Master thesis

# Business model development of early stage start-up projects in the context of the Gründungsgarage

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# Affidavit

I declare that I have authored this thesis independently, that I have not used other than the declared sources/resources, and that I have explicitly indicated all material, which has been quoted either literally or by content from the sources used. The text document uploaded to TUGRAZonline is identical to the present master thesis.

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# Abstract

Without a suitable target market and an appropriate sales structure, it is not possible for a company to fully benefit from an excellent product. This is valid for companies that are already successfully established in various industries over many years, but of course also to recently founded companies, and prospective early stage start-up projects in the pre-foundation phase, which still have to fight for their place in the existing market structure. Independent of this, all of these three representative types of companies use a theoretical model, which serves to close the gap between product and sales market: The “Business Model”. Since not only companies and their managers, but also scientific researchers working in the field of economics, are aware of the importance of this construct, various methods have been developed over the last years to develop these business models or to adapt them to changing market conditions.

This has led to the fact that existing companies often follow a pattern in the further development or the setting up of a new business model that has already paid off in their entrepreneurial past. However, apart from this insight, there is still no comprehensive understanding of the way in which early stage start-up projects develop their business model in the pre-founding phase. Accordingly, it is the aim of this work to start precisely there in order to shed light on this hitherto rather slightly explored research area. Therefore, based on a comprehensive literature research on the topics "Business Models" and "Entrepreneurship", an explorative study was conducted, including 14 early stage start-up projects of the academic start-up accelerator program "Gründungsgarage" . They were examined according to of the "multiple case study approach", with the aim to identify certain changes within their business models and consequently gain a better understanding of how such prospective companies develop their business model.

The obtained results indicate that there is a strong correlation with the way existing companies in the market develop their business models. However, the gained insights provide also important information concerning which business model elements tend to be more affected in these early development stages and which are less considered. Therefore, this change behaviour of the individual elements and the interaction with the respective triggers can serve to develop new methodologies in order to respond even more specifically to the needs of prospective companies in the different phases of the start-up process. In this way, such early stage start-up projects could be supported in the best possible way regarding the continuous development of their business model.

In further consequence, this master thesis also points out that in the future an increased amount of research activity in the field of business model development of early stage start-up projects will be necessary to develop such advanced theoretical models. Thereby, the conclusion of this work suggests that the empirical studies, which are inevitably associated with this, will have to examine much larger samples of representative prospective companies and additionally have to investigate early stage start-up projects that are not part of a start-up accelerator program. Only in this way it will be possible to develop a generally valid understanding of how early stage start-up projects develop their business models.

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# List of abbreviations

BMW…….Business model workshop
BMC……..Business model canvas
ESSUPs...Early stage start-up projects
GG……...Gründungsgarage
MVP……..Minimum viable product
z.B……zum Beispiel

# 1 Introduction

The assumption that a company just has to develop new products that provide a certain value and can afterwards sell them on existing markets, is not valid in the real world. Especially today, customers do not buy products, just because they provide a specific value for an appropriate price, rather they search for solutions that support them to satisfy their needs. Accordingly, it is of major importance for ventures to understand these needs and to align their products correspondingly. Therefore, entrepreneurs develop so-called “Business Models”, which help them to close this gap. (Teece, 2010, p. 175) Consequently, this concept is also of utter importance for prospective companies. These thoughts also provided the impetus for this master thesis. In order to gain a better understanding of the motives behind this work and its basic structure, the following subchapters describe these aspects in more detail.

## 1.1 Initial situation

Nowadays the start-up scene and the new companies that are associated with it are getting more and more attention from day to day. Thereby the potential and the development of such aspiring new ventures do not just catch the attention of economists and established entrepreneurs, rather it seems like that the whole society is interested in the phenomenon of start-ups. (Hahn, 2014, p. 7) Thereby this growing interest can possibly traced back to the success of the internet companies, which began at the turn of the millennium. These enterprises achieved it to be among the most valuable companies off the world in less than 20 years, by being worth several hundred billion dollars. Among them are corporations like Google or Facebook, which are known by nearly the whole global population. However, these companies are of course rather the exception than the rule. Nevertheless, the meteoric rise of these start-ups was definitely among the triggers that led to the rise of the start-up scenes. However, which factors made these companies more successful than others? Their business model may have played a decisive role in this regard. Already Morris *et al.* (2005, p. 726) pointed out that the business model can be the deciding factor concerning if a company succeeds or fails. Nevertheless, thereby the researchers also criticized that there is still no consistent understanding concerning how start-ups develop their early business models, which makes it difficult to assess the influence of the business model regarding the success of a company. The need for studies that address this issue was also proclaimed by Trimi and Berbegal-Mirabent (2012, p. 452). They pointed out that despite the fact that several researchers already separately examined the process of setting up a new company and the fundamentals of business models, the research field of combining these two distinct research topics is still in the early stages. This is because the efforts made so far in this respect are still rather sparse. Beside the insights of researchers like Chesbrough and Rosenbloom (2002, p. 550) and Sosna *et al.* (2010, p. 384), concerning that the initial business model undergoes several iterations and that thereby start-ups often follow a trial-and-error procedure, not much has yet been achieved in this research area. In addition, it has to be pointed out that most of the current findings concern the process of business model development of already founded start-ups. Therefore, this master thesis goes even further by aiming to provide essential insights concerning how early stage start-up projects (ESSUPs) develop their business model. In this context, ESSUPs are prospective companies that are currently in the pre-foundation phase. In order to achieve this, the empirical study, which was carried out in the course of this master thesis, drew upon different methodologies to reveal important information concerning the factors that influence this development process.

## 1.2 Objectives and research questions

This bold undertaking to contribute with this work to a better understanding of how ESSUPs develop their business model, is of course accompanied by several challenges. On the one hand, it is necessary to determine the factors that influence the ESSUPs during this endeavour and on the other hand, it is essential to develop a methodology that is able to identify these factors.

In this respect the empirical study of this work further developed an already existing approach used by Glinik *et al.* (2019, pp. 2–3) in the context of a study concerning the same research area. In fact, the researchers wanted to improve the general understanding of how ESSUPs develop their business models, by examining the changes that occurred within the business models of representative ESSUPs together with the triggers that were responsible for the respective changes.

This approach was used, since the investigation of these two aspects provides useful information for the research area of business model development of ESSUPs in different ways. On the one hand, the analysis of the changes within the business model could reveal that certain elements of the business model tend to change at different stages in the founding process. In further consequence, it would be possible to develop advanced business model development methods, which could perhaps point out on which business model components entrepreneurs should focus during the different phases of the founding process. On the other hand, in order to gain the necessary understanding concerning how ESSUPs proceed in terms of business model development, it is also important to be aware of the factors that influence these prospective companies during this endeavour, such as triggers that lead to changes among the elements of the business model. This in turn can be used to design future methods of business model development in such a way that they also include the corresponding factors that drive the further development of the business model. In fact, the insights about the triggers could be used in such advanced methods to inform entrepreneurs about potential drivers that would subsequently enable them to better align the individual components of their business model and thus further develop them. Due to these thoughts, the following research questions were formed, since their answers provide useful information in order to get a better understanding of how ESSUPs develop their business model:

1) *What business model elements change during the early development phases of ESSUPs in an accelerator program?*

2) *Which triggering factors lead to changes in the business model during the early development phases of ESSUPs in an accelerator program?*

In the course of this master thesis, it was the objective to answer these research questions by means of the findings of the already mentioned empirical study. In order to obtain the therefore necessary data for this study, the Gründungsgarage (GG), which is a start-up accelerator program that is in close contact with the Institute of General Management and Organisation of the TU Graz, and of course the participating ESSUPs themselves, allowed the analysis of their business models. In this respect, these ESSUPs and their business models were examined at three different points in time, with the aim to identify possible changes of the business model elements between the points of investigation together with their respective triggers.

## 1.3 Structure of the master thesis

Since this work was basically carried out in such a manner that a comprehensive literature review preceded the actual empirical study, with the aim to familiarize oneself with the topic and to perhaps benefit later of already existing approaches in the research area, this master thesis is also structured according to this chronology. Therefore *chapter 2* consists of three main blocks that first describe the topics business models and entrepreneurship and subsequently outline the combination of these two research areas. Thereby, the section on business models is essential to understand the principles of the topic that represents the foundation of the conducted empirical study. In order to be able to draw conclusions regarding how ESSUPs proceed in terms of business model development, it is also necessary to develop a basic understanding of the motives for setting up a new company and the skills required to do so. The therefore needed information can be found in *chapter 2.1*.

Afterwards *chapter 3* describes the conducted empirical study in three steps. First, a description of where the data was obtained from is given, followed by a more detailed explanation of the composition of the data and how it was collected. Finally, this section contains information concerning the analysis of the obtained data. At this point it is necessary to mention that two different approaches were used in the course of the analysis process in order to provide the required information to answer the research questions. Therefore, these two approaches are described separately and the respective findings are also described apart from each other in the subsequent *chapter 4*.

Afterwards *chapter 5* attempts to link the obtained results with the already explained concepts from the theoretical section, with the aim to draw conclusions regarding the compatibility of theory and the collected findings. Additionally, this section also outlines the role that the obtained findings of this work play for the existing literature and also shows which parties are the beneficiaries of the gained results. Finally, *chapter 6* summarizes the insights that were collected in the course of this master thesis once again. Furthermore, this section also examines the scope and the validity of the obtained results in a more detailed way and provides an outlook concerning the factors that future research projects in the field of business model development of ESSUPs should possibly consider.

# 2 Theoretical background

As already mentioned before, this section consists of three subchapters with different foci. Thereby *chapter 2.1* mainly describes the motives that drive individual persons to set up a new venture and how upcoming entrepreneurs proceed in the early stages of a new venture. In addition, this section also describes how economists dealt with the topic of entrepreneurship in the past in order to show the evolution of the scope of entrepreneurship over the years.

The following *chapter 2.2* should help to develop a consistent understanding of what a business model actually is in order to be able to follow the approach of the afterwards described empirical study in the best possible way. Therefore, this section describes the components of a business model together with the tools that can be used to develop them. This chapter also points out the major differences of the business model compared to other management constructs, which overlap to some extent with the scope of the business model concept. Furthermore, also this section includes a subchapter that describes how the understanding of business models has developed in the past.

Finally, *chapter 2.3* combines the previously described topics. Thereby it describes the role that the business model plays in the process of setting up a new company and how entrepreneurs actually develop and handle business models in the early stages of a new company.

## 2.1 Entrepreneurship

*"Entrepreneurship is a way of thinking, a way of thinking that emphasizes opportunities over threats."* (Krueger *et al.*, 2000, p. 411)

With this statement, the authors pointed out that an entrepreneurial activity bases on the recognition of an opportunity. It is actual a reaction to the environment where an opportunity arises for example in the form of a new market and the entrepreneur may respond to that chance by starting a new venture. Nevertheless, before the entrepreneur can do this, he has to form a business proposition by processing the hints of a potential opportunity from his environment and by confronting the benefits of the occasion and their accompanied risks. (Krueger *et al.*, 2000, p. 411) Today, however, the role of entrepreneurship is no longer limited to the exploitation of opportunities. Especially with the increasing awareness concerning the responsibility of businesses in terms of sustainable dealing with social and ecological factors, researchers also started to investigate how the principle of entrepreneurship can contribute to ensure socially and ecologically sustainable business practices in the future. The essence of this consideration is the distinction between conventional and sustainable entrepreneurship, which are in general two distinct approaches with different reasons to found a venture. While the conventional entrepreneur considers the establishment of a company as an opportunity to exploit resources with the aim to maximize revenue as fast as possible, the sustainable entrepreneur founds an enterprise to conserve human and natural resources, in order to maintain their quality as long as possible. This requires a careful use of these resources instead of simply consuming them. (Parrish, 2010, pp. 510–511) In order to create a common understanding of the scientific field of entrepreneurship and its historical development, the following chapter describes the initial attempts to build a common understanding of entrepreneurship and also shows which approaches were perhaps less effective than others. Furthermore, it describes how the domain of entrepreneurship evolved from a topic that deals with the exploitation of opportunities to a construct

that includes areas of the research field of sustainability as well. Nevertheless, at this point it also necessary to mention that sustainability became a major topic in the field of entrepreneurship. However, since this is not relevant for this work, the following section just shows when these considerations started, without describing its scope in a detailed manner.

### 2.1.1 Historical development of the domain of entrepreneurship

Generally, the initial attempts to define entrepreneurship often identified it as a process or behaviour that includes elements like the identification of an opportunity or individuals taking risk. Among these attempts is the definition of Shapero (1975, n.p.). He determined entrepreneurship as some sort of behaviour that consists of three essential components: 1) to take the initiative, 2) the coordination of social economic mechanisms in order to convert resources into the desired outputs, and 3) that the considered person is aware of the risk involved in this endeavour and accepts it. Another example would be the definition of Ronstadt (1984, p. 28) about a decade later, who summed up the achieved progress in the field of entrepreneurship by defining it as a dynamic process that is characterized through the creation of incremental wealth. Furthermore, the author stated that the entrepreneur plays an important role in this process, because he generates this prosperity. Nevertheless, the entrepreneur also bears the risk that comes with this process in form of time, equity and career commitment. Beside this approach, many researchers tried to define entrepreneurship through defining the entrepreneur (Gartner, 1988, pp. 11–12). However, many researchers were not satisfied with this development.

Gartner (1988, p. 12) pointed out that such an approach won't be fruitful, because he assumed that finding a strict definition of the term "entrepreneur" will not help to understand the phenomenon of entrepreneurship itself. The researcher justified this by pointing out that no valid definition of the term "entrepreneur" existed at this time and additionally he did not believe that much progress would occur regarding this topic. Thereby he based this conclusion on the insights of previously collected experiences of other researchers. Among them was Cole (1969, p. 17), who pointed out that he and his colleagues tried to define the entrepreneur for more than 10 years and still they failed to find a common definition. Therefore, Gartner (1988, p. 26) pointed out that it would be more promising to change the orientation of research in the field of entrepreneurship from analysing who the entrepreneur actually is to what does the entrepreneur actually do. This would help to understand the core topic of entrepreneurship, which is the process of venture creation from the researcher's point of view. He described this as switching from the so-called trait approach to the behavioural-approach of investigating entrepreneurship (Gartner, 1988, p. 11).

A decade later Venkataraman (1997, p. 120) took up the matter by following a similar approach. He also argued that, instead of trying to define the field of entrepreneurship through determining the entrepreneur and his activities himself, it would be much better to describe entrepreneurship by clarifying the central issues that concern this topic. Therefore, the researcher determined the domain of entrepreneurship as a scholarly field that aims to understand on the one hand, how it is possible to discover, create, and seize opportunities that offer the possibility to generate new goods and services. And on the other hand, this research area has the objective to identify the one, who is actually capable of carrying out these activities. Furthermore, the author pointed out that the field of entrepreneurship also seeks to understand the consequences of these actions. Venkataraman (1997, p. 121) based this on two premises that were from his point of view widely accepted among the scholars of entrepreneurship. The first states that at most of the time, most markets are actually

inefficient and that this provides the opportunity for an entrepreneur to exploit these inefficiencies. The researcher called this the weak premise of entrepreneurship. The second one, which he called the strong premise, states that even if a market is near to equilibrium, this condition will not last for long, because of several factors, like the human endeavour to generate profits or the ambition to enhance knowledge. Based on these two prerequisites, the researcher defined that two certain issues are of major interest for the researchers in the field of entrepreneurship: the sources of opportunities and the relation between the enterprising individuals and these opportunities.

Around the turn of the millennium, economic researchers also identified the potential of sustainability for the field of entrepreneurship. Among the first were Hart and Milstein (1999, p. 25), who stated that sustainable development will be the biggest opportunity for entrepreneurs, because it will change the complete industry. Such considerations of sustainability aspects in combination with entrepreneurship led to an additional research domain of entrepreneurship, namely social entrepreneurship. Mair *et al.* (2006, p. 121) pointed out the relevance of this new concept by highlighting its importance for the sustainable development of countries. The researchers also emphasized the differences between social entrepreneurs and traditional business entrepreneurs in this book. The distinct types do not just differ by having different motives for searching and seizing opportunities, their way of performing the exploitation of an opportunity and their expectations of this endeavour are not the same as well. (Mair *et al.*, 2006, p. 121) The increasing amount of research activity in this new area of entrepreneurship led to the fact that the interconnection between research in the field of entrepreneurship and sustainability became much stronger. The UN even highlighted the major role that entrepreneurship plays in order to manage the UN's proclaimed sustainable development challenges (Filser *et al.*, 2019, p. 1).

As pointed out in this chapter, the concept of entrepreneurship is not just limited to the discovery and exploitation of an opportunity anymore, yet economists and especially people that are not experts in the field of entrepreneurship still associate this term immediately with the founding of a new company. This can perhaps be attributed to the fact that starting a new venture is still a core element of entrepreneurship. The following section describes this process of setting up a new venture and additionally outlines the necessary capabilities that a company has to incorporate in order to survive and become successful.

## 2.1.2 Starting a new venture

The process of setting up a new company can be explained in different ways. Some economists described it in the form of a sequential process, which includes certain characteristics that a company possesses in a specific development stage together with the particular activities that it performs in this phase. However, also other methods exist that address this process in a different way. Therefore, the following subchapters describes some representatives of these different approaches in more detail.

### 2.1.2.1 Lean start-up method

An approach that perhaps cannot be seen as a classical description of the process of starting a new company was proposed by Ries (2011) with the "Lean Start-up Method". According to Ries (2011, p. 5) the origins of this method can be traced back to the customer development model of Blank (2007, pp. 18–19), which is described in *chapter 2.3.1*. In general, the "Lean Start-up Method" is of major

importance since it can help to raise the odds for success for a start-up (Ries, 2011, p. 8). In this context, the author defines a start-up as a human institution, which has the aim to create a new service or product under especially uncertain conditions (Ries, 2011, p. 27).

Generally, the method bases on the assumption that a start-up has three main activities. These are 1) the transformation of ideas into products, 2) measuring how customers respond to these products, and 3) learning from the resulting insights. (Ries, 2011, p. 9) In the course of these activities, customer feedback is the most valuable resource for a start-up, because it contains essential information for reshaping the company's product and its business model. Thereby the products correspond to experiments that constantly consider the learnings of the previous experiment to optimize the outcome. At the heart of the lean start-up methodology is the so-called "Build-Measure-Learn" feedback loop, which is shown in *Figure 1*. (Ries, 2011, pp. 75–76)

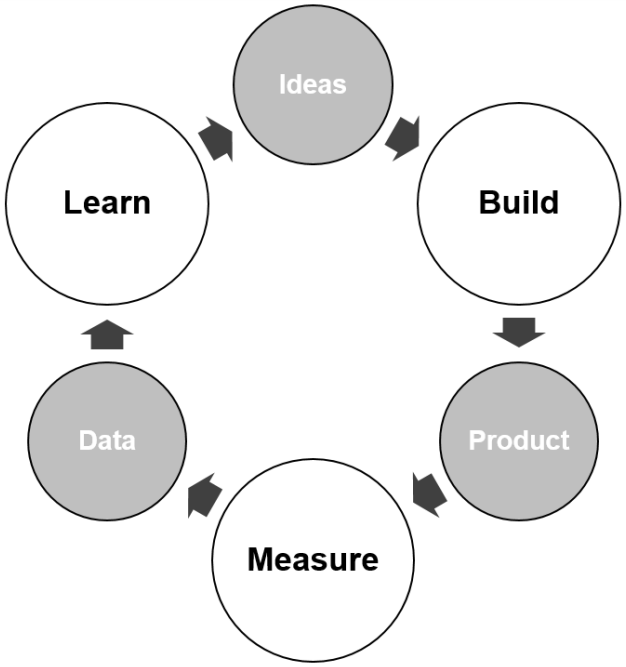


Figure 1: Build-Measure-Learn feedback loop (based on Ries, 2011, p. 75)

This process starts with the build phase, which requires a minimum viable product (MVP). Such a product does not include any additional features. Rather it solely provides the main value that the company wants to offer to its customers. Thereby the entrepreneur descends this value from the value hypothesis, where he makes an assumption about the needs of the customers and how the venture's product satisfies these needs by providing the defined value. The MVP is the base for one iteration of the Build-Measure-Learn feedback loop, which has the aim of confronting the potential customers with the MVP in order to process the obtained feedback and provide the product that the customer actually needs. Therefore, after the start-up possesses the MVP, it gets in contact with the customers and measures the impact of the MVP by recording their reaction. Afterwards, the received data has to be processed and the resulting insights and ideas must flow into the next prototype. Additionally, the author points out that although it is necessary to carry out these activities in the above-described order, the actual planning of these steps takes places in the opposite direction. Thereby the entrepreneur first has to think about what he actually wants to learn of this process. In general, this means that he has to know which kind of information the feedback should contain, how

he gets that information and finally yet importantly, he has to figure out which essential features the product needs in order to get the required information. After the conclusion of the loop, the most challenging question arises: Is it necessary to pivot the original strategy or not? (Ries, 2011, pp. 77–78)

To answer this question it is necessary to know what a pivot actually is. Ries (2011, pp. 172–173) pointed out that it is necessary to not understand it as a new word for change. He defined it as a special kind of change that an entrepreneur has to implement in order to trial for example a new value hypothesis about the business model or product. Ries (2011, pp. 149–150) also describes the pivot as a type of structured course direction that is necessary if the start-up does not make enough progress. Furthermore, the author points out that a start-up will stuck in the so-called land of the living dead if it fails to make such a pivot. There it simply consumes resources and will not move ahead. An example for a pivot is the “Zoom-in Pivot”, where it turns out that a previous sub-feature of the product provides so much value that it becomes the overall product. Another example is the so-called “Customer Segment Pivot”, where the entrepreneur realizes that the product solves a problem for a different group of customers than originally planned. Therefore, he has to shift to this new customer segment. (Ries, 2011, p. 173)

### 2.1.2.2 Start-up development process

According to Startup Commons (2018, n.p.), it is possible to split the endeavour to start a new venture into three main phases. These are 1) Formation, 2) Validation, and 3) Growth, which in turn can be divided into six minor steps. *Figure 2* provides an overview of the sequence of these steps. A detailed description of the process follows afterwards.

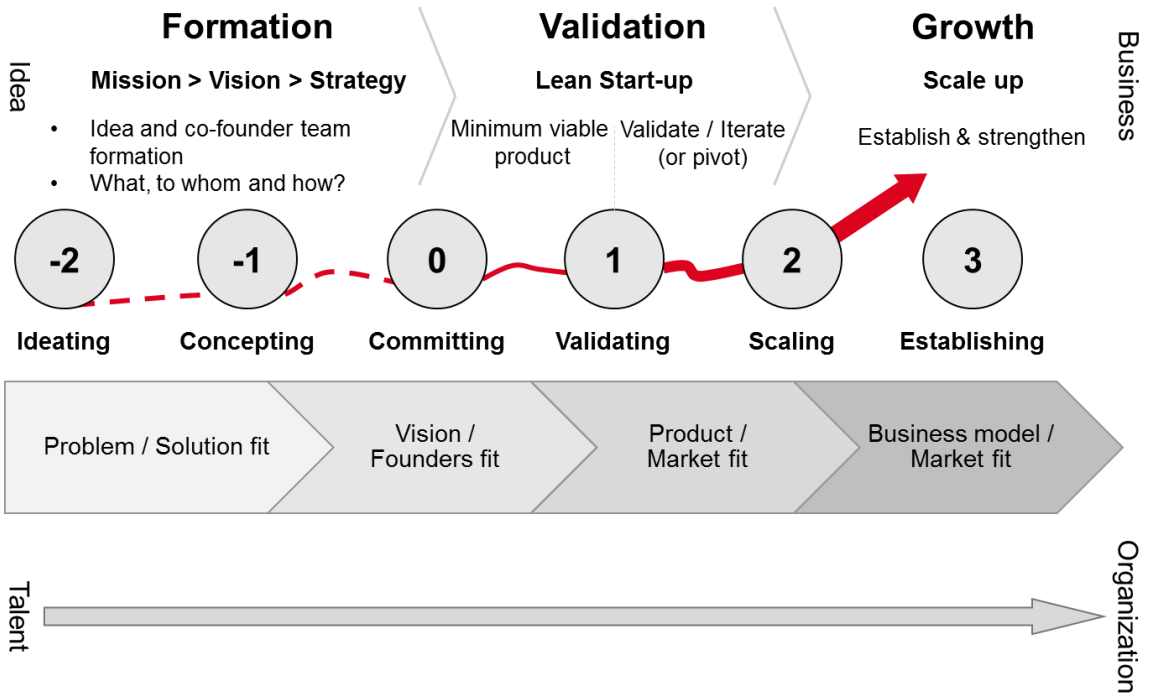


Figure 2: Start-up development process (based on Startup Commons, 2018, n.p.)

Beside the segmentation of the process of setting up a new company, *Figure 2* shows that this model also highlights the evolution from the presence of an idea, which is a necessity for each entrepreneurial activity, to the completed formation of a company. Parallel to this, the team behind the idea also undergoes a certain development, since at the beginning of the process, it often just consists of a single person with the initial idea and over the time, it develops into a whole organisation with clearly defined areas of responsibility. Thereby this development is of utter importance, since many investors and experts consider the team as a very important factor concerning the success of a business. The levels of validation should highlight the key validation targets for each phase. Thereby it is necessary to mention that the achievement of these targets is always depicted in the shape of an arrowhead, in order to show that this is necessary to reach the next phase. The same is also valid for the delimitation of the main phases. Furthermore, *Figure 2* also illustrates that this model distinguishes between the simple presence of ideas and the actual commitment of the team, which could be for example defined as the moment when they sign a shareholder agreement. Therefore, the process starts at -2 and the actual commitment phase is defined as stage 0. This is also emphasized by the design of the red line that represents the progress of the business, since it becomes continuous at stage 0 and its thickness increases with each phase. In addition, the arrow at its end should represent that the journey of the company continues after stage 3. (Startup Commons, 2018, n.p.) The following paragraphs describe the six steps of the start-up development process.

**Ideating**

This phase is characterized through the emergence of a product or service idea that leads to the consideration of starting a new venture. Thereby the idea mainly describes how the respective offering would create value for the target customers. At this point, the team behind the idea very often just consists of one person, which might already have found some potential colleagues. (Startup Commons, 2018, n.p.)

**Concepting**

At this stage, the team defines the mission and the vision of the new company. Based on that it is necessary to set up an initial strategy, which should include major milestones for the next few years and how it is possible to meet these objectives. This phase also includes the formation of the entrepreneurial core team, which consists of the potential co-founders with complementary skills. (Startup Commons, 2018, n.p.)

**Committing**

The main characteristic of this step is that the team members get fully committed to the business by for example signing a shareholder agreement, including the commitment of the individuals in terms of their invested money. At this point, the team is also able to develop the initial product or already possesses a prototype. (Startup Commons, 2018, n.p.)

**Validating**

In this phase, the founded company tries to test several hypothesis about the product. Thereby the team gets in contact with the customer by using a MVP in order to receive necessary feedback. Furthermore, it is necessary to develop advanced models that should represent the prospective user and revenue growth in order to attract additional employees and investors. (Startup Commons, 2018, n.p.)

**Scaling**
This stage is mainly characterized through the endeavour of the company to grow as fast as possible. At this point, the venture already has attracted significant funding or it would be able to do so if it is necessary. In this phase, the company also hires additional employees in order to control the growth process and tries to improve the quality of the product and the general business processes. (Startup Commons, 2018, n.p.)

**Establishing**
At this stage, the company has already achieved a significant growth and has the potential to grow even further depending on its vision and mission. Therefore, it can easily attract additional financial and human resources. Despite its already established structure, ventures often try to maintain the start-up spirit in their culture. Nevertheless, at this stage sometimes founders and investors leave the company. (Startup Commons, 2018, n.p.)

As already mentioned before, the process of starting a new venture does not have to be described in a sequential form. There are also models that describe such an endeavour through considerations based on a visual model. One example for this is the approach of Timmons *et al.* (1977, n.p.), who stated that entrepreneurial activities, like starting a new venture, base on the so-called entrepreneurial process. The following chapter describes this process.

### 2.1.2.3 The entrepreneurial process

In general, the original entrepreneurial process consisted of three main elements, which are the recognition of an opportunity, the entrepreneurial team, and an appropriate choice of resources in order to utilize the idea in the best way (Timmons *et al.*, 1977, n.p.). This concept was the starting point for further studies. Spinelli and Adams (2016, pp. 81–82) for example already assume an more advanced model of the entrepreneurial process, which contains several controllable components that can be influenced and changed. These elements, referred to as driving forces or characteristics of the entrepreneurial process, are the locus of interest for founders and potential investors, during the analysis concerning the chances of success of a venture. In the following, there is a list of this attributes of the entrepreneurial process (Spinelli and Adams, 2016, pp. 81–82):

- It is opportunity driven.
- A lead entrepreneur and an entrepreneurial team drive it.
- It is resource parsimonious and creative.
- It depends on the fit and balance among these.
- It is integrated and holistic.
- It is sustainable.

The concept that contains all of these aspects is the so-called “Timmons Model of the Entrepreneurial Process” (Spinelli and Adams, 2016, pp. 81–82). *Figure 3* is an illustration of this model and the interdependencies of its components. Subsequently follows a general description of the model.

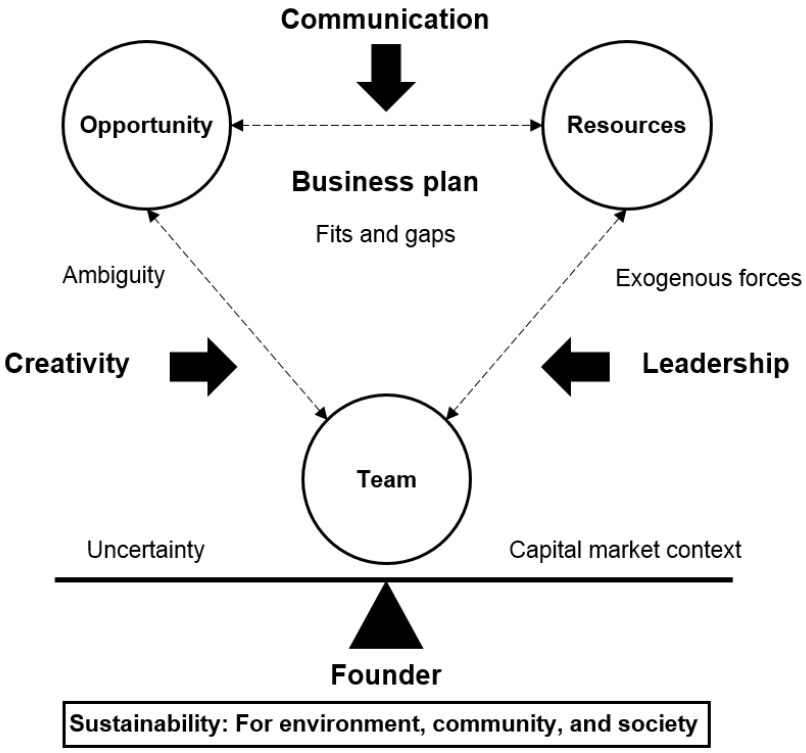


Figure 3: The Timmons Model of the Entrepreneurial Process (based on Spinelli and Adams, 2016, p. 82)

The entrepreneurial process itself starts with an opportunity. It is the opportunity, which determines the required resources and the structure of the team as well. The “Timmons Model” shows this influence by using three circles to represent the main dimensions (opportunity, resources, and team) of the entrepreneurial process. In general, the team can only assure that the opportunity and the resources are in equilibrium, if their size is the same, otherwise the construct will tip over. For example, if the resources are too small to fully exploit the opportunity, then the model will tilt. The role of the founder or the leading entrepreneur in this model is quite simple. He has to bear the undertaking while considering ambiguity and risks to keep the balance. Thereby it is necessary to mention that the arrangement of the team and the founder at the bottom of the model should also emphasize their importance for the whole endeavour of starting a new venture, since many economists and investors define them as the most relevant components of a business. In the centre of the model lie the fits and gaps of the venture. To identify those, it is necessary to confront the team with questions concerning the suitability of the opportunity or questions about the necessities to fully exploit the opportunity. If the entrepreneur can answer these questions and in turn improve the fits and fill the gaps, then the chances to create a successful venture will increase significantly. Superior to this is the business plan, which is a tool to communicate the quality of the three main dimensions and its fits and gaps. Finally yet importantly, it is the task of the entrepreneur to conduct business in a sustainable way, by not causing any damage to the environment or the society. Thereby, the society itself creates a climate that fosters the development of a sensitive consciousness of the people in terms of sustainability related topics. Some examples are global warming, human rights, or pollution. If the entrepreneur considers all of these factors in the process of setting up a new venture, he will be able to strengthen the base of the company significantly in order to guarantee the survival of the business. (Spinelli and Adams, 2016, pp. 82–85)

Finally, it remains to say that the entrepreneurial process itself is a continuous balancing act, which requires a constant review as it follows also a trial and error procedure. Furthermore, timing is an important factor as well. At the beginning of the process, it requires courage and determination to not just perceive the opportunity, but also seizing it. Most ventures fail, because they are waiting to long for the perfect time to set up the business. However, this perfect time does not exist. (Spinelli and Adams, 2016, pp. 85–87)

Interestingly, the start-up development process and the entrepreneurial process have one major aspect in common. Despite their different structure, both processes point out that the entrepreneurial team is perhaps the most important factor when setting up a new business. Especially the "Timmons Model of the Entrepreneurial Process" highlights this importance, since its structure clarifies that the whole business will collapse if the team and the founder are not able to maintain the balance of the driving forces of the entrepreneurial process. In order to avoid this, the entrepreneur can draw back upon the concept of the so-called "dynamic capabilities".

#### 2.1.2.4 Dynamic capabilities

Zahra *et al.* (2006, pp. 917–918) assumed that it is essential for young companies to develop dynamic capabilities in order to exploit the whole potential of an opportunity and to set up a viable business model. However, what are this so-called "dynamic capabilities" in general? Teece *et al.* (1997, p. 516) considered them as an ability of a company to incorporate, adapt, and further develop internal and external competences to cope with changes in the environment of the corporation. Eisenhardt and Martin (2000, p. 1107) came to a similar conclusion during their investigation of the dynamic capabilities concept. For them dynamic capabilities were resource-consuming processes or routines of a company in order to ensure that the corporation adapts to changing market structures, like the emergence of new or the disappearance of old markets.

These two proposed definitions have one important feature in common, namely that they state, that dynamic capabilities are necessary to deal with a changing environment of the company. Another researcher who addressed this issue was Winter (2003, p. 992). He based his study on the general understanding that dynamic capabilities are necessary to handle changes within a company's ecosystem in order to distinguish the dynamic capabilities from the ordinary ones. Additionally, he uses a previous stated thought model of Collis (1994, pp. 145–146), which points out that dynamic capabilities are actually higher order capabilities that influence the ordinary or operational capabilities. Based on that thoughts, Winter (2003, p. 992) came to the conclusion that a company possesses on the one hand the so-called "zero-level capabilities", which are utilized in order to maintain the daily business. On the other hand, a company requires dynamic capabilities, which for example change the production process or help to develop entire new products.

The previous paragraphs showed how scholars define dynamic capabilities. However, it is of course also necessary to know how a venture can actually develop these capabilities. In this regard Zollo and Winter (2002, p. 339) identified three different mechanisms that a company has to implement in order to develop dynamic capabilities. These were:

1) Experience accumulation
2) Knowledge articulation
3) Knowledge codification

**Experience accumulation**

Generally, the authors drew back upon the concept of routines to explain the development of dynamic capabilities within a company. Thereby they identified two different types of routines. The first kind of them, the so-called effective operating routines, are the implementation of standard processes in order to keep up daily business. In addition, the second type of routines involves activities to change the standard procedures to yield more profit in the future. The latter are actual dynamic capabilities and a company can just develop them if the underlying operating routines exist. Therefore, the researchers assumed that a venture can develop dynamic capabilities by following basic learning procedures, like trial and error, because these actually shape the effective operating routines. (Zollo and Winter, 2002, pp. 340–341) The researchers base this proposal on a previously conducted study of Gavetti and Levinthal (2000, p. 113), where the authors proclaimed that operating routines internalize the experiential wisdom of a company, since they evolve through the insights that the venture gains over time.

**Knowledge articulation**

The former mechanism is also the starting point of the second. In order to develop dynamic capabilities, it is necessary that the members of an organization share their experience with each other and analyse their different opinions. In further consequence, this helps to understand the impact that the changing of the variables of a performed task has on its output. Such collective discussions might require time and commitment of the employees of a venture, but they definitely pay off, because the results of these discussions sensitize its participants in order to assess in further consequence if a small adaption of a process is sufficient, or if it requires a more radical change. (Zollo and Winter, 2002, pp. 341–342)

**Knowledge codification**

Generally, this mechanism should provide written guidelines in order to execute future tasks more effectively. However, it is just possible to write such a manual that includes the best practices of operational routines if there is a common understanding of what these best practices are. Therefore, it is indispensable to carry out the previous step of knowledge articulation in advance. At this point, it is necessary to point out the significance of the codification step, since very often only the activity of writing down the characteristics of a process enables it to develop a superior understanding for the underlying success factors. Furthermore, codification is not just helpful for transferring knowledge. It also supports the identification of strengths and weaknesses of the current operational routines and their proposed variations as well. (Zollo and Winter, 2002, p. 342)

Four years later, Zahra *et al.* (2006) proposed a similar construct concerning the development of dynamic capabilities. They based their findings on the existence of organizational knowledge and substantive capabilities, which are a representation of a company's skills. With these two components, a venture can determine the necessary dynamic capabilities and develop them as well. This indicates that the substantive capabilities and the organizational knowledge already have to be present at the initial formation of dynamic capabilities. (Zahra *et al.*, 2006, pp. 926–927)

The development of dynamic capabilities might result in several benefits for a company. For example Teece (2007, p. 1319) stated, that in order to gain a sustainable competitive advantage, it is not sufficient for a company to just possess outstanding know how. The corporation must also develop inimitable dynamic capabilities. Thereby his conclusion based on breaking down dynamic capabilities into three different capacities, namely (1) the ability to identify and modify opportunities and threats

as well, (2) taking advantage of an opportunity and (3) the capacity to improve, join and restructure the tangible and intangible assets of a company to remain competitive. Furthermore, the researcher pointed out that it is essential for a company to develop and exploit all three types of capabilities in order to become successful (Teece, 2007, p. 1347). Besides gaining a competitive advantage, dynamic capabilities also foster the development of business models, as was pointed out by Teece (2018, p. 45). He based this assumption on the fact that a dynamic capable company possesses the ability to quickly implement and test new business models in order to process the lessons learned as fast as possible. This ability in turn draws on dynamic capabilities, like asset orchestration or learning function.

Since the business model represents the main topic of this master thesis, it will be explained separately in the following chapter.

## 2.2 Business models

Although research in the field of business models is getting more and more attention and literature concerning this topic is in a steady progress, there are still different understandings of how a business model is defined (Zott *et al.*, 2011, p. 1019). With this statement, the researchers wanted to highlight the need for a common understanding of the business model construct. Especially with the increase in business model literature around the turn of the millennium, a variety of proposed definitions emerged. Among them was the proposal of Amit and Zott (2001, p. 511), who stated that a business model is a representation of the content, structure, and governance of transactions, which are aligned in a way to create value through the utilization of business opportunities. Another proposed definition regarded a business model as a tool that creates a heuristic logic that combines technical potential with the realization of economic value (Chesbrough and Rosenbloom, 2002, p. 529). The difference between the proclaimed definitions can be traced back to the different approaches that the researchers followed to explain the phenomenon at that time. In order to get a better understanding of these varying approaches and the principles of the theoretical concept behind the term “business model”, the following section deals with the historical evolution of the literature behind this management concept.

### 2.2.1 Development of the business model concept

To find the roots of the expression “business model”, it is not necessary to look very far back in history. In fact, the phrase appeared for the first time in an academic article, written by Bellman *et al.* (1957, n.p.), in which they investigated a business game that served for the training of management personal. DaSilva and Trkman (2014, p. 380) interpreted this first appearance of the business model as a simulation or representation of the real world. 3 years later Jones (1960, p. 619) was the first to mention the term “business model” in the title of a scientific paper. However, the text of this scientific work does not include the expression for a single time, which raises questions about the sense of purpose of using this phrase in the title. Nevertheless, it took 30 to 40 years until the business model concept received much more attention. Osterwalder *et al.* (2005, p. 4) identified in a conducted literature analysis, that this increase goes hand in hand with the rise of the internet in the business world. Strangely, they also discovered that the number of times that the term “business model” appeared in business journals, was similar to the shape of the NASDAQ market index. Nevertheless, they could not justify this interesting discovery and simply assumed that this could be because of the obvious connection between business models and technology.

The launch of the internet also gave birth to new innovative companies with completely new concepts, which where novel to pre-existing industries and it seemed that answers to explain these new way of doing business could only be given through business models. (DaSilva and Trkman, 2014, p. 380). However, the increase in the number of mentions of the term also had other reasons. Especially different ways of interpreting the phrase led to an enormous increase of the business model literature (Ghaziani and Ventresca, 2005, p. 551). These inconsistencies concerning the business model construct and its scope even led to argumentations from prestigious academics, for example by Porter (2001, p. 73), about its sense of purpose. Nevertheless, beside some odd interpretations of the term, academics and managers detected the enterprise related worth of the business model in the business world. For example, Afuah and Tucci (2001, p. 4) , belonged to these researchers and proposed the business model concept as a method to define how a company

behaves on the market to gain a competitive advantage in order to earn money. Also around the turn of the millennium, Amit and Zott (2001, p. 493) made a significant contribution to business model literature by investigating how 59 different e-business companies create value. In this study, the researchers identified four different sources of value creation in e-businesses, namely efficiency, complementarities, lock-in, and novelty. *Figure 4* is a graphical representation of these four sources and their interdependencies.

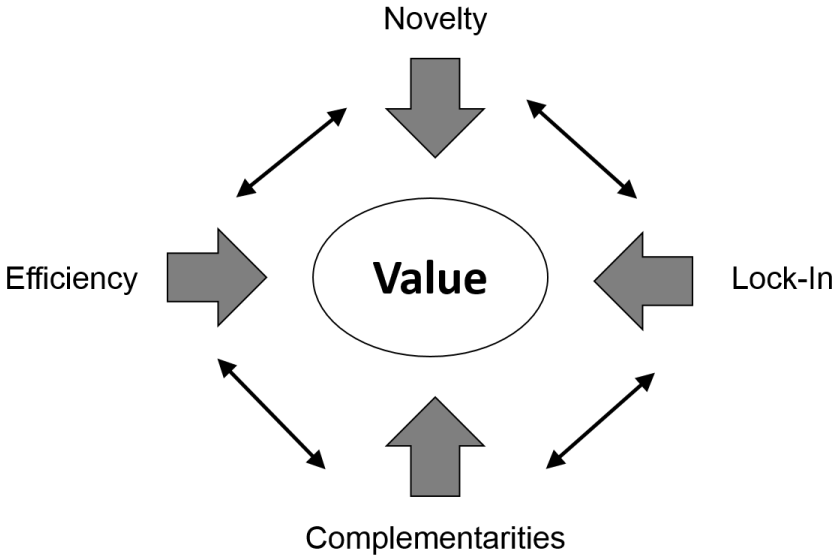


Figure 4: Sources of value creation in e-business (based on Amit and Zott, 2001, p. 504)

In this context, efficiency is a value driver by means of transaction efficiency. The transaction efficiency increases if the costs per business process decline, which proposes that decreasing costs per business process, lead to a higher value creation through this certain transaction. Complementarities are a source of value creation in the sense of, that a certain product is more valuable for the customer if he also possesses a complementary good than having each of the products alone. For example, the provision of an after-sales service can make a product much more attractive. Furthermore, so-called lock-in procedures create value in the form of an increased transaction volume. These mechanisms achieve that through enticing customers to buy products again, because of convenience or barriers for switching to the products of potential competitors. Additionally, this affects are also valid for increasing the bond between the own company and potential partners. Finally, novelty is a source of value creation for e-businesses in the form that a company introduces new ways of how it conducts its business in terms of executing transactions. For example, ebay provided the customer-to-customer auction system. (Amit and Zott, 2001, pp. 503–508) Based on this insights, the researchers proposed that a business model explains the concept of value creation in e-business, because they considered a business model as a representation of the content, structure and governance of transactions and so it embraces the in the course of this study identified sources of value creation. (Amit and Zott, 2001, p. 511)

Based on these insights and the accomplished scientific work of other researchers in the field of business models, Shafer *et al.* (2005, p. 199) tried to classify the components of a business model to foster the development of a consistent understanding of the construct behind this term. To achieve that, the researchers started to analyse 12 proposed definitions of the business model construct and thereby identified 42 different business model elements. In further consequence, the scientists

conducted a clustering analysis and determined four final categories: strategic choices, creating value, capturing value, and the value network. Apart from that, they analysed the terminology itself. They concluded that a business itself deals with the creation of value and the capturing of the generated value in form of revenues. Furthermore, the scientists assumed that a model is a tool to depict reality. With the results of the clustering analysis and the determination of the terminology "business model" the researchers combined these findings and proposed that a business model represents the strategic choices of a company as well as its fundamental core logic in order to create and capture value in the frame of a value network. (Shafer *et al.*, 2005, pp. 200–202) Some years later, other prominent representatives, of the scientific scene concerning the topic of the business model, pursued the thoughts behind this scientific contribution. Among them were Teece (2010, p. 191), who stated that a business model is a construct that explains the creation, delivery and capturing mechanisms of a business and Baden-Fuller and Haefliger (2013, pp. 420–422), who developed a construct of four dimensions including customer identification, customer engagement, value delivery and monetization.

Six years after their published study about value creation in e-businesses, Zott and Amit (2007, p. 181) conducted another empirical analysis, where they investigated how business model design influences the success of entrepreneurial firms. In this study, the researchers determined two different themes of business model design, which are the novelty-centered and the efficiency-centered approach. The novelty-centered design type contains new methodologies of how different parties handle economic exchanges between them. The efficiency-centered design theme includes actions, which companies may take to accomplish transaction efficiency via the venture's business models. (Zott and Amit, 2007, pp. 182–185) To find answers concerning the influence of the business model design on the performance of the new ventures, the researchers analysed how this two different types of business model design and potential hybrid forms matter to the performance of the new ventures. In the course of this investigation, the two researchers developed a model that connects business model design and the performance of new ventures. The results show that novelty-centered business model design is important for the success of new ventures. (Zott and Amit, 2007, pp. 194–195) Furthermore, the study pointed out that it might not be profitable if a business model contains both novelty- and efficiency-centered components, because that may lead to counterproductive effects. (Zott and Amit, 2007, p. 181)

In a following study, Zott and Amit (2008, p. 1) analysed the interdependencies between a company's product market strategy and its business model and their influence on the performance of the company. Therefore, the investigation starts with a theoretical argumentation about the differences of these two management terms. In the course of this, Zott and Amit (2008, pp. 3–4), pointed out that the major difference between the product market strategy and the business model is, that the strategy focuses on the own position compared to their competitors and the business model bases on the economic exchange between the companies and their external relationships. Based on that, the researchers conducted an empirical investigation to evaluate the impact of the product market strategy and the business model on the company's performance. The survey considers the novelty-centered and the efficiency-centered business model design theme of Zott and Amit (2007, pp. 184–185) together with in total three strategic choices, namely the timing of entry into a market, which was discussed by Liebermann and Montgomery (1988, pp. 50–52) , and differentiation and cost leadership (Porter, 1985, pp. 12–16). To address the research question of the study, the two economists created pairs of the different business model design themes together with the individual product market strategy choices and investigated which combinations fit well and which not. (Zott

and Amit, 2008, p. 6) As a result, their empirical findings underpinned the previous theoretical argumentation and showed that a business model and a product market strategy are different concepts that complement each other instead of being replacements. Based on that, the researcher proposed that competitive advantage can also originate from a company's business model and not just from extraordinary market positioning, which may lead in turn to superior performance of the company. (Zott and Amit, 2008, pp. 19–20) Therefore, the empirical results of this work confirmed preceding presumptions of other researchers, like Christensen (2001, p. 109), regarding an increase in performance through strategic positioning or appropriate choice of the business model.

With this increase in interest concerning the business model subject, it was only a matter of time until techniques for appropriate business model development will show up. Osterwalder and Pigneur (2010) were belong the first, who devoted themselves to this matter. They published the book "Business Model Generation: A handbook for visionaries, game changers, and challengers". However, they did not consider their work of literature as a classical management book. For them it was more or less a practical guide, instead of a complex business economics book (Osterwalder and Pigneur, 2010, p. 5). Based on the insight of the need for a consistent understanding of what a business model is, the authors tried to develop a construct that is on the one hand, simple to understand and on the other hand, still able to represent the complexity of a company's business. These efforts resulted in the "Business Model Canvas" (BMC), which briefly is a representation of how a corporation wants to earn money. (Osterwalder and Pigneur, 2010, p. 15) *Chapter 2.2.3.1.1* describes the methodology behind the BMC in more detail.

In addition, the authors pointed out that the BMC is not only a tool that facilitates the development of business models, but that it can also be used to illustrate the impact that the modification of a certain business model component has on the other elements of the business model. The researchers proposed that such changes occur due to four different types of so-called epicentres: 1) customer-driven, 2) offer-driven, 3) resource-driven, and 4) finance-driven. In addition, it is possible that several epicentres are present at the same time. Furthermore, the names of the epicentres already provide hints concerning the starting points of respective changes. Thereby the customer-driven epicentre bases on changes within the customer segment of the BMC that directly result in changes of the other elements. An offer-driven epicentre is present if a company changes its value proposition, which in turn affects the other elements. If changes of the business model elements occur due to changes of the "key-elements", like the resources or the partners, the authors named the source of this behaviour a resource-driven epicentre. Finally, changes driven by new revenue streams or a modified cost structure, base on a finance-driven epicentre. Thereby it is necessary to point out that the researchers defined this approach as a concept to explain the different starting points of the renewing process concerning a company's business model in the context of business model innovation. (Osterwalder and Pigneur, 2010, pp. 138–139)

Three years later, another business model development technique was proposed by Gassmann *et al.* (2013), when they published a book that describes the methodology of the so-called "Business Model Navigator". Generally, the "Business Model Navigator" is a concept that enables companies to innovate their business models. The basic principle behind this methodology is the imitation and recombination of already existing business models to enable the development of new business models. Therefore, the author conducted an analysis together with his colleagues to find possible patterns of already existing business models and as a result, they identified 55 different patterns,

which are the basic construct of every business model. Generally, the “Business Model Navigator” consists of four steps, which are (Gassmann *et al.*, 2013, pp. 16–17):

1. Initiation
2. Ideation
3. Integration
4. Implementation

Thereby the first three steps are part of the design phase and the last step corresponds to the realization phase (Gassmann *et al.*, 2013, p. 16). For a better understanding, the subsequent paragraphs contain a short description of each step.

**Initiation**
Before a company can start with the development of a new business model, it is necessary to understand the initial situation of the enterprise. Based on that, it is possible to define where the journey of business model innovation should go. Therefore, it is necessary to describe the current business model through the “magic triangle” methodology (*Chapter 2.2.3.1.2* describes this basic concept). (Gassmann *et al.*, 2013, pp. 22–24)

**Ideation**
Based on the prior conducted analysis concerning the company’s ecosystem, different possibilities for business model innovation may arise. In the most cases, various alternatives exist for a reasonable innovation of the business model and the initial situation for the change of the business model is very often completely different. Sometimes enterprises just start with an assumed benefit for a potential costumer and at another time, it has a clear defined problem as a starting point. If the initial situation is clear to the company, then the major task of this step is to apply the ideas behind the 55 different patterns of business models on the own business model and to create entire new ideas for the own business. (Gassmann *et al.*, 2013, p. 33)

**Integration**
Generally, the ideation step should enable the creation of multiple new business model ideas. Nevertheless, these are just ideas and not a business model yet. Therefore, it is necessary to embed the ideas into a comprehensive business model, which is internally and externally consistent. To achieve internal consistency, it is necessary to coordinate the four dimensions of the “magic triangle” (What-Who-Why-How). For this purpose, it is best to describe the new business model through the four dimensions, similar to the approach at the initiation step. Concerning the external consistency, it is necessary to coordinate the new business model and the corporate environment to ensure that the needs of all involved participants are satisfied. (Gassmann *et al.*, 2013, pp. 44–47)

**Implementation**
With the successful execution of the previous three steps ends the design phase of the "Business Model Navigator". However, this leads to the last and perhaps most difficult step of the business model innovation process - the implementation. This step includes the reorganization of existing structures and changes the way of conducting business, for example through setting up new sales channels or negotiations with new business partners. (Gassmann *et al.*, 2013, p. 49)

*Chapter 2.2.1* already indicated that the increasing amount of literature concerning business models also had some negative side effects. In fact, researchers failed to clearly define the domain of the business model literature and therefore a lot of confusion emerged, because people where sometimes using the term "business model" in a wrong manner. Especially the interchangeable use of the management terms "strategy" and "business models" caused scientific experts to make it their business to draw a line between these two distinct concepts. As this distinction is quite important, the following chapter points out the major differences between business models and strategies and additionally clarifies the interconnection of these two management terms.

## 2.2.2 Business models & strategy

Morris *et al.* (2005, p. 727) determined that the interchangeable use of the two management terms originates from the fact that a business model actually includes several strategy elements. This assumption also fits to the conducted study of Casadesus-Masanell and Ricart (2010, p. 204), who finally defined a strategy as an action plan, which includes the designing and shaping of business models in order to reach the company's goals. DaSilva and Trkman (2014, p. 383) strengthened this proposal by saying that a business model is a short term oriented tool, derived from a long-term oriented strategy to encounter future or present eventualities. However, there are also other theories about the relationship between these two terms. Zott and Amit (2008, p. 19) stated that business models and strategies complement each other. This view bases on the different foci of the two concepts. This was already pointed out by Magretta (2002, p. 91), who argued that a business models simply describes how the pieces of a business fit together and in addition the strategy describes how the venture wants to outperform its competitors. The intertwining or complementarity of these two management constructs is also highlighted in a paper of Richardson (2008, p. 143). He argued that the business model helps managers to understand the impact of the various by the company performed activities on the execution of the strategy. Furthermore, the researcher also pointed out that this helps to connect the formulation and implementation phase of a strategy. The different foci of strategies and business models were also the starting point for other research endeavours. For example, George and Bock (2011, p. 107) assumed that an opportunity is the central element of the business model construct and that the model develops around the derived business idea. In contrast, the researchers described strategies as a concept that focuses on the company's environment and especially on its competitors. Building upon this, the two economists defined a business model as the configuration of the implementation of an opportunity and the strategy as the process of increasing the chances of success of this configuration with respect to the environment and the market where the business model competes. Thereby the strategy has the possibility of changing the business model, the opportunity itself, and it can even search for new opportunities that might fit even better to the current configuration. (George and Bock, 2011, p. 102)

Even if the previously mentioned definitions have some differences, almost all of them base on a strong interconnection between these two terms and additionally have in common that they point out

that strategies are a superior construct of business models. This insight is consistent with an explanation of Osterwalder and Pigneur (2002, p. 78), who declared a business model as the conceptual and architectural implementation of the superordinate strategy. Furthermore, the researchers stated that the business model represents the foundation for the business processes that a company has to carry out. In order to illustrate this, *Figure 5* shows the hierarchy of these business components in form of a pyramid construct that is called the business logic triangle.

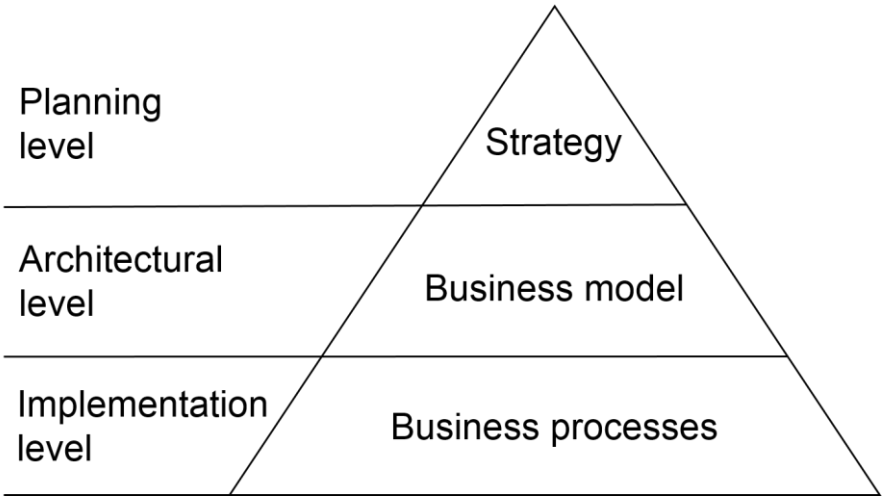


Figure 5: Business logic triangle (based on Osterwalder and Pigneur, 2002, p. 78 )

Over the years this hierarchical approach was further pursued by other researchers like Pateli and Giaglis (2003, p. 337), who added an additional level beneath the implementation level to the pyramid. In fact, they added the information systems, which should provide feedback to the upper levels. Sharma and Gutiérrez (2010, p. 35) expressed the principle behind this approach in such a way that the business model provides the direction for the business processes. Furthermore, the strategy is located on the top of the pyramid in order to provide the direction for the business model itself with the aim to increase the financial returns that are generated by it. Wirtz *et al.* (2016, p. 41) put that in a nutshell by saying that a strategy strongly influences the development of a business model and therefore takes more or less the role of a guide.

Schallmo and Brecht (2013, p. 44) distinguished the terms strategy and business model by defining that these concepts have a different orientation, objective and content. Thereby these findings are reinforcing the previously mentioned distinctions of the two management concepts. *Table 1* briefly summarises these differences.

| | **Strategy** | **Business model** |
|---|---|---|
| **Orientation** | • Competition | • Customers |
| **Objective** | • Creation of a competitive advantage<br>• Differentiation from competitors | • Unique combination of business model elements in order to ensure that the business model is hard to imitate<br>• Business model elements should reinforce each other |

| | | |
|---|---|---|
| **Content** | • Market analysis and market planning<br>• Determination of the own market position<br>• Development of different business model variants | • Description concerning how the business model elements work together in order to implement strategies<br>• Fundamental logic of a company<br>• Description of the benefit for the involved parties<br>• Benefits enable differentiation from competitors and the creation of a competitive advantage |

Table 1: Differences between strategies and business models (based on Schallmo and Brecht, 2013, p. 44)

Beside the clarification of the different domains and focuses of business models and strategies, this chapter also pointed out that a business model and its development depends on the pursued strategy of a company. Especially the general development process is of major interest for this thesis. Therefore, the next chapter describes how companies generally set up business models and on which tools they draw back during this procedure.

## 2.2.3 Business model development

Nowadays, corporations are supported in the development of a new business model in various ways. This is valid for established companies, who want to renew their existing business models, and start-ups that have to create their initial business model as well. All existing and emerging companies profit from the increasing research activity in the field of business models, because this led to the development of the business model design tools, which help to address the main questions when setting up a new business model. Furthermore, it is necessary to point out that beside these design tools, which actually predefine the structure and the components of a business model, economists also developed management techniques that support companies to define the content of these components. Therefore, the following subsections describe these two different type of tools in a separate manner.

### 2.2.3.1 Business model design tools

Generally, different types of business model design tools exists. Thereby these techniques vary from each other on the one hand, through having distinct foci and on the other hand, by describing a company's business model at different levels of detail. *Table 2* provides an overview of some of such tools together with the respective business model approach.

| Business model design tool | Author | Business model approach |
|---|---|---|
| Business model canvas | Osterwalder and Pigneur (2010) | Operative business model concept |
| Magic triangle | Gassmann *et al.* (2013) | Operative business model concept |
| Integrated business model | Wirtz (2011) | Integrated business model concept |

Table 2: Business model design tools (own source)

In general, the literature distinguishes between different kinds of business model approaches. In fact, these are the operative, the strategic and the integrated approach. While the operative approach has

an internal focus in order to increase the performance of a company, the strategic approach includes several elements of the corporate strategy and focuses on a company's market position in comparison to their competitors. The integrated approach tries to combine all aspects in one single model. Generally, most of the researchers in the field of business model development focus on the operative approach. (Eckert, 2014, pp. 59–60) Rather the exception were researchers like Wirtz (2011, pp. 18–23), who proposed to combine the operational and the strategic approach into one single concept, which he defined as the integrated business model concept.

However, this method is deliberately not described in detail here, since it is not relevant for the formation of a consistent understanding concerning the content and structure of a business model, which is necessary to understand the approach of the conducted empirical study. Accordingly, this method is simply mentioned in order to show that there are also other approaches.

In contrast, the BMC is of major importance for this work, since the entire empirical study bases on this understanding of the content of a business model. The major reason for this decision was that the investigated teams also develop their business models with the help of the BMC during their participation in the GG. Therefore, this tool will be described in more detail in the following subchapter. In addition, the magic triangle is also described afterwards, since it similarly defines the content of a business model, but in a less detailed manner.

#### 2.2.3.1.1 Business model canvas

As already mentioned before, Osterwalder and Pigneur (2010, p. 15) identified that it is necessary to have a common understanding of what a business model actually is. Therefore, the authors developed a simple tool, which is also capable of representing the complexity behind a business. This was the birth of the BMC. The researchers defined that this construct consists of nine different building blocks, which in turn represent the four main components of a business: infrastructure, offering, customers, and financial viability. Furthermore, a company can use this construct not just to analyse the own business model, but also for the investigation of the business models of other companies. (Osterwalder and Pigneur, 2010, p. 15) The nine building blocks are (Osterwalder and Pigneur, 2010, pp. 16–17):

1. Customer Segments
2. Value Propositions
3. Channels
4. Customer Relationships
5. Revenue streams
6. Key Resources
7. Key Activities
8. Key Partnerships
9. Cost structure

*Figure 6* shows the arrangement of the nine building blocks and additionally represents the interconnection and interdependence between them that is necessary to create a successful business model.

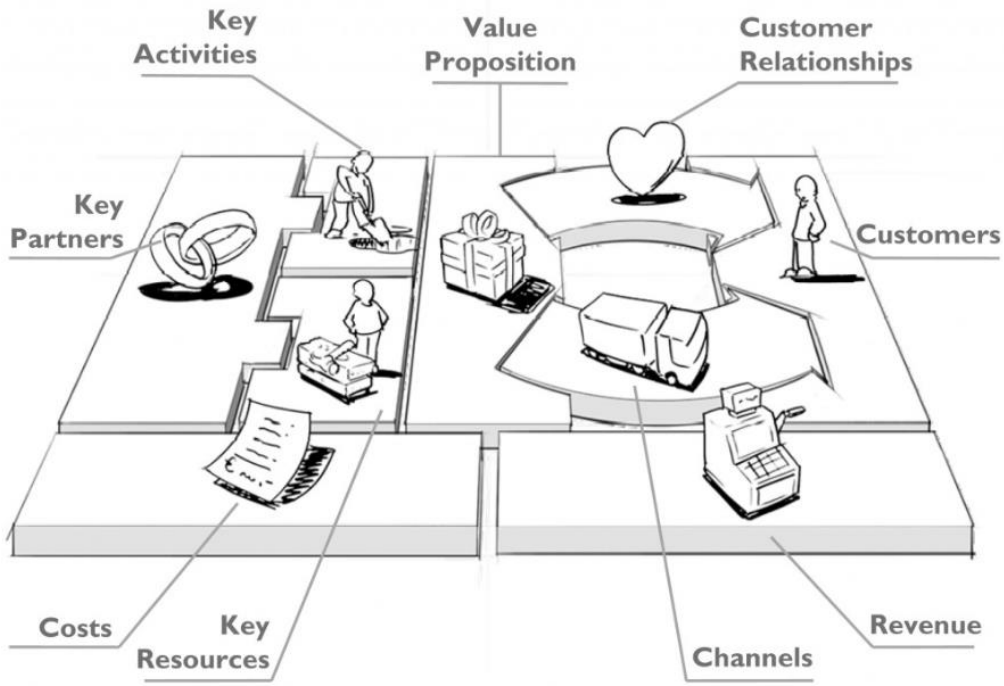


Figure 6: Building blocks of the BMC (Osterwalder and Pigneur, 2010, pp. 18–19)

**Customer Segments**

The customers are actually one of the most important components of the business model, because without a customer group that needs the offered product or service, a business model will not be viable. In order to avoid this, it is necessary to understand the specific needs of a customer group and based on that, to design the offering in such a way that it satisfies the customers. Generally, the structure of the customer segments can vary, depending on which target market a corporation defines for its business model. For example, if a company wants to offer its products on the mass market, then it does not think in terms of different customer segments, but rather offers one general value proposition that satisfies the needs of a large group. However, sometimes also a segmentation into different customer segments may be useful, for example as banks are doing it with their customers. The motivation behind this is that customers of different wealth have similar but not identical problems and therefore appreciate distinct value propositions. A very different construct are multi-sided platforms, where a company requires one customer segment to convince another segment about the business model. This is common practice at newspapers, where other companies actually just want to place advertisements in a newspaper if it reaches a large audience. (Osterwalder and Pigneur, 2010, pp. 20–21)

**Value Propositions**

People are becoming customers of a certain corporation, because the company provides a value proposition that satisfies the customer's needs better than a comparable offering of a competitor. To achieve that, a value proposition comprises different types of benefits in the form of services and/or products, which address the specific customer needs. The combination of these benefits can on the one hand, be a complete new offering or on the other hand, simply be a recombination of already existing solutions. Furthermore, the components of the value proposition can be of quantitative origin, such as a low purchasing price, or the reduction of a customer's costs or they can be qualitative as for instance an exclusive brand reputation, or a fancy design. (Osterwalder and Pigneur, 2010, pp. 22–25)

**Channels**

The “best” product is of no value for a company if the customer does not know that the product exists. Therefore, a company needs some kind of interface between itself and its customers. The solution for this are different types of channels, which the organization can for example use to raise awareness about its offering, to communicate with the customer, or to enable them to purchase the specific product or service. In addition, a company has to assess if it is better to use own channels or to draw on channels that are owned by partners. An own store for selling the products would for example result in higher margins per product, but as the set up and operation costs are quite high, it may happen that this concept does not pay off. A partner store in contrast has the disadvantage of lower margins, but it might be possible that a company can profit from a partners expertise in retailing. However, it can also be that using a partner channel is not the right solution for a certain business model, but it is very important to consider all possibilities. In the end, finding the optimum solution for the channels can be an iterative process of trying out different opportunities. Nevertheless, achieving this is also a very crucial task, because the channels make a significant contribution to the success of a business model. (Osterwalder and Pigneur, 2010, pp. 26–27)

**Customer Relationships**

Beside the channels, which influence the customer experience through the transportation of goods and information, customers also have expectations concerning the relationships that a company establishes and maintains with them. Generally, a corporation might have different reasons, like customer acquisition or customer retention for setting up a specific kind of customer relationship. Some of these types are for example the personal assistance or the self-service relationship, which are quite contrary concepts. Nevertheless, it is important to mention that the different types are not mutually exclusive. (Osterwalder and Pigneur, 2010, pp. 28–29)

**Revenue Streams**

In order to develop a viable business model, it is essential for companies to generate revenues, which enable that the business keeps going. However, for that an organization must really understand the specific needs of the single customer segments, because the customers are just willing to pay for products or services that really address their requirements. Additionally, a corporation must also think about the type of revenue streams that it wants to implement in its business model. Generally, there are two different principles behind the generation of revenue streams, which are the one-time customer payment concept and the ongoing payments method with regular occurring cash flows. The generation of the revenue streams can also follow different principles. An example is the asset sale concept, where a company sells a physical product to the customer together with the ownership rights. The generation of cash flows in form of subscription fees would be a possibility as well. Concerning the pricing mechanisms of the payment flows, a corporation also has some scope, because it can choose between several variations of fixed pricing, like demanding a list price, or a quantity dependent model, and dynamic pricing that enables for instance bargaining about the price. (Osterwalder and Pigneur, 2010, pp. 30–33)

**Key Resources**

To implement a value proposition, a company requires a mix of specific resources to create at least a part of the promised value. These are the so-called “key resources”. A company has to choose them depending on the type of business model it wants to establish. If the value proposition focuses for example on an outstanding design, then the employees and their creative skills are a major

resource of the corporation. A counterexample would be a large online retailer, which requires a comprehensive logistic system and large warehouses to distribute and store the products. Furthermore, intellectual properties, like brands or patents can be a crucial resource of an organization as well. (Osterwalder and Pigneur, 2010, pp. 34–35)

**Key Activities**

In addition to the value creation through key resources, different types of performed activities also make a significant contribution in the generation of the value proposition. Similar to the key resources, these so-called "key activities" must again be oriented towards the type of business model. An example are problem-solving activities that are very often the core capabilities of consulting companies in order to solve a variety of customer problems. In addition, also more tangible procedures, like an outstanding manufacturing process, can be a key activity. In general, it remains to point out that the principle that individual activities are not mutually exclusive also applies to this element of the BMC. (Osterwalder and Pigneur, 2010, pp. 36–37)

**Key Partnerships**

Generally, it does not make sense for a company to carry out all its activities alone, because there are several advantages that accompany the formation of partnerships. Such key partnerships can for example lead to reduced costs for a company that outsources the production of certain components, because a potential vendor might profit from the economy of scale principle. However, there are also other motivations for setting up an alliance, such as risk sharing in the development of new technologies. Furthermore, it is important to mention at this point, that a corporation can establish a cooperation with non-competitors or competitors. (Osterwalder and Pigneur, 2010, pp. 38–39)

**Cost structure**

The operation of a business model generates costs in various ways. The use of resources, the performance of various activities, like maintaining customer relationships, or the delivery of the product to the customer, all that results in costs. In the most cases, companies try to minimize their costs. However, it is important to mention that two types of business model cost structures exist. An organization follows the so-called cost-driven principle if the lowest possible costs are its ultimate goal. This phenomenon is very often to find in the low budget sector. An example would be the "no frills" airlines, which offer flight tickets for a minimum price, but charge the customer for every additional service. The other option is the value-driven concept, where corporations do everything to provide an outstanding product or service rather than focusing on the costs. The motivation behind this construct is, that the company can actually expect that the in the most cases wealthy customer group is willing to pay an extraordinary price for a unique customer experience. This is for instance common practice for exclusive services like staying in a luxury hotel. (Osterwalder and Pigneur, 2010, pp. 40–41)

#### 2.2.3.1.2 Magic triangle

Another common tool for business model development is the "magic triangle". Gassmann *et al.* (2013, p. 5) proposed this methodology as a simplified alternative to the BMC. From their point of view, the lesser complexity of the triangle fits better to small workshops and arguments, because it fosters a more focused way of discussion. This decrease in complexity results from the reduction of the business model to only four dimensions, which are the components of the magic triangle. The dimensions are 1) the customers, 2) the value proposition, 3) the value chain, and 4) the revenue

model, which are shown in *Figure 7*. Generally, the authors designated this business model development tool as “magic triangle”, because a change of one of the corner dimensions automatically requires adaptions of the other corners. (Gassmann *et al.*, 2013, pp. 5–6)

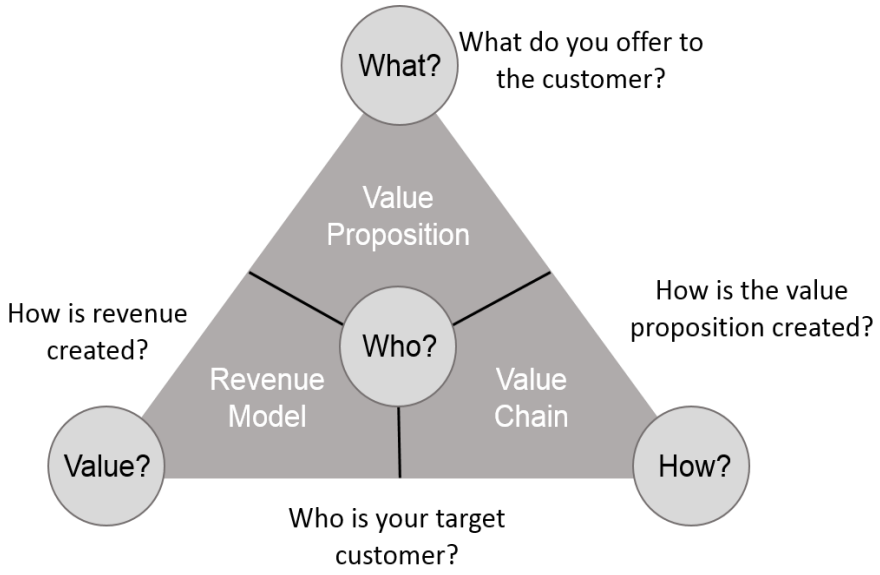


Figure 7: Magic triangle (based on Gassmann *et al.*, 2013, p. 6)

**Customer**
The customer is the base of every business model. To ensure that a business model will be successful, it is extremely important to identify the target customer of a product or service. (Gassmann *et al.*, 2013, p. 6)

**Value Proposition**
It is very important to coordinate the definition of the value proposition and the target customer group, because the value proposition describes the products or services that can satisfy the needs of the customers. (Gassmann *et al.*, 2013, p. 6)

**Value Chain**
This dimension describes the generation of the value proposition within the company. Therefore, it includes all the activities and resources, which are part of the value chain to create the desired output. (Gassmann *et al.*, 2013, p. 6)

**Revenue model**
Finally, the revenue model dimension includes the cost structure and the generation of revenue streams to describe the value capturing process within this business model. Based on that, it is possible to conclude if a certain business model is viable or not. (Gassmann *et al.*, 2013, p. 6)

Furthermore, the aggregation of the customer and the value proposition dimension is a depiction of the internal dimension of a business model, whereas the value chain component represents the external dimension of a business model together with the revenue model component. (Gassmann *et al.*, 2013, p. 7)

### 2.2.3.2 Management tools

As already mentioned at the beginning of *chapter 2.2.3,* companies can already draw back upon different tools when they want to define the content of their business models. These techniques for example enable it to identify the real needs and values of the customers, or they can help a company to design its value proposition in such a way that it overcomes the weaknesses of a competitor's offering. Thereby these management tools can help to define the content of a new business model or to adapt the characteristics of an already existing business model. The following paragraphs provide a short description of some of these methodologies. Nevertheless, beforehand it is necessary to mention that these management tools are actually used to define the strategy of a company (Voelpel *et al.*, 2004, p. 269). However, as already described in *chapter 2.2.2*, the business model and its superior strategy have a strong interconnection. Therefore, the principles behind the following tools also influence the business model.

**PEST analysis**

The PEST analysis has the aim to identify the relevant environmental factors within the business environment. Thereby this method is not limited to the investigation of the current status of these factors, but also has the aim to predict their prospective development. (Fahey and Narayanan, 1986, p. 36) In this regard, PEST is an acronym that stands for political, economic, sociological and technological. The investigation of these four dimensions, is especially relevant if a company intends to sell its product in other countries or if it generally wants to enter new markets. Political factors describe the influence that governmental institutions have on specific industry sectors. Examples for these could be country specific regulations concerning environmental protection or data protection. The economic analysis of the environment helps to eventually prioritize countries in the course of an intended internationalization according to their gross domestic product. Sociological factors describe among other aspects the values that consumers demand from a certain product, like a sustainable production. The technological analysis examines aspects like the digitalization of a country or its existing infrastructure. (Steuernagel, 2017, pp. 61–67)

**SWOT analysis**

This technique supports a company in the process of finding its optimum market position. Thereby the analysis consists of an internal and an external analysis. The internal investigation examines the strengths and the weaknesses of a company. Such a strength could be for example an innovative product. Contrary, a low brand awareness could be identified as a weakness. The external examination reveals the opportunities and threats, which a company has to face in a certain market. An opportunity could be for example that a market offers low competition. In contrast, a potential threat could be for example that another company develops a better solution to satisfy the needs of the customers, which makes the own product dispensable. Generally, the SWOT analysis is a quite versatile tool, which can be for example used as a starting point for discussions concerning the strategic positioning of a company. (Schawel and Billing, 2012, pp. 249–250)

**Porter's five forces**

This model contains five elements that are the suppliers, customers, new entrants, substitution products and industry rivalry, which a company can use to assess the attractiveness of a certain market. Thereby the model is not limited to the analysis of the status quo of a market, since it is also possible to predict the prospective development of a market with this tool. Thereby the characteristics of the previously mentioned five elements have to be analysed. For example, it is necessary to

determine how high customers rate the product of a company or in which degree the company depends on its suppliers in order to define the bargaining power of these parties. A company should also identify the strengths and weaknesses of its competitors and how many competitors it actually has in the market. It is also necessary for a venture to determine if certain substitution products could replace the own product and how it is possible to prevent this. Furthermore, managers also have to be aware of the market structure by assessing the likelihood that new competitors will enter the market. (Schawel and Billing, 2012, pp. 108–109)

*Chapter 2.1* and *chapter 2.2* described the core topics of this master thesis in a separate manner. Thereby they already highlighted some of the most important aspects. Nevertheless, in order to get a better understanding of how start-ups develop their business models, it is also necessary to understand the interrelations of these two management terms. Therefore, chapter *2.3* deals with this matter.

## 2.3 Entrepreneurship and business model development

There is a widespread agreement among researchers that the business model is of major importance for a company to become successful. Among them are Malmström and Johansson (2017, p. 2), who stated that entrepreneurs will on the one hand, not be able to deliver sufficient value and on the other hand, will not be able to capture enough value from their business, if they lack a matured business model. Other representatives of this view are Zott and Amit (2010, p. 216), who described the development of a new business model as a key decision an entrepreneur has to face when setting up a new venture. That is because the entrepreneur's choices concerning the design of his business model will decide if a company will thrive or fail. George and Bock (2011, p. 107) followed a different approach and stated that the value of the business model lies in the possibility to explain and additionally estimate potential entrepreneurial outcomes. These statements are reinforcing each other and thus demonstrate the significance of the business model for setting up a new company.

However, how do start-ups actually develop their business model? Thereby it is necessary to distinguish between the method that a company actually chooses to represent its business model and how the venture develops the content of this business model. In both cases, entrepreneurs can draw back upon the methods that are described in *chapter 2.2.3*. Furthermore, methodologies like the "Lean start-up method" (see *chapter 2.1.2.1*) can also assist start-ups in the business model development process, by providing helpful tips concerning the definition of the appropriate offering for the target customers.

Nevertheless, despite such techniques, the process of business model development is still accompanied by several challenges. Furthermore, entrepreneurs and their business models are also influenced by different factors during the development process. Therefore, the following subchapters describe some of these challenges and the aspects that shape the creation of new business models. Thereby it is necessary to mention that established companies, which want to renew their existing business models, and new emerging companies, very often deal with similar challenges or influencing factors during the development process.

### 2.3.1 Challenges of the business model development process

Blank (2007, p. 15) argued that the customer is a major factor that determines if a new company and its business model will succeed or fail. He justified this by pointing out that most of the start-ups fail, because they are not able to discover their markets, identify their initial customers, and furthermore lack a process for confirming their assumptions of their business model. Therefore he developed the so-called “customer development model”, which enables a new venture to overcome these issues. (Blank, 2007, p. 18) *Figure 8* shows this model.

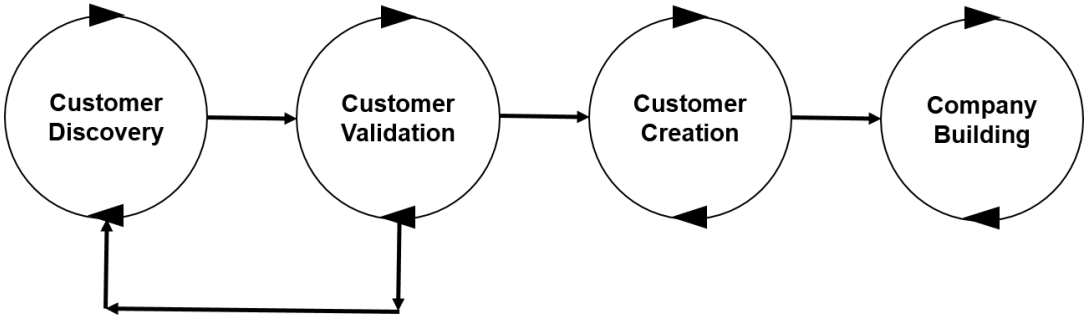


Figure 8: Customer development model (based on Blank, 2007, p. 19)

In general, the model consists of four different steps that are 1) Customer discovery, which deals with the identification of the customer of a product and includes a review to determine how high the customer rates the delivered benefit of this product. 2) Customer validation includes the actual activity of selling products to the identified customers. This step proves that the targeted market and its customers are willing to pay for the product. 3) Customer creation has the aim to create an actual demand of a larger group of customers and to convert this demand into actual purchases. In order to achieve this, a new venture very often increases its marketing efforts in a large manner. 4) Company building is about building up different departments based on the insights and the early market success that the new venture has obtained so far. Generally, these four steps have an impact on a new company’s business model in the early stages of setting up a new venture. Furthermore, the author also pointed out that these four steps require several iterations of trial and error, until a company will truly get it right. Thereby he especially emphasized the significance of the customer validation step by defining it as a key checkpoint including an additional iterative feedback loop that brings the entrepreneur back to the customer discovery step. The author justified that through the argumentation that if a company cannot find paying customers, it has to take a step backwards and rediscover the needs of potential customers. The model also brings one important advantage with it. In fact, it prevents the start-up from spending too much money until it has truly validated its customers. (Blank, 2007, pp. 18–22)

The previously mentioned aspect of saving money can be of major importance for an entrepreneur when he sets up a new business. Malmström and Johansson (2017, p. 9) emphasized this in their conducted study by identifying that cash is highly relevant for managing business model components in the early phases of starting a new venture. Thereby they based that on the fact that most of the entrepreneurs, which participated in the interviews of their study, stated that financing the business until the business model is sufficiently matured, is a crucial task in the early stages of a start-up. In addition, their interviews also revealed that most of the entrepreneurs tried to get financial support of

their governments in this regard, instead of applying for a bank loan. (Malmström and Johansson, 2017, p. 7)

According to Trimi and Berbegal-Mirabent (2012, p. 449), further challenges for entrepreneurs during the business model development process are setting up the boundaries of the corporation and the definition of the final product. From their point of view, this is necessary to form the business model in such a way that it can support the entrepreneur to take the right decisions, which may ultimately lead to the success of the new venture.

However, there are also other challenges that entrepreneurs have to consider when they develop a new business model. An example for that is the general tendency of product lifecycles becoming shorter. Based on that, companies have to constantly re-evaluate their value propositions in order to maintain the harmony between their offering and the needs of their target customers. Shorter product lifecycles are also accompanied by the risk that new technologies may arise soon, which could outperform the own product. (Trimi and Berbegal-Mirabent, 2012, p. 461)

As already indicated in the previous paragraphs, entrepreneurs very often develop a new business model by means of an iterative process. This can be traced back to the methodology of certain business model development practices or through changes in the business environment. Nevertheless, this led to the fact that even beside the various tools that a company can use for the development of a new business model, and the consideration of the challenges that still accompany the development process, many researchers pointed out that in general initial business models do not last very long. Very often new firms start with a business model, which is of course massively influenced by the experience and education of the founding entrepreneur, and adapt it due to certain external triggers. Afterwards the new business model again undergoes a trial procedure. The start-up repeats this procedure until it has found the best fitting business model variant. In further consequence, the development of a company's business model according to such a trial-and-error procedure can be of major importance in order to prevent that the developed business model becomes obsolete due to changes within the market environment. (Sosna *et al.*, 2010, pp. 384–385)

Malmström and Johansson (2017, p. 3) even pointed out that most of the new companies start with just partially formed business models. This imperfection may also have its advantages, because it also brings a certain degree of flexibility with it. Trimi and Berbegal-Mirabent (2012, p. 461) even stated that such a high degree of flexibility is of utterly importance for a business model in order to be able to react quickly to changing market conditions. Thereby the researchers considered environmental changes as a major challenge for the establishment of a successful business model.

### 2.3.2 Driving factors in the business model development process

An interesting methodology for business model development was proposed by Voelpel *et al.* (2004, p. 259). This method is called “The wheel of business model reinvention”. However, it is necessary to point out that this tool was mainly developed to evaluate if a company should adapt its already existing business model instead of setting up a new business model. Therefore, the method has the purpose to identify if it is necessary to develop a new business model or not. In general, it bases on considerations concerning the changing conditions within a company’s environment. In the context of this, it is necessary to assess if the customer preferences will change, how the technological base of an industry sector will develop in the next years, and how profitable a certain business model is. In further consequence, this factors influence the development of the new business model. Furthermore, the authors pointed out that the development of a new business model is also influenced by the dynamic capabilities of a company and additionally requires a reconfiguration of a company’s strategy. (Voelpel *et al.*, 2004, pp. 268–270)

Beside the previously mentioned influencing factors, also other drivers exist that influence the development of a new business model. Thereby such triggers often lead to changes of the content of a business model during the development stage. Fernandes and Afonso (2018, p. 168) came to the conclusion that adaptions of certain business model elements often trigger changes within other business model components. The researchers proposed this assumption in the course of a study, where they investigated the changes that occurred within the business models of several start-ups, during the first years after they were founded. Thereby the researchers analysed the business models based on the methodology of the BMC. (Fernandes and Afonso, 2018, p. 157) The researchers additionally detected that the actual contact with the customer can also trigger changes within the business model. In general, the results of their conducted study show that the elements of certain dimensions of the business models of the examined start-ups tended to change more independently than other components. In fact, changes within the elements of the value delivery dimension did not influence other elements to the same extent as changes in the value creation dimension. Furthermore, the study also revealed that the changes of the individual business model elements especially led to changes of the value proposition or the customer segments, while the cost structure was just slightly affected. (Fernandes and Afonso, 2018, pp. 167–169)

The entirety of the theoretical findings of *chapter 2* helps to better understand and consequently interpret the results of the empirical study that was conducted in the course of this master thesis. Nevertheless, beforehand it is necessary to describe the general structure and the approach that was carried out in the context of this study together with the resulting outcomes. Therefore, the following chapters first address this matter.

# 3 Methods

Before the actual empirical study could start, it was necessary to choose a suitable research design. In this context, the method of Yin (1994, pp. 5–7) was applied. This methodology revealed, that based on the nature of the research questions (see *chapter 1.2*), the explorative case study would be an appropriate research design. This can be explained by the fact that the explorative case study is particularly suitable for investigating research questions that the author defines as "what-questions", which are of the same nature as the research questions of this study. Furthermore, this research method is suitable for providing hypotheses and suggestions for subsequent investigations. (Yin, 1994, p. 5)

According to Yin (1994, p. 14), it is also necessary to distinguish between single- and multiple-case studies, which made it necessary to choose one of these variants. In the course of this, the multiple-case study design was selected, since the single-case study suits to unique cases like the investigation of a rare disease, which is not the case for this empirical study. Furthermore, researchers very often consider the results of multiple-case studies as more expressive, since the examination of a single case is accompanied by the threat that it may later turn out that the single case was not appropriately chosen. (Yin, 1994, pp. 39–45)

In addition, it was also necessary to define how the actual analysis of the data should take place. In this regard, Flick (2009, p. 24) proposed that researchers should orientate themselves on the type of research question and the actual issue that they want to examine. Thereby the author stated that it is possible to choose between qualitative and quantitative methods. In general, the qualitative approach suits to issues were the researcher actually wants to understand the deeper meaning of the investigated matter. In contrast, quantitative methods are used to determine frequencies and distributions of the examined factors.

Since it is the aim of this master thesis to create a better understanding of how ESSUPs develop their business model and just a relatively small sample of fourteen ESSUPs was examined, a qualitative approach was chosen for the empirical study. In fact, the data, which was obtained in the course of this study, was analysed by means of the qualitative content analysis approach according to Mayring (2010, p. 602), since this methodology is ideally suited for such a research endeavour. *Chapter 3.4* includes a detailed description of this approach.

The previous paragraphs already pointed out that the actual research process of an empirical study requires certain data. Therefore, the following chapters describe the aspects that had been considered in terms of the selection, collection, and analysis of the data together with the principal followed approach during these steps. However, beforehand the GG is described in a separate chapter, since the teams that participated in this accelerator program provided the data for this study.

## 3.1 Gründungsgarage

The GG is an inter-university teaching format with the aim to help students and academic personnel to further develop their business ideas and create viable business models out of them (Mueller *et al.*, 2019, p. 48). Thereby the accelerator program supports its participants for a time of approximately four months and the format takes place twice a year. One cycle of the programme takes place in the winter semester and the second in the summer semester. To get the opportunity to participate in the accelerator, it is necessary for applicants to submit application documents that roughly outline their initial business idea before a certain deadline. Based on that information the GG committee choses the 10 most promising ideas for each semester.

During the accelerator program, the teams behind these ideas receive support from various sources. Among them are the mentors, who can draw upon practical experience in different industries, and university employees, who support the participants with their expertise in entrepreneurship and business model development. In addition, the participants also meet graduates of the GG program, who have already successfully founded a company and can therefore offer helpful advices concerning the founding process. (Mueller *et al.*, 2019, p. 48) *Figure 9* shows the structure of the GG together with its distinct phases.

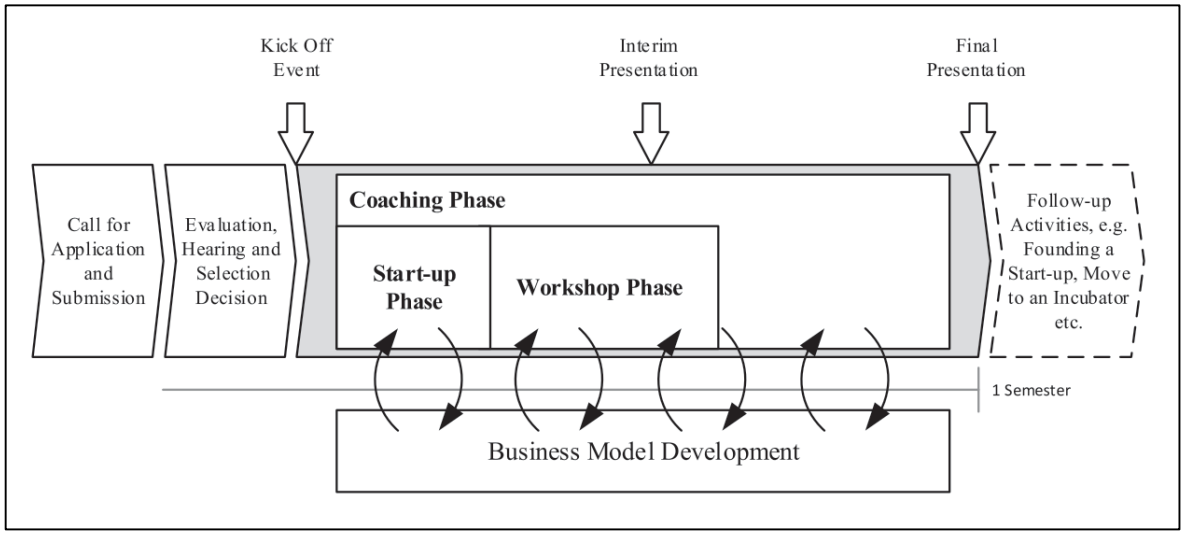


Figure 9: Structure of the GG (based on Vorbach, 2017, n.p.)

Generally, the start-up accelerator starts with a kick-off event, where the teams become acquainted with their assigned mentors and together they work out team specific goals in order to know where the journey within the GG should go. To guarantee the best possible progress and support, the mentor's core competencies have to be consistent with the needs of each team and its potential entrepreneurial core business. In order to ensure this, the GG can draw upon a large pool of mentors, who have expertise in essential entrepreneurial fields, like business model development, legal and tax matters, and online marketing. The kick-off event also initiates the main phase of the accelerator program, which in turn consists of three sub phases. (Mueller *et al.*, 2019, p. 48)

In the start-up phase, the teams have to create an initial business model based on their business idea. Thereby they receive support through a massive open online course that teaches them the

basics of business models and makes them familiar with the BMC, which is the used tool in the GG in order to facilitate business model development. This is approximately a period of two weeks. At the end of this phase, the so-called business model workshop (BMW) takes places, where the individual teams present their business models in front of the other teams and the mentors. This is also the starting point for the following workshop phase, where the teams receive important knowledge and soft skills for setting up a new venture. Close to the end of this phase, which is approximately after half of the semester has passed, the teams have to present their progress again as part of an intermediate presentation. The last phase is the coaching phase, which actually lasts the whole semester. Especially after the workshop phase, this phase has the aim to refine the business models. After four months, the teams finish their participation in the accelerator program by presenting their business model in front of an audience, consisting of potential investors and representatives from science and politics as well. (Mueller *et al.*, 2019, pp. 48–51)

## 3.2 Data selection

The empirical study of this master thesis investigated the business models of fourteen teams, five teams of the GG Volume XI and nine teams that participated in the GG Volume XIII. In general, these teams were selected due to the easy accessibility of them and their representative position for start-ups. According to Flick (2009, pp. 122–123), this approach is called convenience sampling, which is a subtype of purposive sampling and has the advantage that the selection of easy accessible data sources is suitable for performing a study when time and human resources are limited.

The assumption, that the examined teams are representative for ESSUPs in the pre-foundation phase, is justified by comparing the development stages of the individual teams with the phases of the start-up development process according to Startup Commons (2018, n.p.). Based on the statements of the teams regarding their current company status, it was possible to draw the conclusion that none of the teams had already been founded at the time of the analysis or had not yet made any financial commitments. Due to additional information regarding the progress of the individual teams, it was possible to assume in further consequence that the teams were in the ideating or concepting phase at the time of the analysis and thus in the pre-foundation phase (Startup Commons, 2018, n.p.).

*Table 3* provides an overview of the investigated ESSUPs together with their respective business ideas. Thereby it is necessary to mention that these ideas represent the offering of the initial business model at the time of application for the GG, since some teams adapted their intended product or service in the course of the start-up accelerator program. Furthermore, anonymous team names were chosen for reasons of data protection.

| Team | Participation | Business idea |
|---|---|---|
| Alpha | GG Volume XIII | The product is a robotic process automation software that should help companies to automate repetitive computer processes. |
| Beta | GG Volume XIII | Simulation software that should help heating grid operators to save costs. |
| Gamma | GG Volume XIII | Sustainable organic material that has the potential to replace leather as a raw material for different use cases. |
| Delta | GG Volume XIII | Digital fundraising service, which enables that a larger share of a donation reaches the respective organization compared to offline fundraising. |
| Epsilon | GG Volume XIII | App based service that should enable employees to detect if they are at risk of a burnout. |

| | | |
|---|---|---|
| Zeta | GG Volume XIII | A medical storage software that should provide users a comprehensive overview about their health condition by means of their past health data and specific medical sensors. |
| Eta | GG Volume XIII | Online platform to recruit probands for medical, psychological, and pharmaceutical studies. |
| Theta | GG Volume XIII | Functional shirts, which are characterized through a pleasant wearing comfort. This should be guaranteed by means of a special fabric that should minimize the formation of sweat. |
| Iota | GG Volume XIII | Group lessons that should improve the livability of elderly persons by means of a course program that increases the mental capability of its participants. |
| Kappa | GG Volume XI | Wall panels made of wood |
| Lambda | GG Volume XI | Moisture sensor that should enable nursing staff to detect if a patient has wet himself. |
| My | GG Volume XI | Insect based dog food |
| Ny | GG Volume XI | A device that enables the user to have various gadgets, like tools or action-cams, ready to hand and prevents the loss of these gadgets through an integrated lock mechanism . |
| Xi | GG Volume XI | Software for e-sports streams |

Table 3: Investigated ESSUPs (own source)

The following chapter describes how the data acquisition took place and which data was actually collected.

## 3.3 Data collection

As already mentioned at the beginning of *chapter 3*, the empirical study pursued a multiple case study approach as described by Yin (1994, pp. 39–45). Thereby each of the 14 examined ESSUPs represents one case, which consist of four data components. In fact, these are 1) the application documents, 2) the BMC that the individual teams presented at the BMW, 3) a semi-structured interview that was conducted shortly after the BMW, and 4) a second semi-structured interview, which was held after the final presentation of the teams. These data components contain information about the business model of each team at different points in time. To ensure this, the data collection occurred at three discrete points in time. *Figure 10* shows these three points (T0, T1, and T2) to make it easier to understand the chronology of the data acquisition.

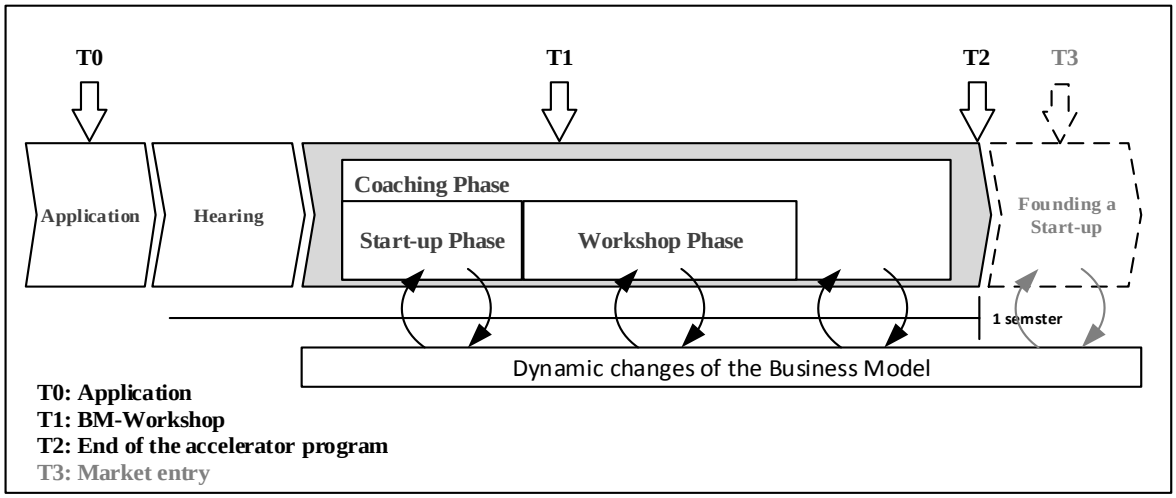


Figure 10: Times of investigation (based on Vorbach, 2017, n.p.)

T0 is the date where the ESSUPs apply for the GG by transmitting their business ideas. The data that is collected at this stage are the application documents of the chosen teams. The second data collection took place shortly after the BMW (T1). At that point, the data collection consisted of two parts. On the one hand, the teams had to transmit their BMC, which they created for the BMW. On the other hand, each team had to participate at a semi-structured interview. T2 represents the date of the final presentations of the teams. The last data acquisition in form of a second semi-structured interview took place shortly after this event. Thereby it is necessary to mention that these three specific points in time were chosen due to different reasons. First, the placement of T0 and T2 right at the beginning and the end of the accelerator program had the purpose to show the whole development of the teams' business models during their participation in the GG. Furthermore, T1 took place shortly after the BMW, because in the course of this workshop and in the previous preparation phase, the teams receive many inputs concerning business model development. Therefore, it was assumed that many changes would occur in the short period between T0 and T1. In order to get a better understanding of the content of the four different data components, the following sections describe them in more detail.

**Application documents**
Generally, it has to be said that the content of the application documents is limited to a certain amount of characters. In this way, the GG wants to ensure that the teams get straight to the point of their business idea without embellishing it too much. Additionally, the business ideas of the individual teams are very often at different development stages, which means that some ideas or perhaps already business models are more advanced than others are. Therefore, the GG team also wants to make sure that persons with less advanced ideas, which are perhaps quite promising, also get the opportunity to participate in the accelerator program. Nevertheless, this limitation leads to the fact that these documents only contain sparse information regarding the business models of the teams at this time. To overcome this lack of information, the first semi-structured interview also has the aim to identify the detailed characteristics of a team's business model at the time of application.

**Business model canvas**
Since the participating teams of the accelerator program have to create a BMC for the BMW anyway, this survey also drew back upon this additional data source. The advantage of this additional data source is that it might contain additional information regarding the team's business models at T1, which the first interview would not have disclosed. Furthermore, the individual BMCs were also used during the semi-structured interviews to support the teams in their answers.

**Semi-structured interviews**
In order to get information regarding the business model of the teams at T1 and T2, two so-called semi-structured interviews were conducted.

Generally, this type of interview has the characteristic that the interviewer thinks before the interview about the topics that he wants to cover and conducts the interview in the area of these themes in form of a discussion rather than a simple questionnaire. In order to ensure that the actual interview addresses all of these necessary themes, an interview guideline has to be created. (Mason, 2002, p. 62) On that note, this study drew on already existing questionnaires from a previously conducted study in the same field of research. Furthermore, in order to facilitate the quality and the output of the discussion, it was necessary to become acquainted with the business idea of each team before conducting the interviews. Additionally, the teams were asked to ensure that all team members participated in the interview, because the individual team members might have different views concerning some questions. When conducting the interviews, care was taken that they did not last longer than 60 minutes to ensure the focus of the participants. Thereby, the interviews were recorded by means of an audio recorder for the subsequent evaluation. In general, the main topics of the interviews were the content of the business models of the teams at different times (T0, T1, T2) and what led to changes between these different points in time. Nevertheless, at this point it is also necessary to mention that the interviews of this study were additionally used to get information for other research projects at the general management and organisation institute. Therefore, some of the questions also had the purpose of getting other information beside the detection of business model changes and their respective triggers.

In order to better understand how the interviews were used to get the necessary information of the investigated teams, the sections "*Interview guideline T1*" and "*Interview guideline T2"* in the appendix contain all of the used guiding questions together with a brief explanation of the purpose of the individual questions. Thereby the passage "*Interview guideline T1*" also contains the questions that should reveal information for other research projects (questions 7-10), since they provided useful

information for this study. In contrast, the section "*Interview guideline T2"* solely contains the guiding questions that had the aim to identify business element changes and their respective triggers, since the guiding questions for the other studies did not reveal useful information for this thesis.

Generally, the questions were sometimes asked in a modified form depending on the course of the interview. Furthermore, it has to be mentioned that the interviews were conducted in German, as this is the mother tongue of almost all team members that participated in the interviews. Therefore, the guiding questions are also listed in German in order to not distort the motivations behind a certain question through its translation. In addition, a few notes in brackets accompany some questions. These comments were used to get more information from the interview partners in the case that their answers were rather sparse. After the interviews were conducted, they had to be transcribed for the subsequent analysis.

## 3.4 Data analysis

As already mentioned at the beginning of *chapter 3*, the data analysis of this study followed a qualitative approach. In particular, the study based on the principle of the qualitative content analysis according to Mayring (2010, p. 602) . Generally, this method is ideally suited for analysing large amounts of text such as interview transcripts. However, it is necessary to mention that the author defined that this methodology actually takes an intermediate position between qualitative and quantitative research approaches, since it is possible to further process the qualitatively obtained findings in a quantitative manner. In principle, the basic approach is to read through the data material and search for text passages that include necessary information for the subject of the study. If such a text passage is detected, it is necessary to assign a so-called category to the passage, which summarizes the particular content as short as possible. The totality of the categories that are created in the examined data material, reduces the text to its essential components and then finally forms a category system that can be the starting point for subsequent quantitative evaluation methods. Generally, it can be said that the category system represents the core of the qualitative content analysis. However, the formation of the categories can occur in two different ways, which are inductive and deductive category formation. (Mayring, 2010, pp. 602–606)

At this point, it is necessary to mention that both of these category formation techniques were used in the course of the empirical study of this master thesis. The analysis of the data regarding the triggers, which led to changes in the business model, based on inductive category formation. Contrary, the investigation of the data in order to identify which specific business model elements changed due to certain triggers, based on deductive category formation. Since this work is structured in such a way that the analysis of the data is described separately for the individual research questions, these different techniques are described in more detail in the respective section. In general, the qualitative content analysis of this study was carried out with QCAmap, which is a software that was explicitly developed for this purpose. This program made it possible to carry out two separate analyses of the application documents and the interview transcripts in order to obtain the results for the respective research question. As already indicated, the following sub-chapters describe the different approaches that were chosen to answer the research questions.

### 3.4.1 Triggers

In order to determine the triggers that led to changes within the business models of the investigated teams, the empirical data was analysed based on inductive category formation. This method basically works in such a way that it is necessary to read through the text that should be examined and to create and assign categories to the text passages that are identified as relevant for the study. Thereby the created category describes the core statement of the section to which it is assigned. (Mayring, 2015, pp. 85–86) Basically, the entire data material was reviewed twice according to this principle to ensure that all triggers had been identified. In addition, all of the created categories had been checked by two researchers, which have experience in the field of qualitative content analysis, in terms of an understandable formulation and a sense making assignment to the individual text passages. The subsequent evaluation of the categories in order to determine how many teams were actually influenced by the identified triggers, followed the methodology according to Gioia *et al.* (2013, pp. 20–21).

This method bases on the principle of bundling identified categories for two times in order to raise them on a higher abstraction level, which should help researchers to identify the deeper meaning of the investigated matter. Therefore, it is necessary to search for eventually present similarities among the categories and in further consequence to create a higher order category, which expresses the identified commonality. (Gioia *et al.*, 2013, pp. 20–21)

In order to simplify this aggregation process for this study, a pre-selection of the categories had been carried out while creating them. Thereby attention had been paid to, that eventual present similarities among the categories are already used for pre-sorting them. To better understand the pre-selection process, *Table 4* and *Table 5* contain two examples that illustrate the aspects that had been taken into account to determine if several categories have a specific similarity or not. To further emphasize the similarities, they are printed in bold in the examples.

| Original category | Similarity | New category |
|---|---|---|
| New product needs new customer segments | Changes within a specific business model element **due to the changes of the value proposition** | **Value Proposition:** New product needs new customer segments |
| Additional value proposition leads to additional revenue streams | Changes within a specific business model element **due to the changes of the value proposition** | **Value proposition:** Additional value proposition leads to additional revenue streams |

Table 4: Example 1 for the pre-selection of the inductive categories (own source)

In the case of *Table 4*, both codes have in common that a certain business model element changed due to a change within the business model's value proposition. Therefore, both codes got the prefix "Value proposition:"

| Original category | Similarity | New category |
|---|---|---|
| Advice to reduce customer segments | Changes within a specific business model element **due to received advice from a mentor of the GG** | **Mentoring:** Advice to reduce customer segments |
| Advice to find other ways to generate revenue streams | Changes within a specific business model element **due to received advice from a mentor of the GG** | **Mentoring:** Advice to find other ways to generate revenue streams |

Table 5: Example 2 for the pre-selection of the inductive categories (own source)

In the case of *Table 5*, both codes have in common that a team changed a certain business model element, because a mentor of the GG advised them to do so. Therefore, both codes got the prefix "Mentoring:"

After such a code was assigned to all identified triggers, the already mentioned analysis process according to Gioia *et al.* (2013, pp. 20–21) was carried out. Therefore the categories were exported from QCAmap into an excel file, where the aggregation process took place. As already indicated, this process requires to search for similarities among the categories, which are defined in this methodology as so-called "1st order codes", in order to bundle them into so-called "2nd order categories". Of course, the already conducted pre-sortation of the created categories facilitated this process, because it already highlighted some of these similarities. *Figure 11* shows an example for this approach. Thereby it has to be mentioned that this is only an excerpt of the bundling process that was carried out for this 2nd order category.

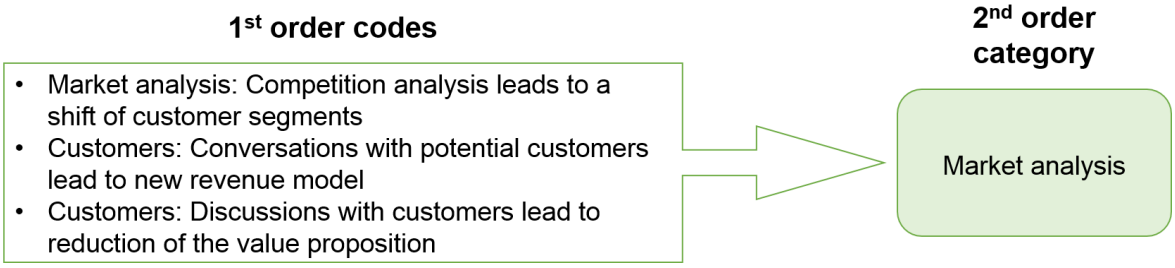


Figure 11: Bundling of 1st order codes (own source)

The above shown example points out that certain activities of the investigated teams, like seeking customer contact or analysing potential competitors, led to changes within their business models. Thereby the created 1st order codes have in common that they describe activities that can be assigned to conducting a market analysis. Therefore, they are bundled into the 2nd order category "Market analysis".

After such an assignment had been accomplished for all created categories and each 2nd order category consisted at least out of two 1st order codes (otherwise the formation of a 2nd order category would not be justifiable), the resulting 2nd order categories were analysed with the aim to raise them on an even higher abstraction level by identifying profound commonalities. *Figure 12* exemplifies this aggregation process and the thereby resulting data structure. This is of course also just an excerpt of the whole data structure.

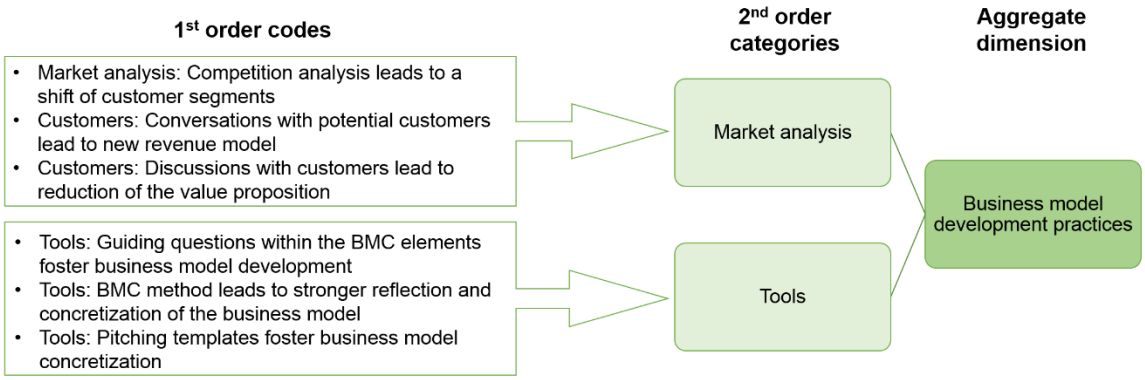


Figure 12: Data structure (own source)

The more precise questioning of the matter behind the 2nd order categories “Market analysis” and “Tools” revealed that these two terms have in common that they both describe activities or approaches that foster the further development of a business model. Therefore, these categories and some other categories with the same underlying principle were bundled together into the aggregate dimension “Business model development practices”, which represents activities and practices that are quite useful or perhaps even necessary for setting up and further developing a viable business model.

This procedure was repeated until each 2nd order category was assigned to a higher order aggregate dimension, which in turn had of course to exist out of at least two 2nd order categories again. Finally, in order to determine how many teams were affected by a certain type of trigger, the therefore required frequencies were calculated for the individual aggregate dimensions and their assigned 2nd order categories as well. The results of this process are shown in *chapter 4.1*.

### 3.4.2 Business model element changes

In order to determine the business model elements that were changed by the teams during their participation in the accelerator program, the empirical data was analysed based on deductive category formation. In the course of this method, researchers have to develop the category system before they actually read the text. Thereby, the categories that are developed during this process clearly define what a respective text passage describes. Afterwards, the researcher has to read the investigation material and highlight text passages that fit to these previously defined codes. (Mayring and Fenzl, 2014, pp. 549–550)

In line with this principle, the categories were developed in such a way that they on the one hand, indicate which business model element is involved and on the other hand, point out at which time the respective information is valid. Therefore, all of the categories have the same structure, which consists of a time specific and a business model element specific component. *Table 6* shows all of the used components, which are in general abbreviations in order to limit the amount of characters, without compromising the meaningfulness of each category.

| Component type | Component | Description |
|---|---|---|
| Business model element | VP | Value proposition |
| Business model element | CS | Customer segments |
| Business model element | CH | Channels |
| Business model element | CR | Customer relationship |
| Business model element | RS | Revenue streams |
| Business model element | KR | Key resources |
| Business model element | KA | Key activities |
| Business model element | KP | Key partners |
| Business model element | C$ | Cost structure |
| Time component | BMx0 | The marked text concerns the business model at T0 |
| Time component | BMx1 | The marked text concerns the business model at T1 |
| Time component | BMx2 | The marked text concerns the business model at T2 |

Table 6: Category components (own source)

Based on these components, categories like “BMx1_VP” were created. This category for example indicates that a certain text passage has to contain information about a team’s value proposition at T1. Afterwards, it was necessary to read through the whole data material in order to assign the previously defined categories to respective text passages. To optimize the output of this procedure, the interview guideline intended to cover each of the business model elements of the individual teams. Furthermore, it has to be mentioned that it was possible to associate the text passages directly with the element categories, but the assignment of the information to a specific point in time usually followed the assessment of the reviewer of the texts, since this information was often taken from the context of the text passage.

*Table 7* contains a few of the developed categories together with a respective example of a marked text passage. Thereby, the sample text in the table is translated, since the interviews were conducted

in German. In addition, it is slightly adapted due to the lack of context of the interview. The table also contains a short definition about the requirements concerning the content of a specific text passage.

| Category | Definition | Example |
|---|---|---|
| BMx2_CS | The text passage has to contain information about the customer segments at T2 | „However, the customer segments changed, because now we also want to sell our service to food supplement manufacturers.“ |
| BMx1_CH | The text passage has to contain information about the channels at T1 | „With regard to channels, we use classic marketing measures such as word of mouth.“ |
| BMx0_RS | The text passage has to contain information about the revenue streams at T0 | „In the beginning, we thought that we would use a licensing model to generate revenue.“ |

Table 7: Deductive categories (own source)

In addition, it has to be pointed out that the deductive categories, which are in total 27 (nine business model elements at three different times of investigation), only served for the pre-selection of the content. The actual categories included additional information to simplify the following steps of the analysis. Below are some examples for such modified categories.

- BMx1_KR: Patent as a resource
- BMx2_CH: Fairs
- BMx1_RS: Ongoing revenues through subscription fees

After all of the data material had been screened through twice regarding the relevant information, the categories and the associated marked text passages were exported from QCAmap into an excel file.

These exported categories were the starting point for the subsequent evaluation process. The objective of this process was to identify the number of teams that had changed a certain business model element during the periods T0-T1 and T1-T2. *Figure 13* shows the general approach behind this process. Afterwards follows a detailed description of the single steps.

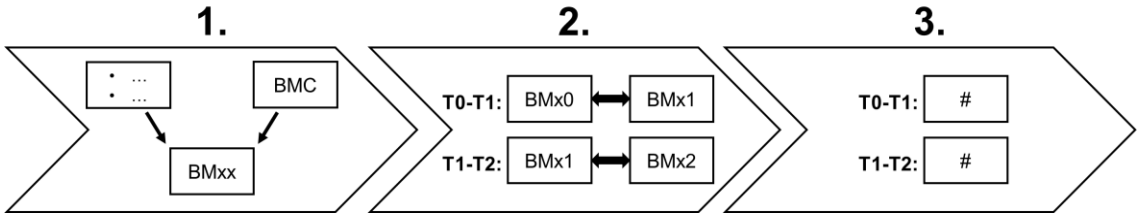


Figure 13: Evaluation process to determine business model element changes (own source)

**Step 1**

First of all the created categories and the respective marked text passages were used to represent the business models of the teams at the three defined times of investigation (T0, T1, T2). Therefore three time specific BMCs (BMx0, BMx1, BMx2) were created for each team. At this point, it has to be mentioned that the BMCs, which were provided by the participating teams, were also used to create BMx1, because they represented the business model of the individual team at the time of the

business model workshop, which took place around the investigation point T1. This made it possible to ensure that all aspects of the teams' business models were covered, because in some cases the teams referred to the contents of their BMC, which was shown to them during the interview, and did not mention each component separately.

**Step 2**
Based on the creation of the three different BMCs, it was afterwards possible to determine the changes of the individual business model elements by comparing each element with the same element of the previous BMC. For each team this had to be done for both investigation periods (T0-T1, T1-T2).

In order to get a better understanding of this procedure, pp. 49-51 show the three time specific BMCs of the team "Zeta". Thereby the individual business model elements that changed between two specific times of investigation are highlighted in red. In addition, the new characteristic of the respective element is also highlighted in bold letters. Furthermore, it has to be pointed out that sometimes teams simply reduced the characteristics of a certain business model element due to different reasons. In such a case, it was of course not possible to additionally highlight this changing feature in bold letters. Therefore, such changes were just marked by a red business model element. An example for such a change is the comparison of the customer relationship element between *Figure 15* and *Figure 16.* The following paragraph contains a detailed explanation of the development of Zeta's customer segments in order to better understand the general thoughts behind the detection of the element changes.

A closer look at the customer segments of *Figure 14* shows that the team initially did not think about focusing on a specific customer segment. This was at the time, where they applied for the GG. However, if one then compares them with the customer segments of *Figure 15*, it can be seen that the team got more specific, because they targeted a certain group of age. Therefore, this element was highlighted in red in *Figure 15*. A comparison between *Figure 15* and *Figure 16* shows that the team got even more specific in defining their customers during the period between T1 and T2. Hence, the customer element was also marked red in *Figure 16*.

As already mentioned, the comparison of the business model elements during the two investigation periods had to be done for each team in a separate manner. However, pp. 49-51 just show the business models of the team "Zeta", since a listing of the time-specific business models of all teams, including their modifications, does not provide additional value for the understanding of the principle approach. Nevertheless, in order to ensure that this information is not withheld, the section "*BMCs of the ESSUPs*" in the appendix contains the business models and their respective modifications for the other ESSUPs.

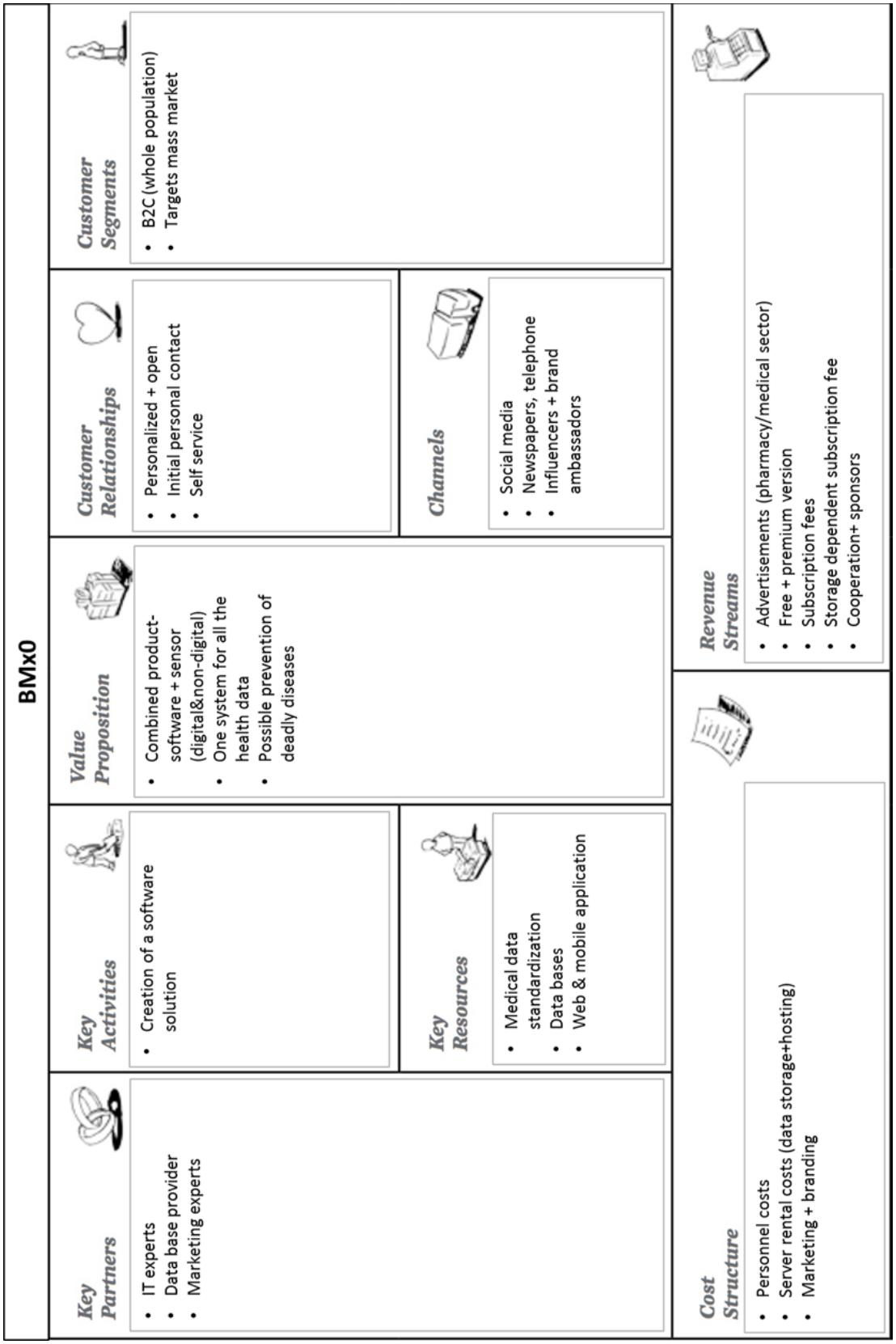


Figure 14: Zeta BMx0 (own source)

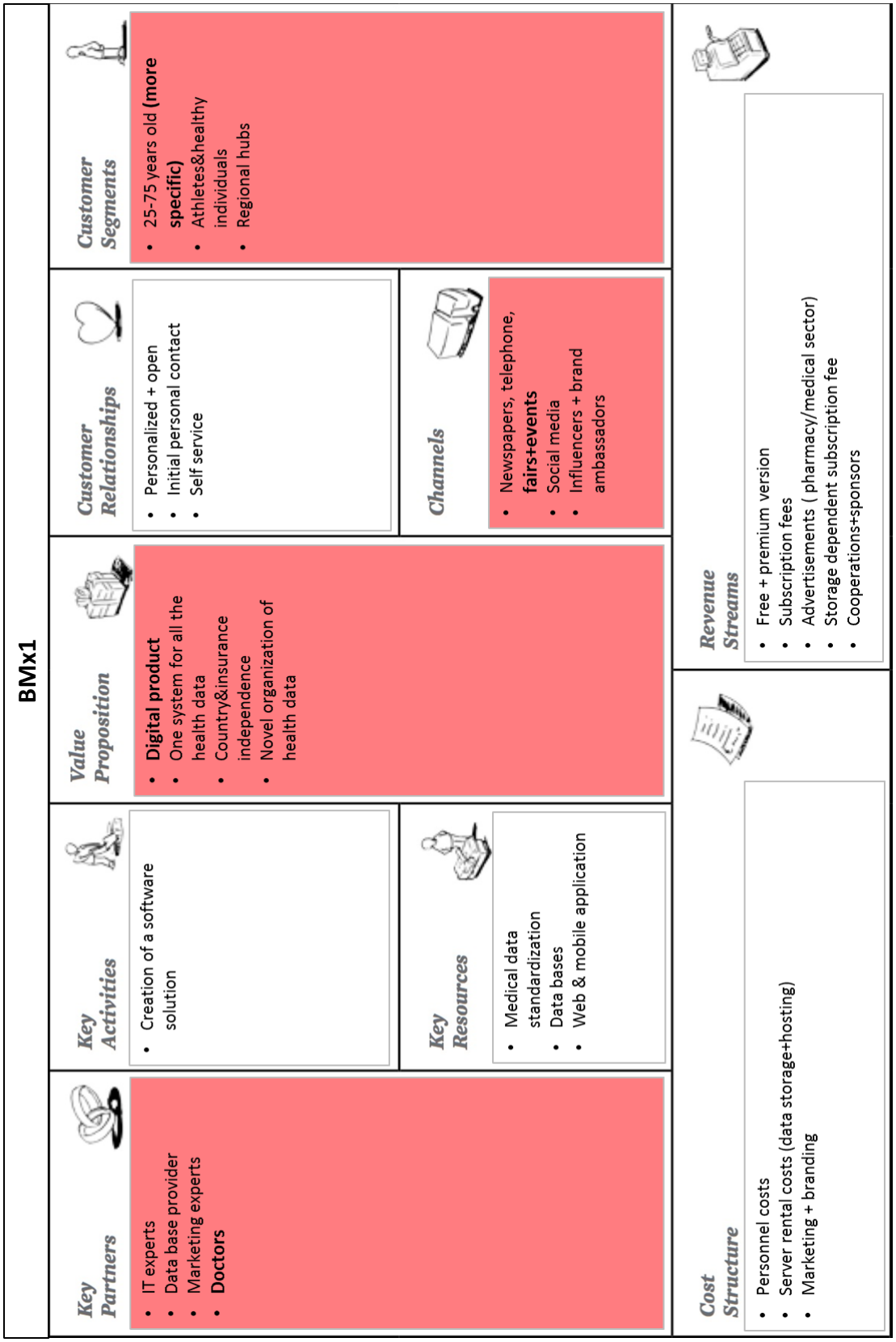


Figure 15: Zeta BMx1 (own source)

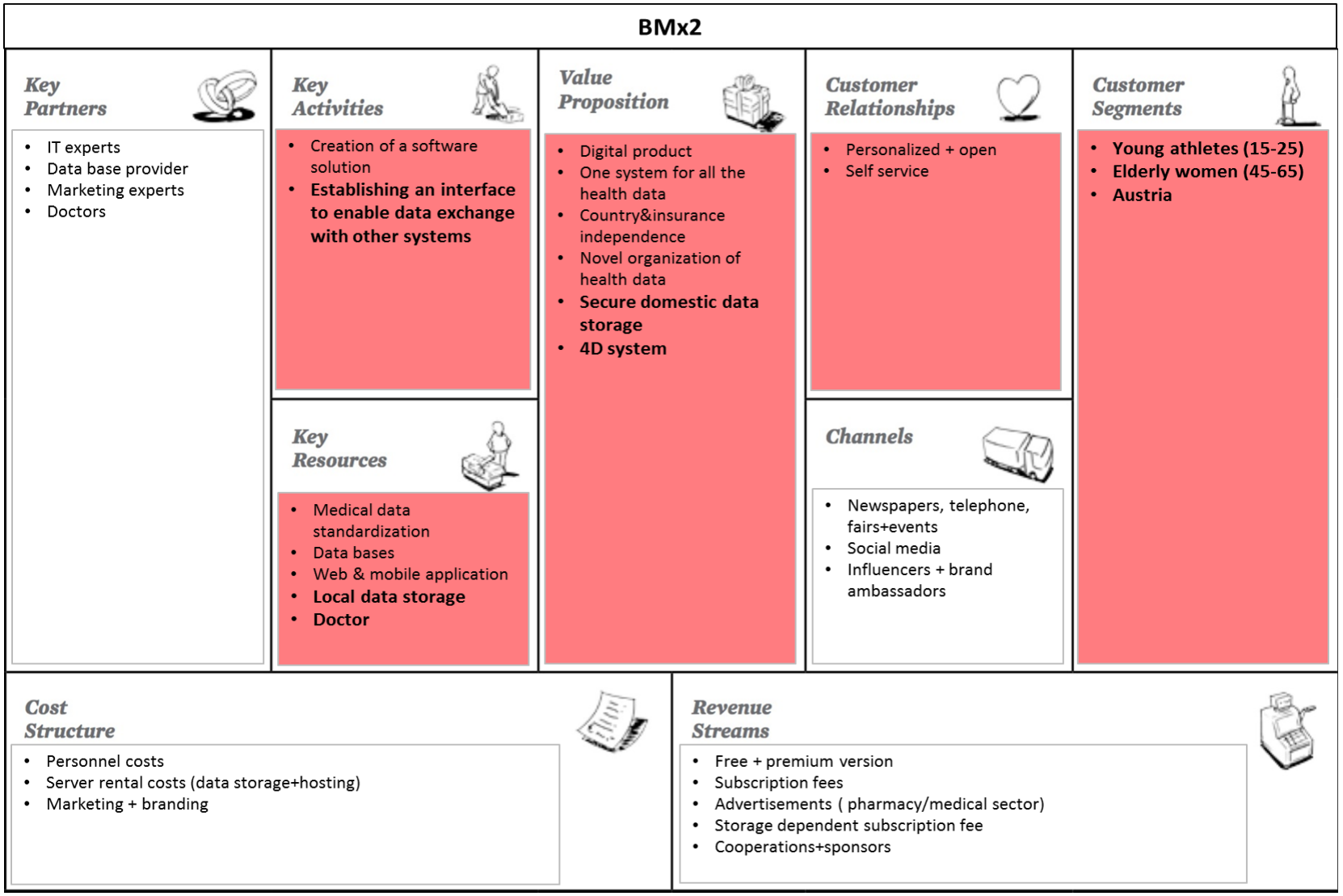


Figure 16: Zeta BMx2 (own source)

**Step 3**

Based on the previously described elaborations, it was afterwards possible to determine the number of teams that had changed a certain business model element during the investigation periods. In the course of this, it was just necessary to count how many teams changed a respective business model element. The results of this process are shown in *chapter 4.2*.

The two different methods that were carried out during the data analysis enabled it to obtain the desired results that should help to better understand how ESSUPs develop their business models. These findings are described in the following chapter.

# 4 Results

Since this study followed two distinct approaches concerning the investigation of the data for the two research questions, the results for each research question are also presented in separate subchapters.

## 4.1 Triggers

The evaluation approach that was described in *chapter 3.4.1* enabled the creation of an overall data structure that represents the several triggers, which led to changes within the business models of the investigated ESSUPs, on different levels of abstraction. The following pages describe the logic and the underlying mind-set that was used during this study in order to form the several resulting 2nd order categories and higher order aggregate dimensions. Thereby, each of the four developed aggregate dimensions is described separately. However, it has to be mentioned that for reasons of clarity not all 1st order codes are shown in the final data structure. In order to ensure that this information is not withheld, the subsection "*Triggers*" of the appendix contains a detailed list that shows which 1st order codes were combined into which 2nd order categories.

**Business model development practices**

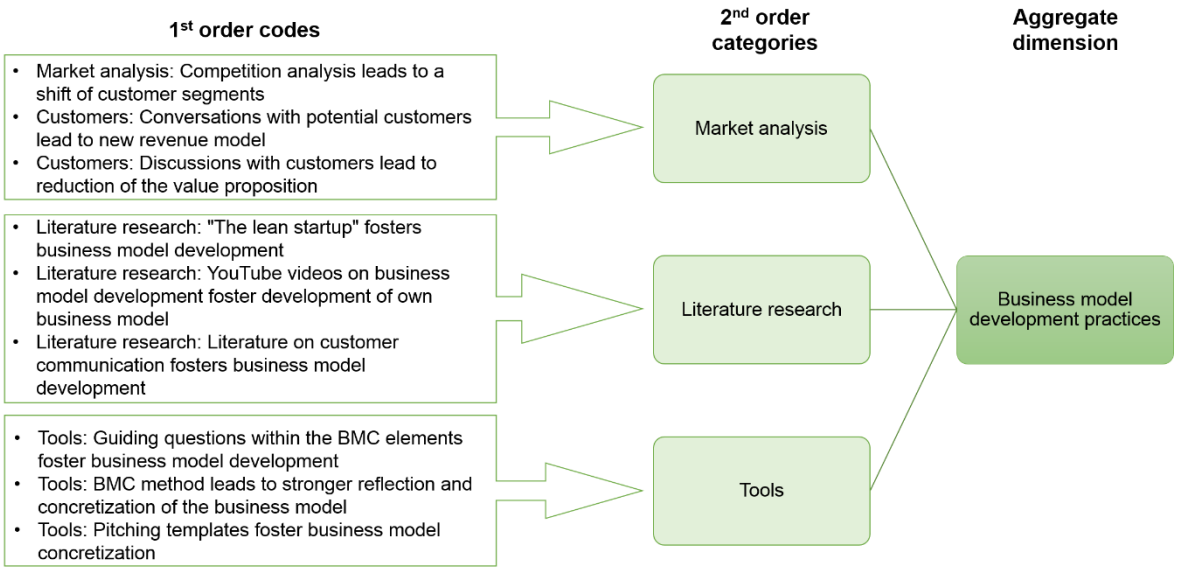


Figure 17: Data structure of "Business model development practices" (own source)

As already mentioned in *chapter 3.4.1*, some teams pointed out that certain activities of them, like getting in touch with customers or investigating the business model of their potential competitors, made them change specific business model elements. The respective 1st order codes were bundled together into the 2nd order category "Market analysis", as they have in common that the described activities are very often part of a market analysis. The next formed 2nd order category "Tools" consists of 1st order codes, which have the similarity that they describe specific approaches for business model development or the appropriate presentation of a start-up's business model. Especially, the guiding questions of such tools led to a closer examination of the business model and thus to the adaption of certain business model elements. Sometimes the teams also conducted a literature

research. Thereby they got new inputs that led to changes within their business model. The 1st order codes, which indicated such changes, were bundled into the 2nd order category “Literature research”. However, this category does not just include classical forms of literature research, like books, but also business model crash courses on YouTube. The deeper questioning of the fundamental logic of these three created categories revealed that they all describe activities or approaches that facilitate the development of a viable business model. Consequently, they are part of the resulting aggregate dimension “Business model development practices”.

### Environment

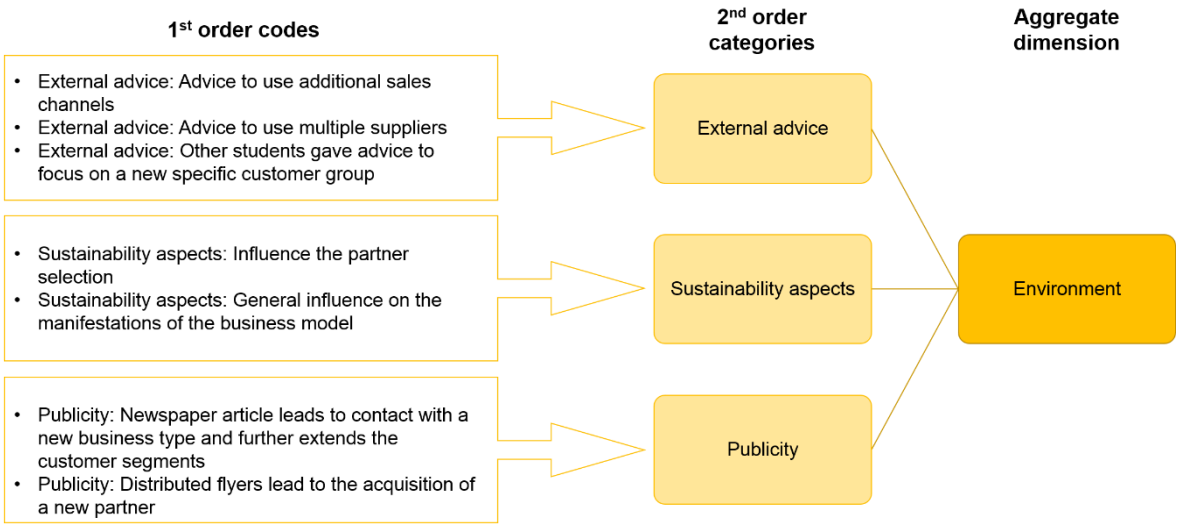


Figure 18: Data structure of "Environment" (own source)

Several teams stated during the interviews that they changed certain business model elements, because an external person gave them the advice to reconsider certain characteristics of their business model. All 1st order codes that describe such advices, which encouraged the teams to reconsider a specific business model component and consequently change it, are therefore bundled into the 2nd order category “External advice”. The term “external” refers to that the advice came from a person, who is not part of the business model or of the specific investigated start-up project itself. In order to avoid confusion, it is important to point out that all advices, which the teams received in the context of the GG from the mentors or the other teams, do not fall into this category. These advices are considered separately in another aggregate dimension.

Sometimes teams adapted their business model, because they started to think about sustainability aspects (social and environmental sustainability). Such considerations led for example to changes of the key partner segment, because the philosophy of previous partners did not fit to the opinions of the teams regarding sustainability anymore. All such changes fall under the 2nd order category “Sustainability aspects”.

Another group of 1st order codes indicated that some teams were directly approached by new potential partners or customers, because they got aware of the ESSUPs due to the marketing activities of the teams or through their appearance in public media. This led then in further consequence to the change of the respective business model element. As these encounters can be traced back to the public appearances of the individual teams, the concerning 1st order codes were

bundled into the 2nd order category “Publicity”. The closer investigation of the hereby-formed categories revealed that all of them describe triggers that are located within the environment of the ESSUPs. Because the external advices came from persons of the teams’ environment, for example friends or family members, but also persons who do not have such a close relationship with the team members, like experts in the field where the team wants to gain a foothold. The sustainability aspects are concerns that were approached to the teams by means of the society and the already shaped mind-set of the team members concerning this topic. This can again be traced back to the environment of the teams. Publicity and environment are linked in the sense, that other entrepreneurs from the society became aware of the ESSUPs due to the public appearance of the teams. In further consequence, these persons got in contact with the prospective start-ups, which led to changes within the business models of the ESSUPs. In this regard, the other entrepreneurs are part of the teams' business environment.

**Start-up fostering organizations**

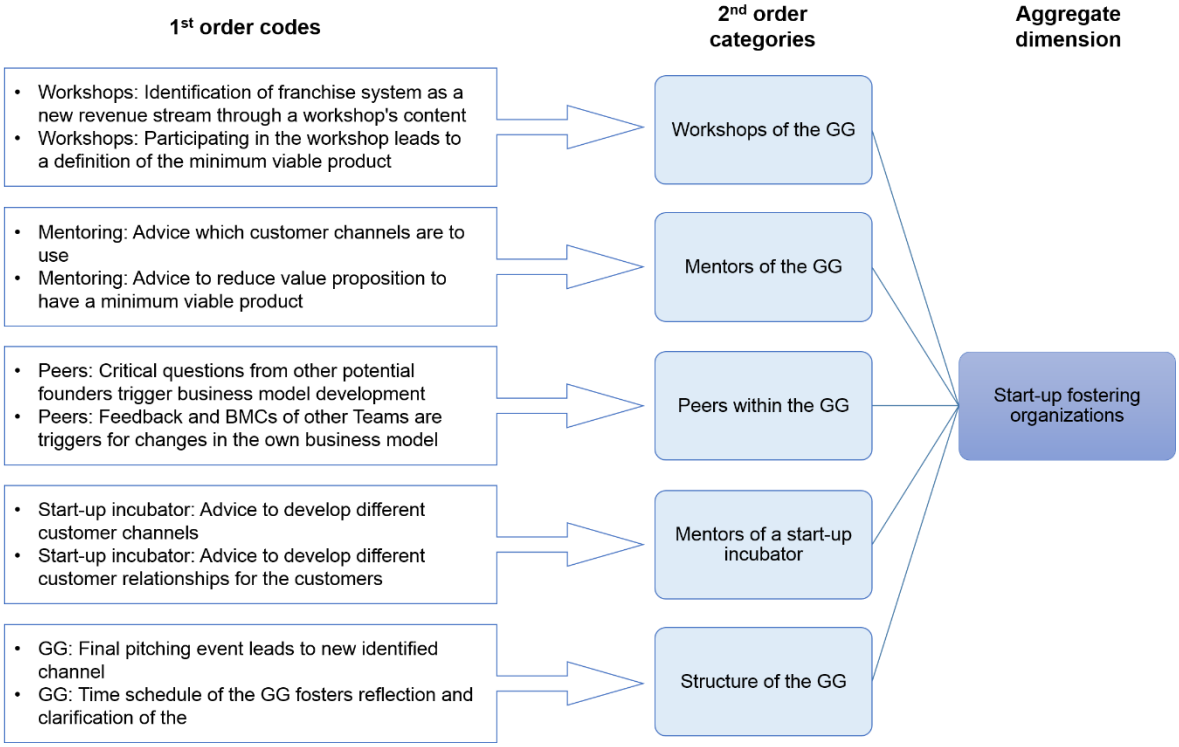


Figure 19: Data structure of "Start-up fostering organizations" (own source)

It should be mentioned in advance that almost all of the 1st order codes and 2nd order categories within this aggregate dimension refer to certain elements of the GG. There is just one exception. The 2nd order category “Mentors of a start-up incubator” and their respective 1st order codes refer to a different organization.

Generally, the teams became quite specific in determining the different components of the GG that led to changes within their business models. Several teams pointed out that their participation in the various workshops during the GG triggered changes within their business models due to the learned content. Therefore, these triggers were grouped together into the 2nd order category “Workshops of the GG”. Many teams also stated that they changed certain business elements, because the mentors of the GG gave them the advice to change an element due to certain reasons. All of the 1st order

codes that describe changes within the business models due to the counsel of a mentor are therefore bundled into the 2nd order category “Mentors of the GG”.

The interviews also revealed that the other teams that participated in the start-up accelerator triggered changes of the business model elements as well. This took place in different ways. On the one hand, teams adapted their own business model, because they identified new ways of doing business by analysing the BMCs of the other teams. On the other hand, discussions with the other teams concerning the own BMC also revealed certain grievances and thus led to changes of the business model elements. As the investigated teams participated together in the start-up accelerator for one semester, these described changes and their respective 1st order codes are summed up in the higher order category “Peers within the GG”.

Some teams also pointed out that they changed a certain business model element, because the temporal sequence of the GG “forced” them to deal with topics within their business model, which they would have postponed under different circumstances. Another team mentioned that they identified a new channel in the course of the final pitching event of the GG. As these triggers can be traced back to the course offering and the course of events of the GG, the respective 1st order codes are bundled into the 2nd order category “Structure of the GG”.

Beside the influence of the start-up accelerator program, some teams also stated during the interview that they adapted their business model due to different inputs, which they received in the course of a start-up incubator. The 1st order codes that describe these changes were therefore bundled together into the higher order category “Mentors of a start-up incubator”.

The subsequent endeavour of determining the underlying commonalities of the five resulting 2nd order categories revealed that all of them describe components of organizations that have made it their task to support start-ups in building up their business. However, at this point it has again to be mentioned that these are two distinct types of organizations, namely a start-up accelerator and a start-up incubator. The difference between these two programs becomes particularly clear when you compare the different time periods over which the respective institution provides its support and also the way in which this support takes place. While the accelerator program usually lasts for about three months, in which the participating teams very often receive a tremendous amount of mentorship, an start-up incubator is characterised by accompanying a start-up for a longer time period of one up to five years, but it provides far less mentoring sessions (Cohen, 2013, pp. 21–23). For this reason, the respective aggregate dimension was named “Start-up fostering organizations”.

**Business model insights**

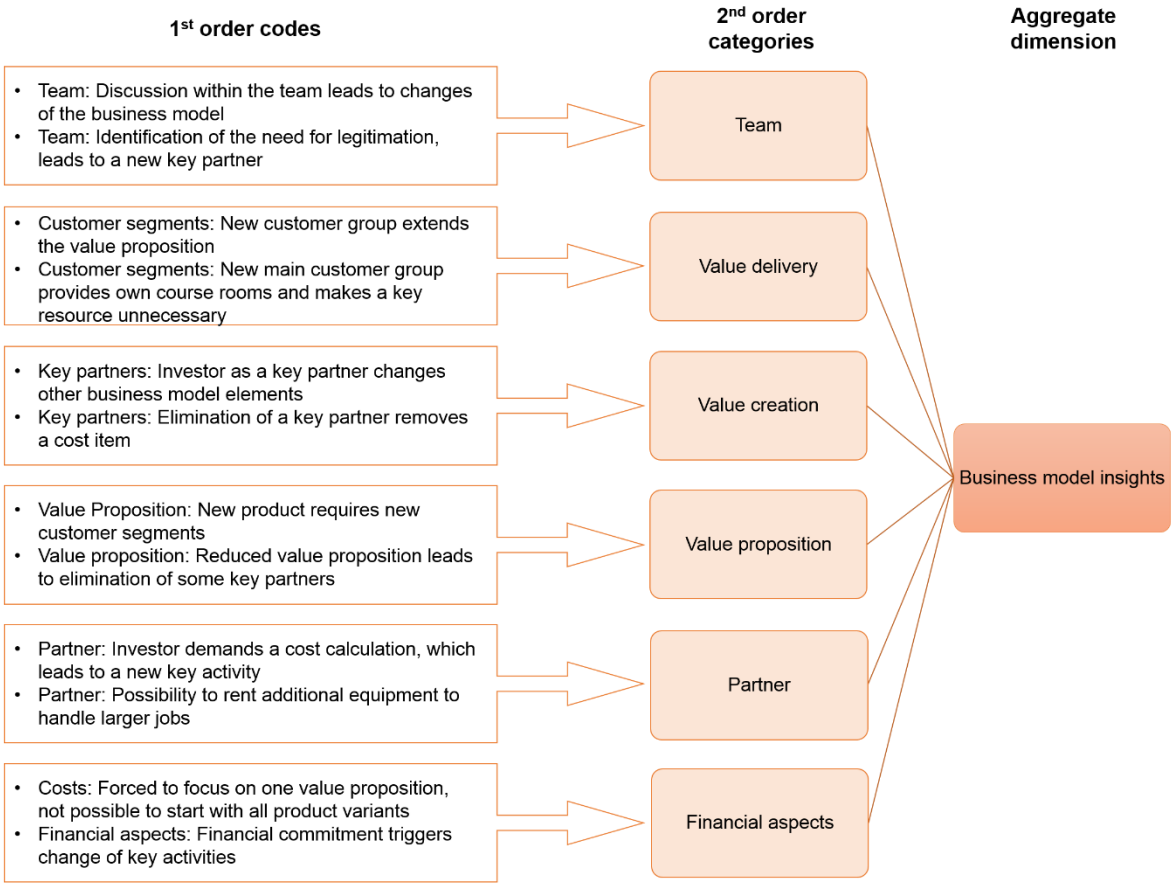


Figure 20: Data structure of "Business model insights" (own source)

The interviews revealed that the teams very often adapted their business model, because the team members themselves identified certain grievances of their current BMCs. Thereby these considerations had different starting points or triggers. Sometimes the team members concluded that they have to change a business model element in the course of an internal discussion and at another time, certain team members simply had an intuition concerning something, which they had not considered before. As all of these triggers can be traced back to considerations of the team, the individual 1st order codes were bundled into the 2nd order category “Team”.

Sometimes teams stated that the change of a certain business model element subsequently triggered a respective adjustment of another element, because otherwise those would not fit to each other. Thereby three different 2nd order categories were developed in order to find out if these changes were mainly triggered by certain areas of the BMC. Generally, the formation of the higher order categories based on the different dimensions of the BMC. Consequently, changes that can be traced back to adaptions of the teams’ value proposition were bundled into the 2nd order category “Value proposition”. Furthermore, business model changes due to the modification of the channels, customer relationships and customer segments were clustered into the higher order category “Value delivery”. Finally, 1st order codes that determine the change of the key partner element as the trigger for other business model changes were bundled together into the category “Value creation”. At this

point, it has to be mentioned that none of the teams stated that the change of an element of the value capture dimension triggered the change of another business model element.

Beside the changes due to the modification of other business model elements, some teams stated that the collaboration with already existing partners also triggered changes. Thereby this had different reasons. For example, one team mentioned that an existing cooperation offered new possibilities of doing business that required certain adjustments of the BMC. Another team stated that the influence of an investor led to changes within the business model. Concisely, all of the respective 1st order codes have in common that they describe changes that base on the inputs of partners. Therefore, they were bundled into the higher order category “Partner”. At this point, it is necessary to highlight the difference between the two 2nd order categories “Value creation” and “Partner”, because both include aspects of the key partner element of the BMC. Nevertheless, the underlying logic of their individual clustering process is quite different. While the “Value creation” category describes changes that occurred due to the change of an element of this dimension, the “Partner” category comprises changes that base on the interaction with partners. Therefore, in the last case, the key partner element does not change, but this would be in turn a prerequisite for the “Value creation” category.

Finally, the interviews also revealed that the teams changed and especially reduced the characteristics of certain business model elements, because they started to think about the costs of carrying out their business model. Thereby a team stated for example that the costs more or less brought them back down to earth, since the financial perspective pointed out that the team could not bear such a tremendous financial commitment from the very beginning. Therefore, they reduced their value proposition. In fact, several changes in the course of this study can be traced back to the insight that the individual teams would not be able to bear the costs. That is why all of the respective 1st order codes were bundled into the higher order category “Financial aspects”. Also here has to be pointed out that none of these described changes based on a modification of the cost structure element, otherwise one could argue that the description “Value capture” would fit better to this category.

The deeper examination of the similarities of the formed six 2nd order categories revealed that all of them describe changes, which had resulted from the business model itself. Because the teams themselves decided to modify certain elements based on insights of the current business model. The changes that occurred due to adaptions within a certain business model dimension can also be traced back to the nature of the business model. The business model changes that were triggered by inputs of already existing partners also fall into this category, since the partners are part of the business model and by defining them as partners, one also accepts the corresponding effects. This means that the business model itself, also caused the changes that fall into this category. The same is valid for the changes that were caused by the insight that the respective team has to reduce the costs. Therefore, all of these categories were clustered into the aggregate dimension “Business model insights”.

*Table 8* provides an overview of the developed 2nd order categories and the resulting aggregate dimensions, including the number of teams that indirectly mentioned a respective trigger via the bundled 1st order codes together with the corresponding percentage share in relation to the total 14 investigated teams. Furthermore, in order to underline the affiliation of the individual categories to the four developed aggregate dimensions, they are highlighted by means of four different colours.

| 2nd order category | Number of teams that mentioned a trigger that belongs to the 2nd order category | Percentage of the examined teams | Aggregate dimension | Number of teams that mentioned a trigger that belongs to the aggregate dimension | Percentage of the examined teams |
|---|---|---|---|---|---|
| Market analysis | 10 | 71,43% | Business model development practices | 12 | 85,71% |
| Tools | 8 | 57,14% | | | |
| Literature research | 3 | 21,43% | | | |
| Team | 10 | 71,43% | Business model insights | 14 | 100,00% |
| Value creation | 4 | 28,57% | | | |
| Value proposition | 4 | 28,57% | | | |
| Value delivery | 3 | 21,43% | | | |
| Financial aspects | 6 | 42,86% | | | |
| Partner | 3 | 21,43% | | | |
| External advice | 8 | 57,14% | Environment | 10 | 71,43% |
| Sustainability | 8 | 57,14% | | | |
| Publicity | 1 | 7,14% | | | |
| Mentors of the GG | 13 | 92,86% | Start-up fostering organizations | 14 | 100,00% |
| Workshops of the GG | 12 | 85,71% | | | |
| Peers within the GG | 5 | 35,71% | | | |
| Structure of the GG | 2 | 14,29% | | | |
| Mentors of a start-up incubator | 1 | 7,14% | | | |

Table 8: Data structure including the number of teams that mentioned a corresponding trigger (own source)

*Table 8* shows that there are major differences concerning the number of teams that mentioned a respective trigger of the formed 2nd order categories. Thereby this value varies from being mentioned by only 1 team up to 13 teams that identified a corresponding trigger. For example, only two teams named a trigger that falls under the category “Structure of the GG”, but almost all of the examined teams changed certain business model elements due to a corresponding trigger of the category “Mentors of the GG”. However, it is noteworthy that the analysis of the aggregate dimensions reveals quite a different picture. Because every aggregate dimension clusters triggers that affected at least ten teams, which is more than 70% of the examined cases. Two of them, namely “Business model insights” and “Start-up fostering organizations”, were even mentioned by all of the teams. However,

it has to be pointed out that this happened of course in an indirect manner by means of their underlying 1st order codes. This difference between the aggregate dimensions and their corresponding 2nd order categories results from the fact that the dimensions cluster categories that were indirectly mentioned by different teams. For example, it could be possible that, if an aggregate dimension consists of three 2nd order categories and each of these categories just includes triggers that were mentioned by only one team, the respective aggregate dimension in turn was indirectly mentioned by three teams, because the 2nd order categories concerned three different teams.

In order to get a better overview of how many teams changed an element of their BMC due to a trigger that belongs to a certain 2nd order category, *Table 9* shows a ranking in which all higher order categories are listed in a descending order according to the number of teams that indirectly identified them as triggers for change. Additionally, the 2nd order categories are highlighted by means of the colour that had been assigned to their corresponding aggregate dimension. This reveals that all of the aggregate dimensions include categories and their respective triggers, which were mentioned by the majority of the investigated teams, but also categories that did not even effect 25% of the teams. Furthermore, especially the influence of the GG becomes clear, since the two categories “Mentors” and “Workshops” concern almost all of the teams. Accordingly, the following table also gives a compact overview about the triggering factors that led to changes in the business model of the investigated ESSUPs and the respective position in the ranking additionally emphasizes the likelihood that a certain trigger influences a comparable start-up project.

| **2nd order category** | **Number of teams that mentioned a respective trigger** | **Percentage of the examined teams** |
|---|---|---|
| Mentors of the GG | 13 | 92,86% |
| Workshops of the GG | 12 | 85,71% |
| Team | 10 | 71,43% |
| Market analysis | 10 | 71,43% |
| External advice | 8 | 57,14% |
| Sustainability | 8 | 57,14% |
| Tools | 8 | 57,14% |
| Financial aspects | 6 | 42,86% |
| Peers within the GG | 5 | 35,71% |
| Value creation | 4 | 28,57% |
| Value proposition | 4 | 28,57% |
| Value delivery | 3 | 21,43% |
| Partner | 3 | 21,43% |
| Literature research | 3 | 21,43% |
| Organizational structure of the GG | 2 | 14,29% |
| Mentors of a start-up incubator | 1 | 7,14% |
| Publicity | 1 | 7,14% |

Table 9: Ranking of the 2nd order categories (own source)

## 4.2 Business model element changes

As already described in *chapter 3.4.2*, the comparison of the time specific BMCs made it possible to determine, if a team changed a certain business model element between the specific times of investigation or not. In order to discover any similarities between the business model changes among the individual teams, it was afterwards determined how many teams changed the individual business model elements during the specific investigation period. *Figure 21* and *Figure 22* show the results of this summation process on the following two pages. Thereby each business model element contains a number that shows how many teams changed the corresponding component in the respective investigation period. Furthermore, in order to emphasize the differences concerning the change behaviour of the single business model elements, the individual components and their change rate are additionally highlighted through different colours. Afterwards, the findings that arise from these figures are collectively described.


Figure 21: Total number of teams that changed the respective business model element in the period T0-T1 (own source)

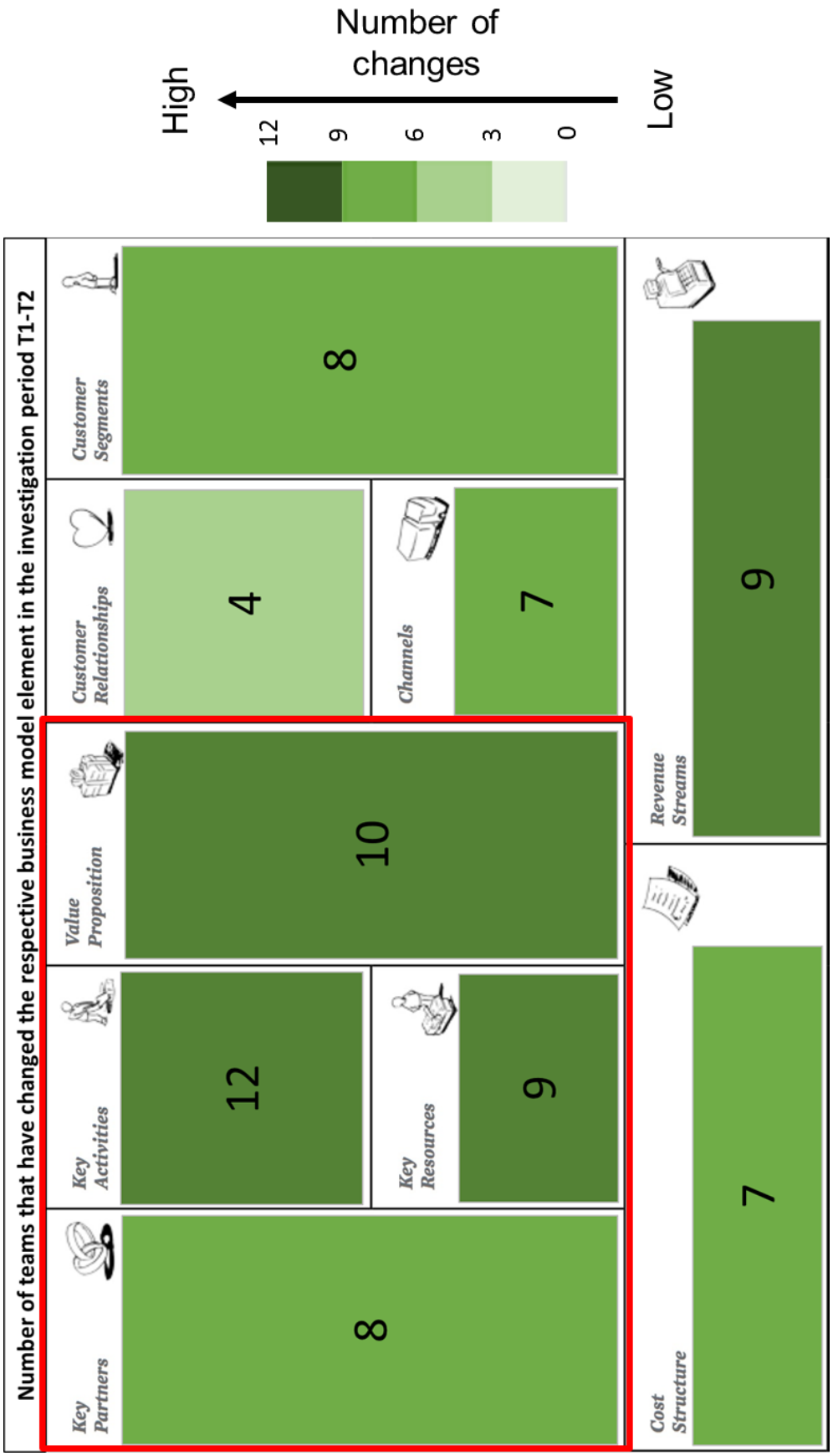


Figure 22: Total number of teams that changed the respective business model element in the period T1-T2 (own source)

A closer look at the previous two figures immediately reveals that the business model elements changed in different ways during the two periods of investigation (T0-T1 & T1-T2). In the case of the first period, it is noticeable that many teams changed the elements of the business model that are arranged on the right-hand side of the BMC, instead of the business model elements arranged on the left and at the bottom. However, there is one exception. Only one team out of the fourteen investigated teams changed the customer relationship element of its business model, which makes this component the least changed business model element during the time between T0 and T1. Furthermore, the rate of change of the value proposition should also be highlighted, since it reaches the second highest value.

The analysis of the second period shows a completely different picture, because the “epicentre” of the elemental changes has tended to move to the left side of the BMC, since this area of the business model changed much more often than the other regions in the period between T1 and T2. Besides the shift of this epicentre, the enormous increase of the number of teams, which changed the elements that are located in this area, is also striking. This is particularly true for the number of teams that changed the key activities and key resources of their business model, because these values quadrupled compared to the previous period. This led to the fact, that the key activities, which were just changed by about one fifth of the investigated teams between T0 and T1, became the most often changed business model element in the period T1-T2, because more than 85% of the teams adapted this BMC component between T1 and T2. Furthermore, the revenue stream element also recorded a considerable increase, concerning the number or teams who changed this BMC component, by doubling its value of the first investigation period. It is also noteworthy that the rate of change of the value proposition segment reached the second highest value again during the period T1-T2 and that the customer relationship segment remained the least changed business model element. In contrast to the general tendency of the business model elements of getting adapted more often between T1 and T2 than in the first period, the customer segments, which was the most changed element during the period T0-T1, by being adapted at eight teams, also changed in the second period at eight teams. However, in this investigation period this is even below the average number of teams that changed a certain business model element.

*Table 10* shows how many teams changed a certain business model element in a specific period together with the corresponding percentage share in order to get a better understanding concerning how many of the total investigated 14 teams had done this. Furthermore, it also contains the average values concerning this matter. Additionally, the table also includes a period specific ranking in which the individual components are ranked in a decreasing manner according to the number of teams that changed them.

| **Business model element** | **Actual changes** (# of teams that changed the element) | | **Percentage of the examined teams** (Actual changes/14) | | **Position** (Ranked in descending order of actual changes) | |
|---|---|---|---|---|---|---|
| | **T0-T1** | **T1-T2** | **T0-T1** | **T1-T2** | **T0-T1** | **T1-T2** |
| Customer segments | 8 | 8 | 57% | 57% | 1 | 5 |
| Customer relationships | 1 | 4 | 7% | 29% | 9 | 9 |
| Channels | 6 | 7 | 43% | 50% | 2 | 7 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Value proposition | 6 | 10 | 43% | 71% | 2 | 2 |
| Key activities | 3 | 12 | 21% | 86% | 7 | 1 |
| Key resources | 2 | 9 | 14% | 64% | 8 | 3 |
| Key partners | 5 | 8 | 36% | 57% | 4 | 5 |
| Cost structure | 5 | 7 | 36% | 50% | 4 | 7 |
| Revenue streams | 4 | 9 | 29% | 64% | 6 | 3 |
| **Average number of teams that changed an element** | 4,44 | 8,22 | 32% | 59% | | |

Table 10: Overview of the number of changed business model elements (own source)

Furthermore, the comparison of the findings at T1 and T2 shows that in the period between T1 and T2 almost twice as much element changes occurred than in the period between T0 and T1. In fact, in the time between the time of application and T1 only 40 business model elements changed across the BMCs of all teams, which is roughly about one third of the total possible element changes (126) during this period. In contrast, all teams together changed 74 business model elements during the period T1-T2, which were almost 60% of the total possible element changes in the time between T1 and T2. *Table 11* shows the calculation of these values.

| **Period** | **Actual changes** (# of changed business model elements) | **Possible changes** ( # of BMCs x # of BMC elements) | **Change rate [%]** (Actual changes/Possible changes) |
|---|---|---|---|
| T0-T1 | 40 | 14x9 = 126 | 40/126=32% |
| T1-T2 | 74 | 14x9 = 126 | 74/126=59% |

Table 11: Comparison of the number of changes that occurred in the investigation periods (own source)

Finally, *Table 12* shows a ranking in order to point out which elements were most often changed by the investigated ESSUPs. Thereby it is interesting that the majority of the total number of element changes is close to 50% of the 28 possible changes per element, except the customer relationships. This frequency also describes the likelihood that a certain business model element changes, as it is also the average of the change rate of the two investigation periods.

| Business model element | Changes T0-T1 | Changes T1-T2 | Total number of element changes | Percentage of total possible changes (28) |
|---|---|---|---|---|
| Customer segments | 8 | 8 | 16 | 57% |
| Value proposition | 6 | 10 | 16 | 57% |
| Key activities | 3 | 12 | 15 | 54% |
| Key partners | 5 | 8 | 13 | 46% |
| Channels | 6 | 7 | 13 | 46% |
| Revenue streams | 4 | 9 | 13 | 46% |
| Cost structure | 5 | 7 | 12 | 43% |
| Key resources | 2 | 9 | 11 | 39% |
| Customer relationships | 1 | 4 | 5 | 18% |

Table 12: Total number of element changes (own source)

# 5 Discussion

The best results do not yield any added value if they are not subsequently analysed and critically examined in terms of their relevance. Accordingly, this chapter deals firstly with the interpretation of the obtained results for each research question and finally emphasizes their significance for future research activities concerning how ESSUPs develop their business models.

## 5.1 Triggers

The evaluation of the triggers clearly shows that the GG has a strong influence on the business models of the teams that participate in the accelerate program, since all of the investigated teams changed at least one business model element due to an input that can be associated with the GG. However, it has of course to be said that this is also the purpose of the start-up accelerator.

Another important insight bases on the result that especially in the second investigation period, 57% of the teams changed certain business model elements due to the modification of another component. This fact emphasizes the interdependencies among the individual business model elements and consequently shows the strong impact that single components have on the overall development of the business model. Furthermore, it also points out that the theory concerning the epicentres of change by Osterwalder and Pigneur (2010, p. 138), applies to more than half of the investigated teams. Thereby the authors pointed out that business model elements can change due to changes of other components of the BMC, which are the so-called “epicentres of change”. While the researchers proposed this concept especially for the renewal of an already existing business model in the form of business model innovation, the findings of this thesis suggest that this is also valid for changes in the business model development stage. *Table 13* table shows at how many different teams a certain epicentre was identified during this study. Thereby it has to be pointed out that no finance driven epicentre was detected.

| **Number of teams with a respective epicentre of change** | | | |
|---|---|---|---|
| Resource driven | Offer driven | Customer driven | Multiple epicentre driven |
| 2 | 2 | 1 | 3 |

Table 13: Number of teams with a respective epicentre of change (own source)

The detected phenomenon that the change of certain business model elements triggers in turn changes within other business model components, also confirms the findings of Fernandes and Afonso (2018, p. 168), which they obtained in the course of a study concerning business model changes in the early phases of start-ups. In fact, these researchers also discovered that a change of certain elements of the BMC often leads to changes within other components. Thereby, they highlighted the role of the customer segments and the elements of the value creation dimension, since these components were very often the starting points for subsequent changes. Additionally, the researchers also identified that changes within the cost structure almost had no impact on other elements of the business model. (Fernandes and Afonso, 2018, pp. 168–169)

Beside the fact that these two researchers investigated already founded start-ups, the comparison of their insights with the results of this master thesis reveals several similarities. On the one hand,

the investigation of the ESSUPs of the GG also revealed that changes within the value creation dimension and the value delivery dimension (especially changes in the customer segments) of the BMC lead to adaptions of other business model components. On the other hand, the findings also pointed out that changes within the value capture dimension did not trigger subsequent changes, which corroborates the insight of Fernandes and Afonso (2018, pp. 168–169) concerning that changes of the cost structure have little influence on other elements of the BMC.

However, beside these similarities, it is necessary to point out that the results of this master thesis additionally revealed that especially changes within the value proposition trigger in further consequence adjustments of other business model components. Thereby the elements of the value creation dimension were affected by such changes in particular.

The interviews also revealed that almost 50% of the investigated teams changed certain components of the BMC, because otherwise they would have exceeded their financial limits. The 2nd order category "Financial aspects" shows this fact in Table *8*. Thereby this discovery corroborates the findings of Malmström and Johansson (2017, pp. 7–9), concerning that financing the business is a major challenge for entrepreneurs when they develop their business model and that entrepreneurs are thereby constrained by their financial limits.

Other interesting insights were revealed by the 2nd order category "Market analysis". On the one hand, this category and their aggregated 1st order codes show that several teams changed the content of their business models because they analysed the business models of potential competitors. On the other hand, the category reveals that some of the ESSUPs carried out targeted customer surveys and in further consequence changed certain business model elements based on the obtained insights. In general, these activities had for example the purpose to develop a suitable value proposition that satisfies actually mentioned customer needs or to detect weaknesses of the competitors in order to gain a competitive advantage. Based on that, it can be concluded that the teams drew back upon different management techniques that support companies to develop their optimal strategy and in further consequence their business model. In fact, the endeavour to gain a competitive advantage can be part of a SWOT analysis, where a company aims to identify its optimum market position (Schawel and Billing, 2012, pp. 249–250). A competitor analysis is also part of porter's five forces methodology, with the superior aim to assess the attractiveness of a certain industry sector (Schawel and Billing, 2012, pp. 108–109). The targeted customer surveys represent an alternative example. These surveys can be part of a PEST analysis in order to identify the values of the customers. (Steuernagel, 2017, pp. 63–65)

Based on these insights it is not possible to say if the teams intended to apply some aspects of these management techniques or if they executed them unconsciously. Nevertheless, this allows the conclusion that the investigated ESSUPs used at least some aspects of these methods when they further developed their business model. In addition, the identified approach of gathering customer feedback concerning the suitability of the value proposition is also part of the trial and error approach, which is according to Sosna *et al.* (2010, pp. 384–385) often used by start-ups in order to find the optimum business model. Therefore, the findings of this master thesis show that ESSUPs also tend to follow such a trial and error approach.

Furthermore, the finding, that many teams changed their business model based on the insights of early customer feedback, also shows that the assumptions of Ries (2011, pp. 75–76) and Blank

(2007, pp. 18–22), concerning the major role that the customer plays in the business model development process of start-ups, are already valid for ESSUPs.

Interestingly, the interviews also revealed that with increasing progress several teams started to think more and more about the ecological and social sustainability of their business models. Thereby it is not important that these considerations sometimes had different origins. In some cases, the team members were the driving force behind this matter and in other cases, the teams were more or less urged by their environment to think about this issue. On the one hand, this shows that nowadays the entrepreneurial spirit is often no longer limited to the economic exploitation of a promising opportunity, but rather aims at creating something of positive social and environmental importance. On the other hand, it shows that the society itself very often reminds entrepreneurs that they have a key role to play in shaping our future. Nevertheless, both insights underpin the conception of Spinelli and Adams (2016, p. 85), concerning that today sustainability is an integral part of the entrepreneurial process.

## 5.2 Business model element changes

The discussion concerning the business model element changes analyses these changes in a separate manner for the two investigation periods (T0-T1, T1-T2), since different aspects have to be considered in the different phases. Nevertheless, the phases are not analysed completely separate from each other, because their comparison reveals some interesting insights. Furthermore, also the influence of the already discussed triggers is taken into account in these analyses, because very often it is just possible to utterly understand the differences between the two investigation periods by considering the respective drivers. In addition, it is necessary to mention that the following two sections concerning the two investigation periods, first describe the differences between the two periods together with the thereby identified reasons, without linking the obtained results to the already existing literature. The actual allocation of the findings to the existing literature is afterwards done in a collective manner for both periods.

**Analysis of the period T0-T1:**
As already mentioned in *chapter 3.3* and *chapter 3.4.2*, the business models at the time T0 were reconstructed by means of the application documents and the first interview together with the BMC of the BMW. Thereby, it was noticeable that most of the teams only defined the value proposition together with the customer segments and the revenue streams in their application documents. This can of course be traced back to the fact that the application form of the GG explicitly asks to define these three elements and only rudimentarily suggests to transmit information concerning the other business model elements by stating that the application should in general include information about the business model of the teams. Consequently, due to the already mentioned restriction of the application documents concerning the amount of characters, teams might tend to neglect the other business model elements. Furthermore, it also depends on the educational background of the team members, because some of them might not even have heard about the other business model elements.

Therefore, it was necessary to use the first interview to identify how much the teams had already defined of their business models at T0. However, this approach heavily depends on the personal assessment of the teams concerning if something had already been defined at the time of application or if it was simply a thought that perhaps briefly haunted their minds. Furthermore, it is interesting to note that during the period T0-T1 most of the changes affected the value proposition and the customer segments, which were defined by most of the teams in their application documents. The other segments that were only rarely defined in the application documents, like the customer relationships or the key resources were just changed by approximately ~7-15% of the teams. One could even say that in the beginning the teams rather developed their business model according to the magic triangle method invented by Gassmann *et al.* (2013, pp. 5–6) instead of using the BMC, because this method reduces the complexity of the BMC by focusing on the customer, value proposition, revenue streams and value creation of a business model. This would apply to the transmitted information in the application documents and to the changes that occurred between T0 and T1 under the condition that the value creation dimension is not considered.

Furthermore, a comparison of the first investigation period with the period T1-T2 also provides reasons to assume that the elements of the value creation dimension (key resources, key activities and key partners) were not defined at T0. In fact, the second period shows that changes in the value proposition were often accompanied by changes in the value creation elements. Accordingly, the

ratio between the number of teams that changed the value proposition and the number of teams that changed these "key" components between T1 and T2 is approximately 1 for each of the elements. However, this is not the case in the first period. *Table 14* and *Table 15* contain the underlying data for this argumentation. Thereby they base on the data of *Figure 21* and *Figure 22*. The following analysis of the second period provides more information in this respect.

| **T0-T1** | | | | | | |
|---|---|---|---|---|---|---|
| Number of teams that changed the business model element | | | | Proportion | | |
| Value proposition | Key resources | Key activities | Key partners | VP/KR | VP/KA | VP/KP |
| 6 | 2 | 3 | 5 | 3 | 2 | 1,2 |

Table 14: Relationship of the changed business model elements T0-T1 (own source)

| **T1-T2** | | | | | | |
|---|---|---|---|---|---|---|
| Number of teams that changed the business model element | | | | Proportion | | |
| Value proposition | Key resources | Key activities | Key partners | VP/KR | VP/KA | VP/KP |
| 10 | 9 | 12 | 8 | 1,11 | 0,83 | 1,25 |

Table 15: Relationship of the changed business model elements T1-T2 (own source)

Another indicator for the assumption that certain business model elements were not defined at T0 is provided by the interviews, since they revealed that most of the teams defined parts of their key activities with matters that they had to approach at the time of the interview. However, in contrast to the second period, where this led to the fact that the majority of the teams (~86%) stated that their key activities had changed, this phenomenon is not visible in the first period. Nevertheless, it has to be mentioned at this point that the time span between T0 and T1 (~1-1,5 months) is shorter than the period between T1 and T2 (2,5-3 months), which might lead to the circumstance that the teams focused on the same matters at T1 and T0. Additionally, it has to be pointed out that the influence of the GG in this first period is perhaps not as strong as between T1-T2 due to the shorter time span and that it may take some time until the teams are fully committed to the program. This is relevant because the GG was a major driver for changes, as the results of *chapter 4.1* show.

**Analysis of the period T1-T2**

The analysis of this period has the advantage that there is no need for a discussion concerning if a certain business model element was defined at the beginning or not, because the created BMCs at T1 base on the first interviews and the BMCs of the business model workshop. Therefore, this already discussed issue had no influence on the total number of element changes between T1 and T2.

Generally, the results of *chapter 4.2* show that almost twice as much changes occurred in the second period compared to the period T0-T1. This may have different reasons. On the one hand, as already stated before, is the second investigation period much longer than the first one, which means that the teams had more time to implement changes. On the other hand, it has to be mentioned that T1 is located at the beginning of the “Workshop phase” of the GG (see *Figure 10*), which indicates that the influence due to the workshops and the mentors is much stronger in the second investigation period. In addition, since the BMW took place shortly before T1, it might be possible that the effects

of this course only became apparent at the time between T1 and T2. This assumption is strengthened by the fact, that in the second period a significant increase was identified concerning the number of teams that changed the business model elements, which were less frequently changed between T0 and T1. This can in turn be traced back to the assumption that the teams gained a better understanding concerning these elements, which are perhaps more difficult to understand. Furthermore, the analysis of the triggering factors revealed that this is not just an assumption, but also a fact, because the interviews pointed out that about 86% of the teams defined the workshops as major triggers for business model changes and withal especially emphasized the role of the BMW. Generally, the conclusions of this comparison base on the data of *Table 10*.

The analysis of this period also revealed another important insight, because as already mentioned before, many teams changed their value proposition together with the key resources, key activities and key partners, which led to the fact that the majority of the changes took place in the value proposition and value creation dimension of the BMC. In comparison, the first investigation period revealed that the teams implemented the majority of the changes in the value proposition together with the value delivery dimension. This also strengthens the previous assumptions concerning that the value creation dimension was sparsely defined at T0, so the teams focused especially on the defined customers and that they afterwards shifted their focus, due to the insights of the workshops, on this previously neglected dimension.

A closer look at the elements of the value capture dimension also reveals some interesting insights. In fact, especially the increase of the number of teams that adapted the revenue streams is remarkable, because this value rose by the factor 2,25. The analysis of these changes together with their triggers made it clear that some teams changed their revenue streams during the phase T1-T2, because they identified more suitable revenue models based on customer interviews. In contrast, the increase of the change rate of the cost structure was a lot smaller (1,4). Furthermore, the analysis of the triggers revealed that the changes within this element were often triggered by the reduction of the teams' value propositions.

Nevertheless, beside all of the previous considerations, it has to be pointed out that the used investigation method does not differentiate if a change of a business model element was serious or if it was only a simple extension. Of course, this applies to both examination periods. However, this does not mean that such considerations were not taken into account during the development of the final investigation methodology, but the analysis of the different element changes revealed that just a quite small percentage of the identified changes were extraordinary changes that were not just extensions of the already existing content within a certain business model element. Furthermore, a major part of these severe changes can be traced back to one specific team, which made it even more difficult to develop a valid model that considers changes on distinct levels of severity. Therefore, it did not make sense to differentiate between the changes in terms of their severity, because an appropriate scale for such a distinction would require a larger number of extraordinary changes concerning more teams. Nevertheless, it is quite interesting that the ratio of the number of serious changes during the second investigation period and the number of more significant changes during the first period is almost equal to the ratio of the total identified changes during T1-T2 and T0-T1. In fact, about 15% of the identified changes during the investigation period T1-T2 were of higher severity, while only about 7,5% of the changes between T0 and T1 were more radical compared to the others during the first period. This results in a ratio of 2, which is similar to the ratio of the total changes (1,9).

Finally, the collective comparison of the results of both investigation periods with the findings of Fernandes and Afonso (2018, pp. 165–166) also enables to draw some interesting conclusions. In the course of their study, where they examined the business model changes of already founded start-ups during their first years on the market, the researchers discovered that certain elements of the BMC tend to change more often than other components. Nevertheless, at this point it is necessary to mention that the researchers computed the therefore necessary frequencies based on a method that distinguishes between the severities of the changes. Based on this methodology, they identified that the value proposition and the customer segment were the most often changed business model elements. In addition, it is noteworthy that these components were the only elements that were modified more radically. They also discovered that a relatively high number of their investigated start-ups adapted the elements of the value creation dimension of the BMC and the revenue streams. In contrast, the study of the two researchers revealed that by far the least changes occurred in the cost structure element. Furthermore, also the channels and the customer relationships were just changed by a few teams. Finally, the researchers also pointed out that the elements of the value delivery dimension tend to change more independently than the elements of the value creation dimension, since the latter show a similar change behaviour while this is not the case for the value delivery elements. (Fernandes and Afonso, 2018, pp. 166–168)

These findings can be confirmed to a certain extent by means of the results that were obtained in the context of this master thesis. In fact, the analysis of both investigation periods shows that the teams changed the value proposition and the customer segments quite often. Despite the fact that the change rate of the customer segments reached a relatively low change rate during the phase T1-T2. However, the analysis also reveals that the cost structure was not the least changed element of the BMC during both periods. This business model component even achieved a rather high value during the first investigation period. The same is also valid for the channels. Furthermore, while the phase T1-T2 delivers similar results concerning the change behaviour of the revenue streams and the value creation dimension, especially the change rate of the elements of the value creation dimension was significantly lower during the period T0-T1. The already broadly discussed issue concerning the initially defined business model elements might be a reason for this. Finally, another important conclusion can be drawn concerning the matter that certain elements tend to change more independently than other components. In fact, while the results of this master thesis confirm the assumption of Fernandes and Afonso (2018, p. 168) that the elements of the value creation dimension strongly depend on each other, they extend this statement by highlighting the strong interdependencies between this dimension and the value proposition. Furthermore, the results also partly suggest that the elements of the value delivery dimension might eventually be more interconnected than the two researchers had concluded, since a connection among the change behaviour of the channels and the customer segments was detected during the interviews.

## 5.3 Contribution

Most of the existing literature concerning business model development provides assumptions and findings for founded start-ups or already established companies. However, it is quite difficult to get information concerning this topic for ESSUPs that are in the pre-foundation phase. The results of this in-depth study address this very issue in several ways by providing important inputs to gain a better understanding of how ESSUPs develop their business model. On the one hand, this work offers a basic overview of the triggers that led to changes among the business model elements and on the other hand, it shows which components of the business model are changed more often or less frequently at the investigated ESSUPs. This insight, concerning the change behaviour of the single business model elements, could be important for the development of advanced business model development tools that focus on specific components of the business model, depending on the phase of the foundation process in which the considered start-up is currently located. Thereby, the analysis of the factors that trigger changes within the business model underpins the relevance of this contribution, since it shows that such tools and the logic behind them often influence prospective companies in further developing their business models.

Furthermore, the findings and the closer examination of these results showed that several theoretical assumptions concerning how start-ups develop their business model are also applicable for ESSUPs, even though only a rather small sample of 14 teams was examined. In fact, already among this relatively low number of ESSUPs, it was possible to identify similarities concerning the development behaviour of the respective business models. The results of this study also provide important insights for upcoming entrepreneurs. Especially in the pre-foundation phase, it is important that the idea does not stand still, because otherwise it might be possible that it will just remain a thought model and never be implemented. A therefore necessary continuous development of the business model can be guaranteed due to the triggers and drivers that were discovered in the course of this work. Above all, the findings suggest that ESSUPs should definitely seize the opportunity and participate in a start-up accelerator program if they get the chance to do so, because this will definitely accelerate the development of their business ideas. Additionally, the results also provide important insights for start-up accelerator programs, since they show that the personal interaction between the participating teams and the mentors is of major importance in order to achieve substantial progresses concerning the teams' business models. Therefore, such accelerator programs should try to create a “pool” of mentors with expertise in as much different fields as possible to guarantee the best possible support for all kinds of start- ups.

Additionally, the results of this study also provide important information for a longitudinal study, in which about 20 teams per year will be examined using a similar methodology in order to obtain results that are more expressive. Beside the findings of this work, the insights concerning some weaknesses of the structure of the study can also contribute to the development of a new and perhaps more sophisticated investigation method.

# 6 Conclusion

In summary, it can be said that this master thesis provides several insights concerning how ESSUPs develop their business model. These findings base on the exploratory study, which was carried out in the course of this work with the aim to determine business model changes on an elementary basis together with the identification of the corresponding triggers. Thereby this approach made it possible to draw some interesting conclusions. On the one hand, the results show that the investigated ESSUPs tended to take a closer look at certain dimensions of the business model during the different development phases, while they put the further development of others temporarily aside. On the other hand, the analysis of the triggers revealed that despite the participation of the teams in an accelerator program, they were by far not only influenced by the GG during the investigated periods. More precisely, the teams were also influenced by their social environment and especially by the business model itself and the interdependencies among its components. The potential reasons for all of these findings were also broadly discussed in this work.

Nevertheless, it is necessary to point out that all of the results are especially valid for ESSUPs that participate in a start-up accelerator program, since the results show that the GG strongly influenced the ESSUPs during the development of their business models. Thereby this statement does not only refer to the identified triggers, but also to the change behaviour of the individual business model elements. Consequently, it is not possible to say if the findings also fit to ESSUPs that are not part of an accelerator program. Furthermore, it is also not given that other start-up accelerators influence their participating entrepreneurs in the same way or at least similarly as the GG. To eliminate these issues, it would be necessary to carry out different types of studies. On the one hand, to ensure the comparability of distinct start-up accelerator programs, it would be useful to conduct a study involving teams that are part of different start-up accelerators. On the other hand, in order to find out if ESSUPs, which do not participate in such a program, develop their business model in a complete different way, or if there are nevertheless similarities in the development process, it would be necessary to investigate such representative cases. Additionally, it would be necessary to examine if the findings are valid for start-up programs all over the world, or if there are differences among various nationalities. Since it is almost impossible to set up and conduct such a study on its own, a large number of researchers would have to undertake such a study on a transnational basis. Despite the enormous effort that would accompany such a type of study, it would nevertheless bring several advantages with it. On the one hand, it would be possible to evaluate this comparable country-specific data in a separate way in order to identify any differences between the individual nations. On the other hand, a collective analysis could be carried out to obtain results that are as generally valid as possible.

Furthermore, based on the results of this master thesis and their respective analysis, it is possible to conclude that it would make sense to develop more specific business model development practices. Such advanced methodologies would possibly help ESSUPs to develop their business models in a more targeted manner during the pre-founding phase. Based on these considerations, economists should check in the near future whether the development of such instruments makes sense and if it would be possible at all. Therefore, subsequent studies, which examine how ESSUPs develop their business model, should definitely try to identify if such advanced tools would pay off for prospective entrepreneurs or not.

However, as it is the case with all studies, the methodology that was used in the course of this master thesis also has certain strengths and weaknesses. Interestingly, both of these aspects apply to the detection of the element changes within the business model. On the one hand, the followed approach enabled it to entirely capture these changes, since the thereby applied focus on details did not allow a serious extension of an element to be seen as a simple enlargement of a certain business model element instead of considering it as a change. On the other hand, this focus on the details and the subsequent counting of these very often minor changes is also the weakness of the followed method. In fact, the approach of focusing on the frequency of changes per element, without considering the severity of the respective changes, has the disadvantage that areas, in which perhaps fewer changes were perceived, might be attributed less importance, even though more fundamental changes might have occurred in these areas. However, as has already been pointed out in the course of this work, it was not possible to develop a corresponding scale, which would be necessary to consider the severity aspect, because the sample itself and the number of extraordinary changes that distinguished themselves from the others were simply too small.

The relatively small sample of 14 investigated ESSUPs makes it also hardly possible to draw conclusions for the entirety of all ESSUPs, even beside the fact that the investigated business models dealt with the most diverse topics. Accordingly, it is indispensable to carry out studies that examine a much larger number of ESSUPs in order to obtain results that are more expressive. Since such larger samples would possibly include a larger variety concerning the severity of the changes, they would also provide the opportunity to develop a scale that defines whether a change is small or radical. Through this, it would be additionally possible to determine which business model elements tend to change more radically than others do and which elements mainly change in an incremental way.

Nevertheless, the empirical study that was carried out in the course of this master thesis together with the corresponding analysis of the applied method, provide a solid starting point for subsequent studies concerning how ESSUPs develop their business model. In particular, the findings regarding the strengths and weaknesses of the pursued approach can on the one hand, serve to set up future studies in a way that they overcome certain identified issues, like the need for a larger sample, by simply extending the study to a larger scale. On the other hand, the obtained insights regarding the individual change behaviour of the business model elements and the factors that trigger such modifications provide important clues for economists, who are engaged in the same research area. In particular, these insights can facilitate the development of new business model development tools that are tailored to ESSUPs in the pre-foundation phase. And in the end, such methods are of major importance, since this master thesis reveals that ESSUPs tend to get influenced by the structure of the business model and the underlying logic of respective development tools.

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# Appendix

## Interview guideline T1

| Question | Aim of the question |
|---|---|
| 1.) Welche Gedanken hast du dir zum Zeitpunkt der GG Bewerbung zum Geschäftsmodell gemacht? (z.B. welche Themen/Bereiche, welche Methoden, eventuell die Bewerbung vorlegen und Hinweise geben, Nachhaken z.B. in Richtung Value Proposition, Partner, Kunden,…) | Getting as much information as possible concerning the team's business model at T0. |
| 2.) Haben sich bis zum Zeitpunkt der Erstellung des ersten BMCs basierend auf dem open online course (iMooX) schon Veränderungen in deinem Geschäftsmodell ergeben und welche Faktoren waren dafür ausschlaggebend? | Detection of changes within the team's business model and determination of the respective triggers of these changes |
| 3.) Bitte beschreibe das im Workshop entwickelte Geschäftsmodell. (Zuerst ohne Vorlegen des BMC, dann gegebenenfalls das BMC Foto vom Workshop vorlegen) Welchen Beitrag hat der BMW zur Erstellung des Geschäftsmodells geliefert? Welche Elemente des Geschäftsmodells haben sich verändert? | Getting information regarding the team's business model at T1. Attempt to identify potential changes within the business model between T0 and T1 together with the corresponding triggers. |
| 4.) Ist nach Beantwortung dieser Frage noch eine Veränderung gegenüber der ursprünglichen Geschäftsidee aufgetaucht, die du vorher noch nicht beschrieben hast? | Repeated questioning should encourage the interviewee to reflect even more strongly on the development of his business model, which might reveal additional changes. |
| 5.) Wo liegen die Herausforderungen bei der Erstellung des Geschäftsmodells? (Nachhaken bei Bedarf) | Stronger reflection of the business model development process might reveal details concerning changing elements. |
| 6.) Hat es seit dem BMW Veränderungen des Geschäftsmodells gegeben und was waren die Auslöser dafür? Welche Veränderungen daraus haben sich durch die GG ergeben? | Identification of „brand new changes", which even might not be present in the BMC of the teams. |
| 7.) Wo siehst du noch weiteren Vertiefungs- und Unterstützungsbedarf bei der Erstellung eures Geschäftsmodells? | Attempt of identifying potential for improvement for the start-up accelerator program. |

| | |
|---|---|
| 8.) Sind digitale Technologien (z.B. Cloud Computing, Big Data) für dein Geschäftsmodell von Bedeutung?<br>Wenn ja, in welchen Elementen des Geschäftsmodells sind digitale Technologien von Bedeutung? | Getting more information concerning the business model elements at T1. |
| 9.) Basiert dein Geschäftsmodell auf Kooperationen oder sind Kooperationen essentiell für dein Geschäftsmodell?<br>Wenn ja, in welchen Elementen des Geschäftsmodells sind Kooperationen von Bedeutung? | Getting more information concerning the business model elements at T1. |
| 10.) Sind ökologische oder soziale Nachhaltigkeit (z.B. Umweltschutz oder Überwindung sozialer Probleme) für dein Geschäftsmodell von Bedeutung?<br>Wenn ja, in welchen Elementen des Geschäftsmodells sind ökologische oder soziale Nachhaltigkeit von Bedeutung? | Getting more information concerning the business model elements at T1. |

Table 16: Guiding questions of the first interview (own source)

# Interview guideline T2

| Question | Aim of the question |
|---|---|
| 1.)Wie hat sich euer Geschäftsmodell seit dem BMW verändert?<br>1.1 Wodurch hat sich euer Geschäftsmodell seit dem BMW verändert?<br>1.2 Was waren Auslöser für die Veränderung eures Geschäftsmodells? | Detection of changes within the team's business model and determination of the respective triggers of these changes. |
| 2.) Kundensegmente /Customer Segments<br>Haben sich die Nutzer, (zahlenden) Kunden seit dem BMW verändert?<br>Wenn ja: Wer waren zum Zeitpunkt des BMW eure wichtigsten Kunden und wer sind jetzt eure wichtigsten Kunden?<br>Wenn ja: Warum haben sich eure Kundensegmente verändert? | Getting information regarding the team's business model at T2. Attempt of identifying potential changes of the business model between T1 and T2 together with the corresponding triggers. |
| 3.) Wertangebote / Value Proposition<br>Hat sich das Produkt bzw. die Kombination von Produkten und Services, die ihr anbietet, verändert?<br>Wenn ja, welche Auswirkungen hatte das auf euer Geschäftsmodell?<br>Hat sich der Nutzen/Mehrwert für euren Kunden seit dem BMW verändert?<br>Wenn ja: Welche Kundenbedürfnisse wolltet ihr zum Zeitpunkt des BMW erfüllen und welche Kundenbedürfnisse erfüllt ihr jetzt?<br>Wenn ja: Warum erfüllt ihr jetzt einen anderen Kundennutzen? | Getting information regarding the team's business model at T2. Attempt of identifying potential changes of the business model between T1 and T2 together with the corresponding triggers. |
| 4.) Vertriebskanäle /Channels<br>Haben sich der Weg bzw. die Kanäle verändert, auf denen ihr eure Kunden erreichen wollt?<br>Wenn ja, wie? | Getting information regarding the team's business model at T2. Attempt of identifying potential changes of the business model between T1 and T2 together with the corresponding triggers. |
| 5.) Kundenbeziehungen / Customer Relationships<br>Hat sich die Art von Beziehung zu euren Kunden seit dem BMW verändert?<br>Wenn ja, was macht ihr jetzt anders für den Aufbau, die Pflege und Erweiterung der Beziehung? | Getting information regarding the team's business model at T2. Attempt of identifying potential changes of the business model between T1 and T2 together with the corresponding triggers. |

| | |
|---|---|
| 6.) Einnahmequellen / Revenue Streams<br>Hat sich die Art, wie ihr Einnahmen erzielen möchtet seit dem BMW verändert?<br>Wenn ja, wie wollt ihr jetzt Geld verdienen? | Getting information regarding the team's business model at T2. Attempt of identifying potential changes of the business model between T1 and T2 together with the corresponding triggers. |
| 7.) Schlüsselressourcen / Key Resources<br>Haben sich die Ressourcen und die Infrastruktur, die ihr benötigt um euer Produkt/ Service anzubieten, seit dem BMW verändert?<br>Wenn ja, auf welchen Ressourcen baut euer Nutzenversprechen jetzt auf? | Getting information regarding the team's business model at T2. Attempt of identifying potential changes of the business model between T1 and T2 together with the corresponding triggers. |
| 8.) Schlüsselaktivitäten / Key Activities<br>Haben sich die Aktivitäten verändert, die ihr durchführen müsst, um den Kundennutzen zu erfüllen?<br>Wenn ja, welche Aktivitäten sind jetzt für die Vertriebskanäle notwendig, welche für die Kundenbeziehungen etc.? | Getting information regarding the team's business model at T2. Attempt of identifying potential changes of the business model between T1 and T2 together with the corresponding triggers. |
| 9.) Schlüsselpartner / Key Partners<br>Haben sich eure Schlüsselpartner oder eure wichtigsten Lieferanten seit dem BMW verändert?<br>Wenn ja, bei welchen Schlüsselressourcen/ Schlüsselaktivitäten seid ihr jetzt von Partnern abhängig? | Getting information regarding the team's business model at T2. Attempt of identifying potential changes of the business model between T1 and T2 together with the corresponding triggers. |
| 10.) Kostenstruktur / Cost Structure<br>Hat sich eure Kostenstruktur seit dem BMW verändert?<br>Wenn ja, welche Schlüsselressourcen/ Schlüsselaktivitäten sind jetzt die Kostentreiber? | Getting information regarding the team's business model at T2. Attempt of identifying potential changes of the business model between T1 and T2 together with the corresponding triggers. |

Table 17: Guiding questions of the second interview (own source)

# Triggers

This section includes all of the identified triggers that led to changes within the business models of the investigated teams. Thereby these triggers are equivalent to the 1st order codes that were created in QCAmap. The following pages (A10-A18) show all of these triggers and their corresponding 2nd order categories. Furthermore, the following figure serves as a reminder to recall the developed aggregate dimensions that are described in chapter *4.1* together with the respective 2nd order categories.

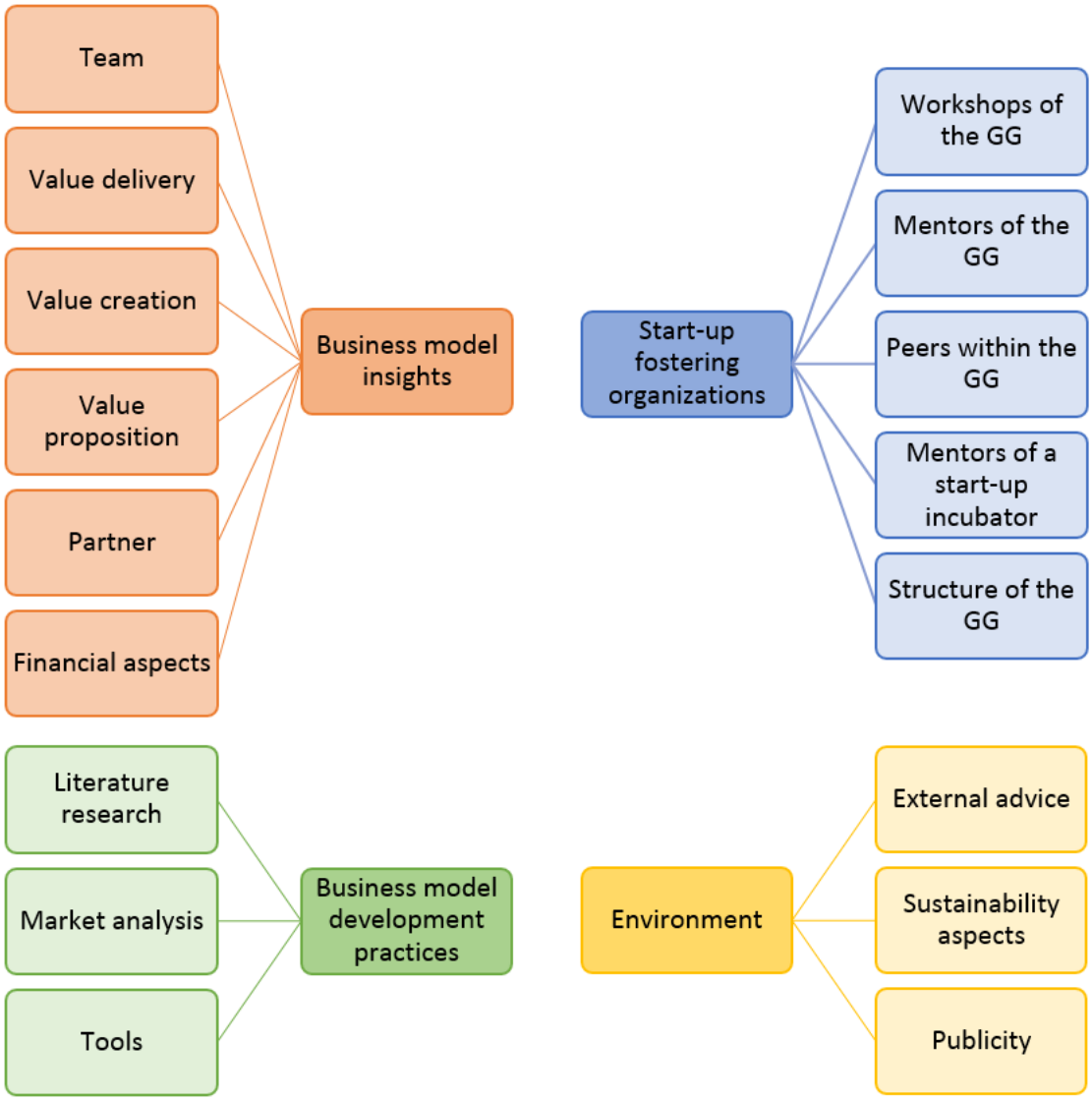


Figure 23: Main categories of the identified triggers (own source)

| 2nd Order Code | | 1st Order Code |
|---|---|---|
| 1 | **Literature Research** | ▪ Literature research: "The lean startup" fosters business model development<br>▪ Literature research: YouTube videos on business model development foster development of own business model<br>▪ Literature research: Literature on customer communication fosters business model development<br>▪ Literature research: Scientific literature fosters business model development |
| 2 | **Market analysis** | ▪ Market analysis: Google search to find out what others are doing triggers business model development<br>▪ Market research: Survey conducted to determine target groups<br>▪ Market analysis: Interviews with stakeholder to specify the value proposition<br>▪ Market analysis: Discovery that the recipe is for free eliminates a cost driver<br>▪ Market analysis: Competition analysis leads to a shift of customer segments<br>▪ Market analysis: Conversation with companies in the industry lead to new channels<br>▪ Customers: Conversations with potential customers lead to new revenue model<br>▪ Customers: Talking to potential customers to define value proposition and price<br>▪ Market research: Analysis of other companies to find key resources<br>▪ Customer: Customer contact leads to new key activity |

| | | |
|---|---|---|
| | | ▪ Customer: Customer asks for flat-rate payment model as a new revenue stream<br>▪ Market research: Google search led to identification of new key partner<br>▪ Market research: Identification of different organizations leads to new offline activities in order to win probands<br>▪ Customers: Discussions with customers lead to reduction of the value proposition<br>▪ Customers: Contact with new potential customers leads to enlargement of the customer segments<br>▪ Customers: Discussions with potential cooperation partners lead to identification of intellectual property as a key resource |
| **3** | **Tools** | ▪ Tools: Better understanding of the BMC approach through applying it fosters business model development<br>▪ Tools: BMC approach of understanding the big picture before going into detail fosters business model development<br>▪ Tools: BMC's structured approach fosters business model development<br>▪ Tools: Guiding questions within the BMC elements foster business model development<br>▪ Tools: BMC method leads to stronger reflection and concretization of the business model<br>▪ Tools: Pitching templates foster business model concretization |
| **4** | **External advice** | ▪ External advice: Do things yourself in the early stage<br>▪ External advice: Advice to use additional sales channels |

| | | |
|---|---|---|
| | | ▪ External advice: Advice to find employees or co-founders changes business model elements<br>▪ External advice: Consultation from experts changes the business model<br>▪ External advice: Advice from entrepreneurs change own business model<br>▪ External advice: Development of the product based on the advice of a colleague with fundamental know how in the application field<br>▪ External advice: Advice to use multiple suppliers<br>▪ External advice: Advice to use domestic production in order to secure intellectual property<br>▪ External advice: Inputs of the social environment foster further business model development<br>▪ External advice: Meeting with a well connected person enables contact with new key partners<br>▪ External advice: Other students gave advice to focus on a new specific customer group<br>▪ External advice: Discussion with a researcher leads to the extension of the value proposition through an AddOn model |
| **5** | **Sustainability Aspects** | ▪ Sustainability aspects: Influence the partner selection<br>▪ Sustainability aspects: General influence on the manifestations of the business model |
| **6** | **Publicity** | ▪ Publicity: Newspaper article leads to contact with a new business type and further extends the customer segments<br>▪ Publicity: Distributed Flyers lead to the acquisition of a new partner |
| **7** | **Workshops of the GG** | ▪ Workshops: BMW fosters better understanding of a business model |

| | | |
|---|---|---|
| | | ▪ Workshops: Inputs of the MOOC videos foster business model development<br>▪ Workshops: Participating in the workshop leads to a definition of the minimum viable product<br>▪ Workshops: Foster business model development<br>▪ Workshops: Content suggests the possibility of using test users as key partners for product development<br>▪ Workshops: Product development and individualization through participation in the accelerator<br>▪ Workshop: Content fosters the concretization of the customer segments<br>▪ Workshop: Content fosters the concretization of channels<br>▪ Workshops: Content suggests the possibility of licensing intellectual property as a new revenue stream<br>▪ Workshops: Content triggers considerations about a cooperation with new key partners<br>▪ Workshop: Identification of franchise system as a new revenue stream through a workshop's content |
| **8** | **Mentors of the GG** | ▪ Mentoring: Discussions with mentors are triggers for business model development<br>▪ Mentoring: Mentoring lesson helped to develop new method of earning revenues<br>▪ Mentoring: Advices how to win new key partners<br>▪ Mentoring: Triggers development of the value proposition for B2C<br>▪ Mentoring: Triggers enlargement of customer segment from B2B to also B2C |

| | | |
|---|---|---|
| | | ▪ Mentoring: Advice which customer channels are to use<br>▪ Mentoring: Advice to reduce customer segments<br>▪ Mentoring: Advice on production and value proposition<br>▪ Mentoring: Advice on which customers to focus on<br>▪ Mentoring: Advice how to use intellectual property<br>▪ Mentoring: Advice to develop different customer relationships for the customers<br>▪ Mentoring: Advice to concretize value proposition<br>▪ Mentoring: Advice to use established structures to reduce own responsibility<br>▪ Mentoring: Advice to sell “Do it yourself-kits” instead of product (open source methodology)<br>▪ Mentoring: Advice how to concretize customer segments<br>▪ Mentoring: Advice to reduce value proposition to have a minimum viable product<br>▪ Mentoring: Advice to include a doctor into the team (key resource)<br>▪ Mentoring: Advice to focus on direct marketing instead of social media<br>▪ Mentoring: Advice to find other ways to generate revenue streams<br>▪ Mentoring: Advice to use ResearchGate to address researchers |
| **9** | **Peers within the GG** | ▪ Peers: Critical questions from other participants/potential founders are triggers for business model development |

| | | |
|---|---|---|
| | | ▪ Peers: Feedback and BMCs of other teams are triggers for changes in the own business model |
| **10** | **Mentors of a start-up incubator** | ▪ Start-up incubator: Advice to develop different customer channels<br>▪ Start-up incubator: Advice to develop different customer relationships for the customers |
| **11** | **Structure of the GG** | ▪ GG: Final pitching event leads to new identified channel<br>▪ GG: Time schedule of the GG fosters reflection and clarification of the business model |
| **12** | **Team** | ▪ Team: Discussion within the team leads to changes of the business model<br>▪ Team: Professional experience within the team changes business model elements<br>▪ Team: Experience from simultaneous entrepreneurial projects foster business model development<br>▪ Team: Sparse impression of the business model elements leads to iteration<br>▪ Team: Rethinking within the team lead to reduction of the value proposition<br>▪ Team: Extension of the value proposition with new ideas<br>▪ Team: Insight that an annually fee fits better for the revenue streams<br>▪ Team: Identified technology triggers change of the customer segment from B2C to B2B<br>▪ Team: Detection of the need for a co-founder as a new key resource<br>▪ Team: Intensive dealing with the business model leads to concretization of it |

| | | |
|---|---|---|
| | | ▪ Team: Internal discussions lead to new revenue streams<br>▪ Team: Discussions lead to switching from an offline to an online service<br>▪ Team: Identification of new customer segments<br>▪ Team: Limited time leads to reduction of the offering<br>▪ Team: Identification of additional costs<br>▪ Team: Reduction of channels because of lacking know how<br>▪ Team: Limited time reduces key activities<br>▪ Team: Limited time removes customer relationship elements<br>▪ Team: Identification of “Face2Face” marketing as a new high potential channel<br>▪ Team: Identification of the need for legitimation, leads to a new key partner<br>▪ Team: Internal insight that the project requires an UI/UX designer to simplify content<br>▪ Team: Internal insight that intellectual property isn't necessary<br>▪ Financial aspects: Funding application leads to new identified key partner |
| **13** | **Value creation** | ▪ Key partners: Elimination of a key partner removes a cost item<br>▪ Key partners: Investor as a key partner changes other business model elements |
| **14** | **Value delivery** | ▪ Customer segments: New customer group extends the value proposition<br>▪ Customer segment: Other requirements of new target customer group lead to changes in the value proposition |

| | | |
|---|---|---|
| | | ▪ Customer segments: New main customer group provides own course rooms and makes a key resource unnecessary |
| **15** | **Value proposition** | ▪ Value proposition: New value proposition leads to reduction of key activities<br>▪ Value proposition: New value proposition requires shipping service providers as key partners<br>▪ Value proposition: New way of doing business changes business model elements<br>▪ Value proposition: Additional value proposition leads to additional revenue streams<br>▪ Value Proposition: New product requires new customer segments<br>▪ Value proposition: Open source method changes the customer relationships<br>▪ Value proposition: Reduced value proposition eliminates some key resources<br>▪ Value proposition: Reduced value proposition leads to elimination of some key partners<br>▪ Value proposition: New value proposition changes key resources |
| **16** | **Partner** | ▪ Partner: New cooperations can lead to changes<br>▪ Partner: Possibility to rent additional equipment to handle larger jobs<br>▪ Partner: Investor demands a cost calculation, which leads to a new key activity |
| **17** | **Financial aspects** | ▪ Costs: Forced to focus on one value proposition, not possible to start with all product variants |

| | |
|---|---|
| | ▪ Financial aspects: Financial commitment triggers change of key activities<br>▪ Costs: As a driver for the use of own resources<br>▪ Cost: Cost intensive certification requirements lead to a replacement of customer segments<br>▪ Costs: Decision to outsource activities<br>▪ Financial aspects: Application for sponsorship requires concretization of the business model<br>▪ Costs: Small budget leads to reduction of channels<br>▪ Costs: Lacking of financial fundings leads to elimination of cost drivers<br>▪ Costs: Limited budget removes customer relationship elements<br>▪ Financial aspects: Funding application leads to new identified key partner |

Table 18: 2nd order categories and the aggregated 1st order codes (own source)

## BMCs of the ESSUPs

The following pages (A20-A58) show the BMCs that represent the business models of the respective ESSUPs at T0, T1, and T2.

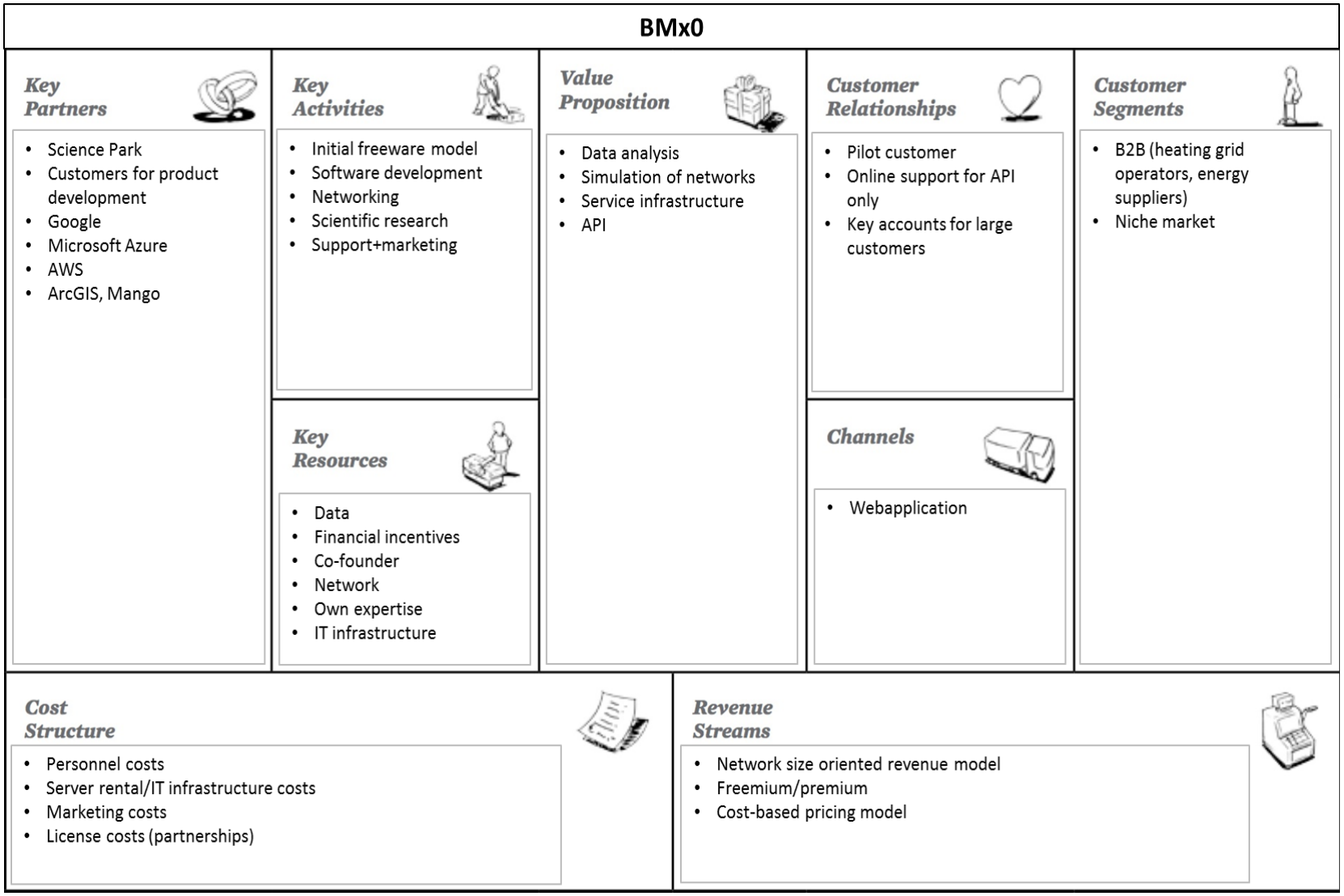


Figure 24: Alpha BMx0 (own source)

## BMx1

### Key Partners
- Science Park
- Customers for product development
- Google
- Microsoft Azure
- AWS
- ArcGIS, Mango

### Key Activities
- Initial freeware model
- Software development
- Networking
- Scientific research
- Support+marketing

### Key Resources
- Data
- Financial incentives
- Co-founder
- Network
- Own expertise
- **Patent**
- IT infrastructure

### Value Proposition
- **Value proposition different depending on customer size**
- Data analysis
- Simulation of networks
- Service infrastructure
- API

### Customer Relationships
- **Pilot customer**
- **Online support for API only**
- **Key accounts for large customers**

### Channels
- API to get information
- Digital channels
- Offline delivery
- Mail chimp
- Network
- Webapplication, mobil

### Customer Segments
- B2B (heating grid operators, energy suppliers)
- Niche market

### Cost Structure
- Personnel costs
- Server rental/IT infrastructure costs
- Marketing costs
- License costs (partnerships)

### Revenue Streams
- **Use case** + network size oriented revenue model
- Freemium/premium
- Cost-based pricing model

Figure 25: Alpha BMx1 (own source)

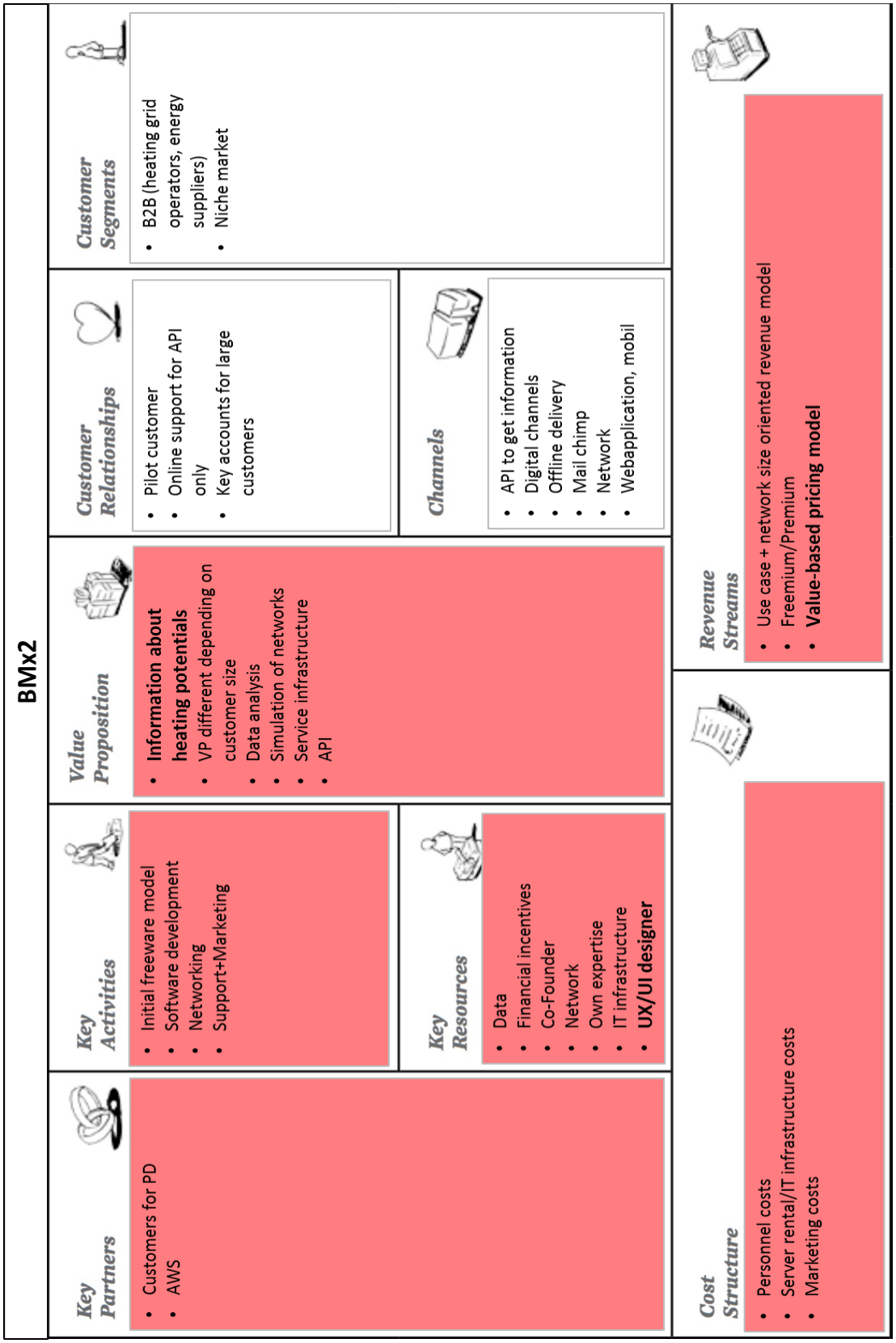


Figure 26: Alpha BMx2 (own source)

**BMx0**

***Key Partners***

- Science Park
- Customers for product development
- Google
- Microsoft Azure
- AWS
- ArcGIS, Mango

***Key Activities***

- Initial freeware model
- Software development
- Networking
- Scientific research
- Support+marketing

***Key Resources***

- Data
- Financial incentives
- Co-founder
- Network
- Own expertise
- IT infrastructure

***Value Proposition***

- Data analysis
- Simulation of networks
- Service infrastructure
- API

***Customer Relationships***

- Pilot customer
- Online support for API only
- Key accounts for large customers

***Channels***

- Webapplication

***Customer Segments***

- B2B (heating grid operators, energy suppliers)
- Niche market

***Cost Structure***

- Personnel costs
- Server rental/IT infrastructure costs
- Marketing costs
- License costs (partnerships)

***Revenue Streams***

- Network size oriented revenue model
- Freemium/premium
- Cost-based pricing model

Figure 27: Beta BMx0 (own source)

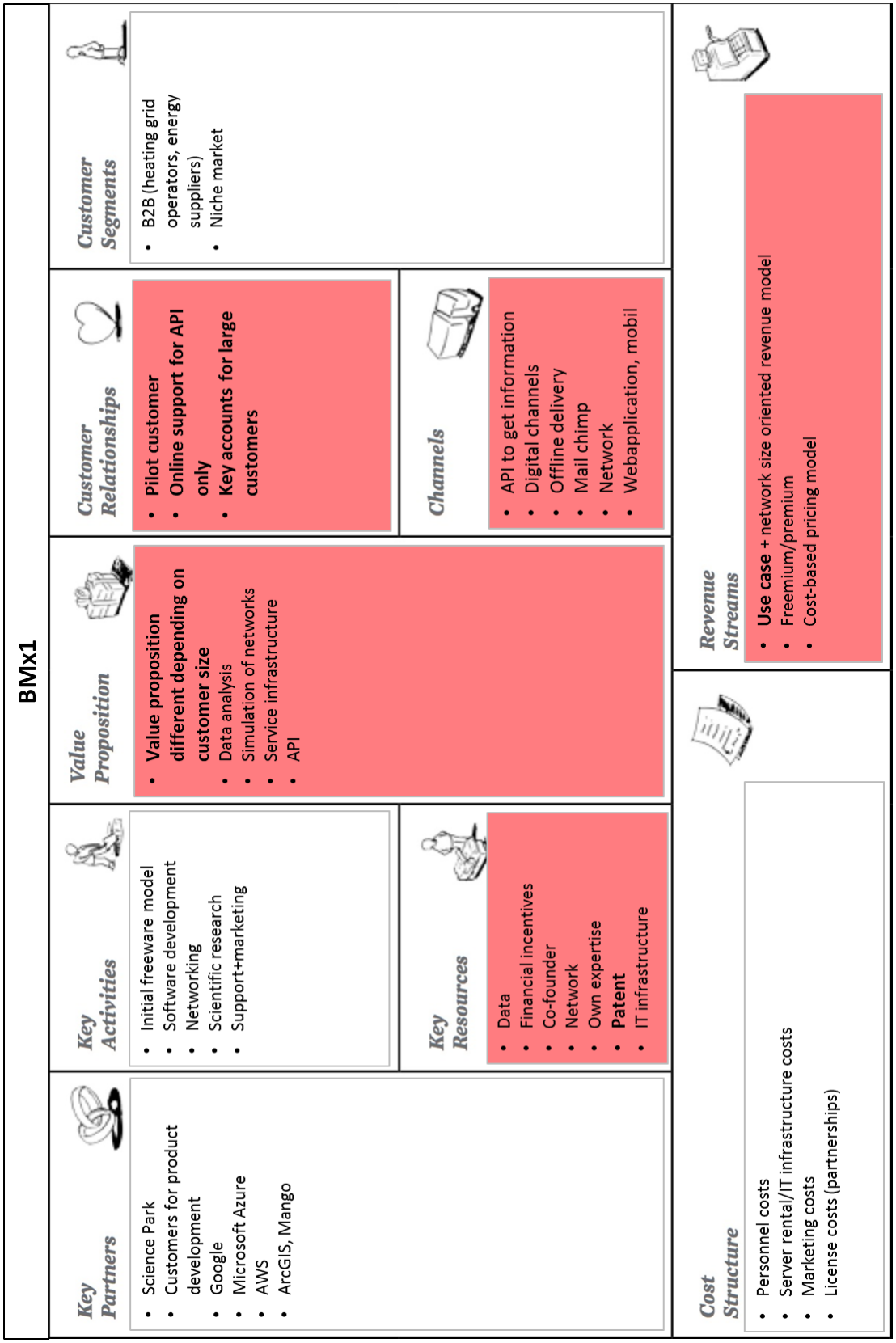


Figure 28: Beta BMx1 (own source)

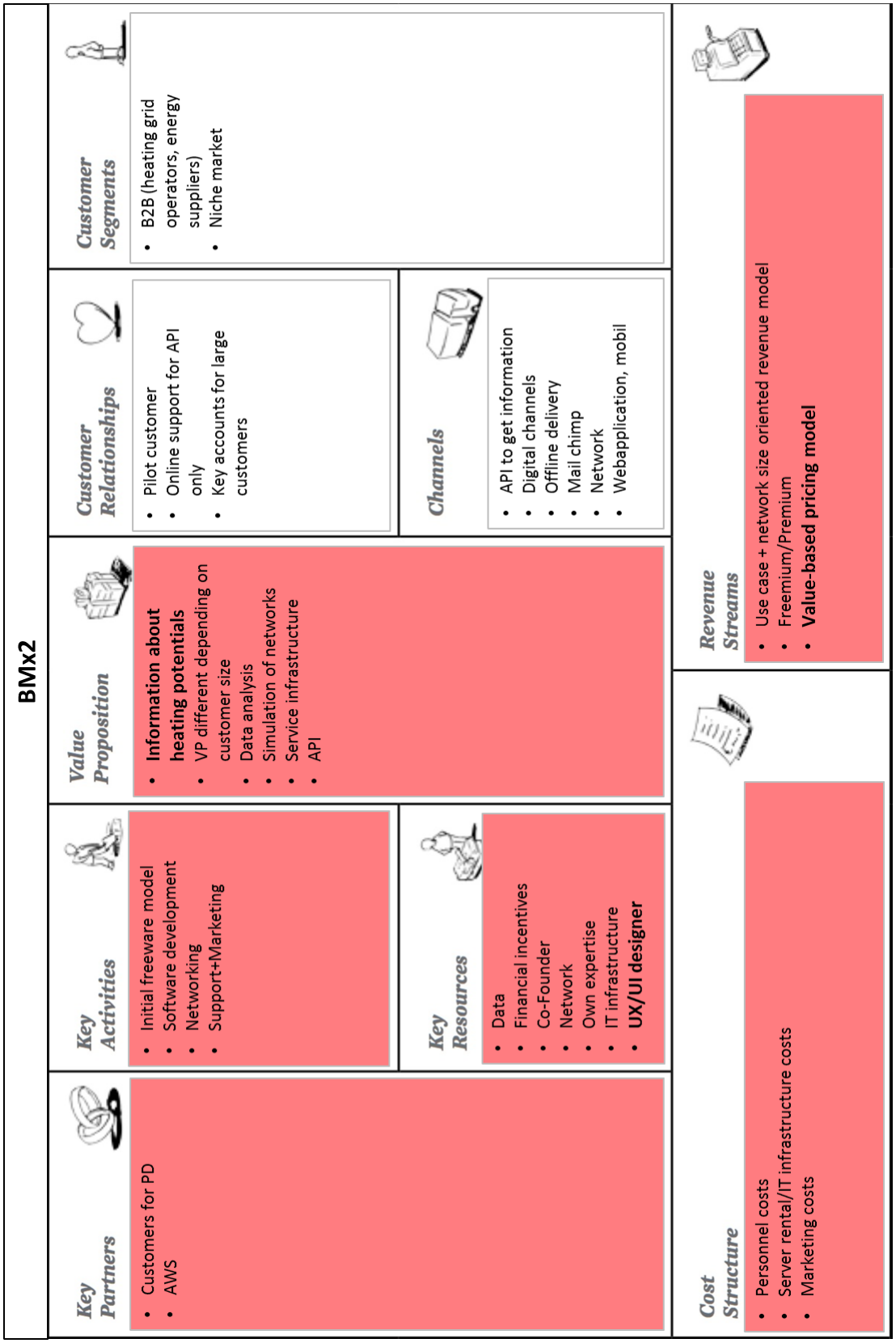


*Figure 29: Beta BMx2 (own source)*

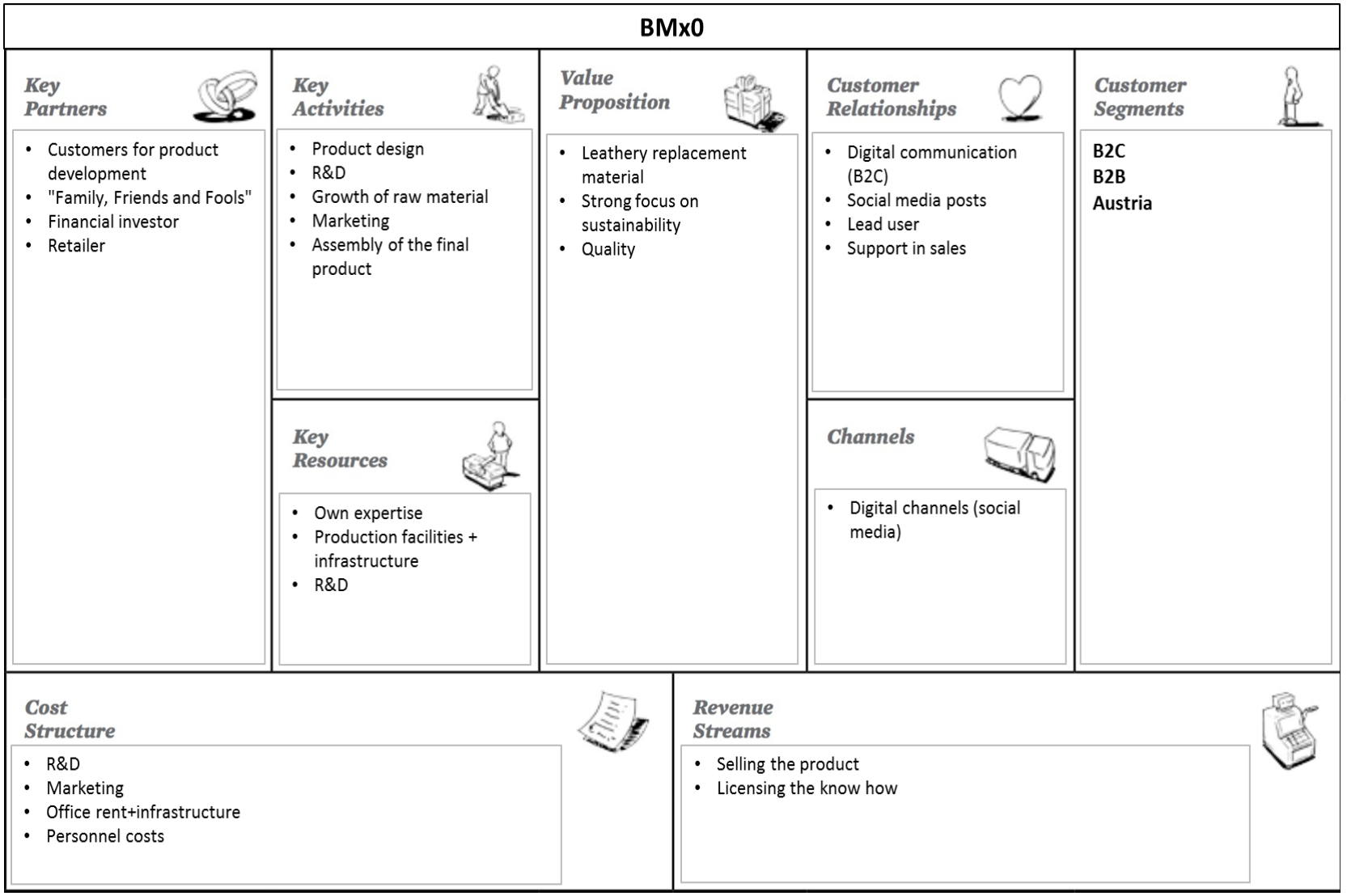


Figure 30: Gamma BMx0 (own source)

## BMx1

### Key Partners

- Customers for PD
- "Family, Friends and Fools"
- Financial investor
- **Supplier of purchased goods**
- Retailer

### Key Activities

- Product design
- R&D
- Growth of raw material
- Marketing
- Assembly of the final product

### Key Resources

- Own expertise
- Production facilities + infrastructure
- R&D

### Value Proposition

- Strong focus on sustainability
- **Handbag**
- Quality

### Customer Relationships

- Digital communication (B2C)
- Social Media Posts
- Lead user
- Support in sales

### Channels

- Digital channels (social media)
- **Distribution system of established companies**

### Customer Segments

- B2C (**female 20-60**)
  **-Ecoconscious**
  **-Fashion conscious**
- B2B
- Austria

### Cost Structure

- R&D
- Marketing
- Office rent+infrastructure
- Personnel costs
- **Purchased goods**

### Revenue Streams

- Selling the product
- Licensing the know how

Figure 31: Gamma BMx1 (own source)

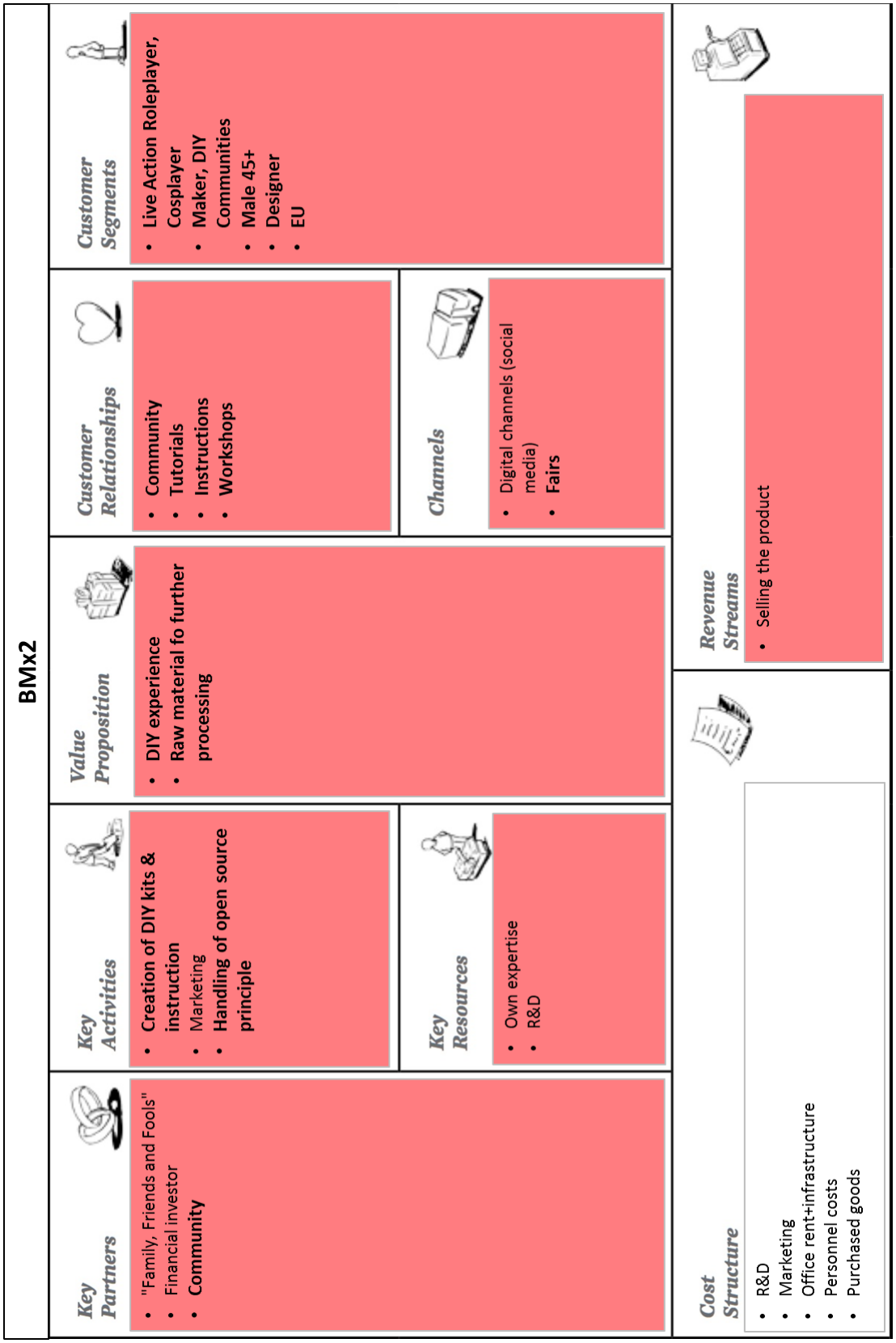


Figure 32: Gamma BMx2 (own source)

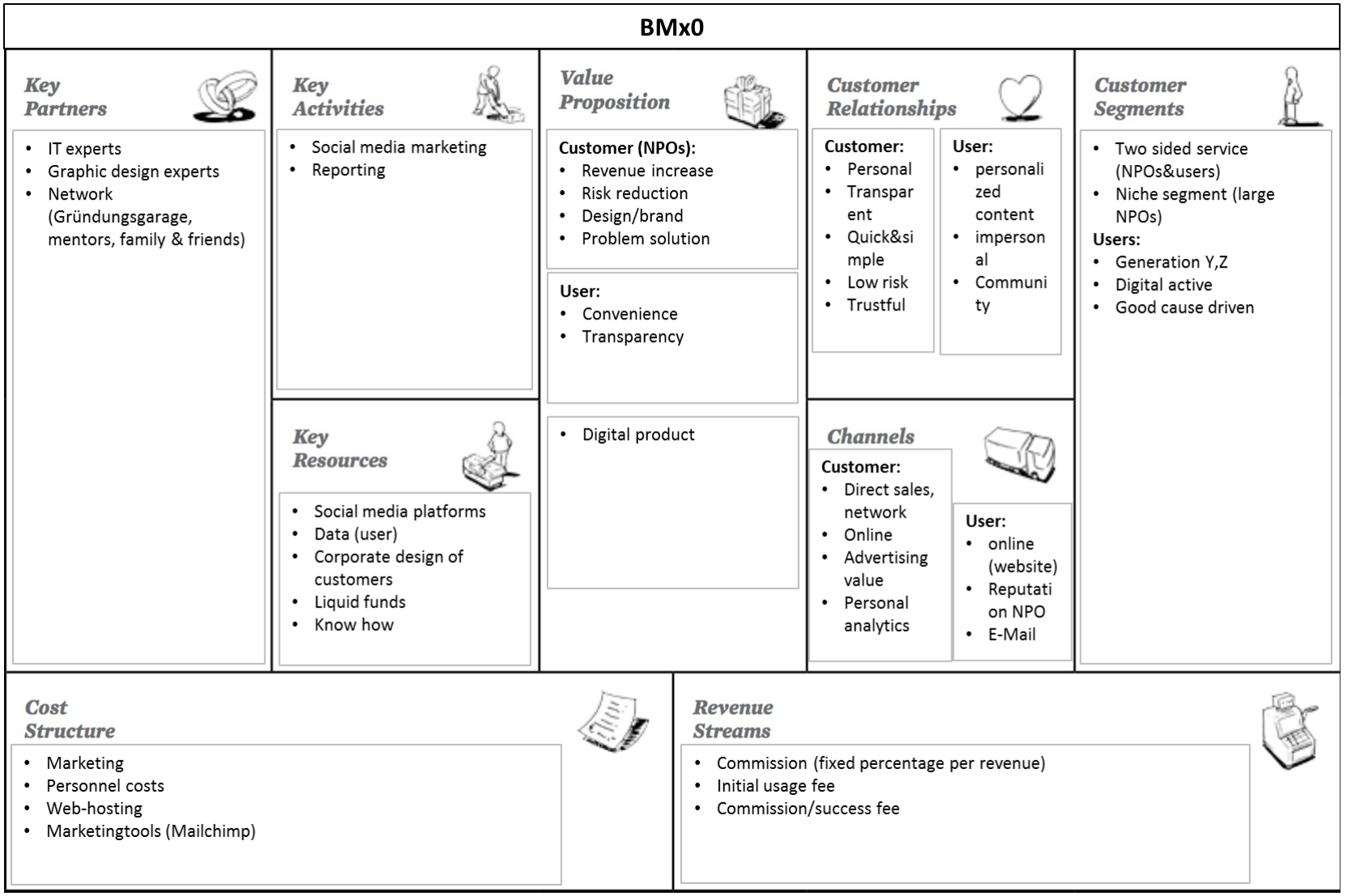


Figure 33: Delta BMx0 (own source)

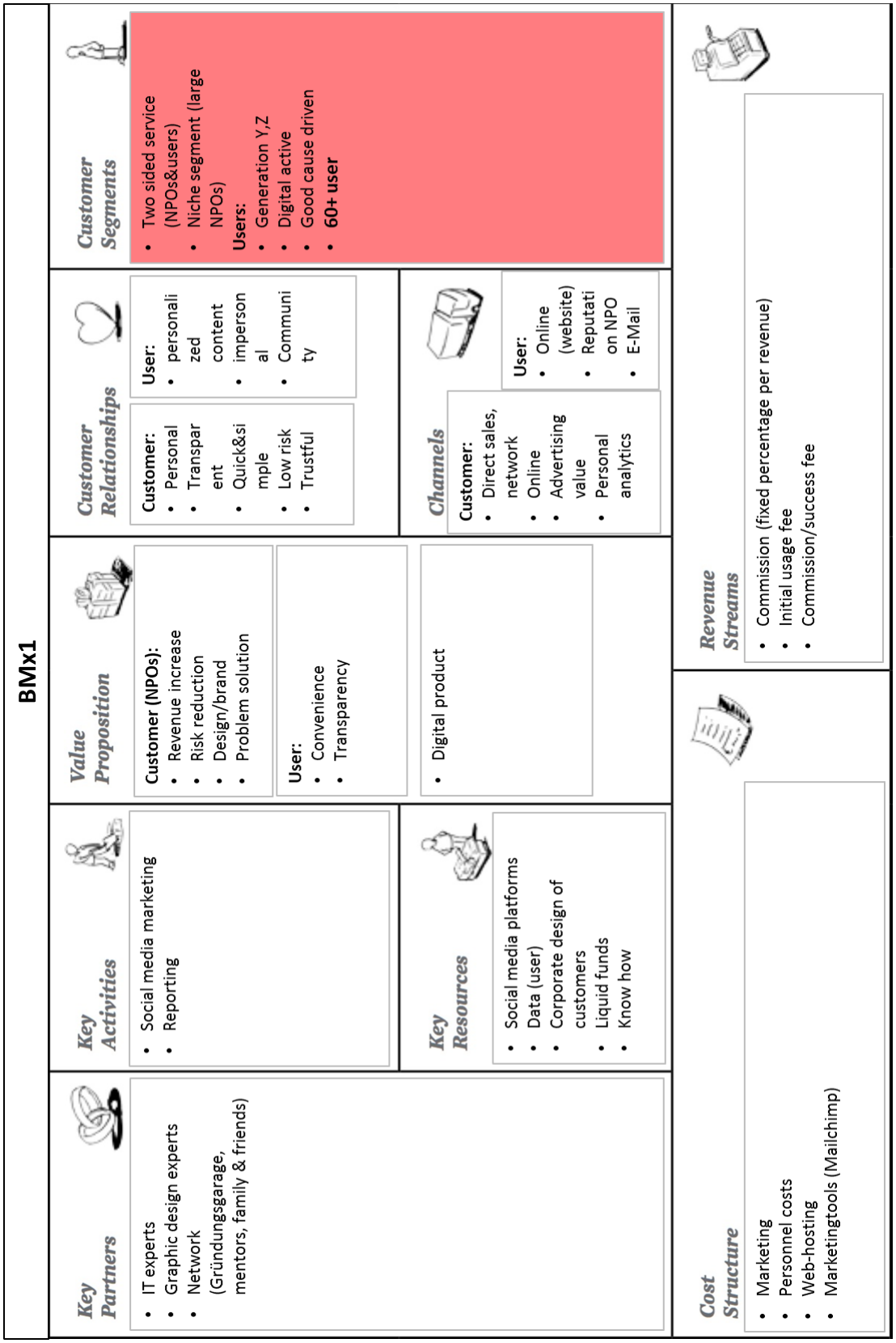


Figure 34: Delta BMx1 (own source)

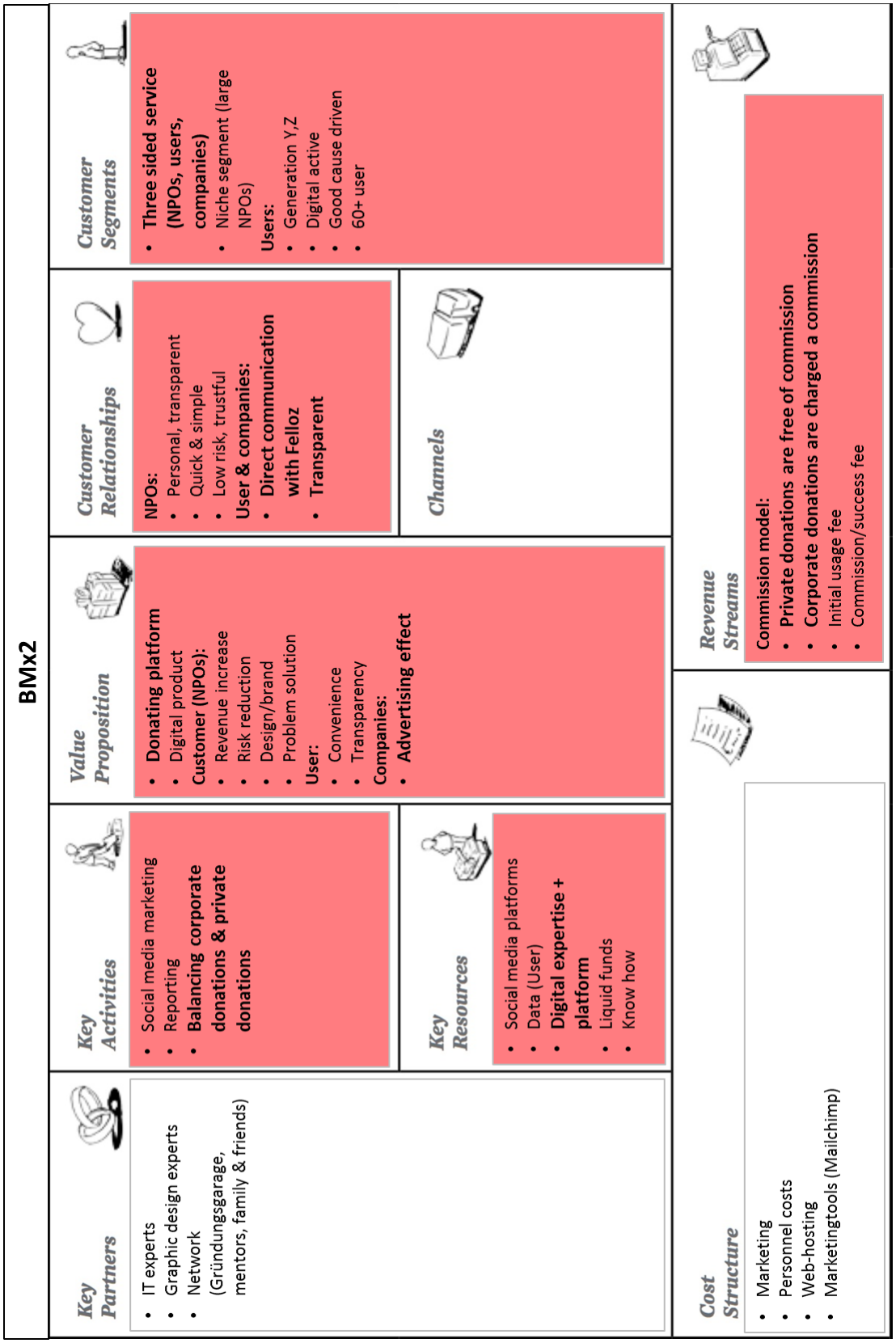


Figure 35: Delta BMx2 (own source)

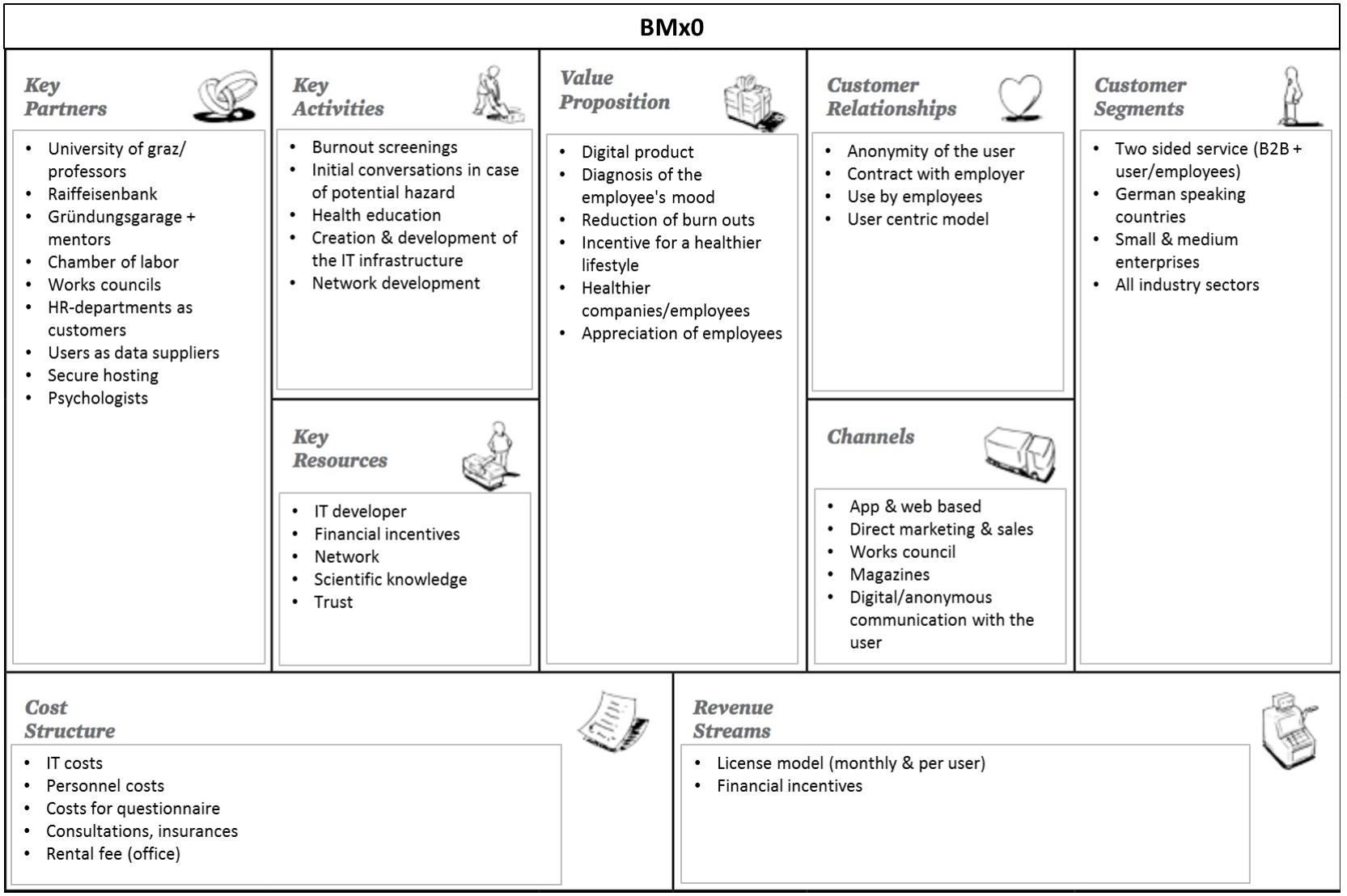


Figure 36: Epsilon BMx0 (own source)

## BMx1

### Key Partners

- Gründungsgarage
- Customers for product development
- Graphic & UI designers
- Works councils
- Marketing experts
- Prof. Paul Jimenez

### Key Activities

- Product development & testing (questionnaire+sw-prototype)
- Seek customer contact

### Key Resources

- User data
- Financial incentives
- Network
- Questionnaire
- Software development

### Value Proposition

- Prediction model for stress induced diseases

**User**

- Anonymous screening for free
- Individual treatment recommendations

**Customer**

- Cost reduction
- Steering/controlling possibility

### Customer Relationships

- Digital/anonymous communication with the user
- Conclusion of contract with employer

### Channels

- Digital/anonym ous communication with the user
- Direct sales (HRs)
- Targeted ads
- Online

### Customer Segments

### Cost Structure

- Consultations & costs for questionnaire
- Costs for development & production
- **Marketing**
- Personnel costs
- Server rental costs, IT costs

### Revenue Streams

- License model (monthly&per user)
- Financial incentives

Figure 37: Epsilon BMx1 (own source)

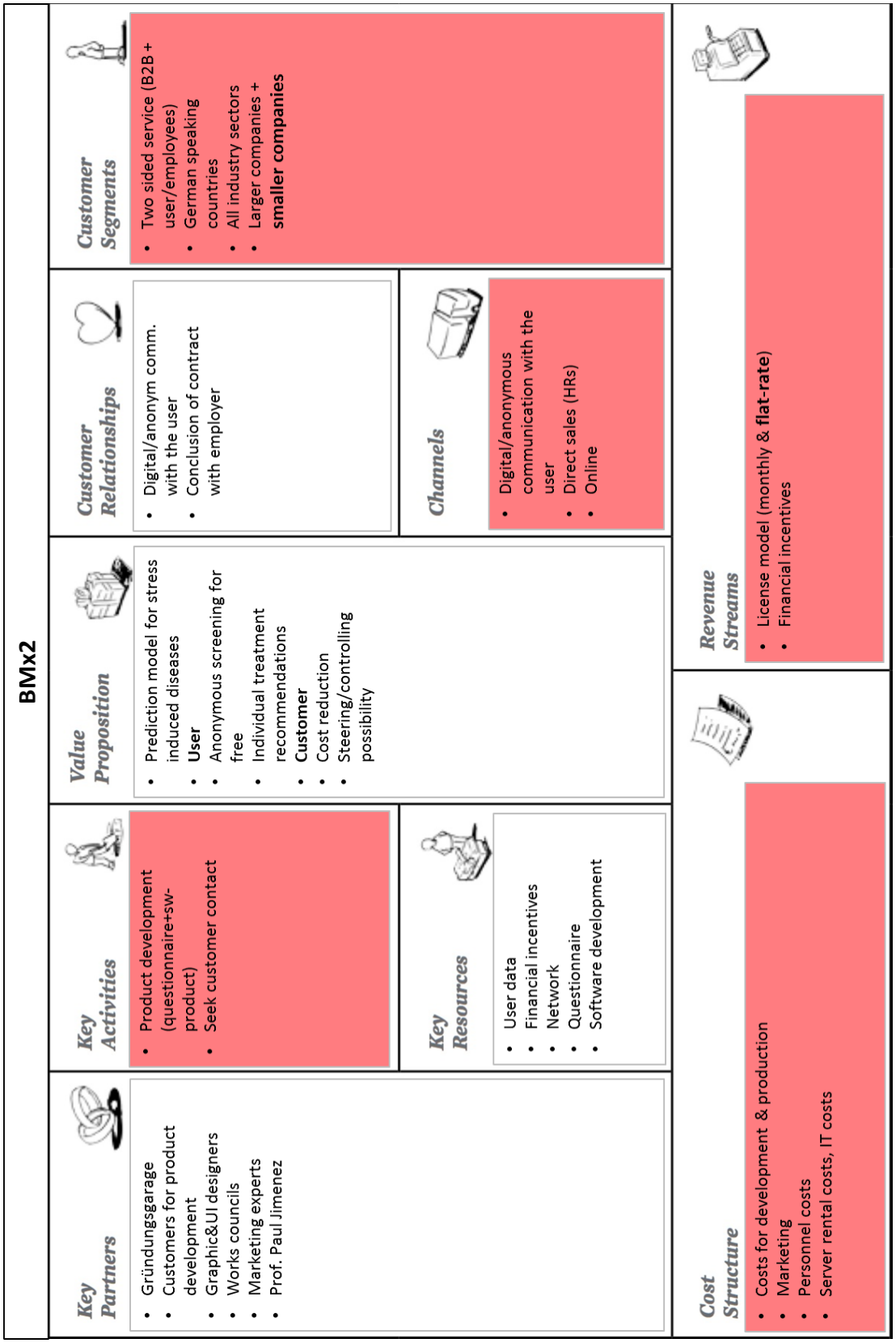


Figure 38: Epsilon BMx2 (own source)

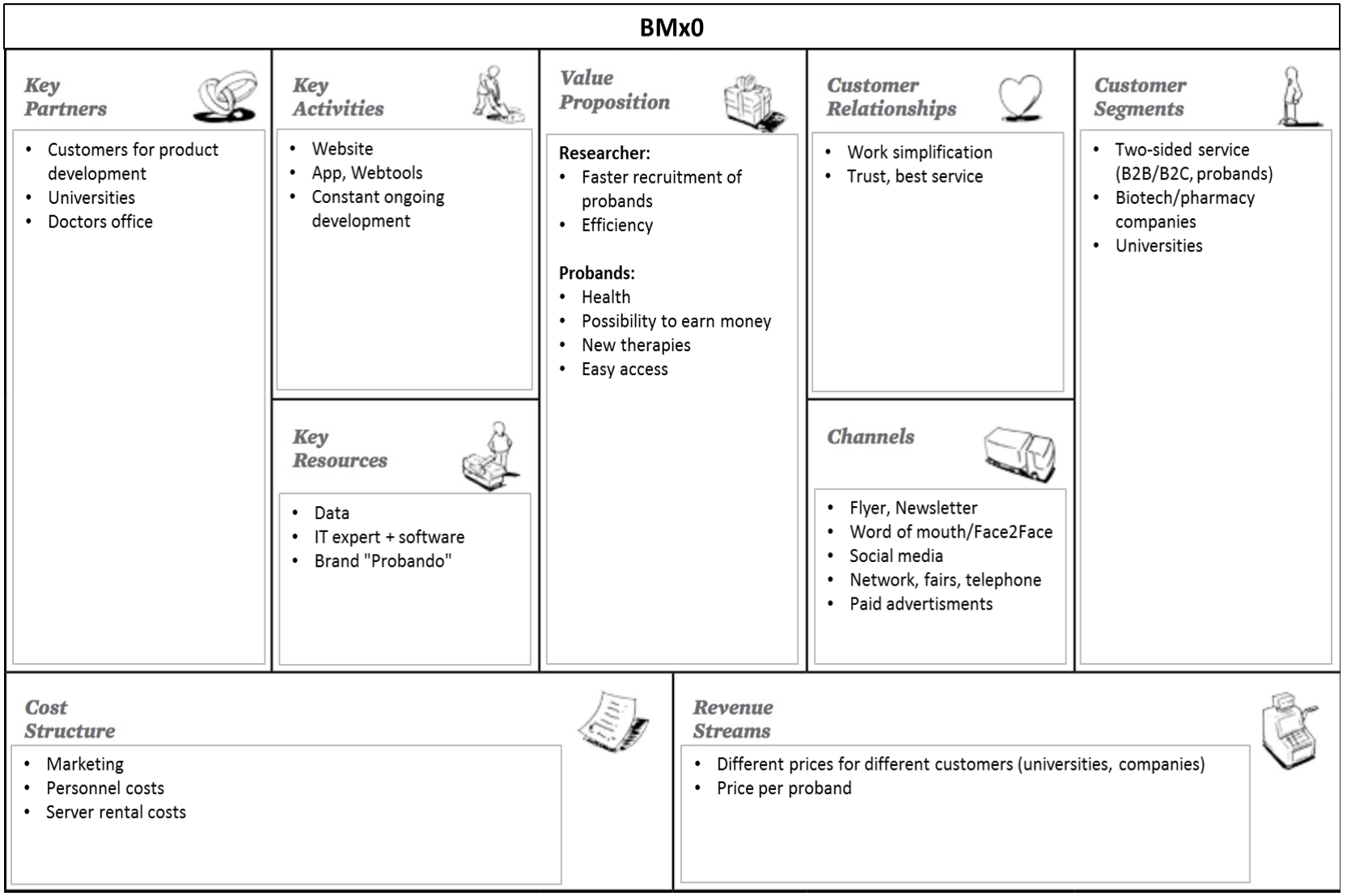


Figure 39: Eta BMx0 (own source)

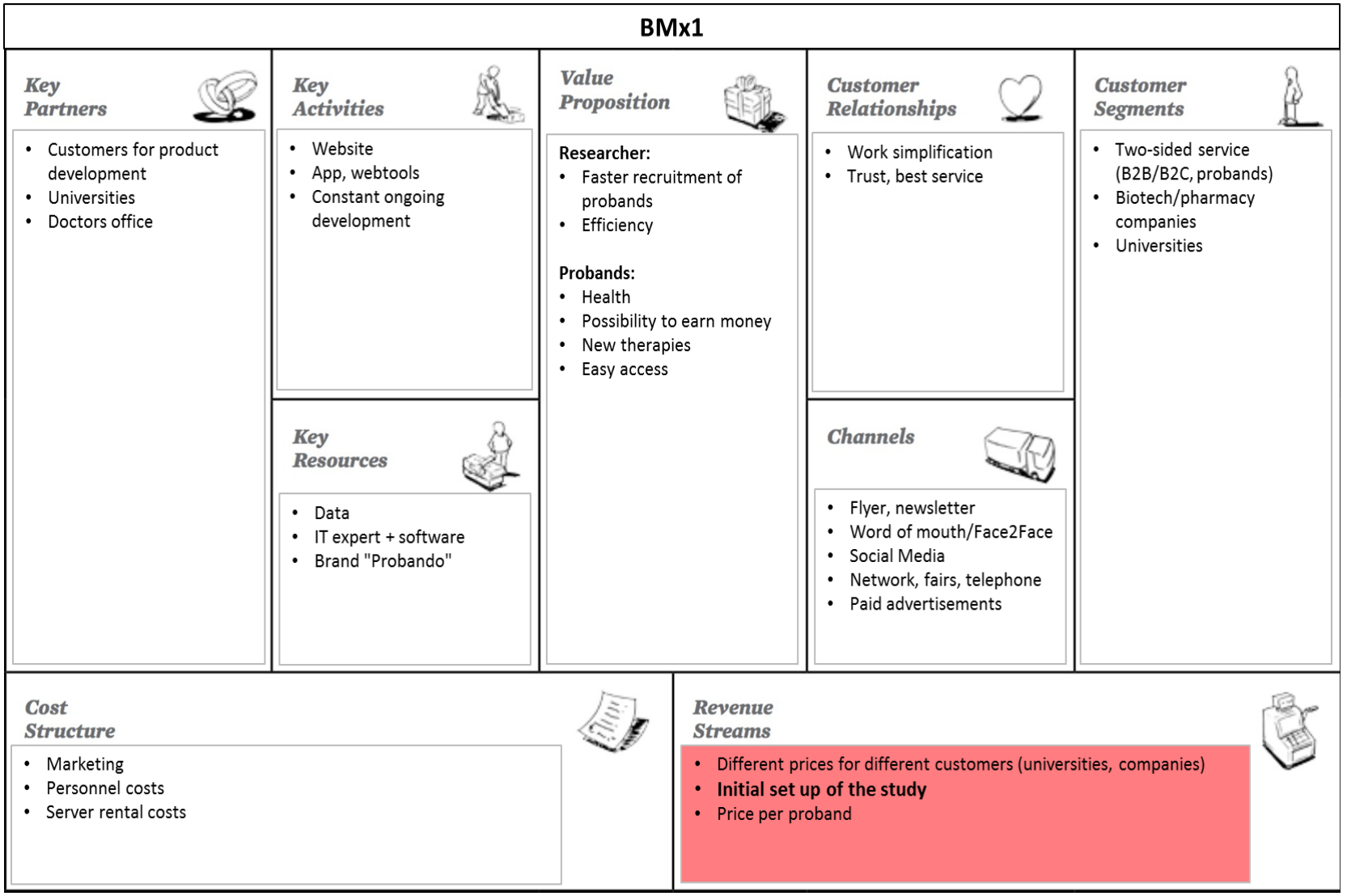


Figure 40: Eta BMx1 (own source)

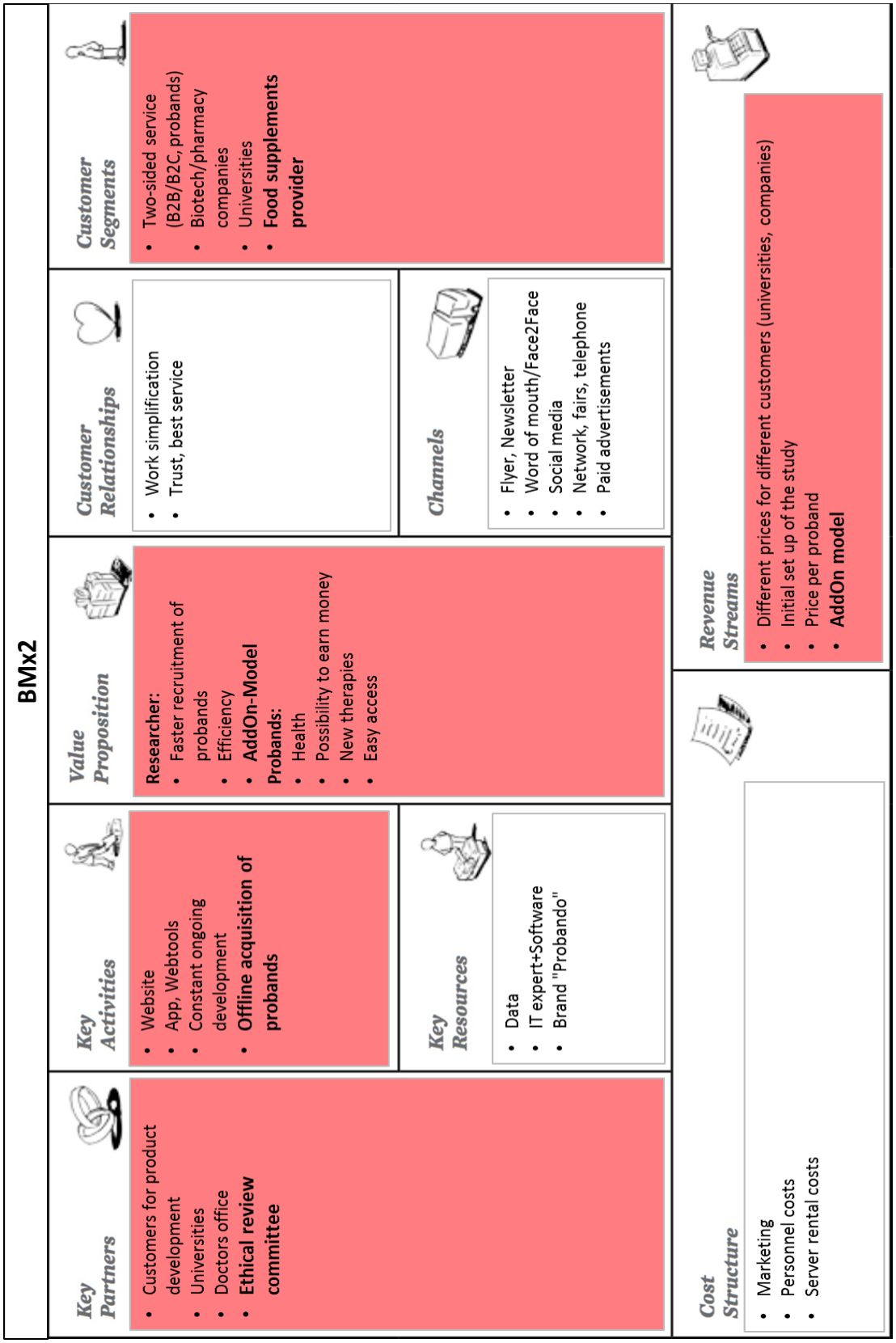


Figure 41: Eta BMx2 (own source)

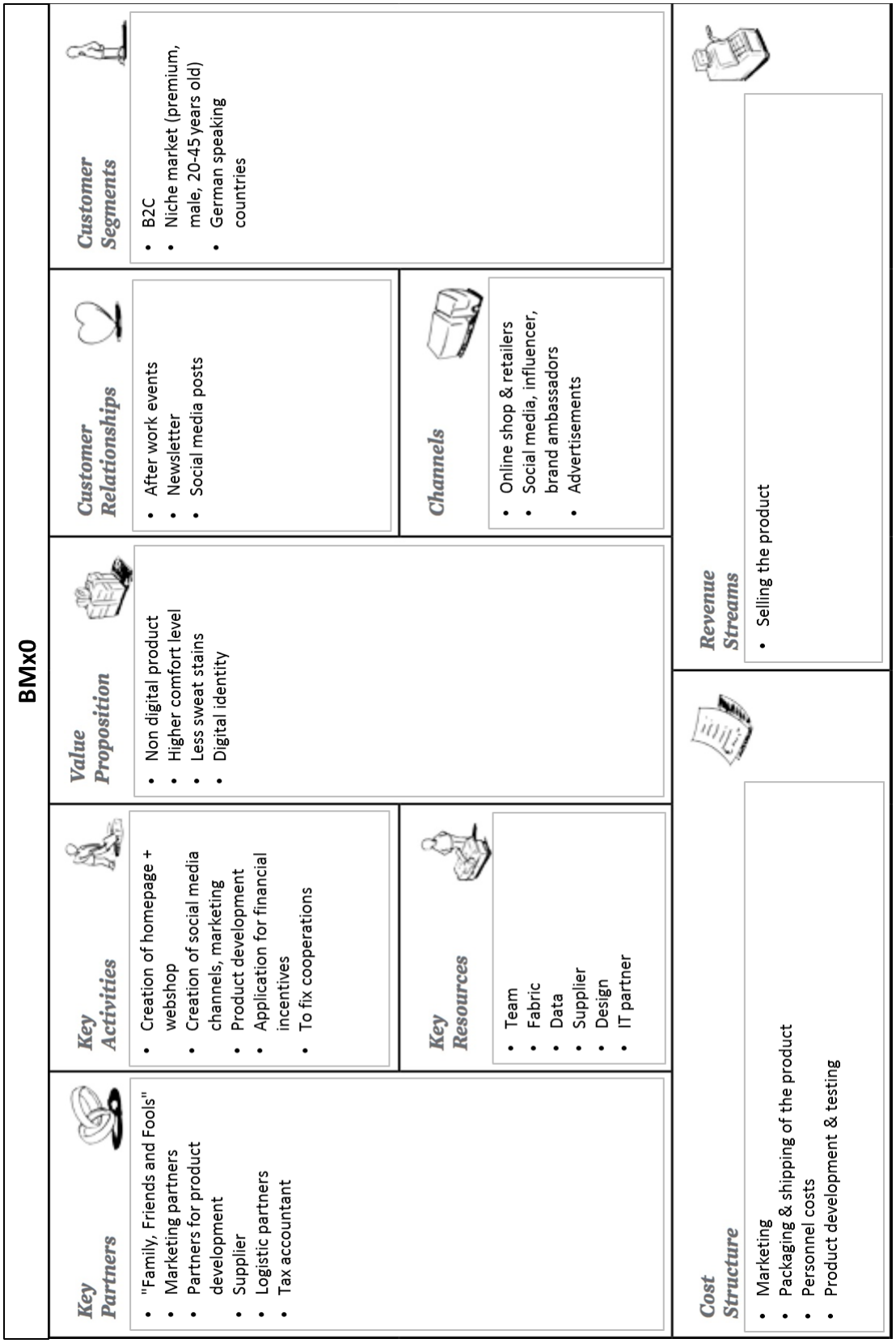


Figure 42: Theta BMx0 (own source)

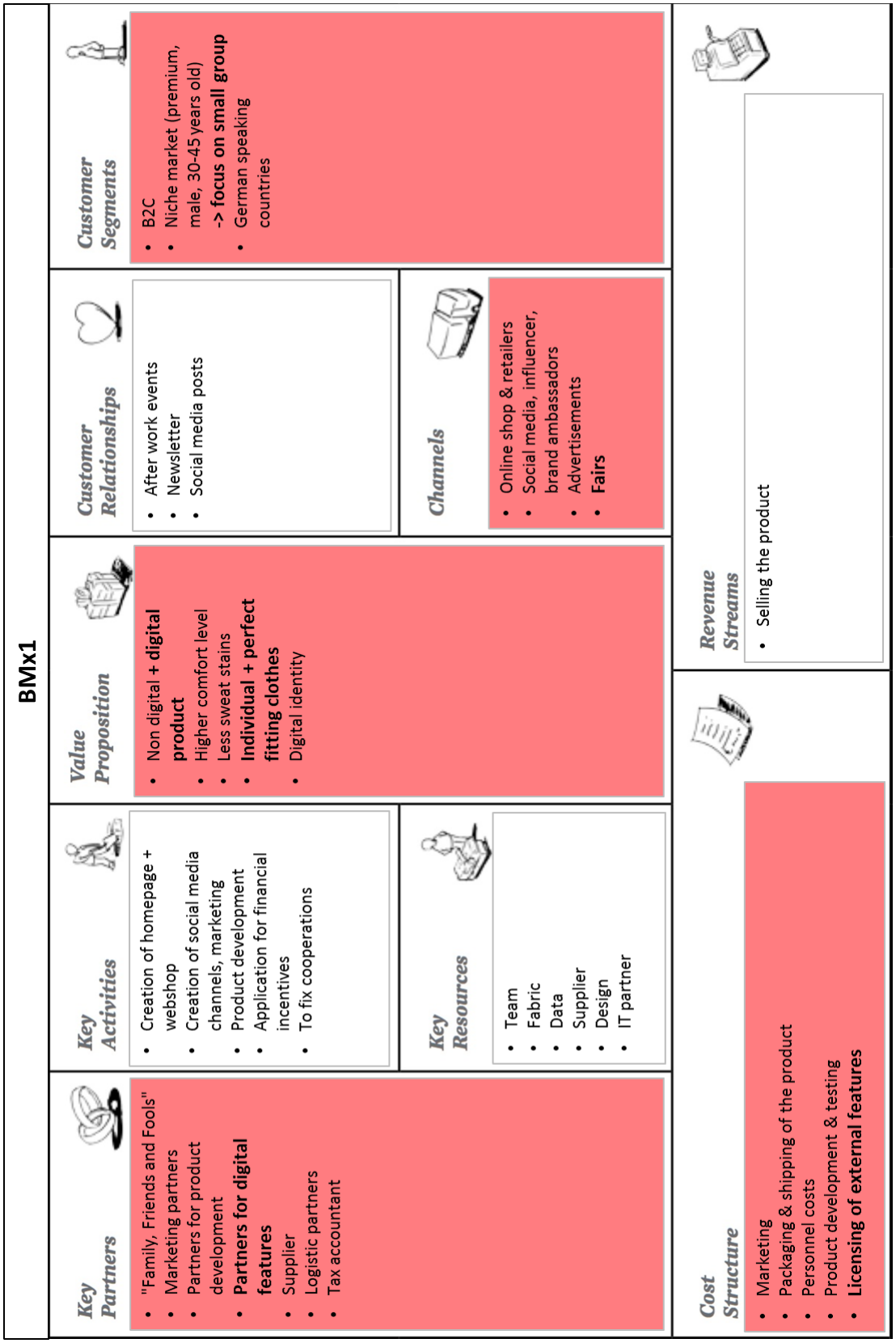


Figure 43: Theta BMx1 (own source)

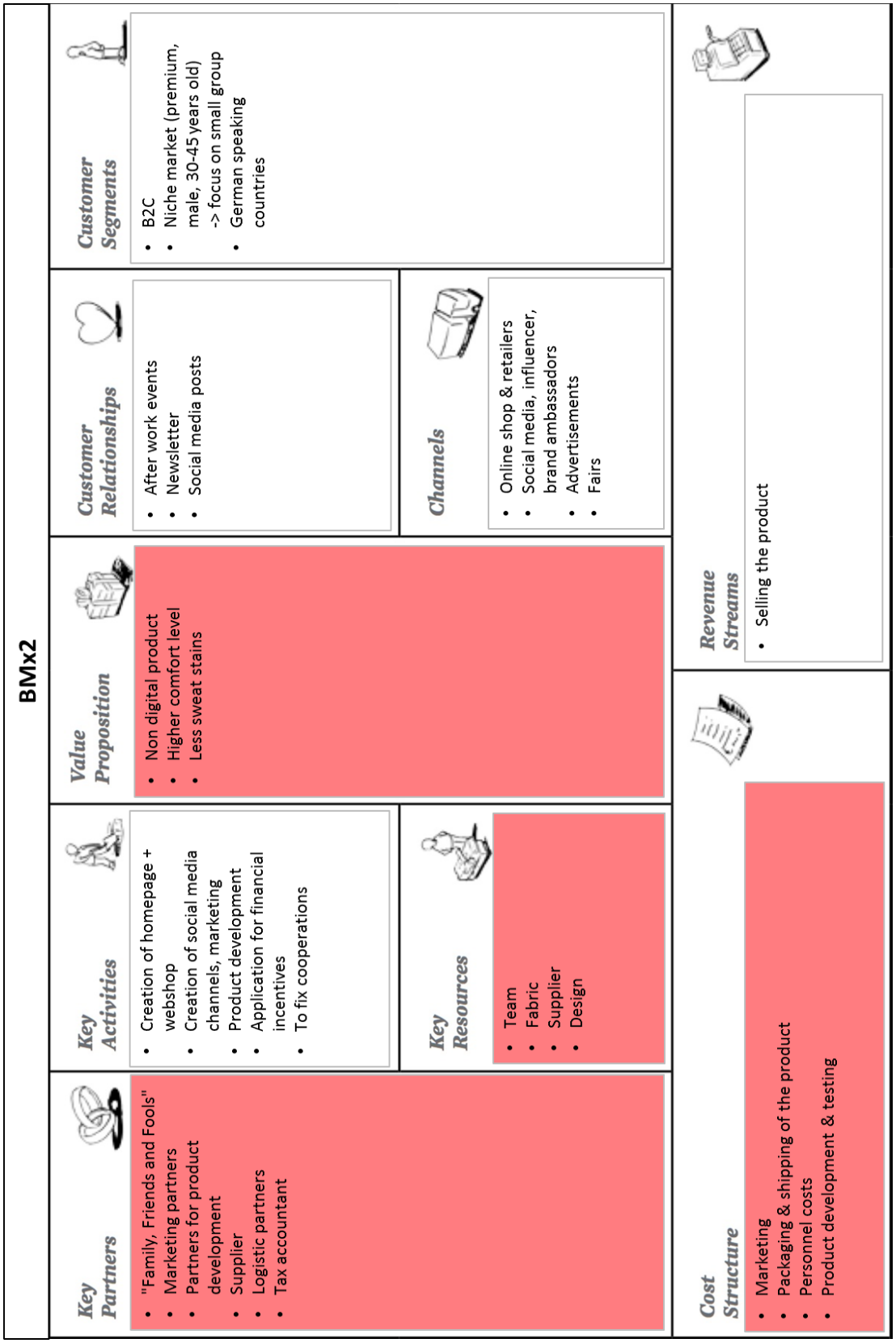


Figure 44: Theta BMx2 (own source)

**BMx0**

***Key Partners***

- Course trainers
- Mind researcher
- Scientists

***Key Activities***

- Marketing
- Personal assistance
- Employee recruiting
- Network development

***Key Resources***

- Own expertise
- Blog, social media

***Value Proposition***

- Personal & individual assistance
- Mental health/fitness
- Fostering creative thinking

***Customer Relationships***

- Personal assistance
- Community feeling
- Group courses

***Channels***

- Word of mouth, Face2Face
- Social media, blog, homepage
- Telephone
- Cooperation partners
- Organizations

***Customer Segments***

- B2C
- B2B

***Cost Structure***

- Personnel costs
- Location + infrastructure
- Course development, events, know how
- Corporate design

***Revenue Streams***

- Subscription model
- Events
- Education courses for trainers
- External training, single coaching

Figure 45: Iota BMx0 (own source)

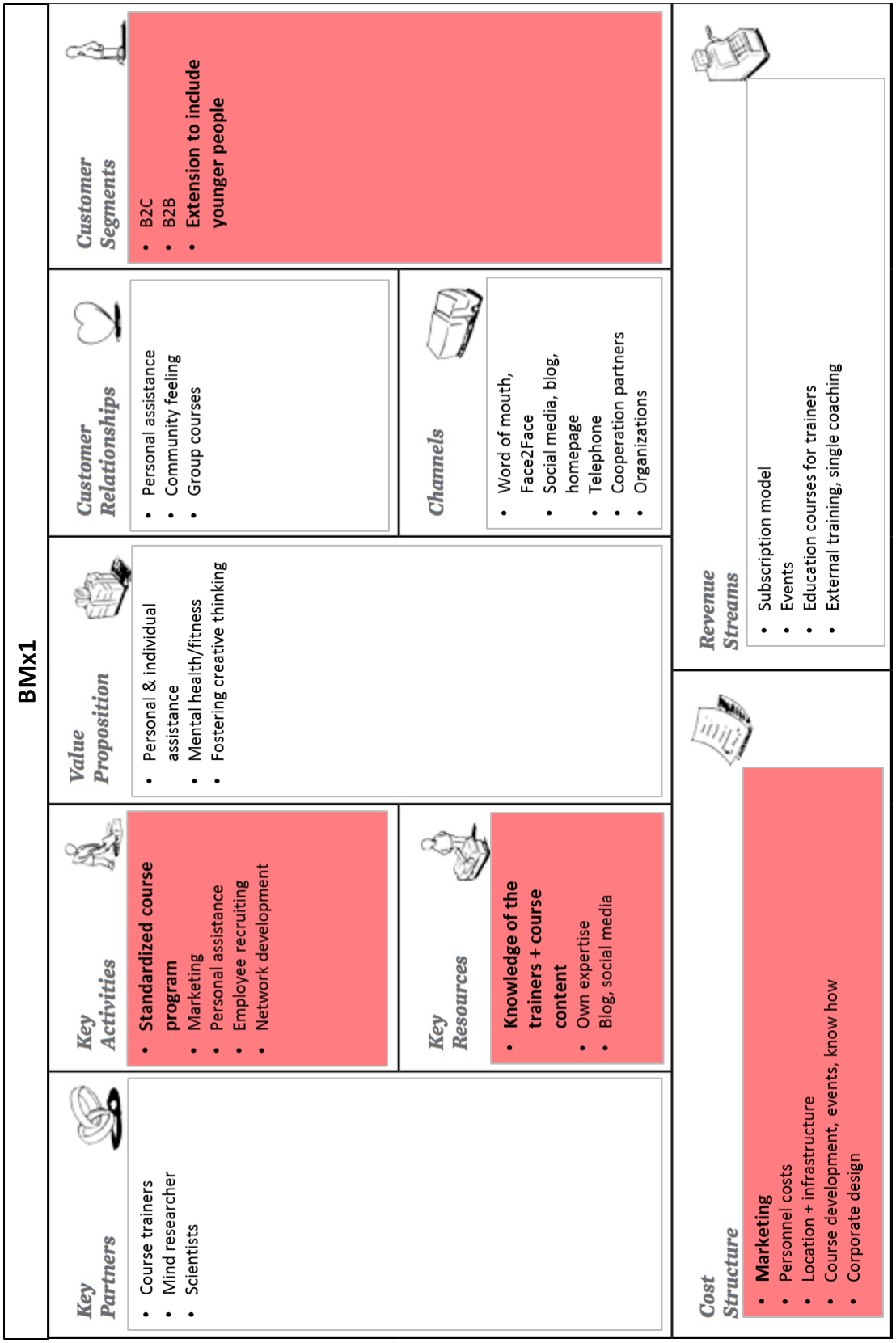


Figure 46: Iota BMx1 (own source)

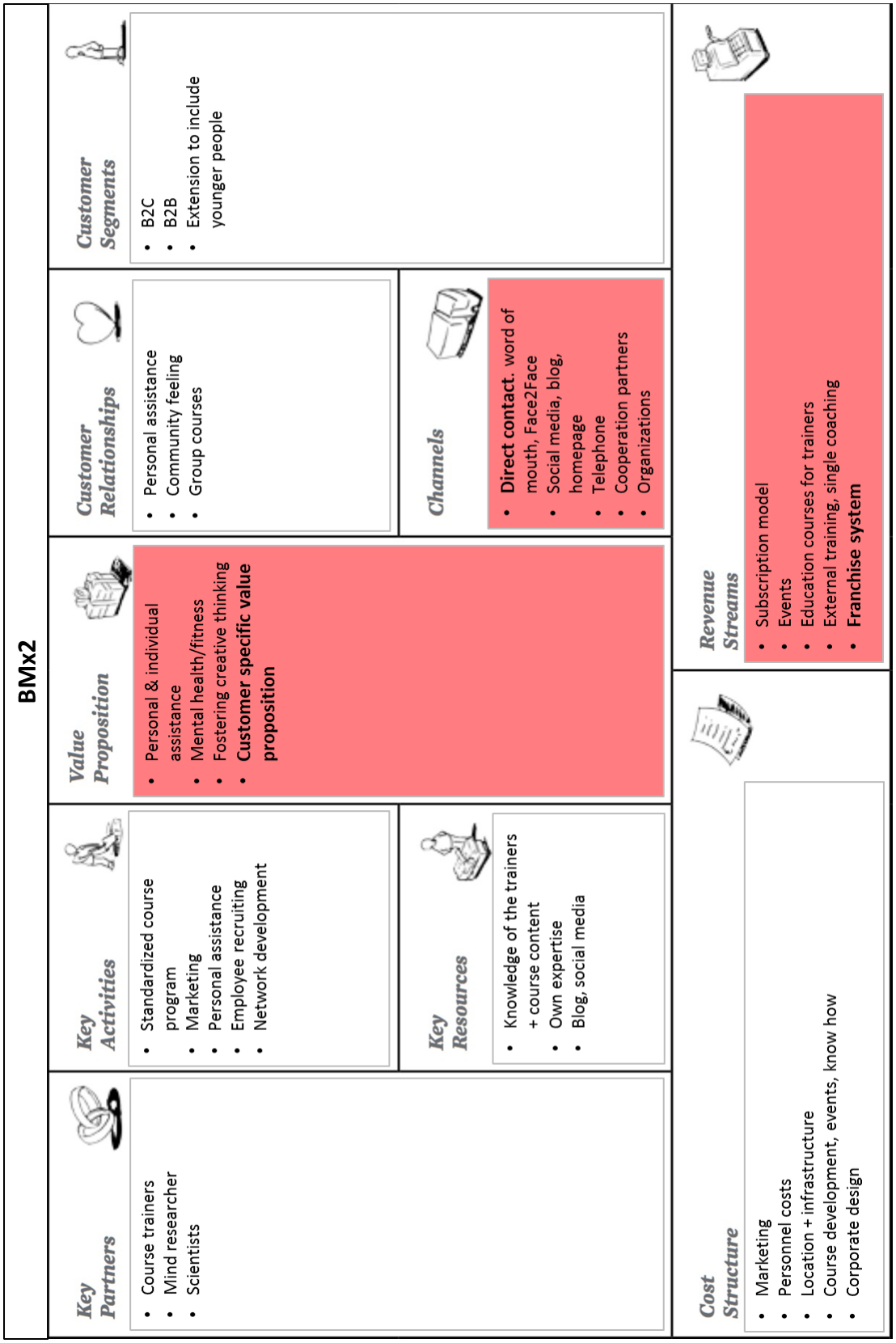


Figure 47: Iota BMx2 (own source)

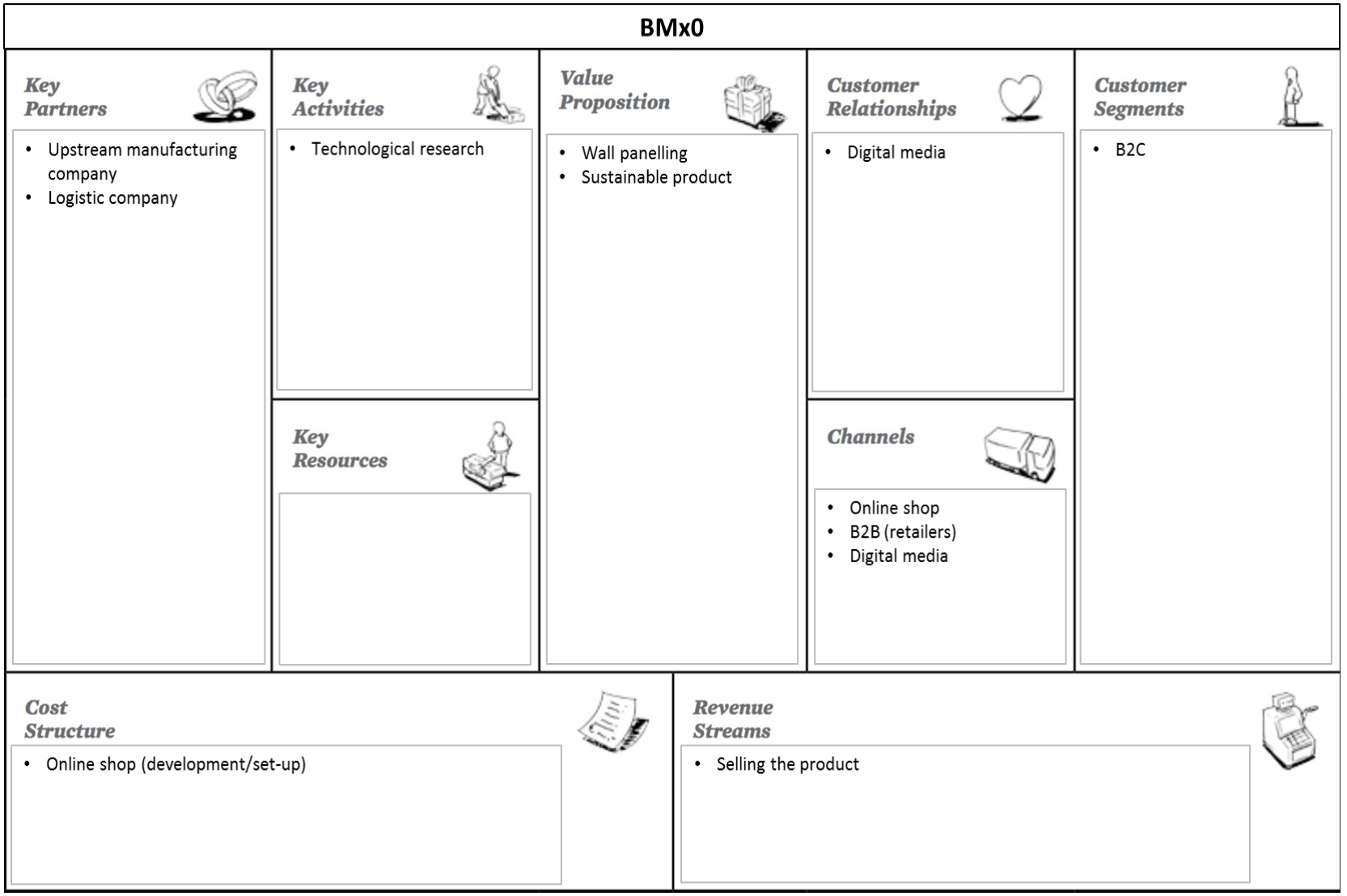


Figure 48: Kappa BMx0 (own source)

**BMx1**

***Key Partners***

- Upstream manufacturing company
- Logistic company

***Key Activities***

- Technological research

***Key Resources***

***Value Proposition***

- **Individual** wall panelling
- Sustainable product

***Customer Relationships***

- Digital media
- Sustainability certification to create trust

***Channels***

- Online shop
- Digital media

***Customer Segments***

- B2C
- **B2B**

***Cost Structure***

- Online shop (development/set-up)
- **External packaging and distribution**

***Revenue Streams***

- Selling the product

Figure 49: Kappa BMx1 (own source)

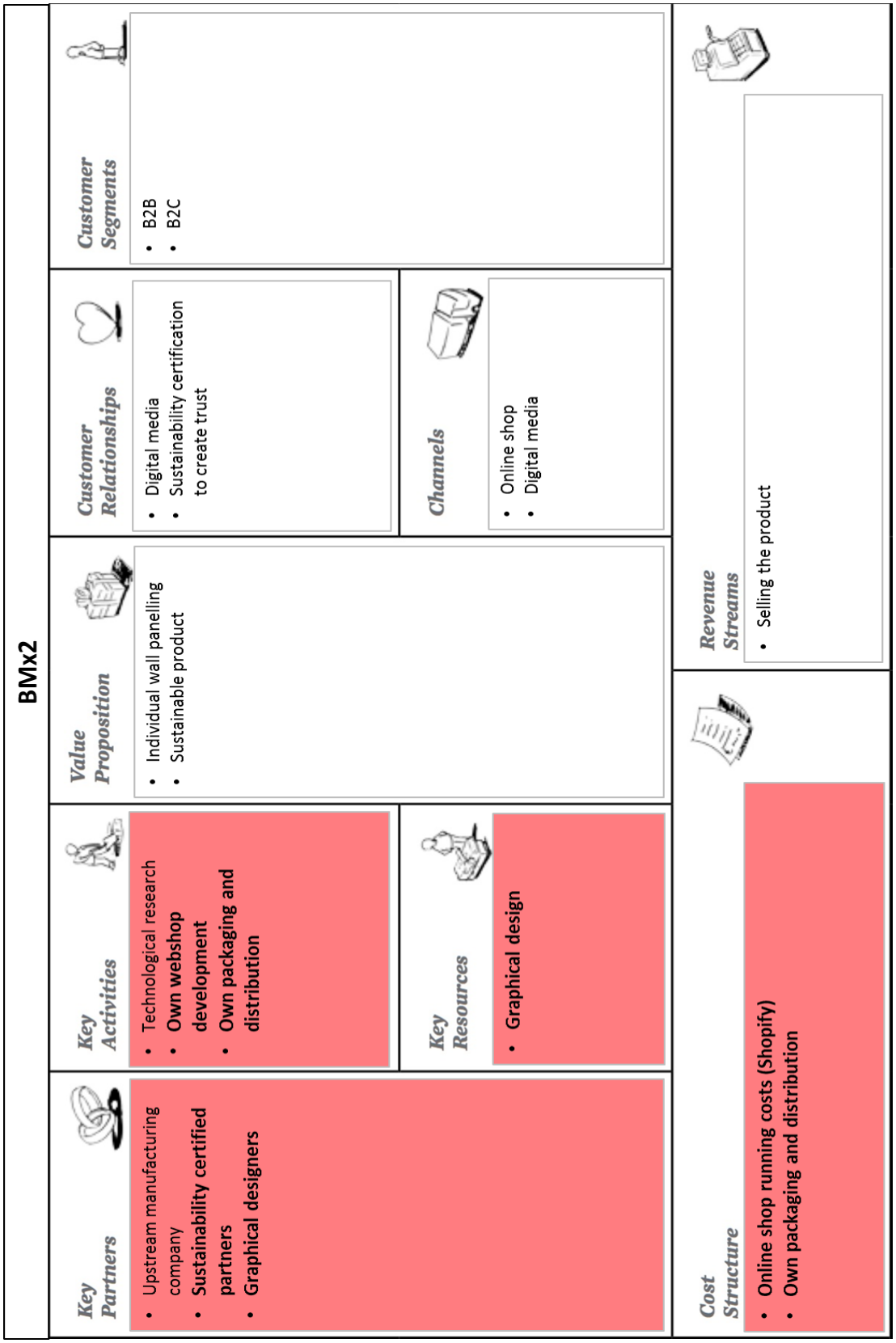


Figure 50: Kappa BMx2 (own source)

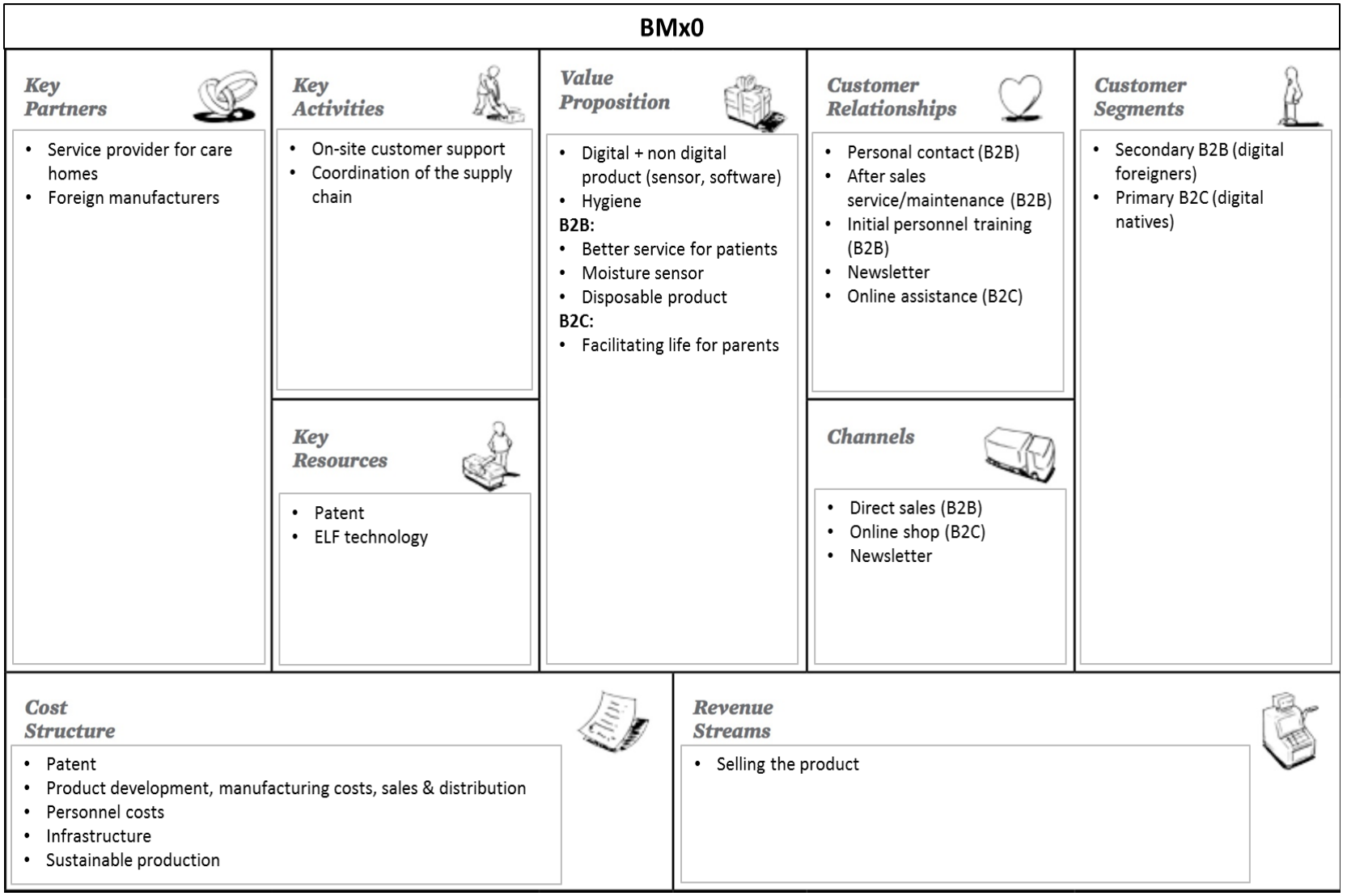


Figure 51: Lambda BMx0 (own source)

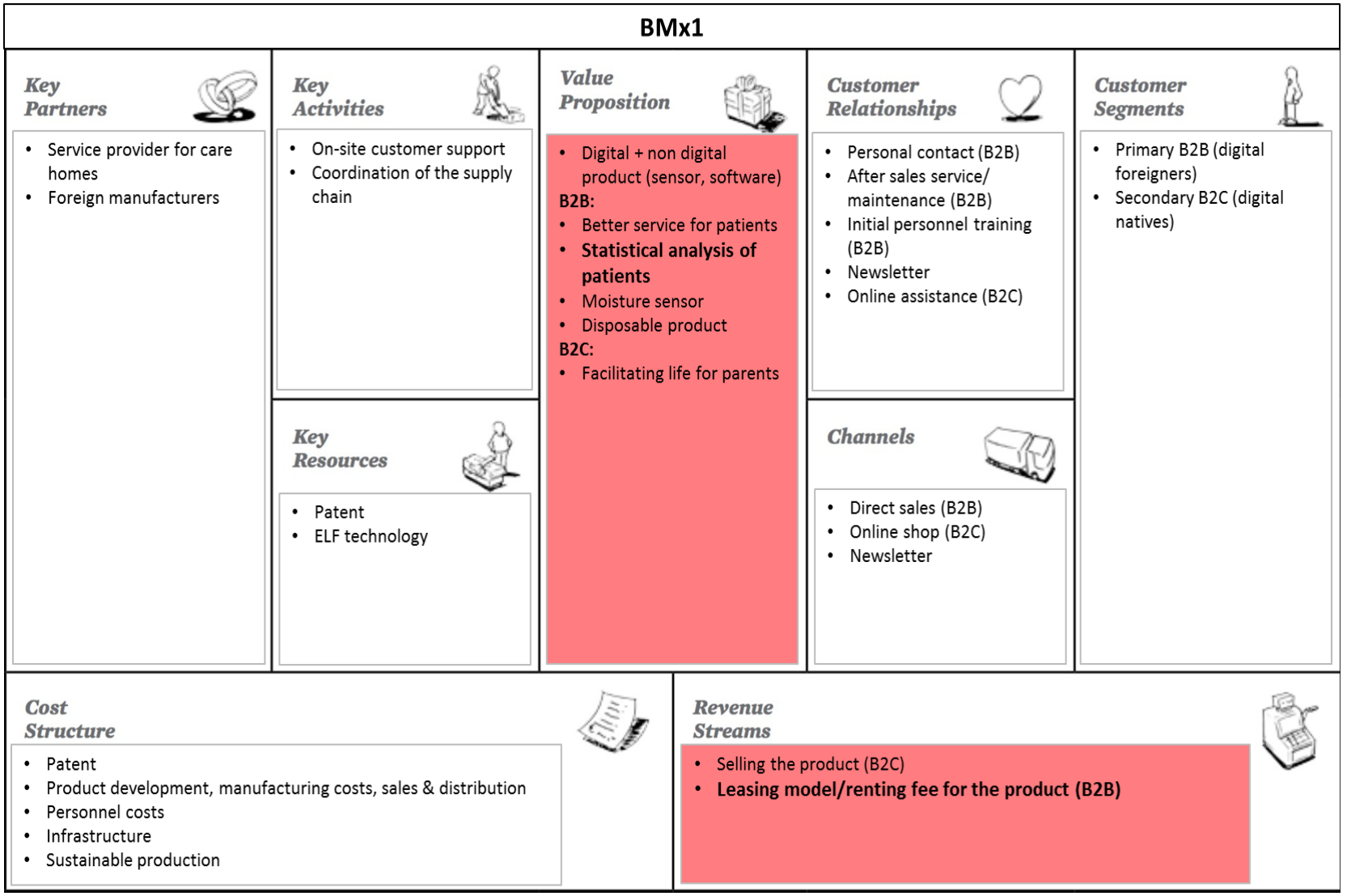


Figure 52: Lambda BMx1 (own source)

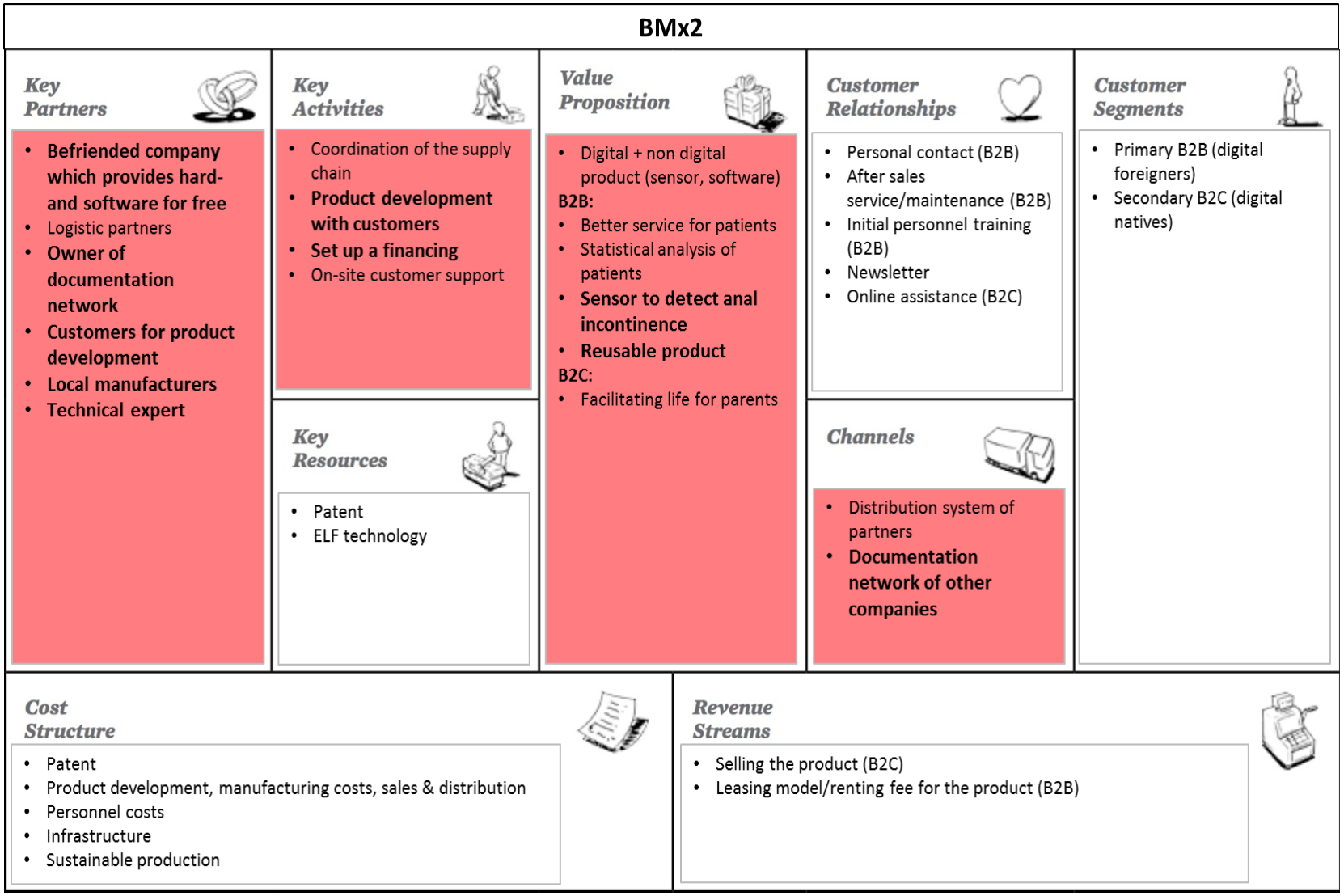


Figure 53: Lambda BMx2 (own source)

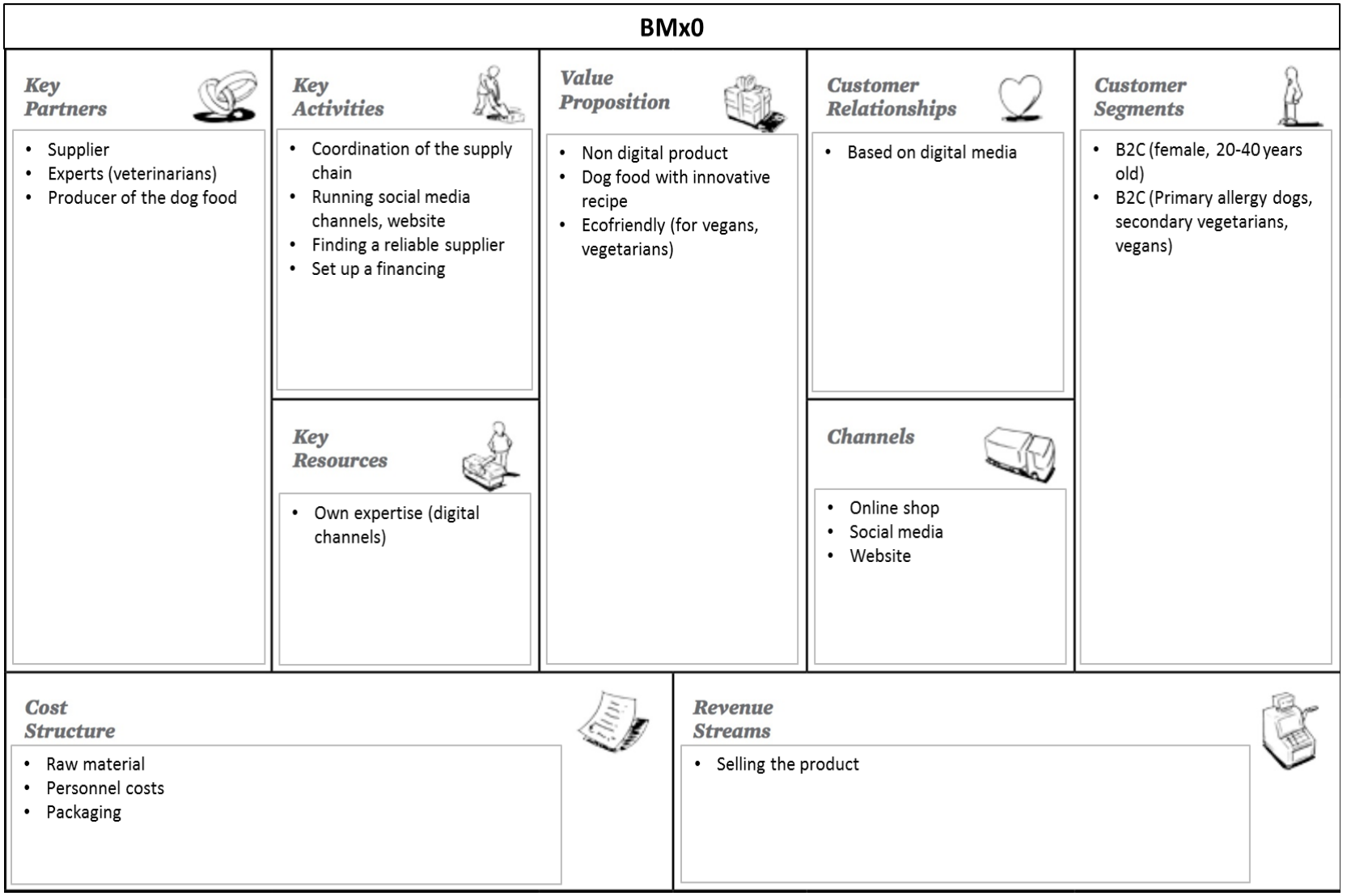


Figure 54: My BMx0 (own source)

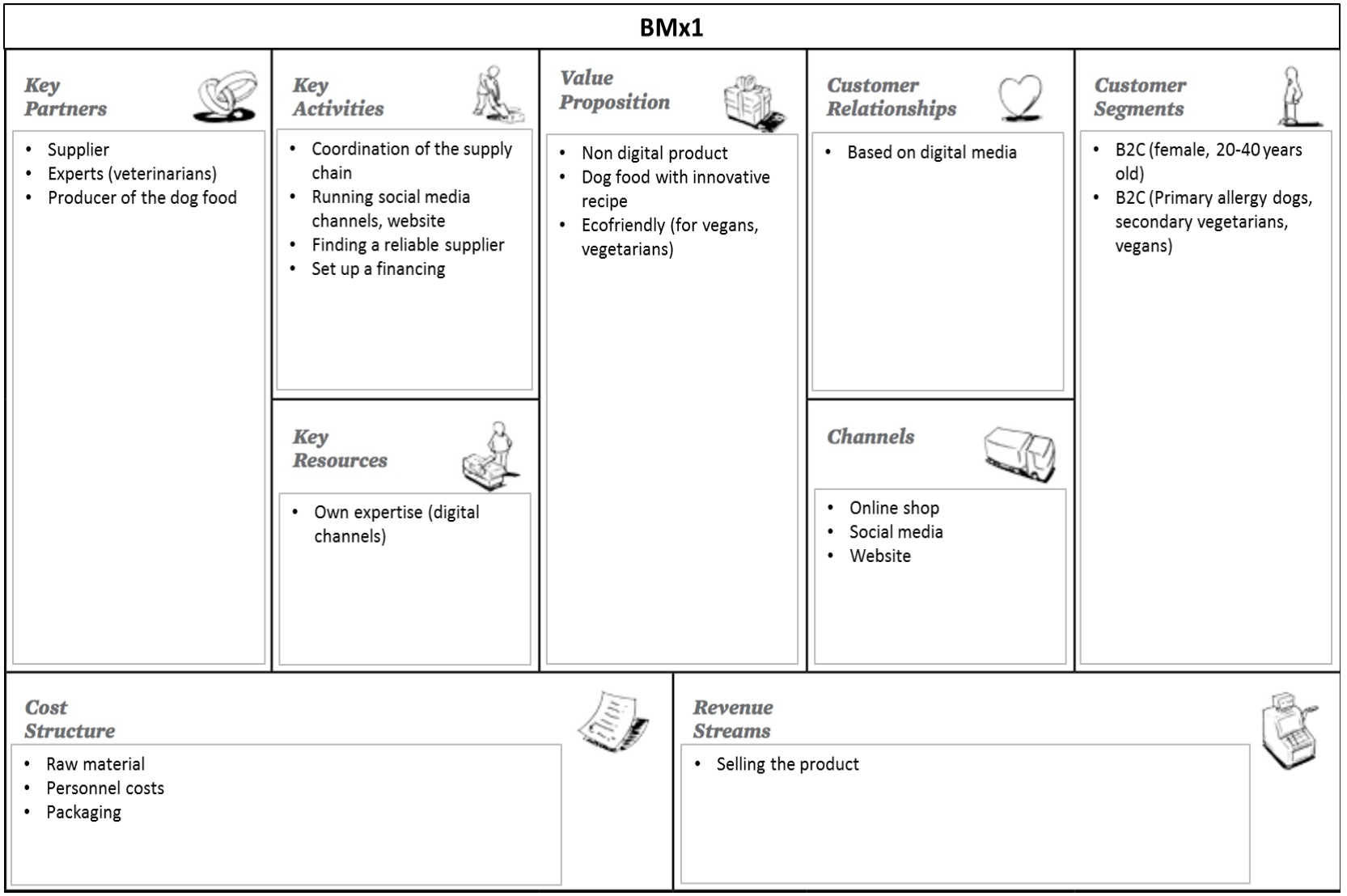


Figure 55: My BMx1 (own source)

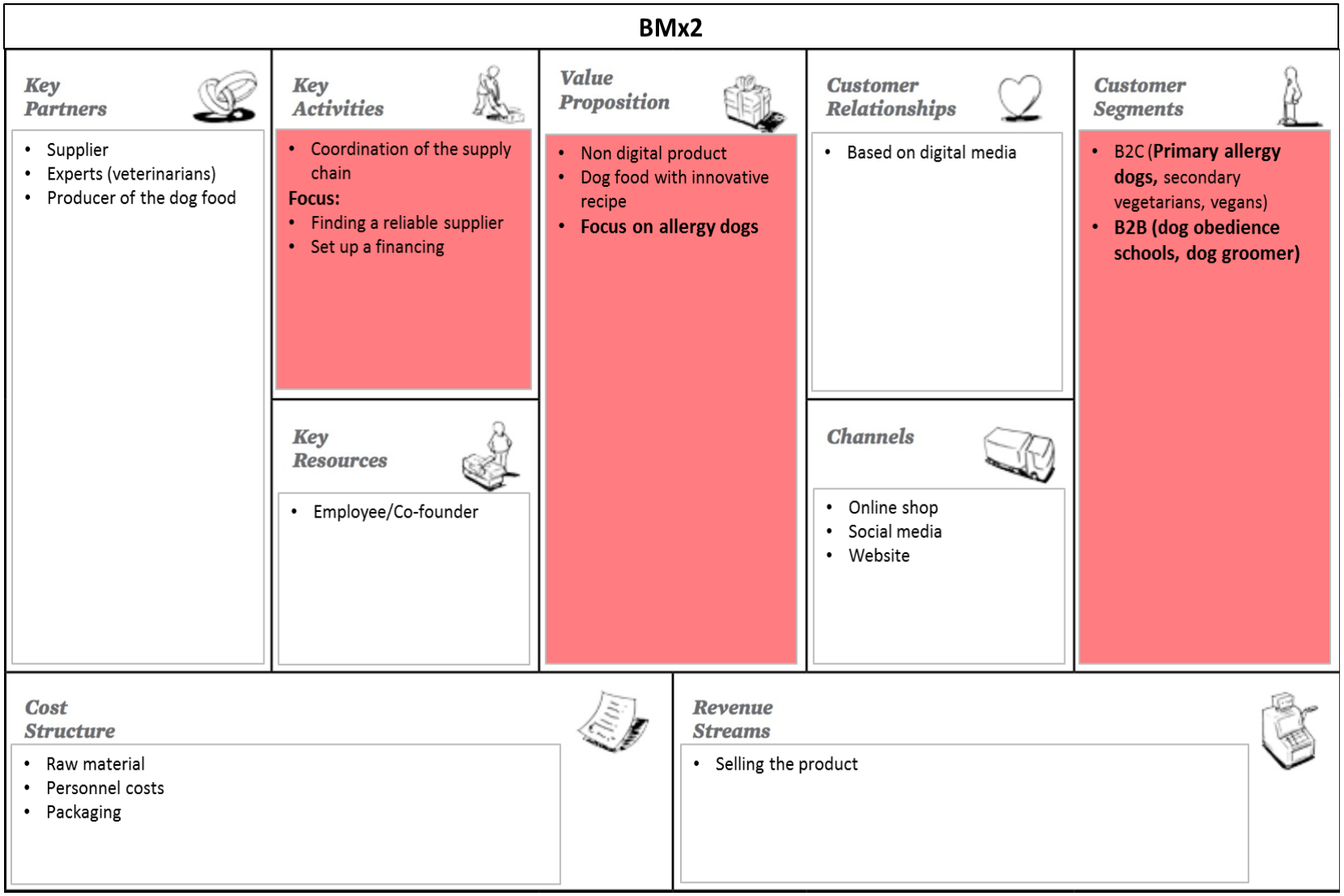


Figure 56: My BMx2 (own source)

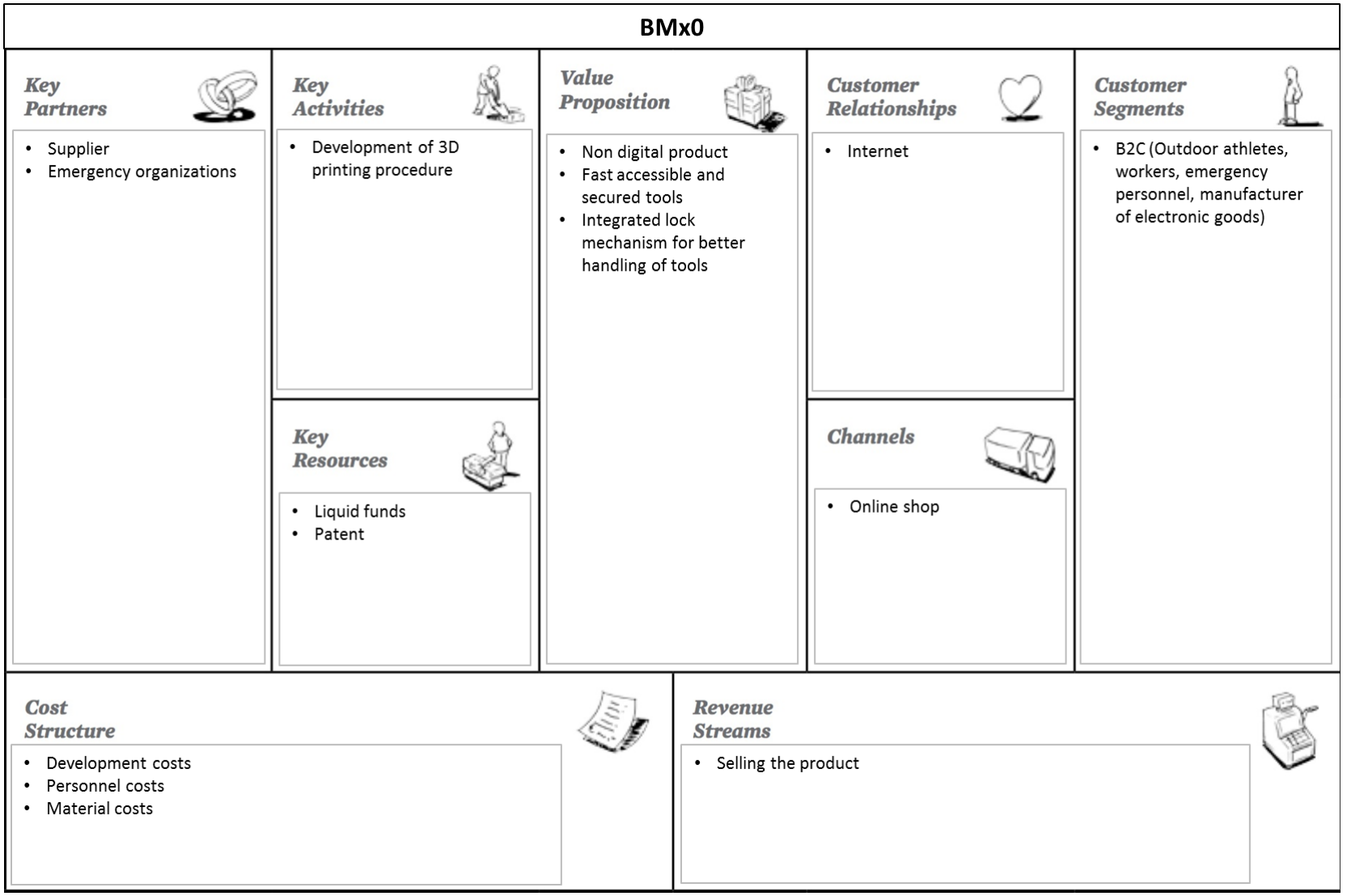


Figure 57: Ny BMx0 (own source)

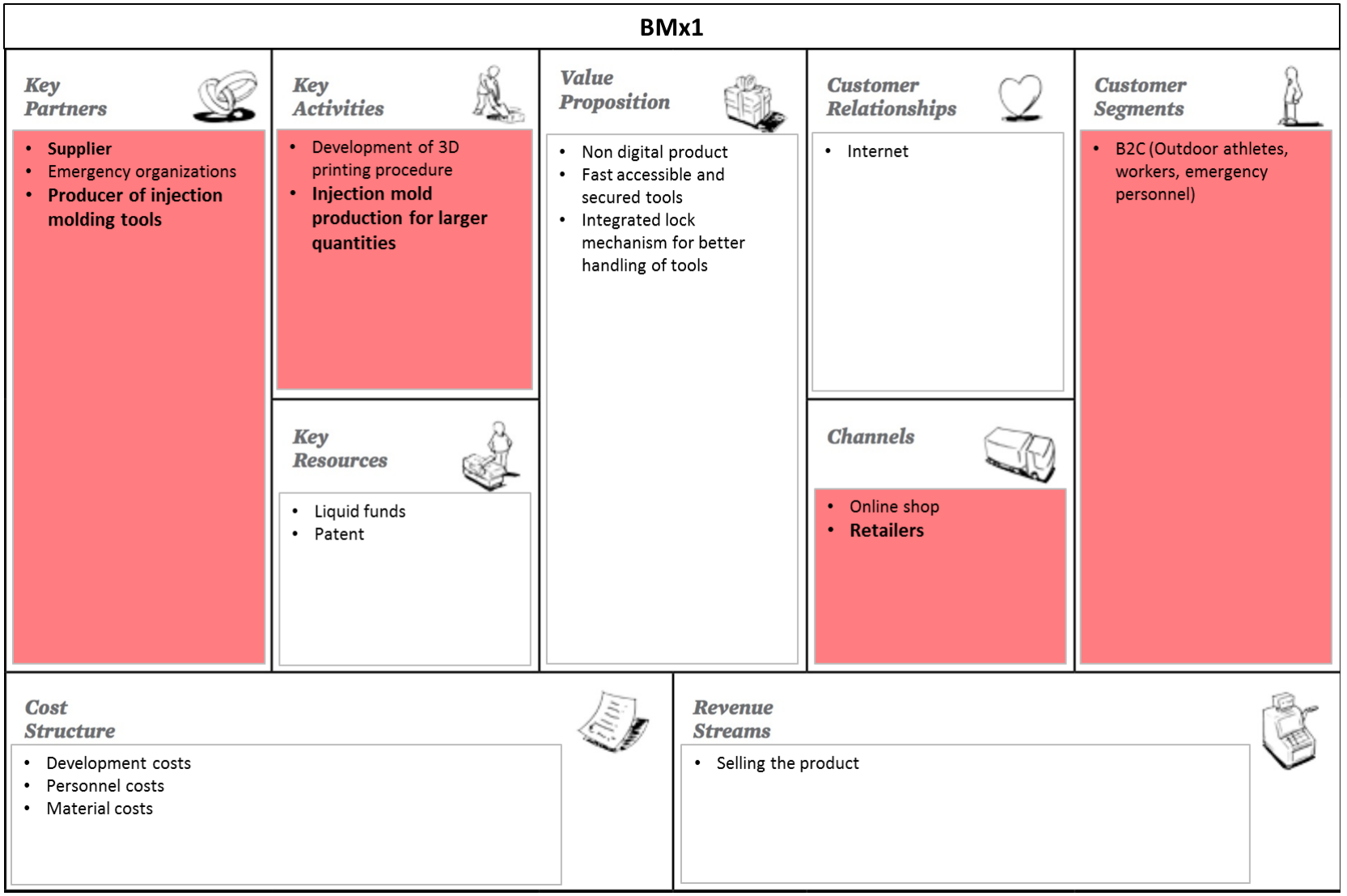


Figure 58: Ny BMx1 (own source)

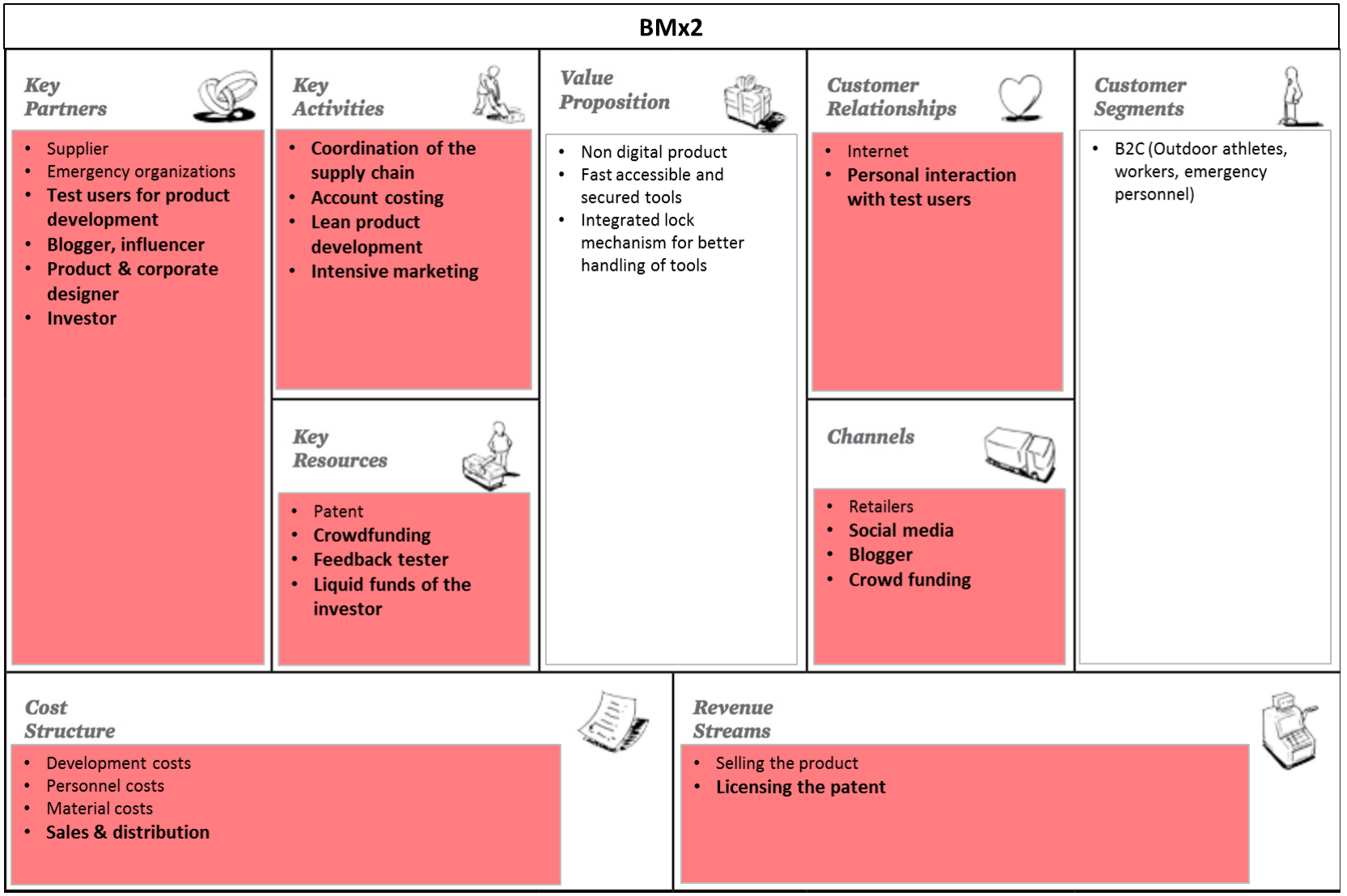


Figure 59: Ny BMx2 (own source)

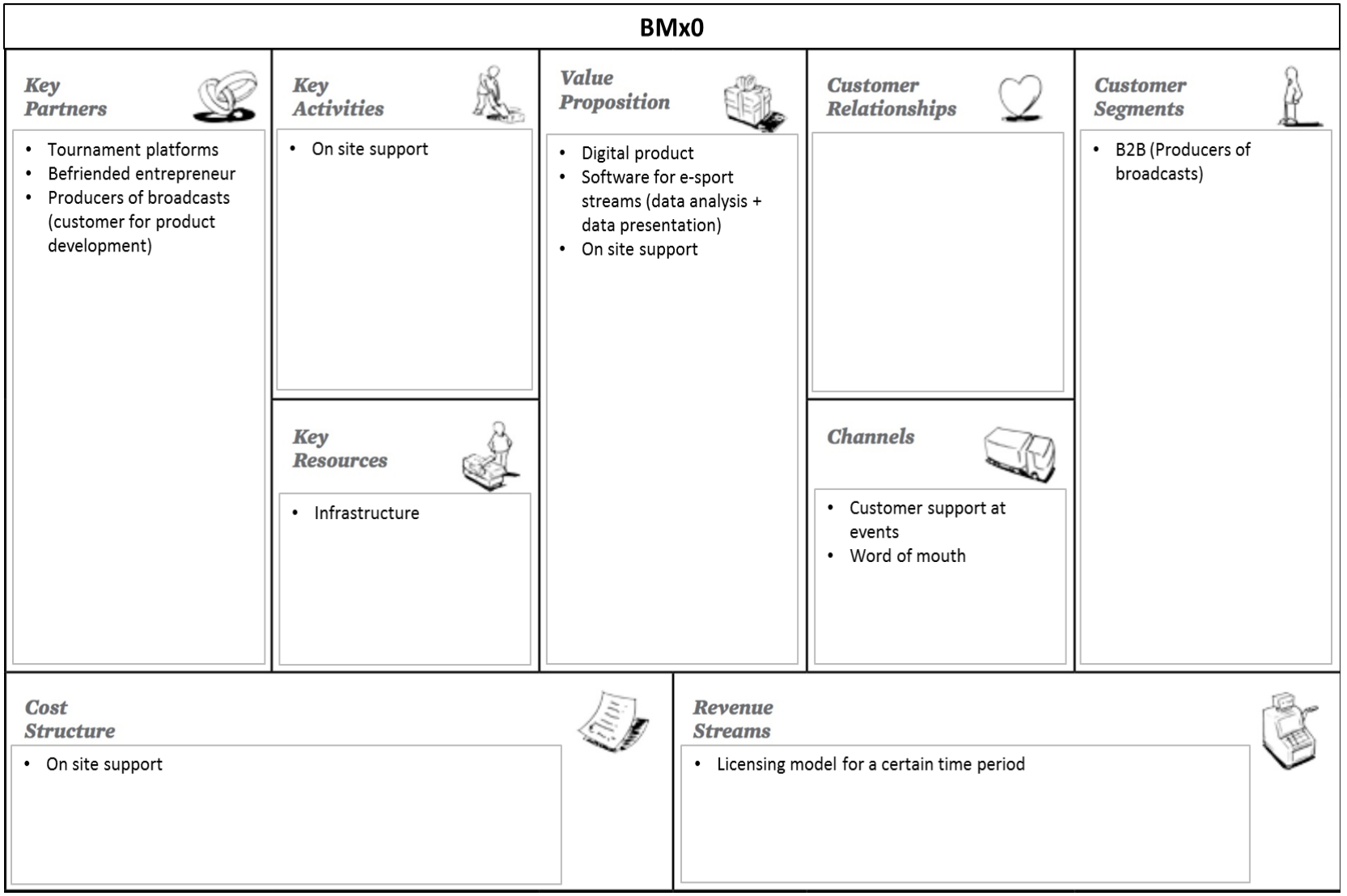


Figure 60: Xi BMx0 (own source)

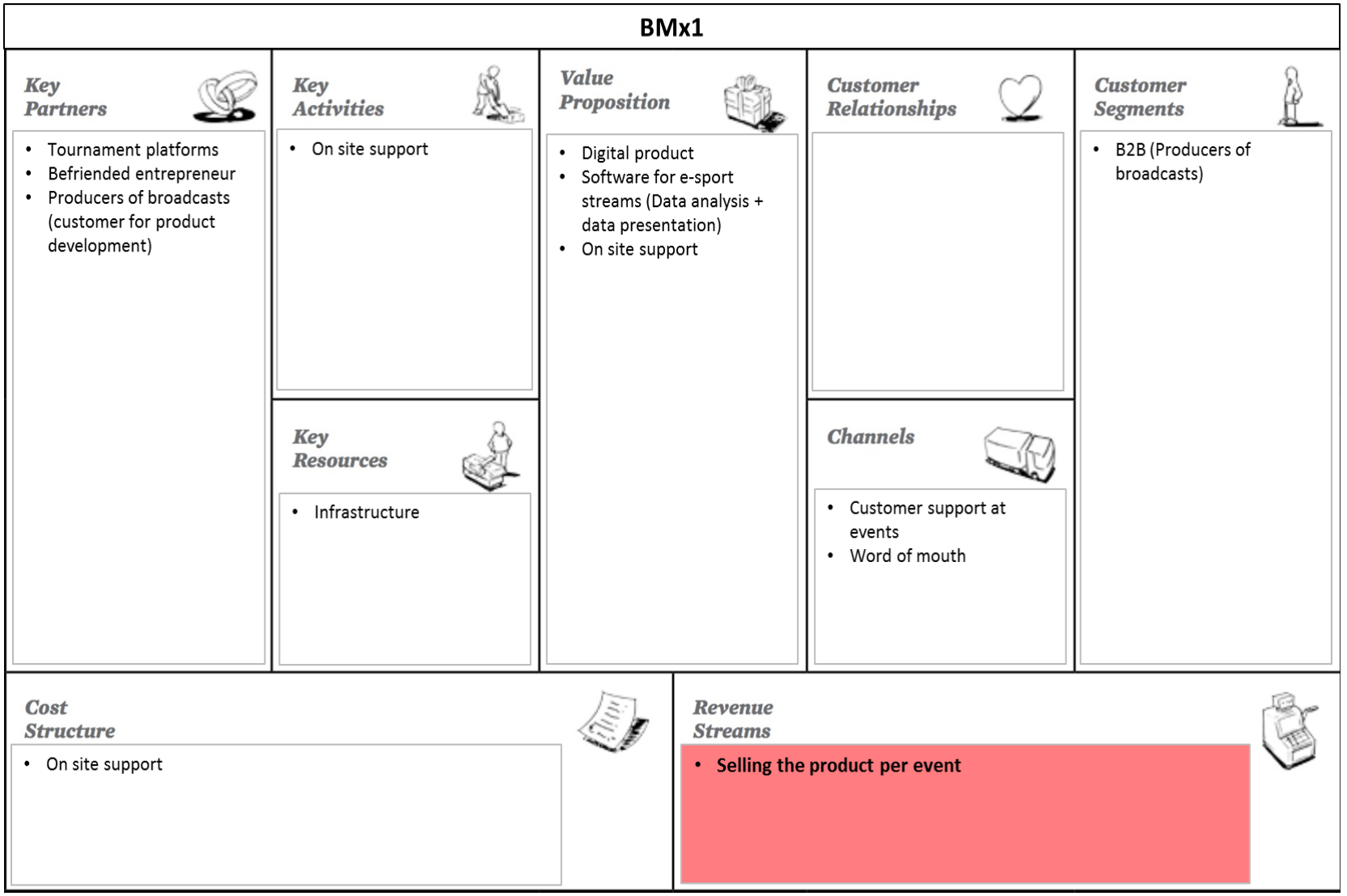


Figure 61: Xi BMx1 (own source)

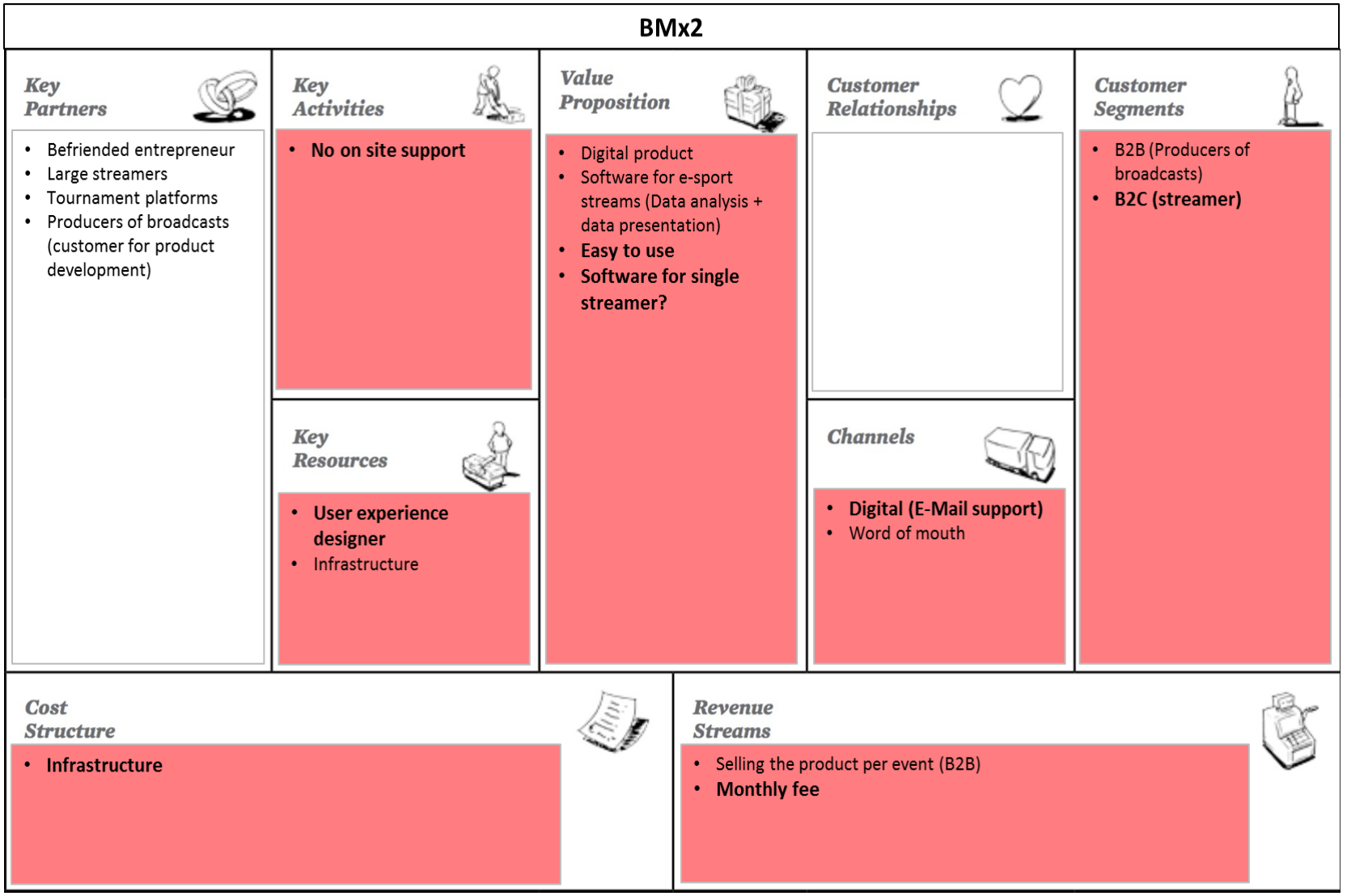


Figure 62: Xi BMx2 (own source)