extended core resource and a remarkable number of new partnerships with content providers, distributors, and brands. The firm's new focus on the brand image caused a type 1 change, since it affected the inimitability and non-substitutability of the core resource itself. The aggregation of the new services and the existing applications in an ecosystem for content sharing and content discover also leads to a type 1 change of the resource ecosystem. The new core capability partner management is a type 2 change. It changed the VRIN attributes of the brand image as one of Tescom's core resources. Moreover, the brand image is, according to our interview partner, significantly affected by the choice and management of partnerships. The remaining changes are categorized as type 3. They are related to new or extended supporting elements. This influenced the VRIN attributes of Tescom's core elements brand image and ecosystem at  $t_1$ , compared to  $t_0$ .

#### **6.1.1.2.1 Type 1 Change: Brand Image as Extended Core Resource**

Between both points of observation,  $t_0$  and  $t_1$ , the brand image changed from a supporting resource to a core resource. Our interview partner explained that the typical user of content sharing services is normally less concerned with the functionality of the application itself. Thus, the brand image of Tescom's product is becoming more important for its success, since other companies offer similar solutions and since the market for applications offers of a rather indistinguishable variety of content sharing tools.

Tescom's efforts to further develop increased the causal ambiguity and, thus, the inimitability of the brand image. Tescom promoted the brand through social networks, brand partners, content partnerships, and through other marketing activities. The brand image is difficult for competitors to imitate. It is difficult to understand how the brand image attracts users and how the actions of Tescom influenced this development. Moreover, the development of the brand image is highly path dependent and also time-sensitive. Besides the efforts that are required to understand the ambiguity of the brand image, this path dependency means that it would take a considerable amount for a competitor to build a similar brand image.

Regarding the non-substitutability of the brand image, it is important to note that is generally difficult to substitute a brand. Besides buying a comparable brand, imitation is probably the only possible solution which is difficult due to the inimitability of a strong brand.

#### **6.1.1.2.2 Type 2 Change: Partner Management as New Capability**

Between  $t_0$  and  $t_1$ , partner management has become an important supporting capability for Tescom as the firm initiated new partnerships with firms in different sectors. While a differentiation based on pure technological features of its applications is difficult, these partnerships offer a unique opportunity to position the product in the market. As our interview partner stated, customers, this means end-users of apps, tend to choose applications based on available content that mostly comes from brand and content partners like sport clubs, bands, and music labels. A good partner management is, as our interview partner argued, important for a proper product placement for the target user group. Therefore, it is important to identify promising partners and to establish a working relationship with them.

The brand image as key resource of Tescom developed over time. For content-driven application like the one developed by Tescom, this development is determined by content that usually stems from the firm's partners. This path dependent development is driven and controlled by Tescom's selection of media partners. Thus, it can be argued that the partner-management increases the inimitability through increased path dependency of the brand. Our interview partner explained that it is difficult for competitors to imitate a carefully built brand image.

This also relates to the causal ambiguity of the brand as core resource. It takes time and efforts to imitate the brand of a given company due to the path dependency. The potential imitator must also understand the composition of the brand: The value of a brand image is typically a complex social construct due to the unclear explanation what exactly makes a brand appealing for customers. Even though a competitor might recognize how Tescom's brand image attracts customers, it will be challenging to figure out how the firm's actions contributed to this development over time. Replicating such a process would probably lead to a different outcome since timing-effects are neglected and since the external environment cannot be replicated in detail. Moreover, it is difficult for competitors to figure out what exact decisions in the partner management system led to which consequences for the brand image as core resource of Tescom.

While other effects like economic deterrence of the partner management are rather insignificant, it can be concluded that this new capability increased the inimitability of the brand as key resource due to the increased causal ambiguity and path dependency.

#### **6.1.1.2.3 Type 3 Change: Content Providers as New Supporting Resource**

According to our interview partner, the unique user-experience of Tescom's applications is crucial for the company's success. Therefore, Tescom initiated two different

kinds of partnerships: brand partnerships and content partnerships. Brand partnerships are about brands that Tescom wants to be associated with. Content partners provide content for the ecosystem. Brand partners and content partners, however, in some cases overlap as brand partners might also provide content. In the following, we focus on the role of content partners.

While everyone can use Tescom's ecosystem to share content, Tescom created exclusive partnerships with bands, actors, celebrities, and sports clubs as content providers that deliver additional and exclusive content for the ecosystem. This additional and exclusive content has an influence on the ecosystem's non-substitutability and inimitability.

The ecosystem becomes more inimitable, as partners are not allowed to publish the same content through similar services. Moreover, our interview partner stated, that due to the introduction of archive functions the content will also be accumulated and can be accessed later on with the developed content discovery techniques. This accumulation of content makes the ecosystem also path dependent and, thus, more inimitable.

Such partnerships with content providers are relatively easy to substitute because even though most partnerships are exclusive, it is still easy to cooperate with other sports clubs, bands or music labels to provide content. Yet, the content is unique for a certain user segment of the ecosystem, for instance, the fans of a certain band or celebrity and, hence, for those users not substitutable.

Concluding, this means that content partners as new supporting resources made the ecosystem more inimitable and less substitutable.

### **6.1.2 Analysis of Value and Rareness**

The analysis showed that changes in resources and capabilities have an impact on the non-substitutability and inimitability of core elements. Hence, a summary of the changes in the value and rareness follows.

For Betahigh's and Tescom's business model, all core resources and capabilities can be described as valuable. They help the firms to capture opportunities and to neutralize threats towards the value proposition. The new capability financial management together with financial institutions as new partners enables Betahigh to capture additional value with the instalment payments as new service. The risk management reduces potential drawbacks of this business opportunity. The same applies for Tescom's newly introduced supporting capability partner management and the new partners as supporting resources. Together, they increase the value of Tescom's brand and ecosystem by taking advantage of market opportunities.

In order to create a competitive advantage, the core elements also must be rare. This means not many firms can possess the same resources and capabilities. The rareness and value of the core elements are, on the other hand, depending on their inimitability and non-substitutability. In case one of Betahigh's or Tescom's core resources or capabilities is imitable, the condition of being rare is not given any longer. A similar connection exists between the value and the non-substitutability of the core elements: If a core element is valuable, depends on its non-substitutability. A substitute could fulfil the same function for a competitor as the core element for Betahigh or Tescom.

The previous analysis has shown that all observed changes in Betahigh's resources and capabilities affected the non-substitutability and inimitability of the firm's core elements in various ways. In fact, all changes in Betahigh's resources and capabilities either led to increased inimitability, to increased non-substitutability, or both. The same applies for all analysed changes in Tescom's business model.

This ultimately allows the conclusion that the observed changes helped to sustain or to increase the value and rareness of Betahigh's and Tescom's core resources and capabilities. In other words: these changes positively affected all attributes that, according to Barney (1991), are required to create and to sustain both companies' competitive advantage. The implications of this result in the context of the research questions are described in "7 Discussion".

## **6.2 Analysis of Implicit Changes**

Not all changes in the business models of Betahigh and Tescom are reflected in new or modified resources and capabilities. In this section, the additional changes will be examined with regard to their influence on the competitive advantage of both companies. This is the previously introduced fourth type of change. In order to enable a deep understanding, one example of Betahigh and one of Tescom will be analysed in detail.

### **6.2.1 Betahigh**

The component *customer segments* is not operationalized through resources or capabilities. Hence, the expansion of Betahigh to the German market did not directly influence the competitive advantage through newly introduced or modified resources.

We argue that those changes have an implicit and indirect influence on the VRIN attributes of core elements. With Germany as a new market, the platform as Betahigh's core resource becomes more valuable since the expansion adds a substantial number of potential new end-customers and new merchants. The platform also becomes more valuable for already existing clients of Betahigh as they now have the opportunity to sell their goods to German end-customers.



Moreover, the value of the platform as core resource has also increased because it has become less substitutable due to the expansion. For Betahigh's competitors, a platform that operates in more countries throughout Europe is more difficult to substitute, since it requires more knowledge to satisfy the demands of a more diversified group of end-customers and merchants.

The expansion to the German market also affected the inimitability of Betahigh's core resources and core capabilities. The new customer segment makes it, for instance, more demanding to understand how the platform exactly works. In Betahigh's case, especially the risk management as core capability is more difficult to understand. In order to imitate this capability, competitors would need to figure out how the complex risk management system works for different countries with their specific customer segments, regulations, and needs. The core capability financial management also became more causal ambiguous. Offering financial services like instalment-payments requires specific knowledge about the laws and legal opportunities in case of defaults. Further, new financial institutions as partners are required. Overall, it also becomes more difficult to see why customers and merchants are attracted to Betahigh's services. The interpretation if customers are attracted to Betahigh because the firm serves additional markets or because of other reasons like financing options becomes more causal ambiguous for competitors. Thus, inimitability of Betahigh's core resources and capabilities is increased.

German merchants and end-customers as new customer segments also increase the path dependency of Betahigh's platform development and risk management. The expansion to the new market requires time to understand the specific needs of the online-buyers and online-shops. According to our interview partner, German online shoppers are much more sensitive when it comes to payment methods than those of other nations. This leads to a much higher number of cancelled check-outs. Hence, it is essential to further develop the platform and the risk management towards these specific needs. Imitating a fully operational platform that serves certain different markets would at least take a considerable amount of time for potential competitors.

Finally, an expansion to a large market like Germany also increases the economic deterrence of Betahigh's core resources and capabilities. More financial and personnel resources are required to copy a platform that also covers the German market with its individual needs. Further, financial services like instalment payments bear higher risks. Moreover, the fact that Betahigh operates in this market reduces its economic attractiveness for competitors. This can be considered as an effect of economic deterrence.

As a conclusion, it can be said that Betahigh's expansion to the German market increased the inimitability of several core resources and capabilities through increased path dependency, higher causal ambiguity, and increased economic deterrence. According to Barney's theory (1991) of competitive advantage, these changes in the inimitability sustained the rareness of Betahigh's core resources and capabilities and, thus, improved the competitive advantage of the company at  $t_1$ .

### **6.2.2 Tescom**

One change from  $t_0$  to  $t_1$  was the integration of the ecosystem in new channels which are in this case the social networks Twitter and Facebook. This means users can share content through the Tescom ecosystem on Facebook and Twitter. None of those channels is a resource because those channels are not tradable. Thus, their influence on the competitive advantage is discussed.

Content sharing can be considered as social activity that is more interesting with a growing number of potential users. Therefore, the additional channels, through which the users can share and view content from the ecosystem, increase the value of the ecosystem for the users. In return, the ecosystem is more valuable for Tescom due to a higher amount of potential users. The introduction of new channels has neither affected the path dependency nor the causal ambiguity of the Tescom's core elements and, hence, there is no influence on the inimitability of the ecosystem by the channels. Competitors could easily implement similar sharing possibilities. Twitter and Facebook interfaces are by no means difficult to implement, since the technical specifications for those systems are publicly and freely available.

Our interview partner acknowledged that, even though the two channels add value to Tescom's core element, this temporary effect on the competitive advantage as observed at  $t_1$  would be difficult to sustain, since it is imitable and also substitutable with other actions that increase the user base. According to our interview partner, the integration of those channels, however, is a must as Facebook and Twitter are two of the most important social networks. Without an implementation of the ecosystem in those networks, the ecosystem would be much less valuable for many users.

## **6.3 Additional Cases**

### **6.3.1 Zoomstrip**

Similarly as Tescom, Zoomstrip underwent a change in the value proposition by switching from Facebook apps to mobile apps. Nevertheless, the core elements of Zoomstrip

also barely changed as shown in Figure 14 in the appendix. From  $t_0$  to  $t_1$ , only the core element applications was modified, as Zoomstrip offered new products for smartphones and tablets. Yet, the major changes occurred in the supporting elements as Zoomstrip acquired many new partners, extended its codebase, and started to improve quality and experience through user tests. Eventually, there are also type 4 changes as Zoomstrip distributes its apps over app stores and started to cooperate with Mixi, a Japanese version of Facebook, as an official distributor and channel. This results in the following classification of changes as shown below in Table 8.

Type 1	Type 2	Type 3	Type 4
Applications		Partnership with Sincerely	Mixi as exclusive channel
		Partnership with Shutterfly	App Stores
		Partnership with scrapbook designers	
		Partnership with Mixi	
		Codebase	
		User testing	

**Table 8.** Overview of the observed changes at Zoomstrip  
(Source: Own creation)

While the implications of partnerships on the VRIN attributes has already been discussed, a short analysis of the changes in the codebase as type 3 change and the type 4 change of Mixi as a new channel will be discussed.

The codebase encompasses the entire source code Zoomstrip has produced and considers as valuable to reuse. Our interview partner explained that Zoomstrip's codebase consists of two parts: The first part is released under an open source licence, meaning that other developers are free to reuse to code. In return, Zoomstrip receives free help as people improve and extend those parts of the codebase. The other part is not released to the public and is kept as a trade secret. The codebase allows Zoomstrip to reduce the amount of new code that is required for new apps. Hence, it has an influence on the core capability of application development. Application development itself is not difficult to imitate as there are many app development firms in the market. The codebase of Zoomstrip, however, is difficult to imitate as it is clearly path dependent: It evolved over time. It is also causal ambiguous as for competitors it is challenging to understand what is contained in the codebase and how Zoomstrip leverages the codebase as a resource for new apps. Moreover, the codebase is

difficult to substitute as it contains specific code. The close link of the codebase with the app development makes the app development more difficult to imitate and non-substitutable. This sustains the value and rareness of Zoomstrip's core capability app development.

A change of the channel as an indirect type 4 change was already discussed for Tescom. In the case of Zoomstrip, however, this change is slightly different as Mixi is an exclusive channel of Zoomstrip that developed from a previous partnership. First of all, the exclusive channel makes the applications of Zoomstrip as core resource more valuable. Second, it helps to capture a larger business opportunity through this new channel. As the channel is exclusive, the applications become inimitable and non-substitutable at least with the respect to the customer segment of Mixi users, since the app is the only one that provides specific functions. Therefore, we argue that Mixi as a new channel increases the VRIN attributes of the applications as core resource in a positive way.

### 6.3.2 Haytech

Our interview partner from Haytech explained that the firm changed several things between  $t_0$  in late 2010 to  $t_1$  in late 2011. The most substantial change in the business model was the introduction of a new web platform, enabling customers to distribute and to sell the content they created with Haytech's software online. Unlike in the other cases, the web platform as a channel is considered as a resource. The platform is a piece of software and, hence, controlled and possessed by Haytech. Contrary to the other cases, Haytech does not have a platform-centric business model. First, the firm is still a provider of E-learning applications. Second, it does not connect two parties through the platform. The platform allows content creators to share their content with learners that Haytech is not related to and does not have contact with. The introduction of the platform affected the VRIN attributes of Haytech's application and the software development as core elements as shown below in Table 9.

Type 1	Type 2	Type 3	Type 4
	Key customers	Web platform	Web platform as new channel
		Customer management	
		Data about end-customers	
		Human resources	

*Table 9.* Overview of the observed changes at Haytech  
(Source: Own creation)

When analysing the consequences of these changes for the sustainment of Haytech's competitive advantage, the role of the new web platform is especially interesting. First of all, the kind of positive effects on the inimitability and non-substitutability of Haytech's software solution replicate the insights from Betahigh's and Keylex' cases. The web platform, as new supporting resource, increased the complexity of Haytech's offering. It can be argued that this addition made Haytech's software more challenging to substitute, since fewer competitors offer a product with similar functionalities. Due to the efforts and resources that were necessary to develop the web platform, this change did affect the economic deterrence that emanates from Haytech's software.

The web platform is noteworthy because it acts as a new channel, enabling Haytech to attract new customers and end-users at the same time. The web platform works similar to Apple's App-store: it makes it easier for content-developers to sell their E-learning products and assists the end-customer in finding appropriate E-learning content. Therefore, the new supporting resource did also directly increase the value of Haytech's application as it enables the company to seize a new market opportunity.

### **6.3.3 Keylex**

Between both points of observation, Keylex' business model experienced many changes. Table 22 in the appendix shows these changes between  $t_0$  and  $t_1$  in detail. The following changes are of special interest for the changes in resources and capabilities and, thus, for the firm's competitive advantage: 1) Keylex extended the functionality of its platform that connects advertisers with copywriters, 2) Keylex entered a new partnership with Facebook to offer the analysis of Facebook Ads, and 3) Keylex introduced the auditing of existing advertisement campaigns as new service. The following table gives an overview of how these events relate to changes in the VRIN attributes of the firm's core elements and, thus, to the changes in the competitive advantage of Keylex. This is shown in Table 10.

Type 1	Type 2	Type 3	Type 4
Platform	Copywriters Copywriter management Partnership with Facebook Ads	Customer data (ad data) Partnership with bid management system companies Partnership with agents Auditing services Partnership with Spyfu	

*Table 10.* Overview of the observed changes at Keylex  
(Source: Own creation)

The VRIN analysis reveals that the extension of the platform as a core resource shows similarities to Betahigh's modification of its core resource. Both companies extended their platform with new functions. Therefore, they directly increased the value of a core resource as the new functions help to capture new opportunities. Another similarity can be seen in the changes of supporting elements that positively affected the inimitability and non-substitutability of the platform as core resource. In Keylex' case, the new auditing services as supporting capability made the platform more challenging to imitate or to substitute due to the added complexity. The capability of auditing services is also path dependent on the experience Keylex gained in optimizing ads. As in Betahigh's case, the extended customer data had an impact on the path dependent development of the platform. Inimitability of this core element was increased.

What distinguishes Keylex from the other cases of our sample is the special role of its partners as supporting resources that are essential to deliver the value proposition. Other than Betahigh's partners, those of Keylex are extremely challenging to substitute or to imitate, as our interview partner pointed out. Especially, the new and exclusive development partnership with Facebook helps Keylex to differentiate its offering from those of competitors. The support of Facebook with exclusive data for the analysis gives Keylex a unique advantage for its platform. Therefore, competitors cannot offer the same quality of analysis. The non-substitutability and inimitability of Keylex' platform as core element increased and its value and rareness were sustained. Yet, as our interview partner explained, the downside of such a partnership is the increased dependency on the goodwill of Facebook.

### 6.3.4 Alphadom

Alphadom provides hassle-free contact management by automatically aggregating contact data from different sources such as Facebook, Twitter, LinkedIn, and Gmail. Due to the age of the company, there are not many changes yet. The only changes observable were the extended application, the introduction of new data providers, and the introduction of app stores as a new channel. The changes are shown in Table 11.

Type 1	Type 2	Type 3	Type 4
Application		Partnership with data providers	App stores

*Table 11.* Overview of the observed changes at Alphadom  
(Source: Own creation)

When it comes to changes and the influence on the VRIN attributes, the Alphadom case does not yield much new insights. The only interesting and differing fact is the strong dependency on partners that deliver data for aggregation. Without partners, the business model is not feasible. This makes partner management the core capability of Alphadom. From  $t_0$  to  $t_1$ , Alphadom added partners. While those partnerships are not valuable on their own, when considered in isolation, they increase the value of the application: More data makes the application less substitutable. Considering the case of imitation of the business model, all partnerships with the data providers would need to be initiated. More data providers, however, make the application not more inimitable to a larger degree because the data they deliver is not casual ambiguous or path dependent in any way.

Concluding, the Alphadom case shows that partners as a resource are essential to increase the competitive advantage through the core resources.

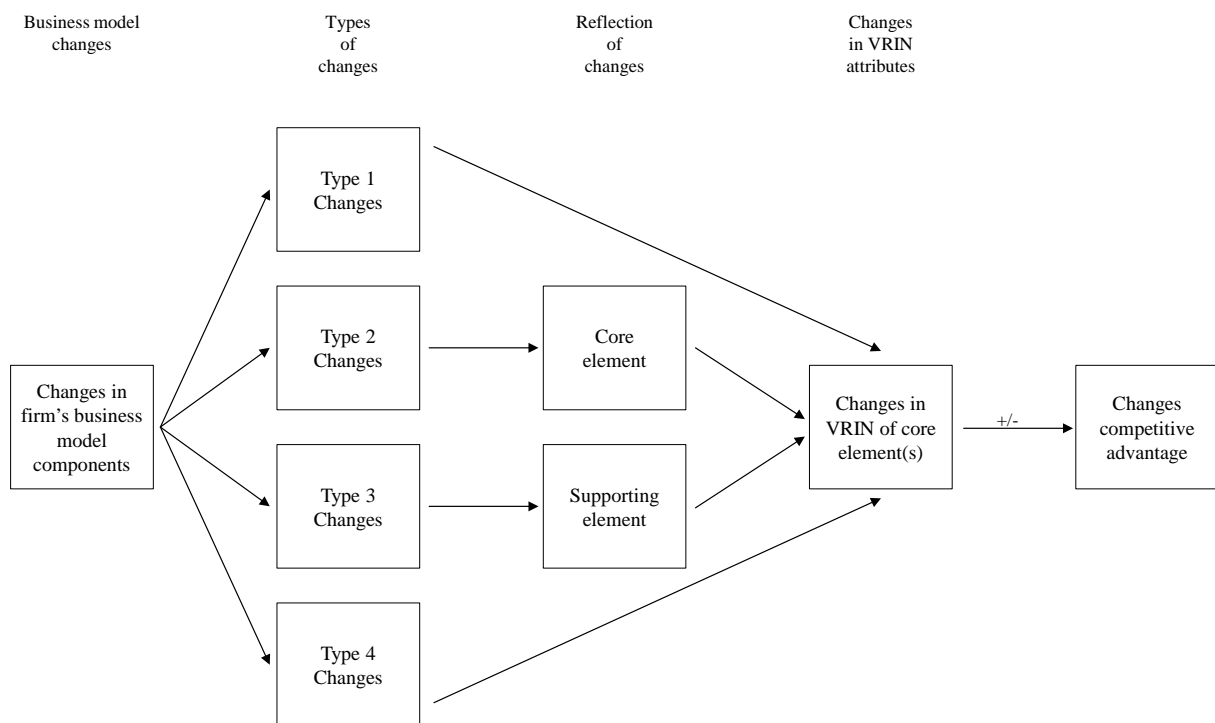
## 7 Discussion

### 7.1 General Findings

We set out by capturing changes in business models which are modifications or introductions of items in the components of firms' existing business models. It was observed that the changes of resources and capabilities, derived from the business model ontology, can be classified in four different types of changes. Along those four types of change, the implications on the VRIN attributes were analysed and discussed. The result is that for all analysed cases, the VRIN attributes of the core elements changed in a positive manner. As the core elements are not only the most connected elements but also are tightly linked to the value proposition, they ultimately determine the competitive advantage of a firm. The core elements

became a) more inimitable, therefore, more rare and b) became more non-substitutable, hence, more valuable.

From this retrospective perspective, we can ultimately suggest that the competitive advantage of the firms analysed was enhanced relative to  $t_0$ . The bottom line is that the observed business model changes helped to sustain the competitive advantage between  $t_0$  and  $t_1$ . The changes in the business models are reflected in the changes of resources and capabilities of the firms. These changes do ultimately influence the VRIN attributes of core elements and, thus, the competitive advantage. Those findings are summarized below in Figure 7.



**Figure 7.** Influence of business model changes on competitive advantage  
(Source: Own creation)

Of course, it can be argued that the analysis of these changes is based on rather subjective information of our interview partners and that the interpretation of this input is subjective as well. The subjectivity of the analysis is, however, not affecting the finding that there exist changes in the VRIN attributes of core elements - only the magnitude and the direction of the effect is debatable. The analysis proved that there are at least observable patterns or principles of how changes in the resources and capabilities affect the VRIN attributes of core elements and, hence, the competitive advantage of the firm.

In this chapter, some generalizable findings and implications will be discussed that are interesting in relation to the analysis.



## **7.2 Negative Influence on the Competitive Advantage**

Our analysis suggests that most changes in the resources and capabilities had positive effects on the VRIN attributes of one or more core elements. This does, however, not universally imply that changes in resources and capabilities must necessarily have positive effects on the competitive advantage of a firm.

In an expert interview with Alexander Osterwalder, we discussed the possibility of missing changes by only taking snapshots at  $t_0$  and  $t_1$  and by not accessing the process that firms actually go through to arrive from  $t_0$  at  $t_1$ . The time span between  $t_0$  and  $t_1$  is basically a blind spot: All changes a company reverts before  $t_1$  for any reason are not part of our analysis. As changes in the business model of young companies can happen quite fast, one could argue that especially changes with negative consequences might have been revised without our notice. In our interview, Alexander Osterwalder stated that many successful companies apply a trial-and-error principle in their early stage to test ideas before the company slows down its development and reaches a more stable “mature” state. Since all firms of our sample can be considered to be successful companies at this point  $t_1$ , one could argue that they made the right decisions in this trial-and-error process and eliminated changes with negative effects on the VRIN attributes of their core elements. On the other hand, there would be the possibility that we could have observed negative changes that were not yet taken back at  $t_1$ . This, however, was not the case either. In any case, this is an assumption that cannot be evaluated with our empirical data but might be of interest for further research on the process of business model development.

## **7.3 The Need for Continuous Changes in Resources and Capabilities**

The influence of the observed changes in the resources and capabilities on the VRIN attributes of core elements has another implication that is simple but momentous. Changes in resources and capabilities seem to be necessary to sustain a competitive advantage over time (Collis & Montgomery, 2008). Conversely, this means that a competitive advantage of a firm will be lost if no changes in the resources and capabilities occur.

Changes are necessary to keep the value and rareness of the firm’s core elements by sustaining the inimitability and non-substitutability. Otherwise, if the elements that deliver the value proposition of a firm are staying on the same level, it will be easy for competitors to copy or to substitute the sources of a firm’s competitive advantage. Therefore, we suggest the development of resources and capabilities as a central task: It secures the survival and determines the success of a firm.

It was interesting to see that most of the interviewees explicitly mentioned this issue and stressed that, as a consequence, the further development of their resources and capabilities is one of their top priorities. Our interview partner from Betahigh explained that the risk of being copied increases with the on-going success of the firm. In a way, the successful company becomes a role model for other companies, which try to imitate the strategy and, related to that, the resources and capabilities that generate the competitive advantage. For that reason, it is of high importance that the core elements of a company are as inimitable and as non-substitutable as possible. Our interview partner at Zoomstrip mentioned, that developing the reusable codebase as a resource is one of their main priorities. They believe that the code base will allow them to create and to release future apps much faster. Moreover, he highlighted that the second office in Taiwan is helpful despite some coordination problems. It allows to work 24 hours a day and, thus, to improve Zoomstrip's products and to extend the codebase much faster. The interviewee argued that this is an important activity to prevent competitors from copying their apps.

Moreover, there seems to be a connection between the age of a company and the risk of being imitated. The younger the company, the more our interviewees were concerned with the risk of being copied. The interview partner of Haytech, one of the younger firms, mentioned that their business idea is still in a "stealth mode", meaning that they try to avoid any public information about the firm's business model and the required resources and capabilities the model depends on. He argued that in the early stage of his company, it would be rather easy to imitate all elements, which are necessary to realize the business idea. On the other hand, Betahigh, the most mature company of our sample, publishes comprehensive information about the business model, partnerships, and features on its website. In our interview, they explained that the risk of being copied is perceived as rather low, since the firm developed a complex web of core resources and capabilities as well as supporting elements. Imitating this complex web would be quite difficult, because of the high path dependency, the causal ambiguity, and the economic deterrence that are attributable to the platform, risk management, financial management, and platform development as core elements. In the case of the younger companies, especially the path dependency and causal ambiguity of their core elements are less developed making these elements relatively easy to imitate.

Oviatt and McDougall (2005) build a similar argument as ours. Thus, the finding that new ventures are more likely to be imitated is not completely new. In the context of business model changes, however, the implication is that the business model might be a helpful tool to reduce the risk of imitations as described in the practical implications.

#### **7.4 The Role of Supporting Elements**

It has been shown that the introduction of supporting elements, which are not valuable or rare themselves, can have important implications for the inimitability and non-substitutability of core elements. In that way, the supporting resources and capabilities can help to sustain the value and rareness of core elements.

This “indirect” importance of supporting elements is especially interesting, as it has been disregarded in the theory of the RBV. Barney (1991) argues that resources and capabilities must have certain attributes in order to be the source of a firm’s SCA. More specifically, a resource or capability must be valuable on its own to sustain an existing competitive advantage. The supporting elements, as we have observed them, do not fulfil this requirement of being valuable, when assessed in isolation of other elements. This does, however, not mean that they cannot assist in sustaining or enhancing a competitive advantage as not proposed by Barney (1991).

Betahigh’s supporting resource customer data, for example, is not valuable on its own. Unlike the data other scoring firms sell that have more a generic character, the data of Betahigh are highly specific and do only cover Betahigh’s customers. Yet, as explained in the analysis, it has a tremendous impact on the inimitability and non-substitutability of the core elements risk management and financial management. Both are closely related to Betahigh’s value proposition and, thus, important for the firm’s competitive advantage. From an ex-post perspective, the increased inimitability and non-substitutability sustained the value and rareness of the two core elements risk management and financial management (Peteraf, 1993). Therefore, the competitive advantage of the firm was also sustained.

There is one more important implication concerning the supporting elements. In some cases, supporting elements are insignificant for the sustainability of the VRIN attributes of core elements. Yet, supporting elements are simply necessary for the core element to function and, hence, only have an influence on the value of the core element. This influence is, however, not sustainable. Consider Betahigh’s partnership with financial institutions as an example: As a matter of fact, this supporting resource is required to offer the new option of instalment payments for Betahigh’s end-customers. Thus, it is essential for the firm’s core elements to function, but does not affect their VRIN attributes over time, since the partnership is relatively easy to substitute or to imitate for competitors.

Concluding, this suggests that the role of supporting elements should not be neglected as supporting elements can also play an essential role in defining the competitive advantage through core elements.

## 7.5 The Role of Partnerships on Competitive Advantage

Interestingly, most of the examined cases showed changes in the key partner component, meaning that resources of partners changed. Therefore, the role of partnerships is discussed. Summarizing the analysis of competitive advantage, it can be said that partners are important supporting resources for most of the companies in our sample. This finding is shared, for example, with Baum, Calabrese, and Silverman (2000) who also found that partnerships are beneficial for young firms.

Keylex is a remarkable example, as the partners are important for both sides of the firm's platform. Copywriters as partners deliver the content for the advertiser as end-customers. Facebook and Google deliver data for the platform on which the end-customers place their advertisements and Spyfu delivers additional analytics data. Keylex' success is in that way depending on the firm's access to all kinds of partners. As the founder of Keylex explained, it would be extremely advantageous to form further exclusive partnerships, locking out competitors with similar ad-improvement solutions. The interviewee stressed that partnerships in general and exclusive partnerships in particular increase the inimitability and non-substitutability of their platform as core resource. While the functionality of their analysis tool is easy to copy for competitors, the partnership with copywriters is difficult to imitate as it developed over time. For that reason, our interview partner also named the copywriter management an important supporting capability.

This also replicates the findings of the Tescom case. As shown in the case observations, the management of content providers, brand partners, and distribution partners has become one of the firm's core capabilities. The single partners are rather easy to substitute in Tescom's case, but affect in their unique combination the VRIN attributes of the brand image and the ecosystem as core resources. The analysis has shown that the partner management as well as the partners themselves have increased the inimitability and non-substitutability of both core elements.

In Alphadom's case, the business model is completely dependent on the partners: As the company offers an integrated management tool for several different social networks, the pure functionality of the product is completely useless without access to the data of social networks like Facebook, LinkedIn, and Twitter. For Alphadom, the access to data of every additional network is important as it extends the value of the application as core resource. Our interview partner explained that the access to important networks like Facebook or LinkedIn is crucial, as it cannot be substituted by access to other, less important networks.

In conclusion, it can be argued that partnerships seem to be supporting elements which are generally important for the VRIN attributes of core elements. In all cases of our sample, the partnerships affected the development of the firm's competitive advantage to an arguable extent.

## **7.6 Business Model Ontologies**

While the previous discussion was mainly focused on the implications from a resource and capability perspective, three more points will be discussed concerning business models.

First, the business model ontology was a useful tool to identify the most important resources and capabilities, which have been named core elements based on this characteristic. The business model ontology also facilitated the understanding of which additional resources and capabilities are required to support the core elements in their function of delivering the value proposition of the firm.

Second, we were aware of the fact that the business model ontology may not be helpful for the analysis of competitive changes. Yet, it was expected that when reviewing the changes and their influences on a component level, there might be generalizable and observable changes in the items of components. Yet, the only visible changes across our sample concerned the key partner component as described above. There were no other interesting observations. In none of the cases, the revenue model or the cost structure exhibited any influences on resources or capabilities. We decided to differentiate between resources and capabilities and to treat them as separate elements due to the key resource and key activity components. Yet, there was no notable difference in changes between resources and capabilities and also no notable difference when it comes to explain competitive advantage.

Third, it was discussed which business model composition should be used depending on the components and whether the analysis should focus only on one, a few, or all components observable. Summarizing, we argue that it makes sense to use a business model ontology that captures a wide range of components. For instance, Table 13 in the appendix shows a list of compositions. Some of them do not even list a partner component. Our analysis revealed, however, that partners are an important mechanism for competitive advantage. A composition that only covers a small range of components is, hence, at more risk to overlook important factors.

Concluding, we agree with Zott et al. (2011) that the business model is a useful unit of analysis. Analysing this statement semantically reveals that business models must be analysed with a separate tool, concept, or theory as they are a unit of analysis and not an analysis tool. Nevertheless, in our case, the business model turned out to be useful. It provides a holistic

view on a firm. Therefore, a new perspective is offered by showing how changes in the resources and capabilities inherent to the business model result in changes in the competitive advantage.

## **8 Conclusion**

### **8.1 Practical Implications**

The findings, as described in the discussion, allow us to draw several practical implications for young companies in dynamic environments.

#### **8.1.1 Business Model Ontologies as Tools**

First of all, it can be argued that the business model ontology proved to be a useful tool to capture the business model, as it enables a holistic understanding of how the value proposition is delivered. All our interview partners agreed that Osterwalder's business model canvas is a useful tool to visualize the "logic" of their company and does not lack any important parts for this purpose. The interviewees and experts also pointed out that the approach to compare the business model, as depicted in the canvas, at two different points of time, is a feasible way to make the strictly static tool more dynamic, as changes in the business model are observable.

It is, however, important for practitioners to understand that a business model ontology itself is not able to explain the competitive advantage of a company and how this competitive advantage is sustained. For such an analysis of the competitive advantage, it is necessary to have a closer look at the resources and capabilities of the firm. Regarding this point, our interview partners stated that the business model itself is not responsible for their competitive advantage but their core resources and capabilities. This corresponds to a comment in the discussion with Alexander Osterwalder. He stated that just having a good business model or business idea is not the same as having a real advantage over the competition. With a business model ontology like the business model canvas it is, however, possible to understand a firm's unique configuration of resources and capabilities, since it facilitates a holistic understanding of the firm's value proposition and, hence, the competitive advantage.

#### **8.1.2 Retrospective Evaluation of Changes in Competitive Advantage**

Equipped with this understanding how changes in the business model are linked to changes in the resources and capabilities, it is possible for the practitioner to analyse how the competitive advantage of a firm changes over a specific period. As soon as the changes in resources and capabilities between two points of time are understood, the practitioner can use this information to evaluate how these changes affected the VRIN attributes of firm's core

elements. With such a retrospective analysis, one can assess how single decisions and events in the process of business model development – like the introduction of new products, partners, or distribution channels – influenced a firm's competitive advantage. This logic offers an interesting perspective for the practitioner on decisions made.

### **8.1.3 Forward-Looking Evaluation of Planned Changes**

Instead of analysing changes in retrospective – as done in the analysis of this thesis – the management team can evaluate the potential effects of planned changes in the business model. The practitioner can evaluate how the planned introduction or modification of resources and capabilities could influence the inimitability and non-substitutability of core elements. This allows drawing conclusions on how the proposed change might affect the firm's competitive advantage. Even though such considerations would be of a rather speculative nature, they could possibly help to avoid harmful changes in business models. For example, our interview partner from Tescom explained that the company had the offer from a large company to develop an application similar to Tescom's main product. The critical issue of this offer was the condition that this new application would have been offered under the contractors name without any notice of Tescom's brand. Even though financially interesting, Tescom's management decided to turn down the offer. What the interviewee described as a gut decision could also have been justified with a VRIN analysis: Selling a similar solution to another company creates a new competitor. The new competition is decreasing the value of the own ecosystem and probably weakening the position of the own brand. It can be argued that the decision to deliver would have affected the VRIN attributes of at least one core resource in a negative way. In summary, Tescom's evaluation would have shown that this move could be harmful to the own competitive advantage since core elements will be weakened.

Besides the evaluation of planned changes in the business model, a forward-looking VRIN analysis could also contribute in a second way to the development of business models. Theoretically, asking the question how the value and rareness of existing core elements can be sustained, enables the practitioner to actively drive the development of the firm's business model. More precisely, the practitioner could try to identify changes in the business model that are supposed to increase inimitability and non-substitutability of the firm's core resources and capabilities. Under the assumption that such changes in the VRIN attributes and their influence on the competitive advantage of a firm are predictable, this approach could help to systematically advance the firm's business model and, hence, to sustain the competitive advantage.

#### 8.1.4 Considerations for a Practical Analysis

There are, however, factors that should be considered when applying such an approach. While it seems to be a feasible for executing smaller modifications in the business model development like the introduction of new supporting elements, it might be unfeasible to assess the consequences of radical changes in the business model. In our interview, Alexander Osterwalder argued that radical changes, often also referred to as “business model innovation” (Chesbrough, 2010), often have a disruptive character: Their consequences for the competitive advantage of a firm are uncertain. This uncertainty makes the analysis of the competitive advantage speculative, and, thus, less useful.

Moreover, the limitations of the VRIN analysis as a business development tool are important to understand. The interviewees in both expert interviews, Alexander Osterwalder and Alexander Fries, agreed that such considerations can be beneficial for systematic business development but might be less useful for firms in a very early stage. They argued that these very young firms change their resources and capabilities very fast, often more or less applying a trial-and-error principle to test out what works for them. This is also in line with the observations in our sample. Younger companies like Keylex have shown a high number of changes in the resources and capabilities that are based on substantial changes in the business model. Moreover, time is a scarce resource for most entrepreneurs in this early phase and the firm’s success depends on fast movements, making time-consuming analyses unfeasible. Furthermore, it can be argued that changes of the business model in the early stage are often determined by external factors: for instance, by specific requirements of the first customers or by the limited availability of partners and distribution channels.

In conclusion, the VRIN analysis as introduced and applied in this thesis seems to be more useful for companies that already developed a certain competitive advantage and want to sustain it. For younger companies, the main task is to create this competitive advantage before a systematic development of the business model becomes feasible for them. The analysis of changes in the VRIN attributes of resources and capabilities is more focused on sustaining a competitive advantage, as the analysis of the six cases in our sample revealed. The way we applied the VRIN analysis cannot explain how firms build a competitive advantage from scratch, since external dimensions that would be required for such an analysis were not part of our framework. For more mature companies with certain constancy in their business model, the VRIN analysis offers an interesting perspective to evaluate development of the competitive advantage and to identify how this advantage can be sustained.



## 8.2 Limitations

There are several limitations that must be considered when interpreting the findings of this thesis. First of all, the restricted sample size and qualitative nature of the study make a generalization of the findings difficult. All firms that have been analysed in the sample had funding from venture capital firms and are considered as successful. They might not represent the highly diverse body of start-ups. Furthermore, all analysed firms are operating in the E-business or E-commerce industry and, thus, in dynamic environments. This limits the transferability of the results to other environments, industries, or less successful firms meaning that business model changes cannot be considered as a panacea to obtain or sustain a competitive advantage.

Another limitation results from the chosen research design. As explained before, we were interested in explaining how changes in business models affect the competitive advantage of firms. We did not access the process of business model changes itself. We did not aim to explain why or how these changes in the business model occurred. This also implies that the influence of the management on the observed change in the business model, and, hence, on the change in the competitive advantage could not be assessed.

We also acknowledge that our study design is not able to capture all changes that occurred between  $t_0$  and  $t_1$  as two distinct points in time. For instance, changes that were implemented after  $t_0$  might be revoked before  $t_1$  because they had a negative influence on the competitive advantage or for other reasons. This means the results we observed and analysed might be biased because successful changes - in this context changes with positive effects on the competitive advantage - are given too much weight. Potentially biased interview partners might also have reinforced this impression. Even though all interviewees were assured that the data is treated confidentially and that the company name will be disguised, one can assume that founders or co-founders have a biased perception of their own firms, and, hence, a tendency to avoid critical topics or failures. Taking those effects of information loss and interviewee bias into account, we acknowledge that the cases as presented in this thesis might deviate from the real development and the current status of the firms.

As described before, the use of Osterwalder's business model canvas has limitations because of the definition for each component, the components are neither mutually exclusive nor collective exhaustive. This has two implications: First, components might overlap as they are not mutually exclusive. Therefore, the depiction of the firm in the canvas might not be unambiguous but a subjective interpretation. Second, due to the inclusion of a limited amount of components in the composition, there was a reduction and simplification of the available

information as another composition might have led to other results. This reduction of data and the selection of certain components were, however, necessary in order to obtain an analysable and manageable amount of data that yields results.

Our research design with focus on the business model and its operationalization with the RBV clearly emphasises an internal perspective of the firm. This internal view naturally neglects external aspects of competition as suggested, for example, by Porter (1980, 1985). Even though, competitors were considered in parts of the VRIN analysis, a complete competitor analysis and industry analysis was due to the focus of our thesis not conducted. Moreover, Spanos and Lioukas (2001) explain that only a combination of inside-out and outside-in perspective can explain the complete competitive advantage. This means that our findings cannot fully explain the competitive advantage of a firm. This does, however, not imply that our study design is unable to explain how an existing competitive advantage – whatever it might look like – is affected by changes in resources and capabilities of a firm. It is not the goal of this thesis to elaborate on the concrete competitive advantage a firm has at  $t_0$  or  $t_1$ .

### **8.3 Summary**

We set out with our research question of how changes in business models - as reflected in a business model ontology - influence the competitive advantage of a firm. Taking an intra-organizational perspective on competitive advantage, we introduced the RBV with the VRIN framework as our main analysis tool. Business model ontologies were used as a method to identify relevant resources and capabilities. Using a case study with six cases and a holistic single-unit of analysis helped to shed light on this question in a number of ways.

First, the value of our insights lies in the explained link between changes in business models and changes in competitive advantage. Based on the definition of business model changes, we took two snapshots of a firm's business model before and after a significant change. The difference between those snapshots represents all emergent or intended changes, the firm made to its business model. We operationalized the business model with resources and capabilities and determined what elements are core or supporting elements. We identified all elements that changed, and classified them in four types of changes. Accordingly, we analysed the changes in inimitability and non-substitutability that sustain the value and rareness of the core elements. Eventually, we concluded that all changes observed in our sample altered the competitive advantage. On the one hand, this answers our research question as we could attest that business model changes influence the competitive advantage.

On the other hand, business model changes alter the competitive advantage as they influence the core elements.

Second, core elements are responsible for the competitive advantage a firm possesses. Hence, it is important to explain how business model changes relate and influence those core elements. There are direct changes in core elements. Yet, the change in one core element can indirectly affect the VRIN attributes of other core elements. Moreover, we assessed the influence of supporting elements on the competitive advantage. While isolated supporting elements are not valuable, they are often essential to assist the core elements in delivering the value proposition. Furthermore, we demonstrated that supporting elements and other implicit changes influence the inimitability and non-substitutability of the core elements. Hence, the competitive advantage is altered to an arguable degree. The bottom line is that the observed business model changes can help to sustain a competitive advantage

Third, we consider the applied business model ontology as a useful tool because it gives the data collection and the analysis a structure. For instance, without the components of the business model ontologies, it would be difficult to “guess”, which resources and capabilities are necessary to deliver a certain value proposition. Moreover, the analysis of the core elements in relation to the VRIN attributes without a value proposition would not make a lot of sense. Without the application of a business model ontology, the assessment of the required core elements for a specific value proposition would not be possible.

Fourth, our data postulates the necessity of continuous change to sustain a competitive advantage. Continuous change is required for young firms, as they are at the risk of being imitated. Therefore, we suggest the combination of business model ontologies and a VRIN analysis as a useful analysis tool of competitive advantage. Furthermore, we explained the role of partnerships. Partnerships seem to be an important mechanism for start-ups to secure a competitive advantage.

Fifth, we outlined two different approaches how practitioners could make use of our findings. First, with a retrospective analysis, they can examine how certain decisions or events, such as product introductions, new partnerships, or distribution channels, affected their competitive advantage. Second, a forward-looking analysis can help to understand how planned changes might influence the competitive advantage.

While the findings are profound, not all open questions are solved. Therefore, the thesis concludes with suggestions for further research.

## 8.4 Further Research

Following the results and limitations of this thesis, we suggest five areas of further research.

First, as we did not access the process of business model changes that occurs between  $t_0$  and  $t_1$ , it remains largely unclear what firms exactly do to achieve those changes. As described, some papers examine the process. For example, Sosna et al. (2010) describe it as a trial-and-error learning process while Demil and Lecocq (2010) suggest an evolutionary process that includes the selection of feasible changes and the reversion of unfeasible changes. Nevertheless, it remains unclear whether negative changes are reverted, how the whole process is related to competitive advantages, and whether different processes that might lead to different results exist.

Second, due to the applied inside-out perspective, the conducted analysis focuses only on competitive advantages of intra-organizational nature. Nevertheless, it would be useful to understand the outside-in perspective of a competitive advantage in combination with the inside-out perspective as only then an absolute competitive advantage can be attested to a firm.

Related to the assessment of the competitive advantage is the third idea of further research. From a theoretical perspective, the VRIN criteria are definitely useful to understand whether resources or capabilities are useful to obtain a competitive advantage. Making concrete measurements along those four dimensions of valuable, rare, inimitable, and non-substitutable resources is, however, difficult which is why we discussed rather than measured them (Newbert, 2007). Therefore, a more concrete process of measuring a competitive advantage would be helpful.

A fourth suggestion of further research is the influence of external changes, for example, new competitors, shifts in the competitive advantage, or regulatory changes on the business model. While it seems obvious that strategic changes are reflected in the business model, the influence of other external changes on the business models and, hence, on competitive advantages is unexplored.

Finally, as criticized by many other scholars (Demil & Lecocq, 2010; Morris et al., 2005; Zott et al., 2011) and as mentioned in the discussion, we see a necessity for more research in the area of the business models. We agree with Zott et al. (2011, p. 1038) that grounding the business model in theoretical roots will make the concept more useful and move it from a pure unit of analysis to an analysis tool.

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## 9 Appendix

The appendix contains additional tables, figures, and illustrations that are not included in the main body of the thesis. It is structured according to chapters. If not stated otherwise, the figures and tables in the appendix, are created by the authors.

### 9.1 Theoretical Foundation

**Table 12.** Definitions of business models  
(Source: Adapted from Zott et al. (2011, p. 1024), extended with own research)

Source	Definition
Timmers (1998)	“An architecture of the product, service and information flows, including a description of the various business actors and their roles; a description of the potential benefits of the various business actors; a description of the sources of revenues” (p. 2).
Amit & Zott (2001)	The business model depicts “the content, structure, and governance of transactions designed so as to create value through the exploitation of business opportunities” (p. 511).
Afuah & Tucci (2001)	The business model describes “the method by which a firm builds and uses its resources to offer its customer better value and to make money in doing so” (p. 3).
Chesbrough & Rosenbloom (2002)	The business model is “the heuristic logic that connects technical potential with the realization of economic value” (p. 529).
Margretta (2002)	Business models are “stories that explain how enterprises work. A good business model answers Peter Drucker’s age-old questions: Who is the customer? And what does the customer value? It also answers the fundamental questions every manager must ask: How do we make money in this business? What is the underlying economic logic that explains how we can deliver value to customers at an appropriate cost?” (p. 4).
Morris et al. (2005)	A business model is a “concise representation of how an interrelated set of decision variables in the areas of venture strategy, architecture, and economics are addressed to create sustainable competitive advantage in defined markets” (p. 727).
Johnson et al. (2008)	“A business model, from our point of view, consists of four interlocking elements that, taken together, create and deliver value” (p. 52).
Casadesus-Masanell & Ricard (2010)	“A business model is [...] a reflection of the firm's realized strategy” (p.195).
Teece (2010)	A business model “articulates the logic, the data and other evidence that support a value proposition for the customer, and a viable structure of revenues and costs for the enterprise delivering that value” (p.179).
Osterwalder et al. (2010)	“A business model describes the rationale of how an organization creates, delivers, and captures value (economic, social, or other forms of value)” (p. 15).

**Table 13.** Components of business models

(Source: Adapted from Morris et al. (2005, p. 728), Hedman and Kalling (2003, p. 58), Zott et al. (2011, p. 1027), extended with own research)

Source	Components
Horowitz (1996)	Price, product, distribution, organizational characteristics, and technology.
Viscio & Pasternak (1996)	Global core, governance, business units, services, and linkages.
Timmers (1998)	Product/service/information flow architecture, business actors and roles, actor benefits, revenue sources, and marketing strategy.
Markides (1999)	Product innovation, customer relationship, infrastructure management, and financial aspects.
Donath (1999)	Customer understanding, marketing tactics, corporate governance, and intranet/extranet capabilities.
Mahadevan (2000)	Value streams, revenue streams and logistical streams.
Stewart & Zhao (2000)	Revenue stream, cost structure, customer selection, differentiation, value capture and scope.
Afuah & Tucci (2001)	Customer value, revenue sources, pricing, connected activities, implementation, capabilities, and sustainability.
Amit & Zott (2001)	Transaction content, transaction structure and transaction governance.
Alt & Zimmerman (2001)	Mission, structure, processes, revenues, technology and legal issues.
Applegate (2001)	Business concept, capabilities and value creation.
Dubosson-Torbay et al. (2002)	Products, customer relationship, infrastructure and network of partners, and financial aspects.
Gordijn et al. (2001)	Actors, market segments, value offering, value activity, stakeholder network, value interfaces, value ports, and value exchanges.
Hamel (2001)	Core strategy, strategic resources, value network and customer interface.
Linder & Cantrell (2001)	Pricing model, revenue model, channel model, commerce process model, organizational form, and value proposition.
Petrovic et al. (2001)	Value model, resource model, production model, customer relations model, revenue model, capital model and market model.
Rappa (2001)	Sustainability, revenue stream, cost structure and value chain positioning.
Rayport & Jaworski (2001)	Value cluster, market space offering, resource system, and financial model.
Weill & Vitale (2001)	Strategic objectives, value proposition, revenue sources, success factors, channels, core competencies, customer segments, and IT infrastructure.
Betz (2002)	Resources, sales, profits, and capital.
Chesbrough & Rosenbloom (2002)	Value proposition, target markets, internal value chain, cost structure, profit model, value network, and competitive strategy.

Hedman & Kalling (2003)	Customers, competitors, offering, activities and organisation, resources, and supply of factor and production inputs, and scope of management.
Bonaccorsi, Giannangeli, & Rossi (2006)	Products & services, customers, cost structure, network and network externalities.
Brousseau & Penard (2006)	Costs, revenue stream, goods and services, pricing, relationships and network externalities.
Malone et al. (2006)	Type of assets employed in the value creation process, and revenue model.
Johnson, Christensen, & Kagermann (2008)	Customer value proposition, profit model, key resources, and processes.
Demil & Lecocq (2010)	Resources and competences, organization, and value proposition.
Osterwalder et al. (2010)	Value proposition, key activities, key resources, key partners, cost structure, customer segments, revenue structure, channels, and customer relationships.

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**Table 14.** Categorization of components in different business model compositions  
(Source: Own creation)

Dimension	Value Offering	Financial		Resource		Customer
		Cost Structure	Revenue Structure	Activities / Resources	Partners / Network	
Horowitz (1996)			x	x		
Viscio & Pasternak (1996)				x	x	
Timmers (1998)			x			
Markides (1999)		x	x	x		x
Donath (1999)				x	x	x
Mahadevan (2000)	x		x	x		
Stewart & Zhao (2000)	x	x	x			x
Afuah & Tucci (2001)	x		x	x	x	
Amit & Zott (2001)			x	x		
Alt & Zimmerman (2001)				x		
Applegate (2001)	x			x		
Dubosson-Torbay et al. (2002)		x	x		x	x
Gordijn et al. (2001)	x			x	x	x
Hamel (2001)				x	x	x
Linder & Cantrell (2001)	x		x			x
Petrovic et al. (2001)	x	x	x	x		x
Rappa (2001)		x	x			
Rayport & Jaworski (2001)		x	x	x		x
Weill & Vitale (2001)	x		x	x		x
Betz (2002)		x	x	x		
Chesbrough & Rosenbloom (2002)	x	x	x	x	x	x
Hedman & Kalling (2003)	x			x		x
Bonaccorsi, Giannangeli, & Rossi (2006)		x			x	x
Brousseau & Penard (2006)		x	x		x	
Malone et al. (2006)			x	x		
Johnson, Christensen, & Kagermann (2008)	x	x	x	x		
Demil & Lecocq (2010)	x			x		
Osterwalder et al. (2010)	x	x	x	x	x	x



**Table 15.** Definition, sources, and similar elements of Osterwalder's canvas  
(Source: Adapted from Osterwalder (2004), extended by own research)

	<b>Definition</b>	<b>Source</b>	<b>Similar Elements in</b>
Value Proposition	“is an overall view of the firm's bundles of products and services that together represent value for a specific customer segment. It describes the way a firm differentiates itself from its competitors and is the reason why customers buy from a certain firm and not from another” (Osterwalder, 2004, p. 50)	Kambil and Ginsberg (1997); Kim and Mauborgne (2002)	Afuah and Tucci (2001); Applegate (2001); Chesbrough and Rosenbloom (2002); Demil and Lecocq (2010); Gordijn et al. (2001); Hedman and Kalling (2003); Johnson et al. (2008); Linder and Cantrell (2001); Mahadevan (2000); Petrovic et al. (2001); Stewart and Zhao (2000); Teece (2010); Weill and Vitale (2001)
Key Resources	“are inputs into the value-creation process” (Osterwalder, 2004, p. 82)	Grant (1991); Wernerfelt (1984).	Alt and Zimmermann (2001); Betz (2002); Demil and Lecocq (2010); Hamel (2001); Hedman and Kalling (2003); Horowitz (1996); Johnson et al. (2008); Malone et al. (2006); Petrovic et al. (2001); Rayport and Jaworski (2001)
Key Activities	“describes the ability to execute a repeatable pattern of actions” (Osterwalder, 2004, p. 80)	Bagchi and Tulske (2000); Wallin (2000)	Afuah and Tucci (2001); Alt and Zimmermann (2001); Applegate (2001); Demil and Lecocq (2010); Gordijn et al. (2001); Hedman and Kalling (2003); Johnson et al. (2008)

Key Partnerships	“voluntarily initiated cooperative agreement formed between two or more independent companies in order to carry out a project or specific activity jointly” (Osterwalder, 2004, p. 89)	Brandenburger and Nalebuff (1996); Child and Faulkner (1998); Dussauge and Garrette (1999).	Afuah and Tucci (2001); Bonaccorsi et al. (2006); Brousseau and Penard (2006); Chesbrough and Rosenbloom (2002); Donath (1999); Dubosson-Torbay et al. (2002); Gordijn et al. (2001); Hamel (2001); Viscio and Pasternack (1996)
Customer Relationships	“describes the relationship a company establishes with a target customer segment” (Osterwalder, 2004, p. 71)	Blattberg, Getz, and Thomas (2001)	Bonaccorsi et al. (2006); Dubosson-Torbay et al. (2002); Hamel (2001); Hedman and Kalling (2003); Markides (1999); Petrovic et al. (2001)
Distribution Channels	“how a company <i>delivers</i> a value proposition to a target customer segment” (Osterwalder, 2004, p. 63)	Moriarty and Moran (1990)	Gordijn et al. (2001); Horowitz (1996); Mahadevan (2000); Weill and Vitale (2001)
Customer Segments	“defines the type of customers a company wants to address” (Osterwalder, 2004, p. 61)	Hagel and Armstrong (1997); Kotler (1999)	Chesbrough and Rosenbloom (2002); Gordijn et al. (2001); Hedman and Kalling (2003); Weill and Vitale (2001)
Cost Structure	“measures all monetary costs incurred by the company” (Osterwalder, 2004, p. 101)	Maître and Aladjidi (1999)	Betz (2002); Bonaccorsi et al. (2006); Brousseau and Penard (2006); Chesbrough and Rosenbloom (2002); Dubosson-Torbay et al. (2002); Johnson et al. (2008); Markides (1999); Petrovic et al. (2001); Rappa (2001); Rayport and Jaworski (2001); Stewart and Zhao (2000)

Revenue Structure	“describes the way a [ <i>sic.</i> ] company makes money” (Osterwalder, 2004, p. 96)	(Klein & Loebbecke, 2000); Pitt and Berthon (2001)	Afuah and Tucci (2001); Betz (2002); Brousseau and Penard (2006); Chesbrough and Rosenbloom (2002); Dubosson-Torbay et al. (2002); Horowitz (1996); Johnson et al. (2008); Linder and Cantrell (2001); Mahadevan (2000); Malone et al. (2006); Markides (1999); Petrovic et al. (2001); Rappa (2001); Rayport and Jaworski (2001); Stewart and Zhao (2000); Timmers (1998); Weill and Vitale (2001); Zott and Amit (2001)
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## 9.2 Methodology

Figure 8. “Cheat sheet” as used in the interviews

<p><b><u>Resources</u></b>  <b>a)</b> Possessed and controlled, <b>b)</b> can be valued, <b>c)</b> can be traded.</p> <ul style="list-style-type: none"> <li>• Financial</li> <li>• Physical</li> <li>• Human</li> <li>• Technological</li> <li>• Organizational / Intangible</li> </ul> <p><b>What a firm has!</b></p>	<p><b><u>Capabilities</u></b>          Complex and collective organisational problem solving</p> <ul style="list-style-type: none"> <li>• Can enhance value of resource</li> <li>• Found in functional areas</li> <li>• Deeply embedded in organisation</li> </ul> <p><b>What a firm does!</b></p>
<p><b><u>VRIN</u></b>  <b><u>Valuable</u></b>          Does the resource exploit opportunities or neutralize threats in towards its value proposition?</p> <p><b><u>Rarity</u></b>          How many companies (competitors) own the resource / capabilities (or something equal)?</p> <p><b><u>Imitability</u></b>          Only inimitable resources can create sustainable competitive advantage. Imitability depends on (at least one):</p> <ol style="list-style-type: none"> <li>1. Physical Uniqueness (just a few resources are really unique)</li> <li>2. Path Dependency (they are unique/scarce because of all that has happened along the path taken in their accumulation) - replicating them needs time and understanding</li> <li>3. Causal Ambiguity (it is very difficult to find out the real competitive advantage - often things like corporate culture)</li> <li>4. Economic Deterrence (competitors are preempted by large investments in a market with limited potential)</li> </ol> <p><b><u>Substitutability</u></b>          Can a unique resource be trumped by a different source?</p> <p><b>Sustained Competitive Advantage</b></p> <ul style="list-style-type: none"> <li>• implementing a value creating strategy</li> <li>• not simultaneously being implemented by any current or potential competitors</li> <li>• other firms are unable to duplicate the benefits of this strategy</li> </ul> <p><b>Business Model Changes</b></p> <ul style="list-style-type: none"> <li>• emergent or intended</li> <li>• introduction or modification</li> <li>• single or multiple items</li> <li>• existing business model</li> </ul>	<p><b>Business Model Canvas</b></p> <p><b><u>Key Partners</u></b></p> <ul style="list-style-type: none"> <li>• Who are our key partners / suppliers?</li> <li>• Which key resources acquired from partners, which key activities performed?</li> <li>• Optimization &amp; efficiency, reduction of risk, acquisition of resources &amp; activities</li> </ul> <p><b><u>Key Activities</u></b></p> <ul style="list-style-type: none"> <li>• What key activities do the VP, distr. channels, customer relationships, revenue streams require?</li> <li>• Production, problem solving, platform / network</li> </ul> <p><b><u>Key Resources</u></b></p> <ul style="list-style-type: none"> <li>• What key resources do the VP, distr. channels, customer relationships, revenue streams require?</li> </ul> <p><b><u>Value proposition</u></b></p> <ul style="list-style-type: none"> <li>• What value do we deliver to our customers?</li> <li>• Which customer problem do we solve?</li> <li>• What bundles do we offer to each segment?</li> <li>• Which needs to we satisfy?</li> <li>• Newness, performance, customization, “getting the job done”, design, brand/status, price, cost reduction, risk reduction, accessibility, convenience/usability</li> </ul> <p><b><u>Customer relationships</u></b></p> <ul style="list-style-type: none"> <li>• What type of relationship does each of our segments expect us to establish and maintain with them?</li> <li>• How are they integrated the rest of our business model?</li> <li>• How costly are they?</li> <li>• (Dedicated) personal assistance, self-service, automated services, communities, co-creation</li> </ul> <p><b><u>Customer Channels</u></b></p> <ul style="list-style-type: none"> <li>• Through which Channels are customers reached?</li> <li>• How are we reaching them now?</li> <li>• Awareness, evaluation, purchase, delivery, after sales</li> </ul> <p><b><u>Customer Segments</u></b></p> <ul style="list-style-type: none"> <li>• Whom are we creating value for? Who is most important?</li> <li>• Mass market, niche market, segmented, diversified, multi-sided platform</li> </ul> <p><b><u>Revenues Streams</u></b></p> <ul style="list-style-type: none"> <li>• For what are our customers really willing to pay?</li> <li>• For what do they currently pay? How are they currently paying? How would they prefer to pay?</li> </ul> <p><b><u>Cost structure</u></b></p> <ul style="list-style-type: none"> <li>• What are the most important costs?</li> <li>• Which key activity / resource is most costly?</li> <li>• Cost driven (low cost), value driven (premium)</li> </ul>

Figure 9. Interview script as used in explorative interviews

<p><b>1) Basics</b></p> <ul style="list-style-type: none"> <li>• Company revenue and number of employees?</li> <li>• Who are you? What do you do?</li> <li>• Can you describe a typical working day with your tasks?</li> </ul>	<p><b>2) Business Model at <math>t_1</math></b>  <i>Explain Osterwalder</i>  <i>Fill out Osterwalder</i>  <i>Explain business model changes concept</i></p> <ul style="list-style-type: none"> <li>• Can you name several changes over the last time that match this concept of business model changes?</li> <li>• Why did you do those changes?</li> <li>• Which one had the biggest impact on the business model and the company? → Select <math>t_0</math> accordingly</li> </ul>
<p><b>3) Business Model at <math>t_0</math></b>  <i>Fill out Osterwalder</i></p>	<p><b>4) Development</b></p> <ul style="list-style-type: none"> <li>• What was the process of getting to those changes?</li> <li>• What do you think are the implication to the competitive advantage?</li> </ul>
<p><b>6) Resources &amp; Capabilities</b>  <i>Definition of resources and capabilities</i></p> <ul style="list-style-type: none"> <li>• What do you consider as your resources and capabilities (especially good at..., very valuable...)?</li> <li>• How did the resources and capabilities change over the time?</li> <li>• Did you actively develop them? How?</li> <li>• How do you deploy your capabilities to make use of your resources?</li> <li>• In which way are those resources and capabilities valuable / important to your business?</li> </ul>	<p><b>7) Reflection</b></p> <ul style="list-style-type: none"> <li>• How does this business model helps to differentiate from competitors?</li> <li>• Have you ever actively used any tools to develop your business model? If yes, which ones and how?</li> <li>• What would you have done differently retrospectively?</li> </ul>

Figure 10. Interview script as used in structured interviews

<p><b>1) Basics</b></p> <ul style="list-style-type: none"> <li>• Company revenue and number of employees?</li> <li>• Who are you? What do you do?</li> <li>• Can you describe a typical working day with your tasks?</li> </ul>	<p><b>2) Business Model at <math>t_1</math></b>  <i>Explain Osterwalder</i>  <i>Fill out Osterwalder</i>  <i>Explain business model changes concept</i></p> <ul style="list-style-type: none"> <li>• Can you name several changes over the last time that match this concept of business model changes?</li> <li>• Which one had the biggest impact on the business model and the company? → Select <math>t_0</math> accordingly</li> </ul>
<p><b>3) Business Model at <math>t_0</math></b>  <i>Fill out Osterwalder</i></p>	<p><b>4) Development</b></p> <ul style="list-style-type: none"> <li>• How did each of the BM components change? Why?</li> <li>• Do you think those changes had an influence on the competitive advantage? If yes, how?</li> </ul>
<p><b>5) Resources &amp; Capabilities</b>  <i>Definition of resources and capabilities</i></p> <ul style="list-style-type: none"> <li>• What do you consider as your resources and capabilities (especially good at..., very valuable...)?</li> <li>• Which ones are the most core, i.e. most important for your value proposition?</li> <li>• Which ones support those core elements?</li> <li>• How did all of them change?</li> <li>• When looking at the VRIN attributes of the core elements what happened to them?</li> <li>• What concrete measures and actions were taken to ensure the VRINity for each item?</li> </ul>	<p><b>6) Reflection</b></p> <ul style="list-style-type: none"> <li>• Have you ever actively used any tools to develop your business model? If yes, which ones and how?</li> <li>• What would you have done differently retrospectively?</li> </ul>

### 9.3 Additional Case Information

#### 9.3.1 Betahigh

Figure 11. Business model canvas of Betahigh at  $t_0$

<b>Key Partners</b> <ul style="list-style-type: none"> <li>• Merchants</li> <li>• Online shop producers</li> <li>• Collection companies</li> </ul>	<b>Key Activities</b> <ul style="list-style-type: none"> <li>• Platform development</li> <li>• Risk management</li> <li>• Sales</li> </ul>	<b>Value Proposition</b> Secure and convenient online payments for a) End customers (pay after receiving) b) Merchants (immediately paid)	<b>Customer Relationships</b> <ul style="list-style-type: none"> <li>• Merchants: direct contact through sales forces and support</li> <li>• Customers: indirect through platform</li> </ul>	<b>Customer Segments</b> <ul style="list-style-type: none"> <li>• Merchants (Nordic countries)</li> <li>• End customers (Nordic countries)</li> </ul>
	<b>Key Resources</b> <ul style="list-style-type: none"> <li>• Platform</li> <li>• Customer data</li> <li>• Human resources</li> <li>• Brand</li> </ul>		<b>Channels</b> <ul style="list-style-type: none"> <li>• Merchants: direct and internet</li> <li>• End customers: internet</li> </ul>	
<b>Cost Structure</b> <ul style="list-style-type: none"> <li>• Personnel costs</li> <li>• Default of end customers</li> <li>• Platform maintenance</li> </ul>		<b>Revenue Structure</b> <ul style="list-style-type: none"> <li>• One time application fee from merchants</li> <li>• Monthly fee for merchants</li> <li>• Transaction fee for merchants</li> </ul>		

Table 16. Summary of complete Betahigh VRIN analysis

Element	Type	Change	Description
<b>Core Element: Platform</b>			
Platform	Resource	Modified	Added new features of financing / paying in instalments.
<b>Type 1 Change (Changes of the platform itself)</b>			
Inimitability (I): Increased causal ambiguity due to added complexity, path dependent development of the platform. Non-substitutability (N): Broader value offering makes it more difficult to substitute. Rareness (R): (I) ensures that platform stays rare as it is difficult to imitate. Valuable (V): (N) leads to increase in value due to broader value offering that captures bigger business opportunity.			
<b>Type 2 Change (Influence of platform changes on other core resources)</b>			
<i>Not applicable as platform is the result of the other resources and capabilities and, hence, is not influencing them.</i>			

**Core Element: Risk Management**

Risk Management	Capability	Modified	Risk management becomes more complex due to the added feature of financing.
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**Type 1 Change (Changes of risk management itself)**

Inimitability (I): Increased causal ambiguity due to added complexity, path dependent as involves learning and experience.

Non-substitutability (N): Dependent on the customer data.

Rareness (R): (I) increased and makes risk management in this form rare.

Valuable (V): Valuable as it reduces the business risk.

**Type 2 Change (Influence of risk management changes on other core resources)**

Platform	Valuable (V): Makes the platform as a resource more valuable due to reducing default risk of customers. <i>(R), (I), (N) are not significant.</i>
Financial Management	Inimitability (I): Increased causal ambiguity as risk management results are essential input for accurate financial management, increased path dependency as risk management influences how financial management works due to gained experiences. Non-substitutability (N): More difficult to substitute because in-house risk management provides unique data. Rareness (R): (I) increased and makes financial management in this form rare. Valuable (V): Valuable as it reduces the business risk. <i>Financial management has similar influences on risk management which are not separately discussed.</i>

**Core Element: Financial Management**

Financial Management	Capability	Introduced	Necessary to provide the new offering of instalment payments.
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**Type 1 Change (Changes of risk financial management itself)**

*Was introduced, hence, changes cannot be measured*

**Type 2 Change (Influence of financial management on other core resources)**

Platform	Inimitability (I): Increased path dependency because of previous experiences and economic deterrence as certain company size is
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	<p>required to offer such a platform with those services</p> <p>Non-substitutability (N): If external party would run financial management, they would also need access to risk management which would make the platform substitutable.</p> <p>Rareness (R): (I) increased and makes platform in this form unique.</p> <p>Valuable (V): Valuable as it reduces business risk and increases value offering.</p>
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**Supporting Element: Partnership with Financial Institutions**

Partnership with financial institutions	Resource	Introduced	Lend money to Betahigh to offer financing options.
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**Type 3 Change (Influence of partnerships with financial institutions on core element)**

Financial Management	<p>Inimitability (I): Imitable with another financial institution. Only slightly path dependent as partnership develops and banks need trust and cannot be imitated immediately, this means time lagging. Economic deterrence might be given as a minimum size and securities are required to receive such loans.</p> <p>Non-substitutability (N): Easy to substitute with another financial institution.</p> <p>Rareness (R): Slightly increased due to (I).</p> <p>Valuable (V): No increased value due to possibility to substitute but having such a partnership with a financial institution is essential to provide the value offering.</p>
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**Supporting Element: Customer Data**

Customer Data	Resource	Modified	Extended to provide new service with higher business risk.
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**Type 3 Change (Influence of extended customer data on core elements)**

Risk Management	<p>Inimitability (I): Increased path dependency as data is growing over time and increased causal ambiguity as it is not know which data is collected and used.</p> <p>Non-substitutability (N): Data is specific to Betahigh’s needs and, hence, difficult to substitute.</p>
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	<p>Rareness (R): Data as input into the risk management increases rareness of risk management.</p> <p>Valuable (V): Data tailored to the needs makes risk management more valuable as it indirectly decreases the business risk.</p>
Financial Management	<p>Inimitability (I): Increased path dependency as data is growing over time and increased causal ambiguity as it is not know which data is collected and used.</p> <p>Non-substitutability (N): Data is specific to Betahigh's needs and, hence, difficult to substitute.</p> <p>Rareness (R): Data as input into the financial management increases rareness of risk management.</p> <p>Valuable (V): Data tailored to the needs makes financial management more valuable as it indirectly decreases the business risk.</p>

**Implicit Change: Change in Customer Segments**

Customer Segment Component	Implicit	Modified	Added Germany as new market in the customer segment
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**Type 4 Change (Influence of new customer segment on core resources)**

Platform	<p>Inimitability (I): Increase inimitability due to path dependency as platform extends over time. Economic deterrence effects due to platform size.</p> <p>Non-substitutability (N): Not changed.</p> <p>Rareness (R): Platform stays rare.</p> <p>Valuable (V): Not changed.</p>
Risk & Financial management	<p>Inimitability (I): Increase inimitability due to added complexity of serving different countries</p> <p>Non-substitutability (N): Not changed.</p> <p>Rareness (R): Sustained rareness.</p> <p>Valuable (V): Not changed.</p>

**Summary**

Overall, the Betahigh's case illustrates how business model changes influence the competitive advantage of a firm through introduction of a new service. The introduction and modification of core and supporting resources and capabilities clearly affected the competitive advantage

between  $t_0$  and  $t_1$  in a positive way. Not all changes, however, have the same impact: For example, to introduction of partnerships with financial institutions is essential but has a low impact on the competitive advantage.

### 9.3.2 Tescom

Figure 12. Business model canvas of Tescom at  $t_0$

<b>Key Partners</b> <ul style="list-style-type: none"> <li>• Stanford</li> </ul>	<b>Key Activities</b> <ul style="list-style-type: none"> <li>• Programming</li> <li>• Product design</li> <li>• Testing</li> <li>• Marketing</li> <li>• Human resource management</li> </ul>	<b>Value Proposition</b> Enhanced web browsing experience	<b>Customer Relationships</b> <ul style="list-style-type: none"> <li>• Direct contact</li> </ul>	<b>Customer Segments</b> <ul style="list-style-type: none"> <li>• No differentiation</li> </ul>
	<b>Key Resources</b> <ul style="list-style-type: none"> <li>• Human resources</li> <li>• Application</li> <li>• Brand image</li> <li>• Customer experience</li> <li>• Intellectual property</li> </ul>		<b>Channels</b> <ul style="list-style-type: none"> <li>• Webpage</li> <li>• Email</li> </ul>	
<b>Cost Structure</b> <ul style="list-style-type: none"> <li>• Personnel costs</li> <li>• Marketing costs</li> <li>• Employee benefits</li> </ul>			<b>Revenue Structure</b> <ul style="list-style-type: none"> <li>• Advertising</li> </ul>	

Table 17. Summary of complete Tescom VRIN analysis

Element	Type	Change	Description
<b>Core Element: Partner Management</b>			
Partner management	Capability	Introduced	Manage the increasing amount of content, distribution, and brand partners.
<b>Type 1 Change (Changes of the partner management itself)</b>			
<i>Was introduced, hence, changes cannot be measured</i>			
<b>Type 2 Change (Introduction of partner management influences other core elements)</b>			
Brand Image	Inimitability (I): Partner management is path dependent as initiation of partnerships takes time and, hence, defines brand over time. Rareness (R): (I) increased and makes brand more unique.		

**Core Element: Brand Image**

Brand Image	Resource	Modified	Branding of products was increased, brand was developed.
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**Type 1 Change (Change of brand itself)**

Inimitability (I): Due to brand development, causal ambiguity increased as brand is socially complex. Brand development is path dependent due to time effects.

Non-substitutability (N): Generally difficult to substitute a brand only imitation is possible.

Rareness (R): (I) increased and makes brand more unique and specific over time.

Valuable (V): Value of the brand increases as it is not imitated and helps to capture new business opportunities.

**Type 2 Change (Influence of brand on other core elements)**

*Brand does not influence other core elements*

**Core Element: Ecosystem**

Ecosystem	Resource	Modified	The ecosystem is basically an advancement of the existing applications and consists of all applications and services offered.
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**Type 1 Change (Change of ecosystem itself)**

Inimitability (I): Increased causal ambiguity due to added complexity of new services, path dependent development of the ecosystem. Use of intellectual property complicates imitation.

Non-substitutability (N): Broader value offering makes it more difficult to substitute.

Rareness (R): (I) ensures that platform stays rare as it is difficult to imitate.

Valuable (V): (N) leads to increase in value due to broader value offering that captures bigger business opportunity.

**Type 2 Change (Influence of brand on other core elements)**

*Not applicable as platform is the result of the other resources and capabilities and, hence, is not influencing them.*

**Supporting Element: Marketing**

Marketing	Capability	Modified	Increased marketing activities to develop brand and use of more channels.
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<b>Type 3 Change (Influence of changes in marketing on core elements)</b>	
Brand Image	<p>Inimitability (I): Promoting the brand through marketing is path dependent as it takes time.</p> <p>Rareness (R): (I) increased and makes brand more unique.</p>

<b>Supporting Element: Brand Partners</b>			
Brand Partners	Resource	Introduced	Help to promote the brand due to their popularity.

<b>Type 3 Change (Influence of changes in marketing on core elements)</b>	
Brand Image	<p>Inimitability (I): Inimitable as the same partner is not able to promote a similar service and, hence, Tescom is associated with those brand partners.</p> <p>Non-substitutability (N): Brand partners are substitutable.</p> <p>Rareness (R): Brand image becomes more specific and unique as brand.</p> <p>Valuable (V): No increase in value.</p>

<b>Supporting Element: Content Partners</b>			
Content Partners	Resource	Introduced	Content partners provide content for the ecosystem.

<b>Type 3 Change (Influence of changes in marketing on core elements)</b>	
Ecosystem	<p>Inimitability (I): Inimitable as the same partner cannot provide content for a similar service. Path dependent due to content accumulation.</p> <p>Non-substitutability (N): Content is unique for a certain user segment and, hence, not substitutable.</p> <p>Rareness (R): Rareness of ecosystem is increased due to unique content.</p> <p>Valuable (V): Value of ecosystem increased for the user segment.</p>

<b>Supporting Element: Distribution Partners</b>			
Distribution Partners	Resource	Introduced	Pre-install the app and distribute parts of the ecosystem through their systems.

<b>Type 3 Change (Influence of changes in marketing on core elements)</b>	
Ecosystem	<p>Inimitability (I): Inimitable as the same partner will not pre-install a similar app in their system.</p>

	<p>Non-substitutability (N): Partners are to a certain degree substitutable.</p> <p>Rareness (R): Rareness of the ecosystem is increased as the ecosystem is already implemented in some systems.</p> <p>Valuable (V): Value is not increased through (N) but through a larger installed user base.</p>
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**Implicit Change: Change in channels**

Channel Component	Implicit	Introduced	Inclusion of different new channels such as app store and social networks in the ecosystem and to distribute the app.
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**Type 4 Change (Influence of implicit changes on core elements)**

Ecosystem	<p>Inimitability (I): Not changed as all channels are easy to access.</p> <p>Non-substitutability (N): Can be substituted with other channels.</p> <p>Rareness (R): Rareness of ecosystem is not changed.</p> <p>Valuable (V): Value of ecosystem increased due to more users.</p>
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**Summary**

Overall, the Tescom’s case illustrates how a company can change its value proposition and product focus by using the existing resources and capabilities and only slightly modify the business model. Overall, the major shift in the business model occurs in the supporting resources, especially partners, which were even treated as groups. The case also shows that all changes in the business model are reflected in the competitive advantage.

### 9.3.3 Zoomstrip

Figure 13. Business model canvas of Zoomstrip at  $t_0$

<b>Key Partners</b> <ul style="list-style-type: none"> <li>• Facebook</li> </ul>	<b>Key Activities</b> <ul style="list-style-type: none"> <li>• Application Development</li> <li>• Marketing through social media</li> </ul>	<b>Value Proposition</b> Casual games for Facebook	<b>Customer Relationships</b> <ul style="list-style-type: none"> <li>• Facebook Groups, Messages</li> </ul>	<b>Customer Segments</b> <ul style="list-style-type: none"> <li>• Largely female customers aged 15-30</li> </ul>
	<b>Key Resources</b> <ul style="list-style-type: none"> <li>• Applications</li> <li>• HR</li> <li>• Code base</li> </ul>		<b>Channels</b> <ul style="list-style-type: none"> <li>• Facebook</li> <li>• Twitter</li> </ul>	
<b>Cost Structure</b> <ul style="list-style-type: none"> <li>• Personnel costs</li> </ul>			<b>Revenue Structure</b> <ul style="list-style-type: none"> <li>• Facebook coins</li> </ul>	

Figure 14. Business model canvas of Zoomstrip at  $t_1$

<b>Key Partners</b> <ul style="list-style-type: none"> <li>• <u>Sincerely</u></li> <li>• <u>Shutterfly</u></li> <li>• <u>Designers of scrapbooks</u></li> <li>• <u>Mixi</u></li> </ul>	<b>Key Activities</b> <ul style="list-style-type: none"> <li>• Application Development</li> <li>• Marketing through social media</li> <li>• User testing</li> </ul>	<b>Value Proposition</b> Apps that focus on <u>social interaction</u> - <u>Entertainment, i.e. games</u> - <u>Sharing of media</u>	<b>Customer Relationships</b> <ul style="list-style-type: none"> <li>• <u>Emails</u></li> </ul>	<b>Customer Segments</b> <ul style="list-style-type: none"> <li>• Largely female customers aged 15-30</li> </ul>
	<b>Key Resources</b> <ul style="list-style-type: none"> <li>• Applications</li> <li>• HR</li> <li>• <u>Code base</u></li> </ul>		<b>Channels</b> <ul style="list-style-type: none"> <li>• Facebook</li> <li>• Twitter</li> <li>• <u>App store</u></li> <li>• <u>Mixi</u></li> </ul>	
<b>Cost Structure</b> <ul style="list-style-type: none"> <li>• Personnel costs</li> <li>• <u>Infrastructures</u></li> </ul>			<b>Revenue Structure</b> <ul style="list-style-type: none"> <li>• <u>App store fees</u></li> <li>• <u>In-App purchases</u></li> <li>• <u>Photo printing provision</u></li> </ul>	

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**Table 18.** Resources and capabilities of Zoomstrip at  $t_0$  and  $t_1$

$t_0$		$t_1$	
Resources	Capabilities	Resources	Capabilities
Applications	Application development	<u>Applications</u>	Application development
Partnership with Facebook	Marketing	<u>Partnership with Sincerely</u>	Marketing
HR		<u>Partnership with Shutterfly</u>	<u>User testing</u>
Codebase		<u>Partnership with scrapbook designers</u>	
		<u>Partnership with Mixi</u>	
		HR	
		<u>Codebase</u>	

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**Table 19.** Core and supporting elements of Zoomstrip at  $t_0$  and  $t_1$

$t_0$		$t_1$	
Core Elements	Supporting Elements	Core Elements	Supporting Elements
Applications	Partnership with Facebook	<u>Applications</u>	<u>Partnership with Sincerely</u>
Application development	Codebase	Application development	<u>Partnership with Shutterfly</u>
HR	Marketing	HR	<u>Partnership with scrapbook designers</u>
			<u>Partnership with Mixi</u>
			<u>Codebase</u>
			Marketing
			<u>User testing</u>

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9.3.4 Haytech

Figure 15. Business model canvas of Haytech at  $t_0$

<b>Key Partners</b> <ul style="list-style-type: none"> <li>• Key customers in different segments</li> <li>• Online payment providers</li> <li>• Webhoster</li> </ul>	<b>Key Activities</b> <ul style="list-style-type: none"> <li>• Application development</li> <li>• Sales activities</li> </ul>	<b>Value Proposition</b> <p>Easy-to-use software for the creation of E-learning content on different platforms (for clients)</p> <p>Delightful user experience (for end-users of E-learning solutions)</p>	<b>Customer Relationships</b> <ul style="list-style-type: none"> <li>• Direct, individual contact with key clients</li> </ul>	<b>Customer Segments</b> <ul style="list-style-type: none"> <li>• Companies and organizations (internal use of E-learning solutions for employees and members)</li> <li>• Producers of E-learning solutions for external use</li> </ul>
	<b>Key Resources</b> <ul style="list-style-type: none"> <li>• Knowledge about E-learning</li> <li>• Human resources</li> </ul>		<b>Channels</b> <ul style="list-style-type: none"> <li>• Sales team with direct contact to potential clients</li> </ul>	
<b>Cost Structure</b> <ul style="list-style-type: none"> <li>• Personnel costs</li> <li>• Marketing and sales</li> </ul>			<b>Revenue Structure</b> <ul style="list-style-type: none"> <li>• One-time fee for clients</li> <li>• Per-user fee for clients</li> </ul>	

Figure 16. Business model canvas of Haytech at  $t_1$

<b>Key Partners</b> <ul style="list-style-type: none"> <li>• <u>Alliances with key-customers</u></li> <li>• Online payment providers</li> <li>• Webhoster</li> </ul>	<b>Key Activities</b> <ul style="list-style-type: none"> <li>• Application development</li> <li>• Sales activities</li> <li>• <u>Customer management</u></li> </ul>	<b>Value Proposition</b> <p>Easy-to-use software for the creation of E-learning content on different platforms (for clients)</p> <p>Delightful user experience (for end-users of E-learning solutions)</p>	<b>Customer Relationships</b> <ul style="list-style-type: none"> <li>• Direct, individual contact with key clients</li> <li>• <u>Indirect contact via webpage</u></li> </ul>	<b>Customer Segments</b> <ul style="list-style-type: none"> <li>• Companies and organizations (internal use of E-learning solutions for employees and members)</li> <li>• Producers of E-Learning solutions for external use</li> </ul>
	<b>Key Resources</b> <ul style="list-style-type: none"> <li>• Knowledge about E-learning</li> <li>• <u>Human resources</u></li> <li>• <u>Data about end-users</u></li> </ul>		<b>Channels</b> <ul style="list-style-type: none"> <li>• Sales team with direct contact to potential clients</li> <li>• <u>Web platform</u></li> </ul>	
<b>Cost Structure</b> <ul style="list-style-type: none"> <li>• Personnel costs</li> <li>• Marketing and Sales</li> <li>• <u>Web platform</u></li> </ul>			<b>Revenue Structure</b> <ul style="list-style-type: none"> <li>• One-time fee for clients</li> <li>• Per-user fee for clients</li> <li>• <u>Customized payment structures</u></li> </ul>	

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*Table 20.* Resources and capabilities of Haytech at  $t_0$  and  $t_1$

$t_0$		$t_1$	
Resources	Capabilities	Resources	Capabilities
Key Customers	Application development	<u>Key Customers</u>	Platform development
Webhoster	Sales	Webhoster	Sales
Online payment providers		Online payment providers	<u>Customer management</u>
Knowledge about e-learning		Knowledge about e-learning	
Human resources		<u>Human resources</u>	
		<u>Data about end-customers</u>	
		<u>Web-platform</u>	

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*Table 21.* Core and supporting elements of Haytech at  $t_0$  and  $t_1$

$t_0$		$t_1$	
Core Elements	Supporting Elements	Core Elements	Supporting Elements
Key customers	Webhoster	<u>Key customers</u>	Knowledge about e-learning
Knowledge about e-learning	Online payment providers	Application development	<u>Human resources</u>
Application development	Human resources	Application for content creation	<u>Data about end-customers</u>
Application for content creation	Sales		Sales
			<u>Customer management</u>
			Webhoster
			Online payment providers
			<u>Web platform</u>

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### 9.3.5 Keylex

Figure 17. Business model canvas of Keylex at  $t_0$

<b>Key Partners</b> <ul style="list-style-type: none"> <li>• Google AdWords</li> <li>• Copywriters</li> </ul>	<b>Key Activities</b> <ul style="list-style-type: none"> <li>• Platform Development</li> <li>• Copywriter management</li> <li>• Sales</li> </ul>	<b>Value Proposition</b> Optimizing of text-based pay per click ads with the goal of a) higher efficiency of marketing b) Time savings (ad creation & automated testing)	<b>Customer Relationships</b> <ul style="list-style-type: none"> <li>• Direct contact with a lot of feedback as customers are often also testers</li> </ul>	<b>Customer Segments</b> <ul style="list-style-type: none"> <li>• Advertisers</li> </ul>
	<b>Key Resources</b> <ul style="list-style-type: none"> <li>• Platform</li> <li>• Ad data</li> </ul>		<b>Channels</b> <ul style="list-style-type: none"> <li>• Internet</li> </ul>	
<b>Cost Structure</b> <ul style="list-style-type: none"> <li>• Personnel costs</li> <li>• Copywriter commissions</li> <li>• Marketing costs</li> </ul>			<b>Revenue Structure</b> <ul style="list-style-type: none"> <li>• Performance based per ad</li> </ul>	

Figure 18. Business model canvas of Keylex at  $t_1$

<b>Key Partners</b> <ul style="list-style-type: none"> <li>• Google AdWords</li> <li>• Copywriters</li> <li>• <u>Bid management system providers</u></li> <li>• <u>Agents</u></li> <li>• <u>Facebook Ads</u></li> <li>• <u>Spyfu</u></li> </ul>	<b>Key Activities</b> <ul style="list-style-type: none"> <li>• <u>Platform Development</u></li> <li>• Copywriter management</li> <li>• <u>Sales</u></li> <li>• <u>Auditing</u></li> </ul>	<b>Value Proposition</b> Optimizing of text-based pay per click ads with the goal of a) higher efficiency of marketing b) Time savings (ad creation & automated testing)	<b>Customer Relationships</b> <ul style="list-style-type: none"> <li>• Direct contact with a lot of feedback as customers are often also testers</li> </ul>	<b>Customer Segments</b> <ul style="list-style-type: none"> <li>• Advertisers</li> </ul>
	<b>Key Resources</b> <ul style="list-style-type: none"> <li>• <u>Platform</u></li> <li>• Ad data</li> </ul>			
<b>Cost Structure</b> <ul style="list-style-type: none"> <li>• Personnel costs</li> <li>• Copywriter commissions</li> <li>• Marketing costs</li> </ul>			<b>Revenue Structure</b> <ul style="list-style-type: none"> <li>• Performance based per ad</li> <li>• <u>Platform fee</u></li> <li>• <u>Audits</u></li> </ul>	

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**Table 22.** Resources and capabilities of Keylex at  $t_0$  and  $t_1$

$t_0$		$t_1$	
Resources	Capabilities	Resources	Capabilities
Google AdWords	Platform development	Google AdWords	Platform development
Copywriters	Copywriter management	<u>Copywriters</u>	<u>Copywriter management</u>
Platform	Sales	<u>Platform</u>	<u>Sales</u>
Customer data (ad data)		<u>Customer data (ad data)</u>	<u>Auditing</u>
		<u>Facebook Ads</u>	
		<u>Partnership with Spyfu</u>	
		<u>Partnership with bid management system companies</u>	
		<u>Partnership with agents</u>	

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**Table 23.** Core and supporting elements of Keylex at  $t_0$  and  $t_1$

$t_0$		$t_1$	
Core Elements	Supporting Elements	Core Elements	Supporting Elements
Copywriters	Google AdWords	<u>Platform</u>	Sales
Platform	Sales	<u>Copywriter management</u>	<u>Auditing services</u>
Platform development	Copywriter management	Platform development	Google AdWords
	Customer data (ad data)	<u>Facebook Ads</u>	<u>Customer data (ad data)</u>
		<u>Copywriters</u>	<u>Partnership with Spyfu</u>
			<u>Partnership with bid management system companies</u>
			<u>Partnership with agents</u>

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### 9.3.6 Alphadom

Figure 19. Business model canvas of Alphadom at  $t_0$

<b>Key Partners</b> <ul style="list-style-type: none"> <li>• Data Providers</li> <li>• LinkedIn</li> <li>• Facebook</li> <li>• Twitter</li> </ul>	<b>Key Activities</b> <ul style="list-style-type: none"> <li>• Application Development</li> <li>• Partner management</li> </ul>	<b>Value Proposition</b> Contact management without manual data entry to leverage relationships	<b>Customer Relationships</b> <ul style="list-style-type: none"> <li>• Isolate high value customers → direct contact</li> </ul>	<b>Customer Segments</b> <ul style="list-style-type: none"> <li>• Outbound professionals (PR, sales etc.)</li> <li>• Referral oriented professionals (Real estate, private wealth)</li> </ul>
	<b>Key Resources</b> <ul style="list-style-type: none"> <li>• Application</li> <li>• Code base of open source projects</li> </ul>		<b>Channels</b> <ul style="list-style-type: none"> <li>• Twitter</li> <li>• Facebook</li> <li>• LinkedIn</li> </ul>	
<b>Cost Structure</b> <ul style="list-style-type: none"> <li>• Personnel costs</li> <li>• Infrastructure</li> </ul>			<b>Revenue Structure</b> <ul style="list-style-type: none"> <li>• Advertising</li> </ul>	

Figure 20. Business model canvas of Alphadom at  $t_1$

<b>Key Partners</b> <ul style="list-style-type: none"> <li>• Data Providers</li> <li>• LinkedIn</li> <li>• Facebook</li> <li>• Twitter</li> <li>• <u>Google Mail</u></li> <li>• <u>Evernote</u></li> </ul>	<b>Key Activities</b> <ul style="list-style-type: none"> <li>• Application Development</li> <li>• Partner management</li> </ul>	<b>Value Proposition</b> Contact management without manual data entry to leverage relationships	<b>Customer Relationships</b> <ul style="list-style-type: none"> <li>• Isolate high value customers → direct contact</li> </ul>	<b>Customer Segments</b> <ul style="list-style-type: none"> <li>• Outbound professionals (PR, sales etc.)</li> <li>• Referral oriented professionals (Real estate, private wealth)</li> </ul>
	<b>Key Resources</b> <ul style="list-style-type: none"> <li>• <u>Application</u></li> <li>• Code base of open source projects</li> </ul>		<b>Channels</b> <ul style="list-style-type: none"> <li>• Twitter</li> <li>• Facebook</li> <li>• LinkedIn</li> <li>• <u>App.store</u></li> </ul>	
<b>Cost Structure</b> <ul style="list-style-type: none"> <li>• Personnel costs</li> <li>• Infrastructure</li> </ul>			<b>Revenue Structure</b> <ul style="list-style-type: none"> <li>• <u>Subscriptions</u></li> </ul>	

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**Table 24.** Resources and capabilities of Alphadom at  $t_0$  and  $t_1$

$t_0$		$t_1$	
Resources	Capabilities	Resources	Capabilities
Partnership with data providers	Application development	<u>Partnership with data providers</u>	Application development
Application	Partner management	<u>Application</u>	Partner management
Codebase of other projects		Codebase of other projects	

     = new,      = modified

**Table 25.** Core and supporting elements of Alphadom at  $t_0$  and  $t_1$

$t_0$		$t_1$	
Core Elements	Supporting Elements	Core Elements	Supporting Elements
Partner management	Application development	Partner management	Application development
Application	Partnership with data providers	<u>Application</u>	<u>Partnership with data providers</u>
	Codebase of other projects		Codebase of other projects

     = new,      = modified