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# Empowering Business Model Innovation:

## The case of European SMEs

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In association with



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## Preface

Before you lies the master thesis “Empowering business model innovation: The case of European SMEs”. The master thesis is based on experiences of SMEs whereby they were asked to experience web-based business model tools. This research is written to accomplish the graduation requirements of the course Master of Business Administration (MSc.) at the University of Twente, Enschede. The research included a time period of eight months; from January to August 2016.

This research was started by a European funded project, named the ENVISION project. InnoValor, one of the project members, offered me an opportunity to research web-based business model tools. I was quite enthusiast about the research, whereby I could test my acquired knowledge of my academic years. Fortunately, my supervisors Dr. Ir. Timber Haaker, Ir. Björn Kijl and Dr. Raymond Loohuis were always available and willing to support me during my queries. Therefore, I would like to thank you for your time, valuable input and cooperative thoughts through the entire thesis period.

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I hope you will get new insights, knowledge and satisfaction by reading this thesis.

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## Abstract

This research gives insight into how web-based business model tools need to be improved to empower SME business model innovation. The main goal of this research is to identify strong points and limitations of web-based business model tools for SMEs. As there are many web-based business model tools available, the research will focus on the web-based business model canvas. The research is based on interviews and a tool evaluation experiment with SMEs. These SMEs experience web-based business model tools by themselves. For this study, a problem-solution fit of the Value Proposition Canvas model will be used as a theoretical framework. Based on the outcomes, analyses will be proposed for improving web-based business model tools. The research is on behalf of a European funded project, which is developing innovative web-based tools for business model innovation to all European SMEs, the recommendations of this research will be fed back to the European project to optimize web-based tooling for SMEs.

## Management summary

Web-based business model tools are power- and helpful tools for empowering SME business model innovation. However, SMEs lack in knowledge and competences in the use of web-based business model tools. For this, web-based business model tools need to be improved and more accessible for SMEs. Based on this study, the strengths and limitations of current web-based business model tools for SMEs are discussed. In the last years, the interest in innovating business models increased, mainly due the fact that companies would like to sustain competitive. Nevertheless, the majority of SMEs don't have the knowledge or competences to conduct business model innovation with business model tools in practice. For analysing these web-based business model tools, a theoretical framework has been used, the value proposition canvas model. This model focuses on the value proposition and the customer segment, in this case web-based business model tools and SMEs.

As there are many web-based business tools, a comparison of five web-based business model tools is conducted and analysed. Based on this analysis, the most suitable web-based tool for SMEs is used for a tool evaluation experiment. This experiment included sessions with SMEs who filled in a web-based business model canvas by themselves. The experiment contained four different exercises whereby all interaction of the SMEs were recorded and analysed. The outcomes are transformed into readable content within a cross-case analysis. Eventually, the results are presented in an extend value proposition canvas model.

SMEs see the added value of web-based business model tools. SMEs feel confident with web-based tools and would like to use it for further activities. Though, they require some improvements, like better management around the tools, real-time editing, giving feedback to sticky notes and a chatbox. In contrast, SMEs don't have time for business modelling and long time strategies, therefore the advantages and importance of web-based business models need to be fostered. Likewise, as web-based tools are complicated for some SMEs, it needs to enclose clear documentations, guidelines and examples. Also, SMEs don't know what to do after filling in web-based tools, the tools needs to be actionable for further usage. Consequently, the recommendations of this research will be presented to the European platform, which is developing innovative web-based business model tools to all SMEs through Europe.

## Table of content

Preface .....	III
Abstract .....	IV
Management summary .....	V
Table of content .....	VI
1. Introduction .....	1
1.1 Problem definition .....	2
1.2 Research Goal .....	3
1.2.1 Main research question: .....	3
1.2.2. Sub research questions: .....	3
1.2.3. Research context .....	3
2. Literature Review .....	4
2.1 Small & Medium sized enterprises .....	4
2.1.1 Categorisation of SMEs .....	4
2.1.2 SMEs; the backbone of Europe .....	5
2.2 Business models .....	5
2.3 Business model innovation .....	6
2.4.1 The need for business model innovation .....	8
2.4.2 Business model innovation; successes and failures .....	10
2.5 Business model tools .....	11
2.5.1 Business model tools for SMEs .....	12
2.5.2 Experimenting with web-based business model tools .....	13
2.6 The research framework, the value proposition canvas .....	14
2.7 Comparison of web-based business model tools .....	17
2.8 Analysing existing web-based business model tools .....	19
2.8.1 BMCanvas .....	19
2.8.2 BMFiddle .....	20
2.8.3 Canvanizer .....	21
2.8.4 GroupMap .....	23
2.8.5 TUZZit .....	24
2.9 Complete overview of the web-based business model tools .....	25
2.10 Results of the comparison of current web-based business model tools .....	27
3. Methodology .....	28
Deniz Alan .....	VI

3.2 Research design.....	28
3.3 Research method .....	29
3.4 Selection and sampling.....	30
3.5 Data measurement .....	31
3.6 Qualitative data analysis.....	32
3.7 Graphical illustration of the methodology .....	33
4. Results .....	34
4.1 Structured overview of the sessions .....	34
4.2 Transcriptions.....	35
4.3 Summary company A.....	35
4.3.1 Tool evaluation experiment.....	36
4.3.2 Feedback business model tool.....	37
4.3.3 Missing features and add-ons .....	38
4.4 Summary company B .....	39
4.4.1 The experimental session .....	40
4.4.2 Feedback evaluation tool.....	41
4.5 Summary Company C .....	42
4.5.1 Tool evaluation experiment.....	43
4.5.2 Feedback evaluation process .....	44
4.6 Intra- & cross-case analysis.....	46
4.6.1 Intra-case analysis .....	46
4.6.2 Cross-case analysis.....	49
4.6.2.1 General remarks .....	49
4.6.2.2 Usage of web-based tools.....	49
4.6.2.3 Functionalities of web-based tools .....	50
4.6.2.4 Usability of web-based tools .....	50
4.7 Problem-solution fit between web-based business model tools and SMEs .....	50
5. Main findings of the study .....	54
5.1 Answer to the main research question.....	55
5.2 Answer to the sub-questions .....	58
5.3 Recommendations .....	60

5.4 Scientific contribution .....	62
5.5 Practical contribution .....	63
5.6 Limitations of the study.....	64
5.7 Suggestions for future research .....	64
6. References .....	67
7. Appendix .....	73
7.1 Appendix I - Tool evaluation experiment .....	73
7.1.1 Aim of the tool evaluation experience: .....	73
7.1.2 Structure and questionnaires .....	73
7.2. Appendix II - Potential SMEs for the research .....	75
7.3 Appendix III - Schedule .....	76



# Introduction

## 1. Introduction

Innovation is crucial for organizations to create sustainable value for customers (Porter & Kramer, 2011). These changes create challenges to the way organizations deliver that value, the business model (Osterwalder & Pigneur, 2010). Business models are defined as the way a company or a network creates, delivers and captures value (Osterwalder & Pigneur, 2010). Pateli (2003) stated that BMs are applicable in countless fields or areas (e.g., e-businesses, computer science, information systems, management). Moreover, business models are mainly applied to high-tech driven new products, innovative strategies, product-service combination and during changes in businesses. In fact, Chesbrough & Vanhaverbeke (2011) claimed that all companies (usually large companies) use business models. Contrary, small- and medium sized enterprises (SMEs) are less interested in strategies and long-term developments. SMEs focus on how to survive today and how to do business nowadays (Frick & Ali, 2013). Additionally, SME do not have the capacities or knowledge and therefore have difficulties in innovating their business models (Akrich & Miller, 2007; Chesbrough, 2007; Chesbrough & Vanhaverbeke, 2011).

Productivity and profitability of SMEs in Europe are uncertain (Barjak, Niedermann, & Perret, 2014). The crucial factor to stay in business and sustain competitive advantage is innovation (Porter & Kramer, 2011). To empower small and medium-sized enterprises a new approach is needed, business model innovation (Johnson, Christensen, & Kagermann, 2008). To support SMEs improving their business model, a European funded project started, named Envision (<http://www.businessmakeover.eu>). The project includes nine European partners, who develop innovative tooling, web-based business model tools, for business model innovation and deliver that free of charge to all European SMEs. The tools also include downloadable paper templates as well as a web-based version of business models, e.g., the business model canvas. The tools are available via an online self-service platform. Likewise, the platform provides examples, tutorials and community functions to support, guide and inspire European SMEs with business model innovation.

## 1.1 Problem definition

SMEs struggle with developing innovative business model to capture value (Chesbrough, 2010). Innovation is challenging in a situation of uncertainty and during experimenting with business models. According to Chesbrough (2007), innovation must include business models, rather than research & development and technology improvements. Chesbrough stated that business models could beat a good concept or an innovative technology. With reference to the problem definition, SMEs are uncertain about their productivity and profitability. SMEs need to innovate their business model to survive the competitive market (Barjak et al., 2014; Chesbrough, 2007; Lund, 2013; Porter & Kramer, 2011). However, SMEs are not conscious of the importance of business model innovation (Akrich & Miller, 2007; Chesbrough, 2010).

*“Business model innovation refers to changes in business logic that are new to the firm, yet not necessarily new to the world, and have to result in observable changes in the practice of a business model” (Pucihar, Kljajić Borštnar, Heikkilä, Bouwman, & Reuver, 2015)*

SME feels like experienced with old business models, are not convenient with new business models. Furthermore, SMEs lack in knowledge or competences on how to do business in a revolutionary way (Akrich & Miller, 2007; Barjak et al., 2014). In order to start with BMI (Business model innovation), business model tools can be used, which is helpful for SMEs (Chesbrough, 2010; Osterwalder & Pigneur, 2010). Business model tools relates to online and offline, hard and soft mechanics that supports to define, evaluate and plan business models (Envision, 2015). Lund (2013) argued that interest in innovating business models tools increased in the last years. Because of the popularity of business models tools, many web-based tools were developed (Amarsy, 2015), e.g., a web-based version of Osterwalder’s business model canvas.

As the popularity is increasing slightly, no academic research has been done in this field of area. Though, there are some sources of web-based business model tools in the Envision Documentation (Working package 1-5). This research will give insights into improvement of web-based business model tools for SMEs. Regarding the improvement of web-based business model tools for SMEs, what are the strong points and limitations of web-based tools? In what way can web-based business model be improved such that it will be more acceptable for SMEs? In what way will SMEs feel comfortable with web-based business model tools? Last but not least, how can web-

based business model tools be improved so it will be more understandable for SMEs? Though, improving web-based tools only, may not be enough, as there may be barriers accepting and using business models by SMEs (Barjak et al., 2014). However, as there are many business models available, this research emphasis on one particular tool, the web-based business model canvas (Osterwalder's business model canvas). The research focuses on the web-based aspects of business model tools and does not include a validation of Osterwalder's business model canvas, which is out of the research scope.

## 1.2 Research Goal

The main goal of this research is to identify strong points and limitations of web-based business model tools for SMEs, focussing on the business model canvas. The results will be used to provide recommendations for improving such tools.

### 1.2.1 Main research question:

With the aim of the research goal of this study, the following central question will be answered:

***“What are the strong points and limitations of current web-based business model canvas tools for SMEs?”***

### 1.2.2. Sub research questions:

- *In what way will SMEs feel confident with web-based business model tools?*
- *In what way can web-based business model tools be improved focussing on SMEs?*
- *How can SMEs be made aware of web-based business model tools?*

### 1.2.3. Research context

This research provides recommendations on how to improve web-based business model tools to empower SME business model innovation. The improvements address the strong points and limitations of web-based business model tools. The study is based on a tool evaluation experiment whereby SMEs experience web-based business model tools by themselves. As there are many business model tools available, the focus will be on (the) web-based business model canvas (Osterwalder's business model canvas). The recommendations will be fed back to the Envision project and used to optimize the specifications for web-based tooling. Likewise, the Envision project allows reaching all of the SMEs through Europe.

# Literature Review

## 2. Literature Review

The second section of this research includes a literature review whereby relevant published data for this research area is collected. The literature review consist information about SMEs, web-based business model tools and business model innovation. These topics are necessary for improving web-based business model tools, the best manner possible, whereby the focus is on small and medium-sized enterprises (SMEs).

### 2.1 Small & Medium sized enterprises

Small and Medium-sized enterprises (SMEs), also called small and medium sized enterprises, usually defined by their number of employees. The term SMEs is approved and used by multiple international institutions, like the European Union, World Bank, United Nations and the World Trade Organization. According to the European commission (Barjak et al., 2014), SMEs represent 90% of all businesses in the European Union. In order to recognize a company as an SME, the European Commission (2015a) appointed the following:

*“The category of micro-, small- and medium-sized enterprises (SMEs) is made up of enterprises which employ fewer than 250 persons and which have an annual turnover not exceeding 50 million euro, and/or an annual balance sheet total not exceeding 43 million euro”* (Commission, 2015a).

#### 2.1.1 Categorisation of SMEs

Small and medium-sized enterprises are classified into three groups by the European Commission, under document number 2003/361/EG (Commission, 2015b). The classifications of the groups include the number of employees, turnovers and the balance sheets total. The classifications of the groups are described in Table 1.

Category	Employees	Turnover	Balance sheet total	Number of enterprises	Percentage
<b>Medium-sized</b>	< 250	≤ 50 m	≤ 43 m	0.2 m	1.1%
<b>Small</b>	< 50	≤ 10 m	≤ 10 m	1.4 m	6.5%
<b>Micro</b>	< 10	≤ 2 m	≤ 2 m	19.2 m	92.2%

Table 1: Classification of SMEs in Europe

Based on a research of Eurostat (2009), the classifications of the companies are completed with percentages. As described in the table, the micro enterprises, with less than 10 employers, are the largest group of SMEs. Small- (6.5%) and Medium-sized enterprises (1.1%) follow this category. Furthermore, large companies (0.2%) in Europe are not included in the table, because these companies are less relevant in the context of this study. However, with reference to turnovers in Europe, SMEs totally generated a turnover of \$12.7 (57.4%) and large enterprises \$9.4 (42.6%) million (Eurostat, 2015a).

### 2.1.2 SMEs; the backbone of Europe

Based on a research of the European Commission (2014), SMEs are the backbone for the European economic growth (Barjak et al., 2014). SMEs provide opportunities for employees, social and economic stability. In figures, more than 20 million SME's gave approximately 20 million job opportunities thorough the European Union (Barjak et al., 2014). SMEs are necessary for the economic growth in the EU. They play an important role in innovation and encourage competitiveness and employment. Moreover, the European Commission supports to improve the business environment for SMEs. In order to realise the full potential of SMEs in the global economy, SMEs needs to innovate. Therefore, business model innovation needs to be considered. In order to understand business model innovation, a definition of business models will be given first.

## 2.2 Business models

*“A good business model begins with an insight into human motivations and ends in a rich stream of profits.” (Magretta, 2002)*

A business model describes the rationale of how an organization creates, delivers and captures value (Osterwalder, 2010). Baden-Fuller & Morgan (2010), claims that business models are objects for investigation in science. Again, Osterwalder (2010) stated that business models are like a blueprint for strategy to be implement through organizational structures, processes and systems. Table 2 presents an overview of different definitions of business models.

Author	Definition
Stewart & Zhao (2000)	<i>A Business model is a statement of how a firm will make money and sustain its profit stream over time</i>

<b>Osterwalder, Pigneur &amp; Tucci (2005)</b>	<i>A business model is a conceptual tool containing a set of objects, concepts and their relationships with the objective to express the business logic of a specific firm. Therefore we must consider which concepts and relationships allow a simplified description and representation of what value is provided to customers, how this is done and with which financial consequences.</i>
<b>Baden-Fuller &amp; Morgan (2010)</b>	<i>Business models are organisms for investigation in science</i>
<b>Casadesus-Masanell &amp; Ricart (2010)</b>	<i>The logic of the firm, the way it operates and how it creates value for its stakeholder</i>
<b>Osterwalder (2010)</b>	<i>A business model describes the rationale of how an organization creates, delivers and captures value Business models are like a blueprint for strategy to be implement through organizational structures, processes and systems</i>
<b>Teece (2010)</b>	<i>How a firm delivers value to customers and converts payment into profits</i>
<b>Yunus, Moingeon &amp; LehmannOrtega (2010)</b>	<i>A value system plus a value constellation</i>
<b>Zott &amp; Amit (2011)</b>	<i>A system of interdependent activities that transcends the focal firm and spans its boundaries</i>
<b>Lund (2013)</b>	<i>A business model is too multifaceted to be defined in any simplistic way. Overall, a business model consists of two elements; what the business does, and the way in which the business gains profit</i>

Table 2: Definitions of business models

As presented above, there is not yet a broadly accepted uniform definition of business models. The term business model is indistinct and has many unanswered questions regarding to the conceptual foundations and how organisations design and adopt business models successfully (Barjak et al., 2014). In practice there is considerable consensus about the core concepts of a business model relating to value creation and value capturing. With respect to all of the authors, because of the popularity of the business model canvas and the focus of this study, the focus will be on the definition of Osterwalder.

### 2.3 Business model innovation

Business models describes the kind of value a company want to create and stimulate innovation (Magretta, 2002; Alex Osterwalder et al., 2015). In order to sustain

competitive, business model innovation need to be considered (Lindgardt, Reeves, Stalk, & Deimler, 2009). Business model innovation embraces not only product or service innovation. It describes reinventing business models to deliver value in a new way (Lindgardt et al., 2009). Still, business model innovation have several interpretations and meanings (Barjak et al., 2014). According to Pucihar et al (2015), business model innovation is defined as changes in business logic that are new to the focal firm, yet not necessarily new to the world and have to result in observable changes in the practice of a BM. Barjak, Niedermann & Perret (2014) describe business model innovation as adopting business models by changing the business logic. In contrast, Mitchel & Coles (2003) claimed that business model innovation is a source of competitive advantage. Furthermore, business model innovation may refer to radical or disruptive innovation that affects the entire business and not just incremental changes (Bock, Opsahl, George, & Gann, 2012; Cavalcante, Kesting, & Ulhøi, 2011; Markides, 2006; Yunus et al., 2010). Hereby, radical refers to doing business in a new way a company operates in and innovating at market level. As there are many definitions of business model innovation, a list is presented in Table 3.

Author	Definition
<b>Lindgardt, Reeves, Stalk, &amp; Deimler (2009)</b>	<i>BMI offers a fresh way to think about renewing competitive advantage and reigniting growth in this challenging environment</i>
<b>Barjak, Niedermann &amp; Perret (2014)</b>	<i>... business model innovation as adopting business models by changing the business logic</i>
<b>Pucihar, Kljajić Borštnar, Heikkilä, Bouwman, &amp; Reuver, (2015)</b>	<i>Business model innovation is defined as changes in business logic that are new to the focal firm, yet not necessarily new to the world, and have to result in observable changes in the practice of a BM</i>

*Table 3: Definitions of business model innovation*

Generally, the idea of business model innovation is to innovate new business opportunities (Lund, 2013). Altogether, business model innovation is the way to attract new customers and enlarge market shares (Barjak et al., 2014). Furthermore, business model innovation is applicable with new ideas, technologies and new market opportunities. Besides, the more radical the technological innovation, the greater the need for business model innovation in order to capture the value created by a new technology (Bock et al., 2012).

However, SMEs are not conscious of the importance of business model innovation. The majority of SMEs don't have the knowledge or competences to conduct BMI in practice (Akrich & Miller, 2007; Chesbrough & Vanhaverbeke, 2011). In order to innovate as well as possible, entrepreneurs should perform business model innovation in parallel with technological innovation or during the development of a new product (H. Bouwman, de Reuver, Hampe, Carlsson, & Walden, 2010). This is difficult because the simultaneous innovation of technology and business model requires complementary skills and capabilities, i.e. developer skills for developing new products or services, engineering skills to work on new technologies and marketing skills to analyse new markets. Especially for micro SMEs it is hard to have all off these skills, as one fulfilled (inexperienced) person is doing several tasks at once.

#### 2.4.1 The need for business model innovation

According to Chesbrough (2010), companies focus less on business model innovation in order to capture value. This goes for new firms and experienced firms. In contrast, Lund (2013) claims that the interest in innovating business models increased in the last years. Mainly due the fact that companies succeed in being competitive or entering a new marketing by successful business models (Lund, 2013). However, while the European Commission foster business model innovation, it may be assumed that the interest in business models increased in the last years. Consequently, business model innovation allows companies to break out of strong competition and sustain advantage.

Business model innovation plays an important role in order to survive the market. Organizational processes must change and departments need to collaborate during changes. Besides, companies need to have a positive attitude toward business model changes (Chesbrough, 2010). Besides, business model innovation supports companies to reach certain opportunities, e.g., to decrease risks or to average prices during times of crises (Lindgardt et al., 2009; Lund, 2013). Furthermore, based on a research by the European Commission (2014), it can be claimed that the importance of business model innovation has been growing. Approximately 40% of 27 founded companies in the USA claimed high positions in Fortune 500 accomplished by business model innovation in the past 10 years (Johnson et al., 2008).

Nevertheless, business model innovation has been undervalued by SMEs (Clarysse, Wright, Lockett, Mustar, & Knockaert, 2007). Therefore, SMEs need to look critically at their (unconscious) business activities (Barjak et al., 2014). Furthermore,



SMEs need to experiment with their business models in practice. Likewise, Kolb (2014) stated that companies need to learn through experiences. This can be conducted through simulations or experimentations. Thereby, it is possible to find out which (parts of the) business models are profitable and which are not (Baden-Fuller & Morgan, 2010). There are different interpretations of how to innovate business models optimum.

Mitchel and Coles (2003) state the following:

*“When a company makes business model replacements that provide product or service offerings to customer and end users that were not previously available, we refer to those replacements as business model innovations.”*

As Mitchel and Coles appropriately points out, business model innovation seems to advance the added value to the customer and end user of a company. According to a research of the Boston Consulting Group (Lindgardt et al., 2009), in general, business model innovation is more challenging and have higher returns. Following, it can be stated that the total shareholder returns of business model innovators was on average four times greater than product or process innovators (e.g., a new or improved version of a product or process) and also continued eliminated the competitors. Correspondingly, the returns of business model innovators are more sustainable compared to product or process innovators, also after several years (10+). Besides, Lindgardt et al (2009) stressed out that business model innovation is one of the most powerful methods doing business nowadays.

Chesbrough (2007) claims that creating sustainable business models takes a lot of time, i.e. to develop business model experiments and interpret the results. During the development of the business model, often, managers are pleased with the results of the current business model. Therefore the manager decides to stay with that current business model. However, as the business model has not been developed sufficiently, the business will grow with the limitations of that business model. To differ from the limited business model, other departments need to be involved. In conclusion, the model, which is developed by the top management, results in a business model, that becomes unchallengeable (Chesbrough, 2007).

Although, successful business models are hard to imitate (Chesbrough, 2007). Likewise, replicating business models may cannibalize company sales and profits, which could lead to upsetting your business relations. Eventually, copying business model will not result positively (Teece, 2010).

#### 2.4.2 Business model innovation; successes and failures

There are some companies who have proven successful by innovating their business model (Chesbrough and Rosenbloom (2002)). A classic example is the Xerox Model 914, which was introduced in the late 50s. This case includes printing images using electricity instead of using wet chemicals. However, printing these images was very high-priced. For this, Xerox decided to lease their products instead of selling and charged a small fee if companies exceeded 2000 copies a day (Kearns, Mauler, & Kleinfield, 1992). This new business model became a success story. Moreover, users of the printer exceeded the 2000 copies a day and the turnover of Xerox experienced a growth of 40% over a 12-year period (Chesbrough & Rosenbloom, 2002). Following this, many companies (more than 35), who are active in the technology branch commercialized Xerox's originating new business model (e.g., 3COM, Adobe, SynOptics, Metaphor, LiveWorks and Documentum). Another example is Apple, who limited hard- and software for niche markets (e.g., designer). Products included the iPod, iPhone and iTunes (Lindgardt et al., 2009).

Dell and Wall-Mart have innovated their business model successfully as well. To provide the customers more value, they believed in working directly with the customers. Dell stated the following:

*“This belief - that by working directly with customers we could get them technology faster, provide a better level of service, and provide better value - was the basis of the business - the fundamental business system was quite powerful and delivered lots of value to our customers - we screwed up lots of things, but the one thing we got right was this core business model, and it masked any other mistakes...” (Dell, 2008).*

Dell's and Wall-Mart's business models were different, superior and supported processes that were difficult for competitors to replace. For instance, Dell's success included selling their products directly to the customers via their partners and resellers. Moreover, customers can completely customize their products, like desktops, laptops, printers and computer related products (Teece, 2010). Wall-Mart business model includes selling high volumes at lower prices and taking a low margin as profit. Moreover, they promoted large companies by selling their products at low prices and invested in lean logistic and IT systems (Teece, 2010). Overall, Dell and Wall-Mart

continuously altered and improved their business model over time, which made their business model hard to imitate and succeed. Still, companies are trying to copy business models, for example, Gateway Computers tried to replicate Dell's business model. However, they failed, as Dell's concept is not working for all companies. In order to succeed, implementation of business models requires changes in systems, processes and assets. Gateway Computers failed during the implementation process (Teece, 2010). Another example is Blockbuster, who operated with the same business model as Netflix. Netflix business model included a video-on-demand service whereby users and payers are the same individual. Moreover, they were the pioneers using business model whereby they offer streaming technology for a small monthly charge. Instead, Blockbuster earned enormous money by charging their customers late fees. However, the market preferred renting movies online, which made Blockbuster go bankrupt in 2010 (Satell, 2014).

## 2.5 Business model tools

Business model tools are designed to support and innovate business models (Chesbrough, 2010; Osterwalder & Pigneur, 2010). Business model tools are defined as online and offline mechanisms that help to define, evaluate or plan implementation of business models. Besides, these tools support to clarify choices for business models and facilitate knowledge sharing about successful business models between branches, sectors, communities and countries (Envision, 2015). According to (Chesbrough & Vanhaverbeke, 2011), companies behave as similar companies in a branch or target market and prefer tools similar to existing business model tools, for example, using similar tools as the competitor (Barjak et al., 2014). Additionally, companies only start experimenting with business model tools if they or their consultants have the support of tooling that is very simple to use (Envision, 2015).

According to the European Commission (Barjak et al., 2014), business model tools need to be newly developed or customized in order to be more accessible for SMEs, accordingly, web-based business model tools. Furthermore, web-based tools need to be accessible for all kind of organizations like the chamber of commerce, family businesses, industry organizations and technological companies. In order to make tools accessible and usable for SMEs, some experiments need to be conducted, which will be discussed later on. The literature is not familiar with producing innovative business model tools. However, there are a few business model tools, which are translated into

web-based business model tools (e.g., Canvanizer, Strategyzer, GroupMap). According to the European Commission (Barjak et al., 2014), web-based tools will bring value, support and simplify the life of managers of SMEs. In addition, web-based tools will allow SMEs to experiment with (online) business models. For example, SME can experiment with tools, easily visualize, design and compare tools. Additionally, web-based tools will result SMEs in collaborating with each other while developing business models (Osterwalder, 2004).

According to a research of Bouwman et al. (2012), many business model frameworks do exists. For example, the business model canvas, Porter's five forces, SWOT, Blue Ocean strategy and STOF business model analysis (W. Bouwman et al., 2012; Osterwalder & Pigneur, 2015). Nevertheless, in order to analyse and research these business models, the focus of this research will be on the most commonly used web-based tool, Osterwalders' business model canvas (Osterwalder & Pigneur, 2015). The popularity of this tool is mainly due the clarity, simplicity and visual appeal of the tool (Massa & Tucci, 2013; Osterwalder, 2004; Osterwalder & Pigneur, 2015).

### 2.5.1 Business model tools for SMEs

SMEs are less interested in business strategies and long-term development. They focus more on how to survive and how to do business nowadays (Frick & Ali, 2013). In addition, SMEs are familiar with the business model concept, but have difficulties in innovating their business model with tools in practice (Akrich & Miller, 2007; Chesbrough & Vanhaverbeke, 2011). The difficulties of innovating may be due to the absence of information, knowledge, competences, complications or the relationships of the company. For this, if companies develop a business plan, they are operating in, the business model canvas would be a great input in order to capture value, especially valuable for start-ups (Frick & Ali, 2013).

According to Frick & Ali, the business model canvas is an convenient one-page model for communicating and implementing strategies for SMEs. Besides, the tool is useful to describe how to increase profits, commercialize products and services and improve partner and customer relationships. The business model canvas can be used by all SMEs, no matter what market or branch the company operates in or the customers the company is focusing on. Regarding to the design of the canvas model, the graphical icons makes it easy for SMEs to think and create, as much idea's as possible. (Frick & Ali, 2013). In addition, based on a research of Lund (2013), business model tools should

be presented in a appropriate way. For example, a presentation of a relevant emerging business models for SMEs, which may awake the interest of an SME. Therefore, a business model tool can be positioned in a way of storytelling. Storytelling characterizes the way of passing of information by words, illustration, interaction and values. Through stories, one can share information, knowledge or idea about a certain thing. Furthermore, storytelling is useful when presenting a strategy, a business model or other complex ideas (Kotter, 2008; Riis & Johansen, 2003). Besides, storytelling in tools makes interactions with others possible, increases ideas of own experience and specifies the requirements. Additionally, Morten Lund (2013) stressed that storytelling is very valuable for the business model canvas, whereby each building block may also be represented by video clips. Besides, the business model canvas, storytelling allows SMEs to be more strategic and flexible while making decisions in how to innovate their business model in practice (Frick & Ali, 2013). Eventually, the actual focus of this research is to emphasize on the improvement and acceptance of web-based business model tools by a tool evaluation experiment.

“Are SMEs willing to innovate their business model with business model tools?” According to Chesbrough (2007, 2010), innovating business models with tools will include important parameters. For example, the cost of innovating, the cost of failures, the time of innovating and the volume of information learned after using tools. Therefore, in order to learn from failures and mistakes, Thomke (2003) stated that companies need to take action that provide high level of reliability, as cheap as possible. Likewise, SMEs need to experience web-based business model tools. As Einstein (1999) stated the following:

*“Anyone who has never made a mistake has never tried anything new.”*  
(Einstein, 1999).

### 2.5.2 Experimenting with web-based business model tools

As the popularity of the business model canvas increased, many web-based versions of this model are developed, since 2000 (Amarsy, 2015). Moreover, there is no data of available web-based canvas tools. Also, there is no academic literature available that describes web-based business model tools, particularly for SMEs. For this, a study needs to be conducted which contains experiences of SMEs whereby they experience and evaluate web-based business model tools, thus a tool evaluation experiment. In this

case, a tool refers to mechanics that support to define, evaluate and plan a business model (Envision, 2015). However, there is no well-understood theoretical definition for a tool evaluation experiment in general. Therefore, with reference to this research, a tool evaluation experiment can be defined as an evaluation process of (web-based) business model tools. Similarly, by learning through experiences, the improvements of web-based tools for SMEs can be presented briefly (Kolb, 2014).

As there are many web-based versions of the business model canvas, not all web-based tools can be evaluated, mainly due to time and period constraints. Therefore, based on the popularity (Google search results), current five web-based business model canvas tools will be analysed and discussed (chapter 4). Subsequently, the most suitable web-based business model tool will be used for the tool evaluation experiment with SMEs, which will be deliberated in the methodology section. As a supporting framework, the value proposition canvas model will be used. This model allows analysing the requirements of SMEs and the services offered by the web-based business model canvas tools for SMEs. Finally, a fit between the web-based tools and SMEs will be presented briefly.

## 2.6 The research framework, the value proposition canvas

To improve and analyse current web-based business model tools, a supporting framework will be used, the value proposition canvas. The value proposition canvas supports companies to identify the customer needs and to determine the value proposition in a structured way (Alex Osterwalder et al., 2015). More precisely, this model is to figure out the characteristics and to tailor web-based tools to the needs of SMEs. To analyse and improve web-based business models for SMEs, based on academic literature, the application of the value proposition canvas will be presented in Figure 1 first, which will be followed by the description of all building blocks.

## Application of the value proposition canvas

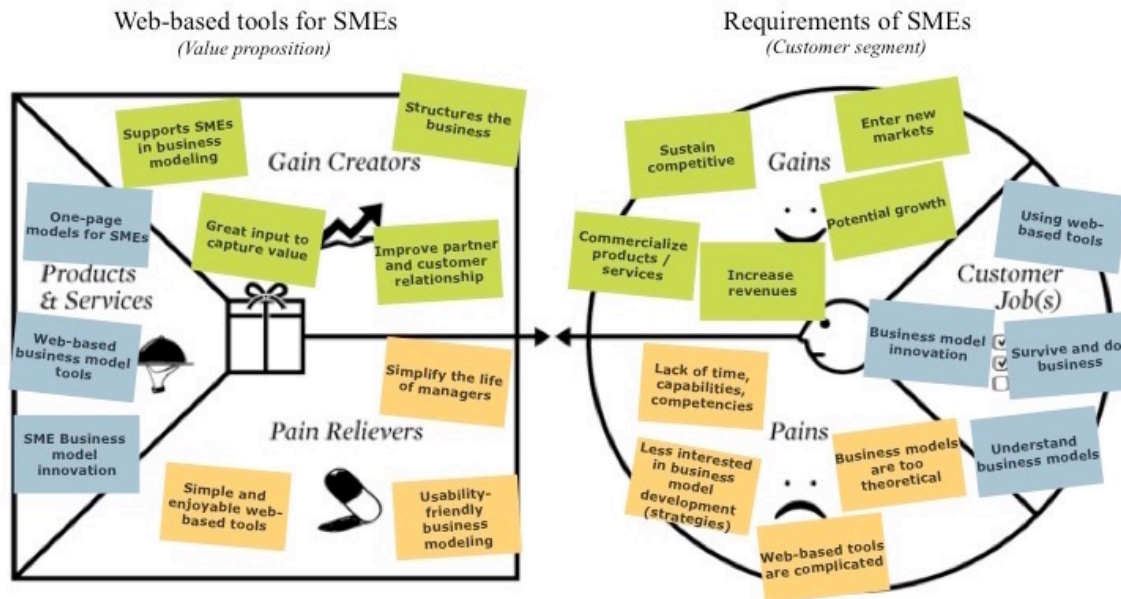


Figure 1: The value proposition canvas for web-based business model tools for SMEs

Referring to the value proposition canvas, the customer segment (right side of the model) describes the characteristics of SMEs in more detail (requirements of SMEs). This includes what SMEs are trying to get done. For example, a task or a problem SMEs are trying to solve or the needs SMEs trying to satisfy. With reference to academic literature, it is complicated for SMEs to develop innovative business models and SMEs are not aware of the importance of business model innovation, thus using web-based business model tools (Akrich & Miller, 2007; Chesbrough, 2010; Chesbrough & Vanhaverbeke, 2011). The second aspect includes SMEs negative emotions, undesired costs and situation, risks, during and after getting a job or task done. Referring to literature, SMEs are less interested in strategies and long-term development, thereby not interested in business model innovation. Furthermore, SMEs focus more on how to survive and how to do business nowadays (Frick & Ali, 2013). Additionally, Chesbrough (2007) stated that many companies do not have to capabilities or capacities to innovate their business models. The last aspect describes the benefits of what SMEs can expect by using web-based tools, this includes functional utility, social gains, positive emotions and cost savings. As an SME, the primary focus is to increase in revenues, enter new markets, deliver values, growth and sustain competitive. Obviously, the outcomes and benefits may vary per SME (Chesbrough & Rosenbloom,

2002; Lu & Beamish, 2006; Magretta, 2002; Osterwalder & Pigneur, 2010; Wade, Johnston, & McClean, 2004).

The value proposition (left side of the model) describes the features of the value proposition, thus the web-based business model tools for SMEs. The value proposition includes products and services, pain relievers and gain creators. Referring to academic literature, web-based business model tools for SMEs are developed to support and innovate business models (Akrich & Miller, 2007; Chesbrough & Vanhaverbeke, 2011; Osterwalder & Pigneur, 2010). Likewise, web-based business model tools are convenient one page-models for communicating and implementing strategies for SMEs (Frick & Ali, 2013). As for pain relievers, web-based business model tools simplify the life of managers of SMEs. Moreover, these tools are easy to understand, simple, enjoyable and user-friendly for business model development (Barjak et al., 2014; Frick & Ali, 2013; Lund, 2013). The last aspect, gain creators, describes how products and services create customer gains. Referring to literature, web-based business model tools gives great input o capture value, are helpful, supports SMEs in business modelling, structures the business and are valuable for start-ups (Barjak et al., 2014; Frick & Ali, 2013; Osterwalder & Pigneur, 2010). Furthermore, web-based business models tools describes how to improve communication with partners and customers (Barjak et al., 2014; Frick & Ali, 2013).

To achieve the fit between the value proposition canvas, the features of the value proposition need to match the characteristics of the customer profile, thus a problem-solution fit. More precisely, SMEs need to get exited about web-based business model tools, which can be achieved by fulfilling the jobs, gains and pains they care about. However, striving for the perfect fit is not always achievable, as no businesses can reasonably address all of the characteristics of customer profiles (Osterwalder, 2012; Osterwalder, Pigneur, Bernarda, & Smith, 2015). To achieve the problem-solution fit, a comparison of web-based business model tools will be presented first. In this analysis five web-based business model canvas tools will be analysed and compared with each other, which will be discussed on the next section. Based on this analysis, one web-based business model tool will be used for the experimental session. Eventually, the problem-solution fit will be used to answer the research questions.



## 2.7 Comparison of web-based business model tools

For analysing web-based business model tools, a comparison of current web-based business model tools will be presented. As the self-service platform delivers web-based business tools free of charge to all SMEs, only free and freemium web-based business model tools will be compared during this analysis. Freemium refers to offering services for free and charging money for additional functionalities (Liu, Au, & Choi, 2012). Based the popularity (Google search results), the following five, web-based business model canvas tools will be analysed and compared with each other; Canvanizer, BMcanvas, BMFiddle, Tuzzit and Groupmap. Strategyzer, Osterwalder's web-based tool, is a paid web app and is not included or analysed for this study. The comparison of the tools is based on the requirements of SMEs. Subsequently, the tool evaluation experiment will be based on the most suitable web-based tool for SMEs.

There is little relevant academic literature available related to requirements of business model tools for SMEs. Though, two sources are found which specify the requirements for SMEs. The first source describes requirements from a qualitative research amongst European SMEs (Pucihar et al., 2015). The second source describes preferences and practices from users of the business model canvas (Osterwalder & Pigneur, 2015). Based on the sources, the requirements of SMEs are divided into three categories. The first category includes the usage of using web-based business model tools, whereby the options of web-based tools are described. The second category describes the features of web-based business model tools. Lastly, usability requirements of web-based tools will be deliberated. An overview of the description of the requirements is presented in Table 4.

<b>Definition of the requirements</b>		
	<i>Description</i>	<i>Source</i>
<i>Usage of web-based tools:</i>		
<b>Data transport</b>	The possibility to transfer data from tools to other tools	EU report
<b>Brainstorm</b>	The tools need to support brainstorm modules	EU report
<b>Low entry barriers</b>	The tools need to be simple, fast and fast registration screens (less registration steps)	EU report
<b>Import/export tools</b>	The tools need to support importing and exporting existing designs (e.g., filled in BMT)	EU report
<b>Reviews/recommendations</b>	The tools need to have recommendations (from other SMEs). Experiences from others.	EU report, Strategyzer
<b>Secure (data)</b>	Data of the tool need to be secure (e.g., SSL data transfer)	EU report
<b>Support / guidelines</b>	The tools need to have help/support/guideline options	EU report
<i>Features of web-based tools:</i>		
<b>Community</b>	The tools need to have a community, chatbox or a forum function for fast exchange of information	EU report
<b>Checklist</b>	The tools need to have a checklist function	EU report
<b>Download &amp; print</b>	The tools need to support downloading and printing functions	EU report
<b>Examples / patterns</b>	The tools need to have examples or patterns for better understanding the tools	EU report
<b>Multi-devices support</b>	The tools need to be usable on multiple devices (PC, laptop, tablet and smartphones)	EU report
<b>Provide analysis</b>	The tools need to support financial data processing	EU report
<b>Prefilled content</b>	The tools need to be prefilled for inspiration	EU report
<b>Real-time editing</b>	The tools need to be editable by multiple users at the same time	EU report, Strategyzer
<b>Reminders</b>	The tools need to support a reminder function	EU report
<b>Saving options</b>	The tools need to support saving options	EU report
<b>Sharing options</b>	The tools need to be sharable with others	EU report, Strategyzer
<i>Usability of web-based tools:</i>		
<b>Attractive to use</b>	The tools need to be simple, attractive and understandable	EU report, Strategyzer
<b>Grouping (colouring)</b>	The tools need to support grouping/colouring the elements (sticky notes)	EU report
<b>Usability</b>	The tools need to be simple structured and have a clear overview (front-end)	EU report, Strategyzer
<b>Video tutorials</b>	The tools need to have video tutorials of the tools for a practical explanation	EU report

*Table 4: Definition of the requirements*

## 2.8 Analysing existing web-based business model tools

All of the five web-based tools are examined briefly based on SME requirements. The analysis includes an overview of the web-based business model tools first, followed by a summary and a screenshot of the tool. The tools are rated by the option available, neutral or not available, defined by a plus (+), plus/minus (+/-) or minus (-). The overall outcome of the analysis is presented in Table 10.

### 2.8.1 BMCanvas

Overview of BMCanvas	
<b>Author:</b>	Not available (BMCanvas)
<b>Year of development:</b>	Not available
<b>Available business models:</b>	Business model canvas only
<b>Available options:</b>	Support / guidelines, downloading, printing, multi-device support, saving options, secure data, attractive and usability-friendly
<b>Non-available option:</b>	Data transport, brainstorming module, low entry-barriers, import/export tools, reviews, community, checklist, examples, provide analysis, prefilled content, real-time editing, reminders, sharing-options and video-tutorials
<b>Website:</b>	<a href="http://www.bmcanvas.com">http://www.bmcanvas.com</a>

Table 5: Overview of BMCanvas

BMCanvas is a freemium online tool for business model development. In order to start using the tools, it requires some authorization by a login. After authorization, SMEs can start with a project and experiment with the tool. This web-based tool supports the business model canvas only. The tool may be user friendly; simple in use and a help guide is available. Besides, this web-based tool saves the business model canvas automatically, supports features like printing, grouping (by colours) downloading and is scalable for all devices (multi platform support). However, this web-based tool is missing many features required by SMEs, like; data transport, import and export data, recommendations, a community, checklist, examples, real-time editing and video tutorials. With reference to secure data, there may be an insecure communication between the servers and the application, while there is no SSL (Secure Sockets Layer) certificate installed. SSL refers to encrypted information transfer between computers and websites (Bhiogade, 2002). There is no data available about the creators of this tool.

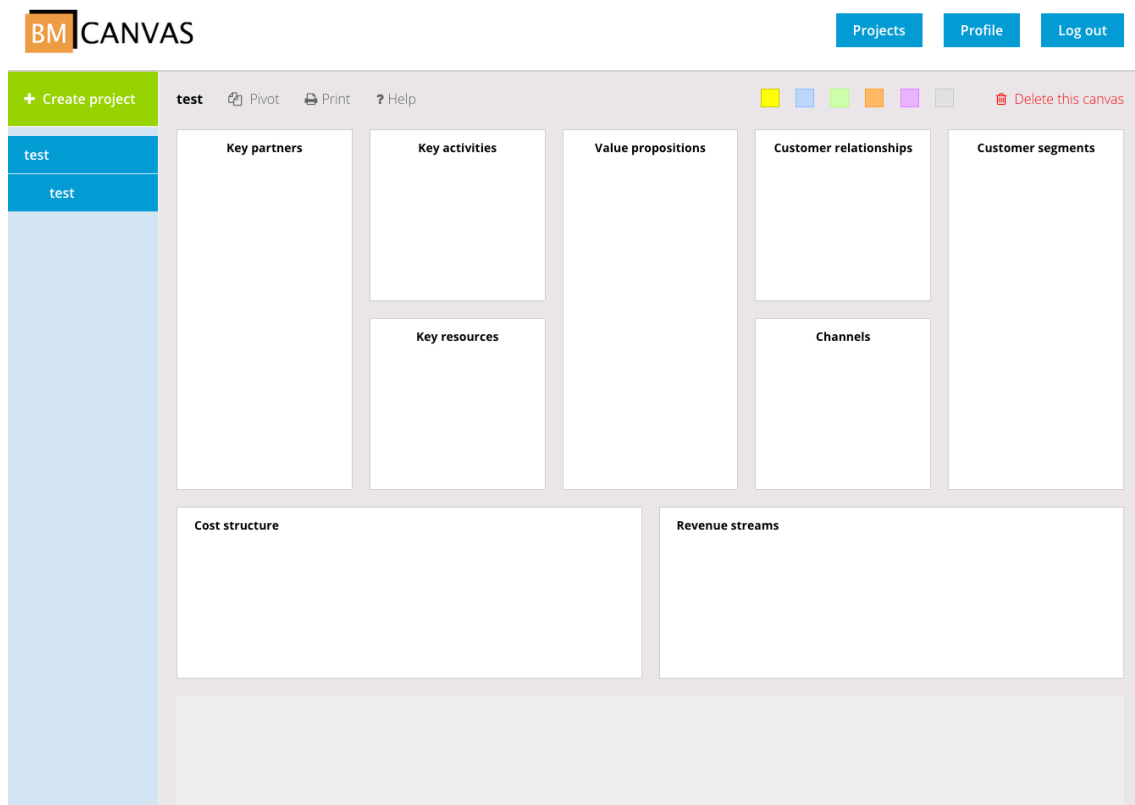


Figure 2: Screenshot of BMCanvas

### 2.8.2 BMFiddle

Overview of Business Model Fiddle (BMFiddle)	
<b>Author:</b>	Orbital ( <a href="http://orbital.co.nz">http://orbital.co.nz</a> )
<b>Year of development:</b>	Not available
<b>Available business models:</b>	Business model canvas only
<b>Available options:</b>	Support/guidelines, low entry barriers, secure data, download option, printing option, examples, multi-device support, prefilled content, saving option, sharing option, attractive and usability friendly
<b>Non-available option:</b>	Data transport, brainstorming module, import/export tools, reviews, community, checklist, provide analysis, real-time editing, reminders and video-tutorials
<b>Website:</b>	<a href="https://www.bmfiddle.com">https://www.bmfiddle.com</a>

Table 6: Overview of BMFiddle

BMFiddle is a freemium web-based tool whereby you can start directly without any registration. Besides the business model canvas, BMFiddle support other web-based tools as well (e.g., Lean canvas, product canvas, SWOT). This web-based tool is simple and easy for SMEs and requires a few clicks to start experimenting. As the tool is

Deniz Alan

simple in use, this tool may be attractive for SMEs. Likewise, SMEs can start developing their business model by examples (e.g., Skype, LinkedIn, Facebook) or start with an empty business model. Additionally, this tool supports place for notes, snapshots, sharing, grouping (by colours), options to save the tool and is scalable for all devices. In contrast, this tool is missing features required by SMEs, like a checklist, reminders, provide analysis, real-time editing and video tutorials.

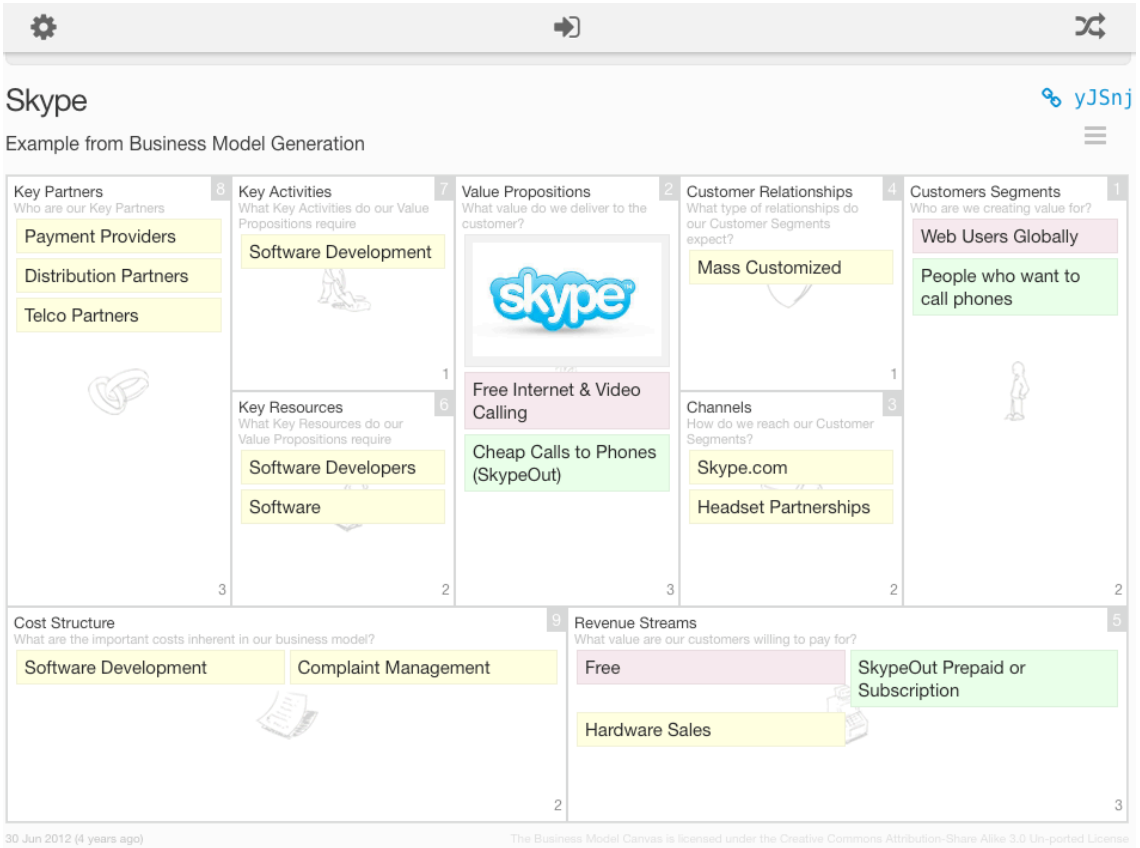


Figure 3: Screenshot of BMFiddle - Example of BM of Skype

### 2.8.3 Canvanizer

Overview of Canvanizer	
<b>Author:</b>	Canvanizer ( <a href="http://coworking-nuernberg.de/">http://coworking-nuernberg.de/</a> )
<b>Year of development:</b>	2012
<b>Available business models:</b>	Business model canvas, lean canvas, lean change canvas, feedback canvas, SWOT-analysis, open innovation canvas, canvas4change, business model zen canvas, HR innovation canvas, pitch planner canvas and disruption by design canvas
<b>Available options:</b>	Brainstorm module, low-entry barriers, import/export tools, secure data, support/guidelines, download, printing, examples, multi-device

	support, real-time editing (v2.0), saving options, sharing options, grouping, attractive and usability-friendly.
<b>Non-available option:</b>	Data transport, reviews, community, checklist, provide analysis, prefilled content, reminders and video-tutorials
<b>Website:</b>	<a href="https://www.canvanizer.com">https://www.canvanizer.com</a>

Table 7: Overview of Canvanizer

Canvanizer is a popular online business model tool, which offers a freemium and a premium package for three years now. Canvanizer include different kind of business model tools (e.g., lean canvas, SWOT, open innovation canvas). During the last years, Canvanizer collected feedback from the users and introduced a preview of version 2.0 (<https://canvanizer.com/blog/canvanizer-2-0/the-canvas-view-canvanizer-2-0.html>).

With reference to the usage of the tools, SMEs can start developing their business model without any authorization. The tool is easy to understand, playful and may be useful for experimenting with new idea's. Likewise, this tool support guidelines (hints), brainstorming, importing and exporting tools, grouping, sharing, a history overview (timeline), works on multiple devices and the data are saved by a secure connection (SSL certificate). In contrast, this tool is missing data transport, reminders, examples, real-time editing (supported in version 2.0) and providing analysis.

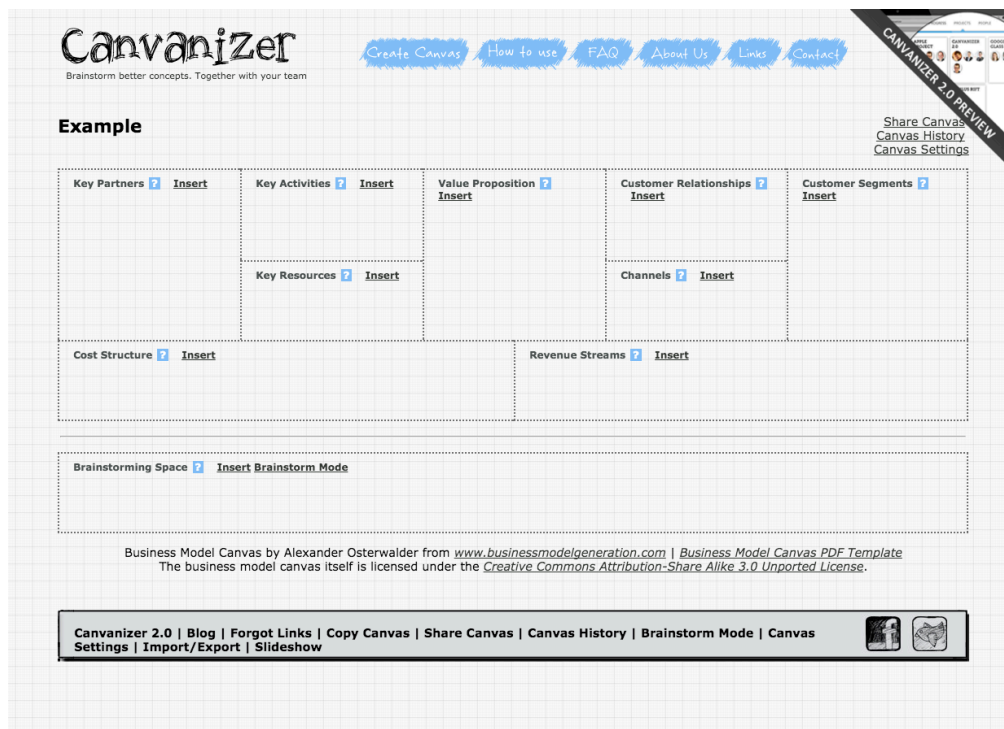


Figure 4: Screenshot of Canvanizer

## 2.8.4 GroupMap

Overview of GroupMap	
<b>Author:</b>	GroupMap Technology
<b>Year of development:</b>	2012
<b>Available business models:</b>	BCG Matric, business model canvas, customer value, elevator pitch, lean model canvas, PEST-analysis, problem solving, risk map, SOAR-analysis, SWOT-analysis and stakeholder map
<b>Available options:</b>	Brainstorm module, low-entry barriers, secure data, support/guidelines, community, download, printing, examples, multi-device support, real-time editing, saving options, sharing options, grouping, attractive and usability-friendly.
<b>Non-available option:</b>	Data transport, import/export tools, reviews, community, checklist, provide analysis, prefilled content, reminders and video-tutorials
<b>Website:</b>	<a href="http://www.groupmap.com">http://www.groupmap.com</a>

*Table 8: Overview of GroupMap*

Another web-based business model tool is GroupMap. Like Canvanizer, GroupMap offers other tools as well (e.g., SWOT, a stakeholder analysis, lean canvas model). However, GroupMap requires some authorization for a trial account, which may be a bottleneck for using the tools. Though, GroupMap offers features like adding images, sharing, chatting, brainstorming, voting and is scalable for smartphones and tables. Moreover, multiple users can edit a tool same time (real-time editing), which may make this tool valuable and playful for SMEs. GroupMap includes a community that is for participants only. In contrast, GroupMap is missing features like data transport, making analysis, prefilled content, reminders and video tutorials. Regarding to the visualization of the tool, GroupMap uses several colours to divide the building blocks of the canvas model. Resulting, it may be that SMEs can feel uncomfortable with GroupMap, as the original business model canvas has a white background.

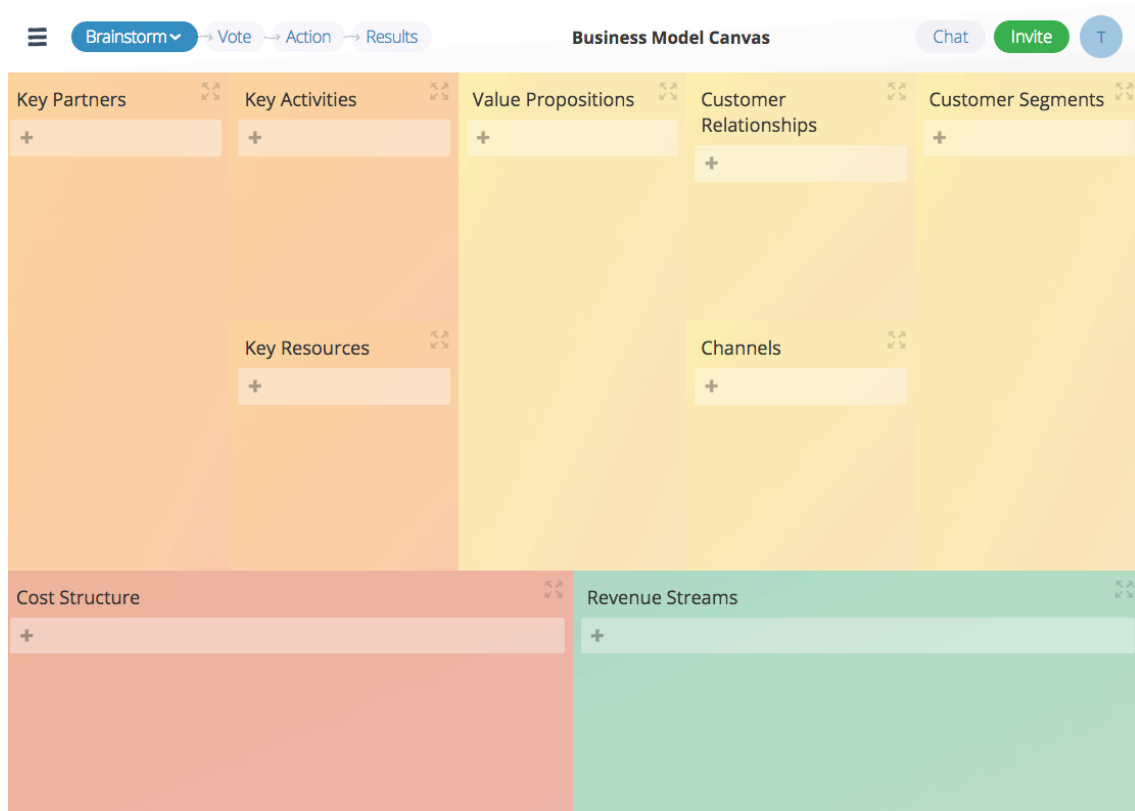


Figure 5: Screenshot of GroupMap

## 2.8.5 TUZZit

Overview of TUZZit	
<b>Author:</b>	TUZZIT
<b>Year of development:</b>	2012
<b>Available business models:</b>	Business model canvas, lean canvas, SWOT-analysis, six thinking hats, digital marketing canvas, personal business model canvas, PEST-analysis, PESTEL-analysis and Porters five-forces.
<b>Available options:</b>	Brainstorm module, reviews, secure data, support/guidelines, download, printing, examples, multi-device support, prefilled content, saving options, sharing options, grouping, attractive and usability-friendly.
<b>Non-available option:</b>	Data transport, low-entry barriers, import/export tools, community, checklist, provide analysis, real-time editing, reminders and video-tutorials
<b>Website:</b>	<a href="https://www.tuzzit.com">https://www.tuzzit.com</a>

Table 9: Overview of TUZZit



The last web-based canvas model includes TUZZit, based in Belgium. TUZZit offers several other tools outside the popular business model canvas (e.g., SWOT-analysis, Porter's five forces, PEST-Analysis, lean canvas). In order to use and save the tools, SMEs need to authorize themselves by email verification. Regarding to the functionalities of TUZZit, this tool uses the original template of the BMC. Hereby, users can add notes anywhere on the template they want. Likewise, the tool supports a list for brainstorming, checklist, images, video-links and includes guidelines. Additionally, after authorization (login), users can save their work and export the filled canvas. In contrast, there is no option for data transport, importing and exporting existing tools, providing analysis and video tutorials.

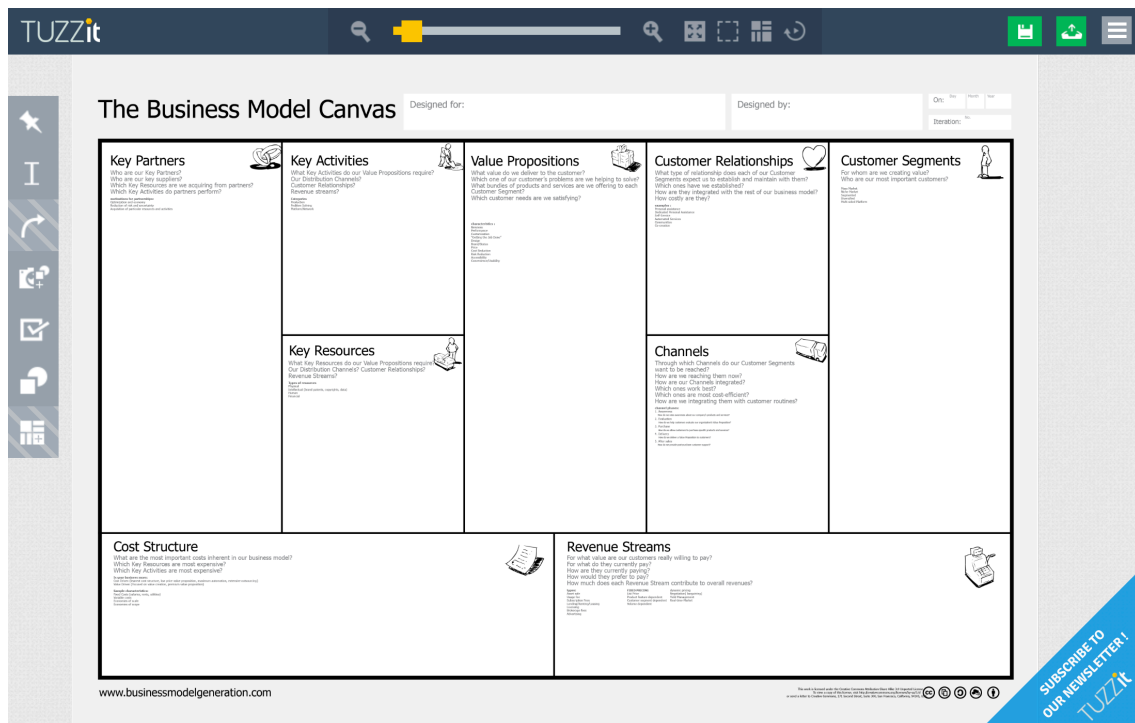


Figure 6: Screenshot of TUZZit

## 2.9 Complete overview of the web-based business model tools

Based on the findings of current web-based business model tools, a comparison can be presented in table 5. In this overview the scores of the requirements of web-based tools will be compared with each other. All of the requirements from section 3.1 are discussed and will be noted by a plus (+) if the option or function is available or a minus if the option or function is not available. If no choice could be made, the requirement will be presented as neutral (+/-).

Comparison of current web-based business model canvas tools (BMC)					
Web-based tools	BMCanvas	BMFiddle	Canvanizer	GroupMap	TUZZit
Requirements SMEs					
<i>Usage of web-based tools:</i>					
Data transport	-	-	-	-	-
Brainstorm	-	-	+	+	+
Low entry barriers	-	+	+	+/-	-
Import/export tools	-	-	+	-	-
Reviews/recommendations	-	-	-	-	+
Secure (data)	+/-	+	+	+	+
Support / guidelines	+	+	+	+	+
<i>Features of web-based tools:</i>					
Community	-	-	-	+/-	-
Checklist	-	-	-	-	+
Download & print	+	+	+	+	+/-
Examples / patterns	-	+	+	+	+
Multi-device support	+	+	+	+	+
Provide analysis	-	-	-	-	-
Prefilled content	-	+	-	-	+
Real-time editing	-	-	+	+	-
Reminders	-	-	-	-	-
Saving options	+	+	+	+	+
Sharing options	-	+	+	+	+
<i>Usability of web-based tools:</i>					
Attractive to use	+	+	+	+	+
Grouping (colouring)	+	+	+	+	+
Usability	+	+	+	+	+
Video-tutorials	-	-	-	-	-

+ Option available, +/- Neutral, - Option not available

Table 10: Overview of current web-based business model tools

Deniz Alan

## 2.10 Results of the comparison of current web-based business model tools

Overall, the result of the comparison (Table 10) shows that Groupmap, TUZZit and Canvanizer fit mostly to SME requirements. With respect to all tools, Canvanizer includes a timeline feature whereby interactions of participants can be analyzed easily. This is a useful feature for experimenting with web-based business model tools, which will be discussed more briefly in the upcoming sections. With regard to the experiment, the participants will get a preview of a web-based business model tool. During this phase, the participant can experiment and try the tool beforehand, which can be analysed by a timeline-feature afterwards. At this moment, Canvanizer is one of the tool providers that offer this feature. Likewise, the tool doesn't require any email authorization whereby SMEs can start directly with the web-based business model canvas. In conclusion, the experimental session, which will be discussed in the methodology section, includes business model provider Canvanizer.

# Methodology

## 3. Methodology

This section describes the methodology for answering the central problem definition. The methodology section contains a research design, research method, selection and sampling, data measurements and lastly the qualitative data analysis. Likewise, the application of the value proposition canvas will be argued. The goal of this research is to present strong points and limitations, based on the experiences of SMEs, of web-based business model tools for SMEs. The driver of this research is to support small and medium-sized enterprises innovating their business model with web-based business model tools. As there are not enough academic literature that describes the relation of web-based business model tools and SMEs, a qualitative research is needed.

### 3.2 Research design

The research design includes the overall configuration of the research (Pandit, 1996). As described in the theoretical section, there is not enough academic literature that describes the relation between web-based business model tools and SMEs. To understand the relation between these, a qualitative research will be conducted. The reason for this is that qualitative research methods may advance the development of quality measures and improvements of pain relievers (Sofaer, 2002), which is useful for improving web-based business model tools for SMEs. As the research includes the improvement of web-based business model tools, a qualitative research is a useful method as the research design. There are many possibilities to collect information by a qualitative research, for example, interviews, conversations, (participant and non-participant) observations, recordings and memo's (Denzin, 2005; Denzin & Lincoln, 2009; DiCicco-Bloom & Crabtree, 2006). For this research an interview with SMEs and a tool evaluation experiment will be conducted. Likewise, several authors stated that interviews are one of the most common strategies for gathering qualitative data (Britten, 1995; Burnard, 1991; DiCicco-Bloom & Crabtree, 2006). Referring to the usage of the theoretical framework, the value proposition canvas will be used to understand the value of a service or a product, and how to package and offer this to the end-users, in this case

the SMEs (Osterwalder & Pigneur, 2003). For this, the participants, SMEs, will be presented to web-based business model tools to experience these by themselves.

### 3.3 Research method

This section describes the research method, which will be used for the research. The process of the research is described in phases, which are needed to evaluate web-based business model tools. The following phases were recognised: the preview of the experiment, the interview session, the tool evaluation experiment and the feedback phase. In Table 11 the phases of the tool evaluation experiment are described. A comprehensive presentation of the activities is presented in Appendix III.

Phase	Activity	Duration	Rationale
1	Preview experiment	No criteria	The phase where the interviewee can experiment and try out a web-based business model tool (link to tool send by mail). There are no criteria for this. This phase is optional.
2	Interview	30 minutes	The phase where questions regarding the business and experience with BMI and tools will be asked. The interview will take approximately 30 minutes.
3	Experiment	60 minutes	The experimental phase in which the participant will use a web-based business model tool to perform a well-defined set of tasks. As the experiment consists of four tasks, the experiment will take up to 60 minutes.
	3.1 Exercise 1	45 minutes	The participant needs to fill in his or her own business model in a web-based business model canvas tool.
	3.2 Exercise 2	5 minutes	The participant needs to categorize the stickers/notes of the business model tool by colours
	3.3 Exercise 3	5 minutes	The participant needs to duplicate an older version of the web-based business model canvas
	3.4 Exercise 4	5 minutes	The participant needs to share and print the web-based canvas model
4	Feedback / evaluation	30 minutes	The last phase includes the evaluation part of web-based business model tools whereby strong points, limitations and potential improvements will be discussed. This part will approximately take up to 30 minutes.

*Table 11: Phases of the tools evaluation experiment*

Referring to the tool evaluation experiment, during the first phase, a web-based business model tool is presented to the interviewee. As the tools are web-based, SMEs will receive an individual mail with a link whereby they can try the web-based tool. As the European platform is a self-service platform, SMEs can explore and feel web-based business model tools by themselves without any support. The second phase includes an interview with SMEs. According to several authors, it has been asserted that qualitative interviews are categorized in three structures: structured, semi-structured and unstructured interviews (Bernard, 1988; Crabtree & Miller, 1999; DiCicco-Bloom & Crabtree, 2006; Fontana & Frey, 2005). As the interview, with an individual, includes open questions, small discussions and question emerging from the conversation, a semi-structured interview is the most applicable structure for this research. In addition, as this research is about learning from individual experiences of SMEs, face-to-face in-depth interviews are conducted. Besides, if the preview tool is used, feedback regarding to the previous phase (preview of the tools) will be discussed too. Furthermore, during this phase, SME jobs, gains and the pains will be deliberated, as for opinions about web-based tools will be asked. The third phase includes the experiment whereby the web-based business model canvas will be filled in and discussed. In this phase, the participants need to fill in the business model canvas by themselves. If needed, the participants are supported where needed. The final phase includes the evaluation part, whereby questions regarding web-based business model tools will be asked. More precisely, the strong points, limitations and improvements of web-based business model tools are discussed during this phase. Furthermore, this section is quite important, as the gain creators and the pain relievers will be argued for web-based tools. Also, during this phase, SMEs will be asked what they really want to do and what they expect of web-based business modelling. Furthermore, additional modules (missing features like chat-modules, collaboration options, reminders etc.) will be discussed as well. Eventually the experimental tool session with the interviews will foster improvements of web-based business model tools.

### 3.4 Selection and sampling

This section describes the sampling method. This section will be used for the qualitative study whereby the results of the study can be generalized back to the entire populace. Sampling a research is an important phase because studying the whole target

group is not practicable (Coyne, 1997; Marshall, 1996), as there are more than 20 million SMEs through Europe. Therefore the focus will be on micro SMEs and companies with less than 10 employers (largest group, see [table 1](#)) located in the Netherlands. More than 30 SMEs are contacted for an experimental session. There is no criteria selection for SMEs; the selection is based on all industries, branches and type of companies. Because of the limited period for executing the experiments, only three SMEs will participate the experimental session. However, these experimental sessions may have a low validity, but the results of the experiments should be enough answering the research questions. The selection of these (micro) SMEs is based on convenience sampling, which makes all the candidates have an equal chance of selection (Marshall, 1996). For the selection of the micro enterprise, a list of criteria of the companies is presented in Table 12.

Criteria	Selection	Description
<b>SME</b>	Micro SMEs	As micro enterprises are the largest, the focus will be on this group
<b>Employers</b>	10 or less employees	SMEs with 10 or less employees
<b>Turnover</b>	Equal or less than € 2 million a year	SMEs with a maximum of 2 million turnover a year. However, no data about the turnovers can be found of the companies.
<b>Industry</b>	All industries	The focus will be on all industries, branches and type of companies. In addition, there are no criteria for the years of experience (e.g., start-ups as mature companies can cooperate).
<b>Core business</b>	No criteria	
<b>Years of experience</b>	No criteria	
<b>Type of company</b>	No criteria	
<b>Experience with business models</b>	Experienced (not necessary)	As the research includes the improvement of tools, companies with experience in business models, web-based business model tools are preferred. However, this is not necessary as the research focuses on all SMEs.
<b>Experience with web-based tools</b>	Experienced (not necessary)	

*Table 12: Overview of the selections of SMEs*

### 3.5 Data measurement

The research includes a qualitative research whereby information is collected by interviews and a tool experience experiment. The goal of the research is to understand the strong points and limitations of web-based tools. Before the experimental session, a preview of a web-based business model canvas will be presented to the SMEs. In

addition, each SME will receive a mail whereby a sample of a web-based business model canvas is presented. As the tools are web-based, the tool records all changes in the web-based business model. Via the history-timeline marker, changes in the tool can be retrieved and analysed (Figure 7).



*Figure 7: A capture of a history timeline of web-based business model tools*

No academic literature is available that describes web-based (business model) tools by video or audio recordings. Therefore, during the interviews, questions regarding web-based business model tools will be recorded by a sound recorder. Moreover, as the interviewee's mother tongue is Dutch, the interviews are held in Dutch as well. Nevertheless, the results will be translated into English. With reference to the tool evaluation experiment, while the interviewee is experimenting with the web-based business model canvas, the screen and voice will be recorded. This methodological approach permits collecting information about how SMEs use web-based business model tools (Tang, Liu, Muller, Lin, & Drews, 2006). Moreover, Tang et al. stated that screen recording allows collecting rich and empirical data in an inconspicuous way. To capture data on how SMEs use web-based business model tools, a build-in screen recording software will be used. In order to generate optimum quality of the recordings, the settings will be configured to high quality audio and video performance. The reason for this is to analyse the recordings precisely for the results chapter. In addition, Tang et al. (2006) claimed that analysing a permanent record creates valuable information instead of focusing on real-time notes.

### 3.6 Qualitative data analysis

This section includes the qualitative data analysis whereby the collected data will be translated into useful information. Rabiee (2004) stated that a qualitative data analysis is to understand, explain, the meanings, beliefs and cultures that influence the feelings, attitudes and behaviours of individuals. Sofaer (2002) claimed that qualitative data analysis allows recognizing personal experiences of the individuals (participants). Many researchers use combinations for analysing data (Green & Thorogood, 2013; Hopf, 2004; Lamnek, 2006). As approach for analysing qualitative data, Lamnek's content-reductive analysis will be used. The reason for this, interviews and experiments of a research can be analysed and compared with Lamnek's approach. Furthermore, Deniz Alan



Lamnek's approach seems to be popular in academic literature as well (number of cites > 4544). It includes four steps; the transcription, intra-case analysis, cross-case analysis and the proof of results. During the first step, the transcription, the collected data of the participants will be translated into readable cases. Herewith, the interactions (e.g., non-verbal reactions) of the participants are described as well. Subsequently, the collected information will be grouped and ordered into similar or different questions (e.g., usage of the tools, business related questions). In addition less relevant information will be scrapped during this step. In the next step, relevant topics will be analysed during a cross-case analysis. This step includes searching for patterns and general results for the conclusion part. Lastly, the conclusions of the interview and experiment will be presented.

### 3.7 Graphical illustration of the methodology

To get a clear overview of the methodology section, a graphical representation is presented in Figure 8. This graphical representation includes all of the parts of the methodology, whereby these are presented with sub-section where possible. The tool evaluation experiment includes 4 exercises, which is discussed in the research method briefly.

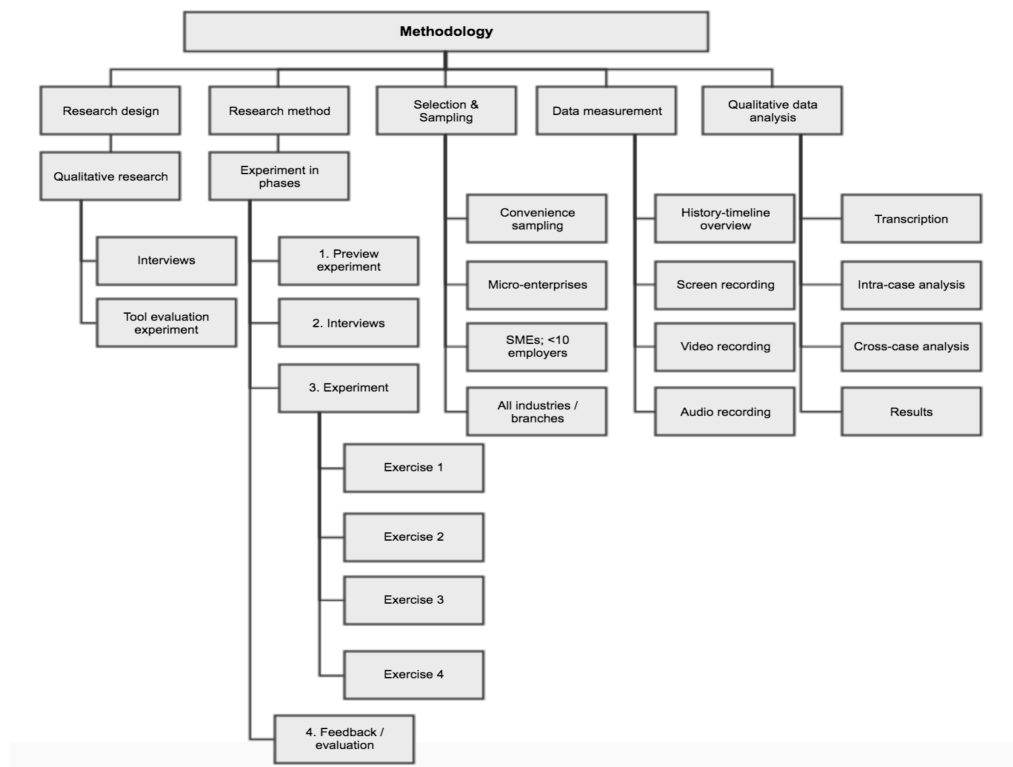


Figure 8: Graphical representation of the methodology

# Results

## 4. Results

The results include the outcomes of the experimental sessions. For this, a structured overview of the SMEs will be presented first. This overview includes details of SMEs, the interviews and experiences of the participants. Followed by transcriptions of the companies, which includes the interviews and experiments. All of the key points will be presented in an intra- and cross-case analysis thereafter. Afterwards, the application of the theoretical framework, the value proposition canvas will be deliberated.

### 4.1 Structured overview of the sessions

An overview of the experimental session is presented in Table 13. This overview displays the company, interview details and the experiences of the. Additionally, all of the participants prefer to stay anonymous and are named by company A, B, C respectively. Likewise, the filled in web-based tools by the participants are private and are not included in this research; it is used for analysing and collecting data only.

Overview SMEs			
	<i>Company A</i>	<i>Company B</i>	<i>Company C</i>
<i>Overview of the companies:</i>			
<b>Contact person</b>	A	B	C
<b>Branch</b>	IT and Innovation	High-tech and innovation	Media and innovation
<b>Employees</b>	3	4	7
<b>Turnover data</b>	N.a.	N.a.	N.a.
<b>Product / Services</b>	Dashboards	Personal tracking software	Interactive multimedia agency
<b>Common issue</b>	Market products	N.a.	N.a.
<i>Interview/ Experiment data:</i>			
<b>Duration of the interview</b>	17 min	23 min	21 min
<b>Duration of the experiment</b>	55 min	50 min	48 min
<b>Data recording</b>	Voice- and screen-recording	Voice- and screen-recording	Voice- and screen-recording

<b>Confidentially</b>	Confidential & Privileged	Confidential & Privileged	Confidential & Privileged
<b>Total duration</b>	72 min	73 min	69 min
<b><i>Experience with business modelling:</i></b>			
<b>Experience with BMs</b>	Yes	Yes	Yes
<b>Experience with BMT</b>	Yes	Yes	Yes
<b>Experience with BMC</b>	Yes	Yes	No
<b>Used the preview</b>	Yes	No	Yes

*Table 13: Structured overview of the experimental sessions*

## 4.2 Transcriptions

All of the interviews and experiments are performed in the same order. First, background information about the study and the problem definition are presented to the participants. Subsequently, questions regarding the company, business model innovation and business modelling were asked. Followed by the experimental session, which took approximately 60 minutes respectively. Lastly, feedback regarding the web-based tools is asked to examine the strong points and limitations of web-based tools. All of the summaries of the companies are presented in the upcoming sections.

## 4.3 Summary company A

Company A is a young high-tech company working on interactive social dashboards based in the Netherlands, since 2014. They collect social media data and present these on large touch screens to inspire people. Their vision is to inspire people and support people with social media. The added value they believe in is making social media useful and fun to use for individuals and businesses. With reference to innovation, company A innovates their products constantly by co-creation. Regarding to their business model, they use this for how to sell their products and determine the most applicable revenue streams (e.g., by a one-time purchase, monthly purchase, via apps or via a pay-wall). Company A spots new ideas by looking at the market and by feedback to their products. Besides, the company orientates the environment for what companies are offering. With reference to business modelling, Company A is familiar with web-based business models, mainly the business model canvas. However, they claim to use this model once only without looking back. Additionally, they never wrote a business plan beforehand, likewise A claimed the following:

*“A business plan is too wordy and includes too much text; it does not work... a business model canvas has a clear overview on an A4 (preferable A3)... this is the way we want to use it and it allows us to be useful. However our activities are still clear in how we do business, but using the canvas model again, lightens our business activities. Therefore, we would like to use the canvas model, but it needs to be a part of daily processes...”*

Referring to the statement, as the interviewee preferred using a business model canvas daily, it may be inconvenient as SMEs don't have the time and will not use business models on a daily basis.

Company A is familiar with web-based business model tools. Still, they prefer Microsoft Word instead of web-based tools, as they do not know if it is worth it paying for functionalities, actually they prefer free tools. Moreover, A stated that the business model canvas might be enough for presenting business activities. However, each building block of the model has its own stories, which are described more briefly in short texts. Therefore they prefer clicking on the building blocks for adding a short summary and highlighting relevant information. Moreover, A stated that a business model might be active by its own. For example, sending messages to the owner (a status update or a sticky note), a reminder function or a CRM connection (e.g., receives a message when you are dealing with a customer).

#### 4.3.1 Tool evaluation experiment

During this stage, SMEs need to fill in a web-based business model by themselves. In addition, they are free in filling their own or a random business model. As stated in the methodology, only the experiences of a web-based tool will be presented in the conclusion section. Therefore, a finished web-based business model is not present in this research. Also, due to privacy reasons.

Company A used another web-based tool previously, named the lean canvas model and filled in that model in a certain order. Moreover, like used the lean canvas model, A started with the value proposition, followed by the key activities, customer relationships, customer segments, key partners, key resources, channels, revenue stream and the cost structure. While filling in the customer relationship, customer segments and key resources, A did not know what to do; therefore A checked the question mark for a hint or example. A stated that the guidelines in the hints area are not clear enough and expected better guidelines and examples.

Within 20 minutes, the first exercise was finished. However, A did not categorize the sticky notes by colours, probably preferred not to do

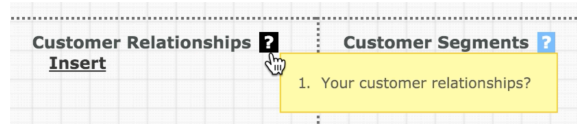


Figure 9: A checked the question mark for a hint

this. After asking categorizing the notes (exercise 2), the participant started colouring the customer segments as first. Afterwards, A used four colours and stated that categorizing the canvas model gives a clear overview of the model. Exercise 3 includes duplicating the canvas model, whereby A struggled finding the way to duplicate the canvas model. After duplicating the canvas model, an editable link pops up on the screen and A closed the popup. To continue, the editable link needs to be opened. In contrast, A expected the copy of the canvas model directly, instead of clicking on the close link.



Figure 10: A new link of a duplicated web-based business model canvas

Exercise 4 included sharing and printing the web-based tool. Sharing the tool was not an issue, however, A would not share the canvas model via Twitter, but via email or dropbox to his colleagues. Likewise, he expected a list with social media icons and a print icon. As there is no icon or option for printing, A used the browser build in printing option. Likewise, he preferred to export the tool to a PDF format. Furthermore, A used the Slideshow link, which he would like to use in presenting the canvas model.

#### 4.3.2 Feedback business model tool

This section describes the feedback of the experimental session. After four exercises, the feedback questions regarding the web-based business model tool were asked. A stated that filling in the business model is pretty reasonable. However, inserting a sticky note in the canvas model may be improved. For example, when users click on insert, a popup appears where user could fill in a title and notes. Subsequently, users can close the popup by clicking on “Close” or “Save”. A expected closing the popup will automatic-save the filled in note. However, clicking on the ‘close button’ deleted the note

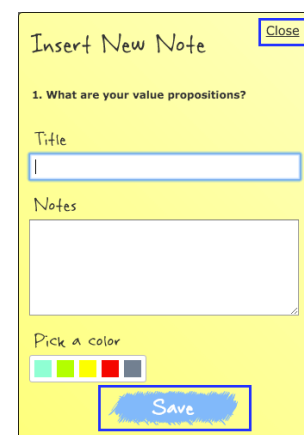


Figure 11: Inserting a sticky note

completely. Therefore, deleting should be possible only after adding the note, whereby the user receives a warning as well, A stated. Secondly, as described previously, the hints were hard to understand. A would like to see examples or well-defined hints. Subsequently, if A still do not know what to do, he would search for the terms in Google or look into books (e.g., Osterwalders book). A stated a wizard would help and guide newcomers with this kind of tools (e.g., with simple slideshows). Besides A suggested a pattern/guideline, how to fill in the canvas model, may support users, e.g., starting via the value proposition or the customer segments. With reference to the design of the web-based tools, A stated that the tool is messy and needs to be changed (e.g., a white background instead of a gridlines). Likewise, he would like to see icons and images, which makes the tool more fun to work with. A's general opinion about web-based business model tools is the following:

*"I believe that web-based business model tools does have a future and it is a world which is yet to be conquered. However, there is plenty to do and there are still barriers for accepting web-based business model tools, e.g., paying for web-based tools... I do not want to pay for a company, which I do not know yet... Therefore, I think this research is pretty meaningful. Because I want to be helped for developing my business model."*

With reference to the business, a finished web-based canvas model makes you thinking differently about your business activities. Moreover, it supports knowing your relations better, come up with new ideas and gives guidance and direction into the business activities, A stated. Additionally, A would like to give a pitch via a filled in web-based business model canvas.

#### 4.3.3 Missing features and add-ons

As missing features for web-based business model tools, A prefers more information and guidelines about the building blocks. Additionally, reminders and triggers, whereby users receives a notification to finalize things, may be a great feature for web-based tools. As usefulness of web-based tools, A stated that bundling platforms (e.g., Microsoft Word, DropBox) may make web-based tools more useful. Additionally, uploading files or documents into the building blocks needs to be considered. Likewise, A would like to see video tutorials, which needs to be short and powerful. However, these videos must not interrupt the user while filling in/using web-based tools. Contrary,

he stated that text as guideline is also useful, which may be even faster than looking at video tutorials. As for the revenue streams, automatic calculations may be useful, A stated.

#### 4.4 Summary company B

Company B is a high-tech company who offers smart mobile transportation systems for three years now. Company B is working on a technological ICT-platform to help people with smart mobile transportation choices. Moreover, it offers the platform as a service within the mobile transportation branch. The products they offer include identifying movement behaviour via smartphones, analysing moving behaviour and making personal movement profiles based on the analysis. Eventually, based on the data Company B can make statements at network level about how people travel, for example for the purpose of a city or carriers. Company B collects data via the end-user by a medium, for example an app for smartphones or wearables.

Company B innovate their products continuously, by improving the applications for their customers. Referring to innovation, B stated the following:

*“Innovation is the necessity to stay interesting for our customers and to make it simple for us to come up with a distinctive product... We are improving and extending our product continuously to stay ahead. By doing this, we are staying outside of the market where companies, for example, compete by price.”*

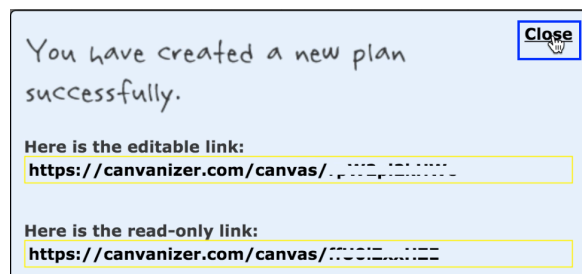
They do this because of the newness of the smart behaviour market, which allows new opportunities for companies as well. With reference to innovative activities, B stated that each project for a company is an innovative process, whereby they look at how companies may innovate their business, market their products or improving business processes. However, there is a countertrend while offering services to businesses, for example, all of the systems and services needs to be maintained and supported. Eventually, everything needs to work optimum in order to fulfil the requirements of the end-user. Referencing to business modelling, B is familiar with the business model canvas. B stated the following:

*“Web-based business model tools are not core. By that, I mean web-based business model tools are just supporting tools to do the finishing touches.”*

As for the business of Company B, they did not use any business model to make a business plan and doing business. Actually, they did this by experiences, as B has more than 15 years of experience in the ICT branch with projects in behavioural movements. As for the business model canvas, B would like to use this for their products, mainly, due the fact that Company B is working in a complex environment. B claims that there are a lot of challenges in developing a revenue model in the smart behaviour branch, which a canvas model may be useful for.

#### 4.4.1 The experimental session

As described previously, the experimental session starts with filling in the web-based canvas model. B started filling in the canvas model with the value proposition. Subsequently, he stuck with the customer relationship, whereby he clicked on the question mark. However, he said that the hints are clear enough. Therefore he looked at an own filled in canvas model (on paper). Afterwards, he filled in three customer relationships and reordered these notes. Eventually, as B is well known with the canvas model, he finished the web-based tool within 30 minutes. As for the second exercise, B was not interested in colouring the sticky notes. Therefore he did not perform this exercise; he stated that colouring the sticky notes would not give an added value. During the third exercise, B was asked to duplicate the current canvas model to a new version. Firstly, B tried to save the web-based canvas model by searching for a ‘save’ button. However, as web-based tools are saved automatically, B stated that is was not clear enough for him. Afterwards, to make a second version of the canvas model, B clicked o create canvas in the header and landed on a new page, however, he did not know what to do next. After going back to the previous page B clicked on ‘Canvas Settings’ and “Canvas History”, subsequently he found the copy canvas button. Additionally, he stated that the copy canvas button is concealed too much. After filling a name for the new canvas (V.1.1) a new screen pops up.



However, B closed this popup and nothing happened. Moreover, he claimed that making a copy via ‘Canvas History’

*Figure 12: A popup with a new link*

makes no sense. With reference to the

third exercise, sharing the canvas, B would not like to share his canvas model via social

Deniz Alan



media. In addition, B stated that inviting a team is useful during a business model session. As for the last exercise, printing the canvas model, B looked at 'Canvas Settings', scrolled through the page and clicked on 'How to use'. After not finding a way to print the canvas, he preferred a print screen for printing.

#### 4.4.2 Feedback evaluation tool

After finalizing the web-based canvas model a general opinion was asked. B stated the following:

*"The current web-based business model is pretty straightforward at this moment. It is still limited; you can add text and colorize the sticky notes only. However, I could have done the same with PowerPoint, if I had an empty canvas template. Still, filling in an online tool is useful, e.g., the canvas model is saving automatically, but it may be that someone is watching as well."*

B would not use a canvas model for launching a new product. The reason for this is that using a canvas model would not bring up new ideas or structure a business. Furthermore, he claimed that his business is too small to convince their colleagues for developing the business proposition. But, using a canvas model may be useful within large companies. As stated previously, B struggled with the Customer Relationship block. For solving this, B preferred clicking on the help button or using a search machine (Google). As a starting process for start-ups and companies who are not familiar with a (web-based) business model canvas, B stated the following:

*"An example of a simple case of a business will support start-ups with filling in a canvas model. Additionally, a guideline or a pattern will be useful whereby the steps of a canvas model is presented. However, as an user this needs to be a choice, e.g., users can start with an empty canvas or a supported canvas."*

Referencing to the strong points and limitations of the canvas tool, B would like to see an option to invite people and the guidelines and hints needs to be improved. Additionally, the tool needs to have an option to add comments to the sticky notes. In contrast, B liked the design, visualisation and colour usage of the web-based business model canvas. B's general opinion about web-based business model is the following:

*“Web-based business model tools are working pretty well and it may provide excellent support to companies. Additionally, I would like to advice web-based tool to my relations and customers as well.”*

With reference to business activities, B stated that as a started filling in a web-based canvas model would let you think about the business activities, ideas and strategies. As for developing new product, B would not like to use a web-based canvas model for new products and prefers to remember the whole idea. Actually, B claimed that the challenge lies below the building blocks. Therewith, he means that the steps hereafter are the important, e.g., what are the choices of a filled in sticky note. As for additionally features, B would like to see real time collaboration module whereby he is still the owner of the canvas model. Likewise, a comment mode may be useful, whereby users can give feedback to the sticky notes. The reason for this is that B would have control of the whole web-based canvas model. Therefore he is not interested in a canvas model that is edited by others (e.g., deleted text). Furthermore, B is not interested in support from others, for example a business expert or a (chat)-helpdesk, nor reminders. Therefore, he stated that the ‘How to use’ and ‘FAQ’ pages needs to be optimized. As for tutorials, video tutorials may support filling in the canvas model, B stated. As for the usability of web-based tools B stated:

*“The building blocks are easy to fill in, however, the management around are not enough. For example, do I need to save the canvas? How to print the canvas? How to add or edit the title? Can I add a date? How to see the version number? At this moment, these topics are still unclear.”*

#### 4.5 Summary Company C

Company C is an interactive media agency that develops web-applications, websites, branding styles and videos since 2008. Their mission statement includes thinking and developing meaningful innovation in the media and communication area to support companies for building a better world. Their goal is to have positive impact on companies with our talents, instead of focusing on making profit only. They would like to be a leading creative digital media agency, whereby leading refers handling employees, customers, products and profits with care. With reference to innovation, C stated they are always looking for a creative solution for customer needs. Additionally, C claimed the following:

*“The World Wide Web is innovation, whereby every day something new is invented which you discover. You need to apply innovation the right way. For example, there are more than 100 methods in technological developments, whereby you need to make the right choice for a successful business model. Eventually, I think you need to be open for things that comes to you”*

Referencing Company C’s additional services, they have some ideas, which they want to place on the market. Therefore they are interested in using business models whereby they can test if an idea is profitable and achievable. However, C has never used a business model for his own business, are interested in using a business model for a new idea.

#### 4.5.1 Tool evaluation experiment

Company C’s web-based business model is based on a new idea they’re working on. For filling in the web-based tool, C used the preview business model (which he has received previously by mail) as an example. Starting, C filled in the key partners first and checked the question mark for some hints. He stated that the hints were not sufficiently clear and needs to be improved for further usage. Subsequently, the key activities, key resources, the value proposition, customer relationships, customer segments, channels, cost structure and the revenue stream were filled in subsequently. However, C did not know what to fill in as a key resource and customer segment, therefore he checked the preview example consecutively. Additionally, C stated that previews of web-based business models are really help- and useful for SMEs. Besides, SMEs need to know more about the original business model, which will help you while filling in a web-based business model, C stated.

The second exercise included categorizing the sticky notes. However, C would no do this if he was not asked for it. Eventually, C used 4 colours; green, blue, red and yellow. Afterwards, C stated that colouring a web-based canvas model gives a pretty overview of the canvas model, because it was too ‘yellow’ earlier. The third exercise included making a new version of the canvas model. Therefore C copied the current canvas directly, while C assumed that a

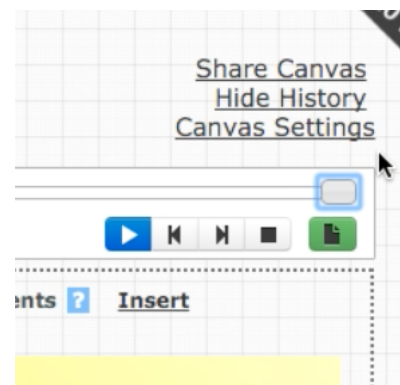


Figure 13: Copy button (green). Visible when “Canvas Settings” is clicked

web-based canvas model should to have a copy button. The copy button (green button) is not user friendly, not logical and should be available below the canvas settings links, C stated. With reference to the fourth exercise, sharing and printing, C found the printing and sharing option “Share Canvas”, however he did not shared the canvas, as he would not like to share a business model via social media. Additionally, he discovered the Slideshow module “Get Slideshow Link” and he liked the fact that this function is available. As for printing, C could not find a print option, which is not present either, and used the build-in print option.

#### 4.5.2 Feedback evaluation process

To analyse the strong points and limitations of web-based tools, a feedback evaluations session is conducted. C concluded the following:

*“Filling in a web-based canvas model is pretty easy. The model is really recognisably, clear and simple. Moreover, you cannot do that much, it is pretty straightforward. The strengths lie in its simplicity.”*

Referring to the canvas model in general, C stated that the canvas model gives a clear overview of the stakeholder at a glance. However, C is wondering of a filled in canvas model will let you think about your business. Additionally, the model is very understandable but still limited. For example, as a user “I don’t know what to do next” and “What is the next step in my company?”. A canvas model is just to visually create an environment of a business, but it is more structured. With reference to the business model canvas, C stated key partners, resources and the customer relations ship hard to fill in.

Furthermore, having troubles of issues filling in web-based tools, C preferred to use search machines (Google) and would like to search for a ‘Business model canvas’ for some tips and help. Additionally, C claimed that the help function (question mark) does not support the user at all. Each help function needs to have good examples and should give relevant ideas of the building block, J stated. As for the relations of Company C, they would like to advice colleagues and relations to use web-based tools, mainly due the fact that companies can brainstorm digitally.

As suggestions and feedback, C would like to see a good example of a tool, in this case an example of a web-based business model tool. Additionally, without an example, C did not know what to fill in the building blocks, because you are not getting

any support. As missing features, C would like to see better hints and guidelines. An alternative option for colouring the canvas model is a relationship marker whereby the sticky notes can be linked by lines with each

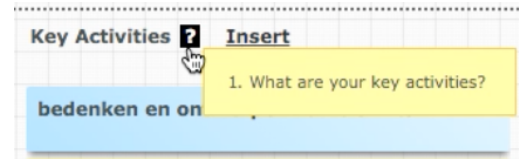


Figure 14: Showing hints by clicking on the question mark

other. C prefers this so he can see the connections between the notes. With reference to the usability, C stated that current web-based tool looks out-dated. However, as there is a demo of the newest version, the usability may be improved later. Furthermore, C claimed that it looks like you are writing cards on paper. C's general opinion about tools is as follows:

*“Web-based tools are good, but there is always a tool that is missing some functionalities. For example adding pictures or documents to a sticky note. However, the strengths of web-based tools lie in its simplicity. In contrast, collaboration (real-live editing) may be a good functionality whereby you can work with others at the same time. This allows us to brainstorm digitally.”*

As for collaboration options, still C would like to write down ideas on paper while brainstorming, instead of using web-based tools. As for a web-based tool for businesses, C stated that tools lets you think differently about a business. For example, it structures your business, detects the gaps and what to look for. Moreover, it makes the business actionable and allows commercializing and innovating the products better. C claimed that web-based tools are supporting ideas, strategies and to build a new concept. As improvements, C would like to use web-based tools for his own business and share it with relations. With reference to printing a web-based tool, this may be useful, as some users still prefer printing web-based tools. Other functionalities, like a helper on distance, a chat module and video tutorials are not necessary if the documentations of the models are sufficiently written. However, this may be presented with images, examples or simple illustrations. Lastly, C stated:

*“Web-based tools do not require explanations compared to explanations of the business models itself. A business model is just to fill in, whereby it supports you if you continue your idea.”*

Referring to the above statement, C claims that if you understand the underlying concepts of a business model you can complete a web-based version of it. However, it

may be that a web-based business model is still fillable without knowing the core of a business model.

#### 4.6 Intra- & cross-case analysis

This section includes the intra-case and cross-case analysis whereby collected information of the participants will be grouped into similar or different quotes. Likewise, the analyses of the companies are grouped into four components; general remarks, usage, functionalities and the usability of web-based tools. Furthermore, the intra-case analysis includes combined colours; which are similar remarks. Not coloured results are specified for the SME only. Subsequently, the cross-case analysis includes general results of the components, which will be applied for the conclusion section as well.

##### 4.6.1 Intra-case analysis

The intra-case analysis includes the transcriptions of the collected data of the participants. Additionally, it includes relevant key points of the tool evaluation experiment per company. The collected data are grouped by general marks, usage, functionalities and the usability of web-based business model tools. The key points are categorized by colours, whereby similar colours are equal to each other. The intra-case analysis is presented in Table 14.

Intra-case analysis		Company	
Components	A	B	C
General remarks	“Using a web-based business model canvas once only”	“Would not use a web-based business model canvas tools for new products”	“Prefers to use web-based tools for future activities, e.g., new products”
	“Web-based tools (e.g., the business model canvas) lightens the business activities”	“A web-based canvas model would let you think of the business activities, ideas and strategies”	“Web-based tools makes you think differently about a business, e.g., structures a business, detects gaps”
	“Prefers not to share web-based tools with social media”	“Prefers not to share a web-based tool via social media platforms”	“Web-based tools supports ideas, strategies and concepts”
	“Prefers to share with colleagues only (by mail)”	“Sharing the canvas with a team is useful”	“Prefers not to share a web-based tool via social media platforms”
	“Would use Google if he do not know what to do”	“Prefers using Google if he do not know what to do”	“Sharing the canvas with a team is useful”
	“Prefers filling in a web-based tool by	“Guidelines and patterns	“Would use Google if I do

	<p>patterns/guidelines”</p> <p>“Web-based tools do have a future which is yet to be discovered”</p> <p>“Web-based tools needs to be a part of the daily process”</p> <p>“Prefers free web-based tools”</p> <p>“Web-based tools needs to be active by its own”</p>	<p>may help filling in web-based tools”</p> <p>“Web-based tools are useful for developing revenue models”</p> <p>“Web-based tools (e.g., the business model canvas) gives a clear overview of all stakeholders”</p> <p>“Web-based business models tools are not core, they are just supporting tools”</p> <p>“Prefers to use web-based tools for a complex environment only”</p> <p>“A web-based business model canvas may be useful for large companies”</p>	<p>not know what to do”</p> <p>“Prefers using examples for filling in web-based tools”</p> <p>“Web-based business model may be reasonably useful”</p> <p>“Web-based tools makes your business actionable”</p> <p>“Filling in a web-based business model canvas is easy, simple and straightforward”</p> <p>“The strengths lie in its simplicity (the business model canvas)”</p> <p>“The web-based business model is still limited; I do not know what to do next, after filling in a web-based tool”</p> <p>“Web-based tools do not require explanations compared to business model tools themselves”</p>
Usage of web-based tools	<p>“Unclear guidelines /hints”</p> <p>“Would not colour the sticky notes if was not asked for”</p> <p>“Colouring gives a clear overview of a web-based tool”</p> <p>“Duplicating tools was not clear enough”</p> <p>“Expected a duplicated version of the tool by clicking on copy and closing the pop-up”</p> <p>“Prefers clear information about web-based business model tools”</p> <p>“Highlighting sticky notes”</p> <p>“Closing an insert popup may refer to automatic</p>	<p>“The hints/guidelines are not clear enough”</p> <p>“Did not categorize the sticky notes by colours”</p> <p>“Duplicating web-based tools were not clear enough”</p> <p>“Copying the canvas via ‘Canvas History’ makes no sense”</p> <p>“The current web-based business model is pretty straightforward, but limited”</p> <p>“Web-based tools are working pretty well and may provide excellent support to companies”</p> <p>“Examples with a case of company will support start-ups who are not familiar with business modelling”</p>	<p>“The hints/guidelines are not clear enough”</p> <p>“Would not categorize the sticky notes by colours if was not asked for”</p> <p>“Colourizing sticky notes gives a clear overview of web-based tools”</p> <p>“Duplicating the canvas model was not clear”</p> <p>“Web-based tools are good, but there is always a tool which is missing some functionalities, e.g., adding documents, pictures to notes”</p> <p>“The hints/guidelines should present nice examples or ideas”</p> <p>“Prefers good explanations of the building blocks”</p> <p>“Would like to see good</p>



	<p>saving”</p> <p>“A wizard may help filling in a web-based tool”</p> <p>“Prefers to have a warning/popup notification when deleting notes”</p>	<p>“Filling in online tools are useful, e.g. automatic saving”</p> <p>“Offer users the choice starting with an empty or prefilled web-based tool”</p> <p>“The actual challenges lies below the building blocks”</p>	<p>examples of web-based tools”</p> <p>“Web-based tools allows companies to brainstorm digitally, still offline papers work best”</p>
<b>Functionalities of web-based tools</b>	<p>“Printing icon is missing”</p> <p>“Real-time editing is useful”</p> <p>“Export option to PDF”</p> <p>“Slideshows are useful”</p> <p>“Would like to give a pitch after filling in a web-based tool”</p> <p>“Would like to see short video and simple tutorials, but without interrupting users”</p> <p>“Reminders / triggers with notifications may be a great feature for finalize things”</p> <p>“Text as guidelines may be useful instead of looking at video tutorials”</p> <p>“A calculation module may be useful”</p>	<p>“Prefers a print button/icon”</p> <p>“Real-time editing, with ownership of a tool”</p> <p>“Comments/feedback module for adding comments to the notes”</p> <p>“Support from others are not needed if the ‘How to Use’ and ‘FAQ’ page is well optimized”</p> <p>“Video tutorials may support filling in web-based tools”</p>	<p>“Prefers a printing button for printing”</p> <p>“Collaboration (real-time) editing may be a good functionality”</p> <p>“Liked the Slideshow module”</p> <p>“Helper on distance, a chat module and video tutorials are not necessary if the documents are sufficiently written”</p> <p>“Relationship marker whereby the notes can be connected by lines”</p> <p>“Digitally brainstorming possible”</p> <p>“Would like to work with paper based tools as well”</p>
	<p>“Copying the canvas was not easy,”</p> <p>“The current tool looks to messy”</p> <p>“Prefers a white background without grids”</p> <p>“Would like to see icons, images to make the web-based tools more fun to work with”</p>	<p>“Copy canvas button is concealed too much”</p> <p>“Prefers a print button/icon”</p> <p>“The building block’s are easy to fill in”</p> <p>“Management around the web-based tool are not clear; e.g., saving, printing, version numbers, adding titles, adding dates are missing”</p>	<p>“The copy button (green button) was not easy to find, not logical and should be available below the canvas settings”</p> <p>“Current web-based business model looks outdated”</p> <p>“Simple icons, illustrations and examples may support users”</p>

Table 14: Intra-case analysis



#### 4.6.2 Cross-case analysis

The cross-case analysis includes searching for patterns in the tools and presenting general results for the conclusion section. Like the intra-case analysis, the cross-case analysis is grouped by general remarks, usage, functionalities and the usability of web-based business model tools.

##### 4.6.2.1 General remarks

In general, it may be said that all of the companies are enthusiast about web-based business model tools. Web-based tools support companies in developing their business activities and let them think differently about the business. Furthermore, web-based tools allow companies to structure the business, make businesses actionable and detect gaps. In contrast, none of them would like to share a web-based tool via social media platforms, but would share it with colleagues, e.g., for real time-editing/collaboration. However, opinions differ in the usage of tools, one stated using a web-based tools and one prefer not to use web-based tools for new products or services. Also, one stated using a tool only once, without looking back. As for filling in web-based tools, the participants stated that guidelines and hints might support user to filling tools. However, SMEs stated that the hints and guidelines are not clear enough. For this, examples would help and support SMEs to fill in web-based tools. Concluding, web-based tools are useful and do have a future which needs to be discovered yet. Besides, web-based tools are just supporting tools, limited and companies do not know what to do next.

##### 4.6.2.2 Usage of web-based tools

Referring to the usage of web-based tools, it can be concluded that the hints and guidelines are not clear enough, duplicating a web-based canvas model was complicated and the participants prefer not to colorize sticky notes, if they were not asked for. However, after colorizing the sticky notes, they stated that it gives a better overview of all building blocks. Still one of the participants did not colourize the notes because he stated that it would not have an added value. Furthermore, a wizard or a guideline may support companies, as well as for the starting point (an empty versus a pre-filled web-based tool). Likewise, the participants claimed that web-based tools provide support for companies, but there is always a web-based tool that misses functionalities like adding documents, images and attachments to notes. Still, in my opinion, web-based tools need

to be simple as possible and attaching documents and files may confuse SMEs. Denoting to adding notes, one of the participants assumed closing a note (after filling in the fields) is saving the note automatically, however, this was not the case and the note was deleted.

#### 4.6.2.3 Functionalities of web-based tools

As the tools are web-based and participants were asked for printing the tools, it can be assumed that users still prefer printing web-based tools. Also, one stated that they would like to use paper-based tools as well. Likewise, real-time editing is a must have functionality for web-based tools; however, one claimed that this could be optional by user-permission and rights (e.g., admin roles who has more permission compared to normal users). Furthermore, a comment module, whereby users can give feedback to the notes, can be added to the real-time editing function. As for support, simple tutorials and videos may support using web-based tools. However, if the documentations of the tools are well defined, these are not necessary. Likely for support from others (e.g., a chat-box or helper on distance). The participants discovered and liked the automated slideshows, which is available by one click only. Moreover, one participant preferred reminders, a calculation module and triggers. In contrast, the other two participants claimed they do not need these functionalities. Also, one stated a relationship marker may be useful for the web-based business model canvas.

#### 4.6.2.4 Usability of web-based tools

It can be concluded that the usability of web-based business model tools looks out-dated and messy. Though, the participants liked and enjoyed the tool. Likewise, the participants stated that filling in a web-based version of the business model canvas is easy and simple, which may be due the simplicity of the canvas model itself. As for the management around the web-based tools, these are not user friendly, nor clear or logical (e.g., saving, printing, copying, version numbers). Therefore, the participants prefer simple and clear icons, which make web-based tools more fun to play with.

### 4.7 Problem-solution fit between web-based business model tools and SMEs

Now the results and the cross-case analysis are discussed, the application of the value proposition canvas model can be presented. As stated beforehand, the main goal of this supporting framework is to find a problem-solution fit between web-based business model tools and the requirements of SMEs. For this, the theoretical framework

Deniz Alan

is extended and presented horizontally, which makes it more readable and transparent. To understand the problem-solution fit, the features of the value proposition need to match the characteristics of the customer profile. Correspondingly, the products & services need to fit the SME requirements, the gain creators need to fit the SME gains and the pain relievers need to fit the pains of SMEs. Subsequently, based on the problem-solution fit, strong points and limitations of current web-based business model tools will be presented in the upcoming chapter, conclusions and recommendations. In Figure 15 the extended framework of the value proposition canvas is presented, which is followed by a description of the extended framework.

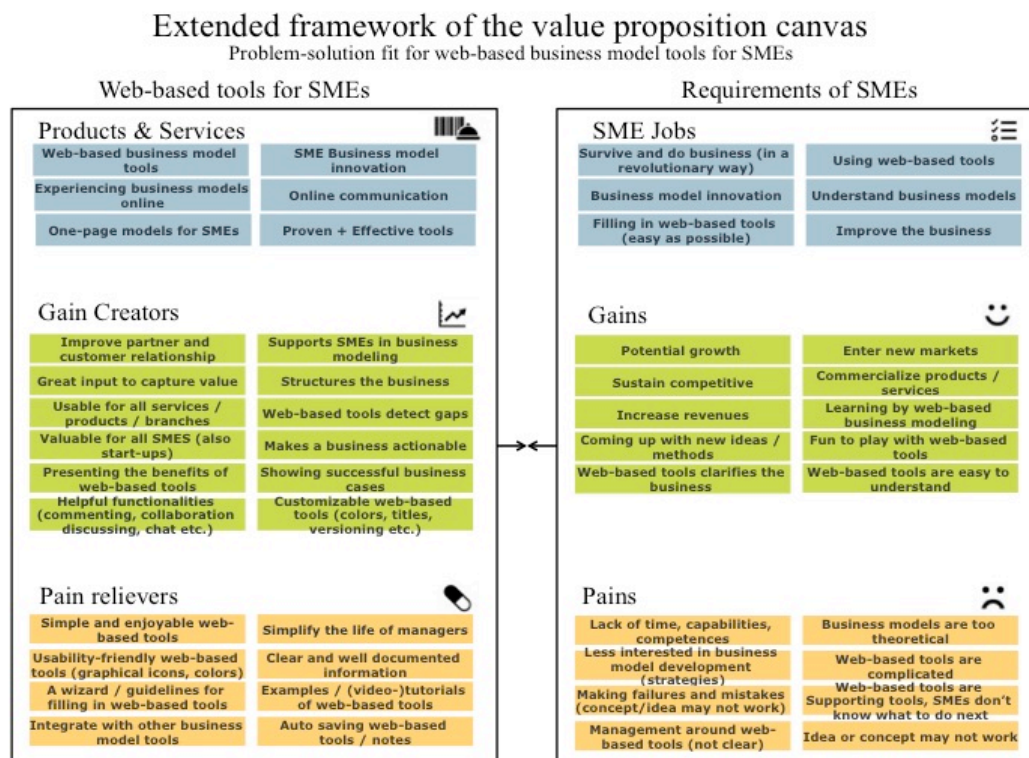


Figure 15: Extended framework of the value proposition canvas

First, the SME jobs, SMEs are trying to survive the competitive market, are trying to understand web-based tools and do business with web-based tools. SMEs prefer this by proven and effective tools, as they are used to existing business models (Akrich & Miller, 2007; Barjak et al., 2014). Based on the study, it can be claimed that SMEs prefer filling in web-based tools easy, simple and quick as possible. In addition, based on the study, SMEs like one-page business models, as these are quickly and easy to fill in. Eventually, SMEs would like to improve their business models in a revolutionary way, thus using web-based business model tools.

Second, the gains of SMEs, according to the outcomes, SMEs are trying to increase in revenues, grow potentially, sustain competitive and trying to commercialize their services and products better. Based on the study, it can be claimed that SMEs are enthusiast about web-based tools and stated that web-based tools are help- and useful. Furthermore, tools allow SMEs to learn more about the business, to come up with new ideas and it clarifies the business. Therefore, for an optimum web-based business model tool, tools need to be actionable; it needs to structure the business, detect gaps and enables practices of SMEs. Also, to increase the usages of web-based tools, the benefits need to be more presents, which make encourage web-based tools for SMEs. In general, web-based business models gives input to capture value and it is valuable for all SMEs, even for start-ups. Also, based on the research, web-based tools are applicable by all branches, services or products, although the experiment included service-providing companies. Furthermore, SMEs like customizable web-based tools, whereby they can make effective changes, like colouring sticky-notes, editing titles, dates and adding versions to filled in tools. Moreover, functionalities like commenting notes, collaboration (real-time editing), discussing and a chat for quick questions are helpful for filling in web-based business model tools. Though, a chat-module for quick questions is not necessary, but it may advance the usage of web-based tools, as it is a helpful functionality for SMEs. In addition, the newest version of Canvanizer makes the required functionalities possible, which makes it possible for web-based business model tools for Envision as well.

Third, there are some pains of SMEs, mainly the lack of time, missing competences and knowledge in business modelling. Likewise, as SMEs are doing their daily activities, they don't have time for doing other things, like using web-based business model, mainly. Furthermore, SMEs claim that business models are too complicated and theoretical. Also, an idea may not work after filling in a web-based business model. In contrast, some claim business models are simple and not theoretical at all. Another issue is that the management around current web-based tools are disordered. For these pains, web-based tools need to include clear and well-defined documentations, (step-by-step)-guidelines and hints, (video-)tutorials, examples of relevant prefilled business models. Furthermore, web-based tools need to be enjoyable, simple and user-friendly (e.g., simple icons, no background-colours, clear buttons, links for saving, printing, versioning, titling, adding dates). Likewise, some small

improvements, e.g., automatic saving notes, sharing tools with colleagues (for collaboration), a wizard for filling in web-based tools and integrating with other web-based business model tools, may foster the usage of web-based tools and relieve the pains of SMEs. However, a wizard for filling in web-based tools could make the filling process complicated again, as SMEs prefer simple web-based tools as possible. Moreover, the presentation module needs to be presented more superior, as SMEs were interested in presenting a finished web-based business model tool. Furthermore, after using a web-based tool, SMEs don't know what to do next. Therefore the tools can be actionable as well, e.g., starting with a new business model, printing, or, if possible, presenting web-based tool to the higher management to practice the model were possible, for future business activities.

Generally, based on the research, web-based business model tools offer many opportunities and possibilities for SME business model innovation. For example, by using web-based tools, SMEs could get a better overview of their business, often within an hour. Likewise, SMEs are enthusiast about web-based business modelling which may foster SMEs business activities and the managers. In addition, current web-based tools operate quickly and look reliable for SMEs, possible because of the simplicity and straightforwardness of the business model canvas. In contrast, it may be that SMEs are afraid that their web-based business model will be copied or used by copycats, as the participants asked to delete a web-based business model afterwards. Still, not all functionalities are used by SMEs, but it can be present for developing optimum web-based business model tools for the Envision platform.

# Conclusion & Recommendations

The last section of this research includes conclusions and recommendations for this study. In this section the main- and sub-questions will be answered. Following, the recommendations, the scientific- and practical contribution and the limitations of this study are presented. Lastly, suggestions for further research will be deliberated.

## 5. Main findings of the study

Summarizing the results of this study, it can be concluded that web-based business model tools do have a future and need to be improved for SMEs business model innovation. Web-based business model tools are supporting SMEs in developing businesses, as they are supporting tools for SMEs to create value, increase in revenues and sustain competitive. However, SMEs lack in knowledge, competences and time for web-based business models. Therefore, based on the study and the application of the theoretical framework, current web-based business model tools need to be optimized, should be simple and user-friendly as possible. Web-based business model tools need to have examples of relevant business models, tutorials, clear guidelines and hints, user-friendly management (throughout the tools) and simple functionalities (e.g., real-time collaboration, automatic saving notes, sharing with colleagues, versioning, editable titles and adding dates). These changes are required by SMEs for web-based business model tools, which make the tools also more fun to play with. Likewise, one of the participants claimed, web-based business model tools need to be used on a daily basis. However, often, SMEs do not have the time for business modelling, as there are focussing on their daily business activities, it may be inconvenient. Therefore I rather disagree with using web-based business model tools on a daily basis, periodically is recommended (e.g., once a month or during new services or products).

SMEs are interested in web-based tools, may have heard of it and stated that web-based tools are handy and would like to use it once. Additionally, SMEs know how to fill in web-based tools when they understand the underlying concept of a business model. In general, the business model canvas is understandable, as the model is straightforward and simple. SMEs are not willing to categorize web-based business model tools. But afterwards, they like coloured web-based tools; which can be inspired by examples. Also, before filing in web-based tools, SMEs can be asked if they prefer

an empty or prefilled web-based canvas, e.g. a decision tree, as they would like to see this feature. Furthermore, SMEs do not know what to do after filling in web-based tools, which may be a reason why web-based tools are used once only. For this, tools need to be actionable (e.g., by triggers, mails or the management needs to take action). As for video tutorials, this is not required by SMEs if the documentations of the tools are described well. Likewise, SMEs prefer not to share web-based tools on social media channels. Moreover, current web-based business model canvas tools do not include strategies or the competitors, which could be valuable for SMEs as well. However, current web-based business model tools focuses on what value companies deliver to their customers only. Furthermore, it may be concluded that real-time editing is a must have for web-based tools, whereby users could have different permissions with different rights (e.g., administrator and normal user roles). Likewise, SMEs are interested in pitching their web-based tools, which needs to be presented more superior, as the participants stumbled upon and liked the presentation module.

### 5.1 Answer to the main research question

Now the main findings of this study are presented, answers to the main- and sub-questions can be given. The research includes one main research question and three sub-research question. To give answers to the main research question, the problem-solution fit between web-based business model tools and SMEs will be used, thus the extended framework. Based on these results, the strong points and limitations of current web-based business models will be deliberated. Finally, the main goal of these questions is to give insights in how web-based business model tools needs to be improved to empower SME business model innovation.

Referring to the main question:

***“What are the strong points and limitations of current web-based business model canvas tools for SMEs?”***

To answer the main question, the application of the problem-solution fit of the value proposition canvas will be used. For this, a model is developed, named the SPL-Fit (Strong points and limitations fit) model. In this model the problem-solution fit is displayed on the left (as rows), which includes products & services, pain relievers and gain creators. The strong points and limitations can be found on the right (as columns). In addition, as the main question includes current web-based business model tools only, some points are also applicable for web-based tools in general. The complete outcome

of the strong points and limitations of current web-based business model canvas tools is displayed in Figure 16. The explanations of the strong points and limitations are presented afterwards.






SPL-Fit model			
Strong Points and Limitations <b>FIT</b> of current web-based business model canvas tools			
 Products & Services	 Strong Points		 Limitations
	<ul style="list-style-type: none"> <li>- Web-based business model tools clarifies the business</li> <li>- Web-based tools (the tools itself) do not require explanations</li> <li>- Web-based business model tools are use-and helpful tools for SMEs</li> <li>- SMEs are familiar with the business model canvas concept, as they have heard or seen the model before</li> <li>- Filling in web-based tools is simple, if SMEs know the underlying concept of a business model canvas</li> </ul>		<ul style="list-style-type: none"> <li>- Web-based business model tools are only used once, it needs to be actionable</li> <li>- Current web-based business model canvas tools are not core, just supporting tools</li> <li>- Current web-based tools do not have a follow up step</li> <li>- Current web-based tools are messy, looks out-dated (usability / visual representation needs to be improved)</li> <li>- Filling in web-based tools is complex, if SMEs dont know the underlying concept of a business mode canvas</li> </ul>
 Pain relievers of web-based tools for SMEs	Strong Points		Limitations
	<ul style="list-style-type: none"> <li>- Offer simple, enjoyable, usability-friendly web-based business model tools</li> <li>- Offer step-by-step guidelines, examples, guidelines for filling in web-based business model tools</li> <li>- Simplify the live of managers with web-based business model tools</li> <li>- Offer valuable options (like integrating with other models, auto-saving, auto-versioning)</li> </ul>		<ul style="list-style-type: none"> <li>- The hints, guidelines of web-based tools are not clear enough (explanations of the building blocks)</li> <li>- Current web-based tools do not have clear management around web-based tools (like simple buttons, icons, titling)</li> <li>- Duplicating, printing, sharing web-based tools is to complicated (to concealed)</li> <li>- No warning notification when deleting notes</li> <li>- Web-based tools are saving automatic, but this is not clear enough (not showing when it has been saved, or version numbers)</li> </ul>
 Gain creators of web-based tools for SMEs	Strong Points		Limitations
	<ul style="list-style-type: none"> <li>- Support SMEs in business modelling</li> <li>- Offer web-based tools to structure the business, capture value and detect gaps</li> <li>- Offer web-based business model tools to make a business actionable</li> <li>- Offer the benefits and successtories of web-based business model tools</li> <li>- Offer valuable functionalities and customizable web-based tools for SMES</li> </ul>		<ul style="list-style-type: none"> <li>- The tested web-based tool does not have the option for real time editing, printing, pdf export, feedback module</li> <li>- Web-based tools do not have examples or (video)tutorials (most of them)</li> <li>- SMEs do not know what to do after filling in a tool</li> <li>- Current web-based tools do not show the benefits of business modelling</li> <li>- Current web-based business model canvas tools do not include strategies or competitors (the model itself)</li> </ul>

Figure 16: SPL-Fit model – Strong points and limitations of current web-based business model canvas tools



Referring to Figure 16, the SPL-Fit model includes the problem-solution fit for products & services, the pain relievers and the gain creators for web-based tools for SMEs. As for the application of the SPL-Fit model, there are some similarities between the strong points and limitations for the problem-solution fit, which makes some of these applicable for more problem-solution fits.

### **Products and services**

First, referring to the strong points of the products and services, current web-based business model canvas tools allow SMEs to do business model innovation. These web-based tools do not require extensive explanations, are easy to understand, clarify the business and are useful and helpful for SMEs. Additionally, SMEs are familiar with the business model canvas concept, as they have heard or seen the model before. Therefore, SMEs could fill in a web-based version of the business model canvas, as filling in web-based tools is simple. Nevertheless, it may be that SMEs need to know the underlying concept of a business model in order to use it optimally. In contrast, a web-based business model tool could be complex, if SMEs do not know the underlying concept at all. As for more limitations, current web-based business model tools are used once only. Besides, the tools are not core, just supporting tools. Also, current web-based business models do not include a follow-up step. Therefore, it needs to be actionable, whereby SMEs can use tools more often.

### **Pain relievers of web-based tools for SMEs**

Second, referring to the strong points of the pain relievers, SMEs do understand and see the value of current web-based business model canvas. Moreover, the tools and their features are offered free of charge to all SMEs through Europe. Furthermore, SMEs were enthusiastic of some features offered by current web-based business model tool (e.g., slideshows, adding notes, history overview). Likely, the tools are useful for digital brainstorming for SMEs and it stimulates SMEs in doing business. As for the limitations of the pain relievers, SMEs are used to click on the question marks if they do not know what to do. Clicking on these question marks, gives users some hints and guidelines on how to fill in a canvas tool or a building block. However, these explanations are not clear enough and need to be improved with relevant and useful information (e.g., showing relevant keywords). Another limitation is that SMEs don't

know how and where to start. Therefore, a guiding web-based tool may support SMEs (e.g., a step-by-step guide, showing examples, tutorials). Likewise asking SMEs if they want to start with an empty or a prefilled tool could improve the usage of web-based business model tools. Besides, current web-based business model tools need to include clear management, well-documented information, real-time editing, a FAQ page, simple buttons and icons, thus usability improvements. Moreover, functionalities like duplicating, printing, sharing are too hidden, which needs to be more present. Lastly, during filling in a web-based tool, sticky notes are not saved automatically and no warning is giving when deleting, which is a key improvement for web-based tools.

### **Gain creators of web-based tools for SMEs**

Third, referring to the strong points of the gain creators, current web-based business model tools offer many chances, opportunities and possibilities for business model innovation. In fact, it makes you think different about the business and stimulates SMEs. Furthermore, as current web-based business canvas model tools offer handy functionalities, like the presentation module, automatic saving, hints and the brainstorm module, these functionalities needs to be improved thoroughly. Furthermore, current web-based tools allow discussing new ideas or concepts and it includes history data. In contrast, as for the limitations, the tested web-based tool does not have options for real-time editing, printing, pdf export or a feedback/discussion module. Furthermore, no examples, tutorials or guidelines are presents. Another limitation is that SMEs don't know what to next, after they fill in a web-based tool Therefore, a follow up step needs to include in current tools (e.g., by adding a button on the right side). This could be asking SMEs what they want to do next, like printing, presenting the tool, start with another tool or practicing the business model.

## **5.2 Answer to the sub-questions**

As for the first sub-question;

***“In what way will SMEs feel confident with web-based business model tools?”***

The following answer could be given:

Based to the experiment and outcomes, it may be concluded that SMEs see added value in web-based business model tools. SMEs feel confident using web-based tools and would like to use it for further activities, in general. Likewise, SMEs would

like to tell their environment about the existence of web-based tools, which may increase the acceptance of web-based tools. However, as many of the SMEs do not have the time or knowledge about business modelling, it still may be a barrier accepting web-based business model tools. For this, giving relevant examples of pre-filled web-based business model tools may increase the acceptance, as the participants would like to see examples. Likewise, showing benefits and quotes why web-based business models will improve business activities can be added to gain the trust of SMEs. Besides, making web-based business model tools actionable (e.g., by notifications, messages, mails) could trigger SMEs using web-based tools for a longer time, instead of once only. Additionally, transferring data from one business model to the other may support SMEs as well. For example, transferring relevant data from a business model canvas to another business model. Lastly, showing SMEs that current web-based tools are supported and stimulated by the European commission could gain trust, as the interest in web-based business models are increasing slightly.

Referring to the second sub-question:

***“In what way can web-based business model tools be improved focussing on SMEs?”***

The following answer could be given:

As for the improvements of web-based business model, the usability of the tools needs to be improved; web-based tools nowadays look out-dated, the management around the tools (a date, version numbers, quick editable titles, printing options) need to be improved, better hints, step-by-step guidelines and examples can be added. Additionally, adding documents and images to sticky notes is a nice to have, but not necessary. Referring to helper on distance, SMEs do not require support on distance, for example; a chat is not needed if the documentation of the tools is written sufficiently. However, it may help SMEs for quick questions. Writing sufficiently includes a guideline how to use web-based tools and an explanation of business models. Additionally, SMEs would like to see a collaboration option of web-based tools, as working on a business model tool via one system (e.g., working with a team on one laptop) may not be efficient. Likewise, adding documents or images may be helpful while using web-based business model tools. In contrast, still web-based tools might be limited for SMEs, as there are always web-based tools that are missing a functionality required by SMEs. Referring to the right colour usage, as this research does not include

designing business models, this may be taking into consideration. Moreover, the participants stated not liking the colours of the tools and preferred a white background, instead of grid lines. As SMEs do not know what to do afterwards, a button or a follow-up step can be included in current web-based business model tools. Thereby, a popup can appear with questions what to do next. Concluding, web-based tools are power- and useful for innovating business models, but the usability, some functionalities and modules need to be improved to fulfil SME requirements.

Referring to the third sub-question:

***“How can SMEs be made aware of web-based business model tools?”***

Based on the study, it may be claimed that SMEs are aware of business models and web-based tools in general. However, SMEs are not willing to use web-based tools unless they are asked for. Though, SMEs are satisfied after using a web-based tool. To increase the awareness of web-based business model tools, the European commission could start giving (online) trainings, workshops, freebies trough Europe, to show the added value, benefits and the importance of web-based business model tools. Besides as the most of the companies are using social media platforms (e.g., Facebook, Twitter, LinkedIn), awareness of web-based business model tools may be created through these social channels. Furthermore, sponsoring events, which are relevant for SMEs, may stimulate the awareness of web-based business model tools. Moreover, the European Commission could set up advertising campaigns, as they want to reach at least 10% of European SMEs (Envision, 2015). For this, the European Commission can send actionable mails to SMEs (e.g., by branch and country). Furthermore, the European Commission would like to start partnering with UEAPME, AFAEMME and ENOLL, for gathering best practices. These partners are linked to SME organisation covering 27 EU member states (UEAPME stands for European Association of Craft, Small and Medium-Sized Enterprises, AFAEMME for The Association of Organisations of Mediterranean Businesswomen and ENOLL for European network of living labs). All of these organization supports SMEs for empowering business model innovation (Envision, 2015).

### 5.3 Recommendations

As this research provides recommendations on how to improve web-based business model tools for SMEs, a list will be presented. Likewise, the recommendations

will be fed back to the envision project to optimize the specification for web-based tooling. Based on the application of the theoretical framework and the outcomes of the study the following recommendations can be presented:

- General recommendations for web-based business model tools:
  - Clear and well-defined documentations
  - Autosaving sticky notes
  - Clear management around the tools (titling, versioning etc.)
  - Presenting the benefits of business model innovation
  - Presentation of successful business cases
  - Showing reviews and recommendations
  - Examples of relevant business models / SMEs
  - A “What to do next?” button
  - Secure / Safe web-based tools (SSL-encryptions)
  - A community/portal (other pages)
  - Multi-device support (responsive)
- Modules / Functionalities for web-based business model tools:
  - Real-time editing (and separate user colours)
  - Chat-module (for quick questions)
  - Commenting sticky notes
  - Frequently asked questions page
  - Sharing with colleagues
  - Actionable web-based tools (triggers)
  - Starting with an empty or prefilled business model (decision tree)
  - Brainstorming needs to be more present
- Usability improvements for web-based business model tools:
  - Clear hints & guidelines
  - Simple buttons & icons
  - Web-based tools with no background
  - History overview
  - Data transfer between web-based business models
  - Downloadable web-based tools

- Printing option
- Exporting option
- Warning while deleting sticky notes
- Colourizing web-based tools (need to be more present)

Overall, the recommendations are based on experiments of one web-based business model tool provider (Canvanizer). Therefore, the results may vary if another web-based tool was used. For the most part, it can be assumed that above recommendations may be generalizable for all web-based business model tools.

#### 5.4 Scientific contribution

This research contributed to scientific literature with regard to an own developed model, named the SPL-Fit model. Actually, this model is a combination of the problem-solution fit of the value proposition canvas and the strong points and limitations. Until this moment, in scientific literature, the combination of both is never presented before, which makes it a contribution to theory. In addition, the SPL-Fit model can be used without the value proposition canvas model as well, if the user of the model exactly knows the existing problem-solution fit.

In scientific literature, there are a lot of studies about small and medium-sized enterprises (SMEs) and business models. Likewise, many authors contributed in the area of business modelling, like Henry William Chesbrough, Alexander Osterwalder and Yves Pigneur. However, these are mainly active with business modelling for corporates in general. As for web-based business model tools, in relation to SMEs, almost no relevant literature can be found in scientific literature. Therefore the combination of web-based tools and SMEs can be seen as the connection between the two studies, which adds information to theoretical studies.

The term ‘web-based business model tool’ is relatively young. Likewise, almost no definition could be found in scientific literature regarding this term. Based on this research, the term web-based business model tool is described and discussed briefly, which provide added value in scientific literature. Furthermore, no comparison of web-based business model tools can be found. Which could also due to the newness of business modelling in general. Therefore the comparison of current web-based business model canvas tools, focussing on the requirements of SMEs, could give added value to scientific literature, which could even be extended for a further research.

Another added value is the term tool evaluation experiment. The term tool evaluation experiment is discussed briefly in this research. Moreover, no experiment with web-based tools and SMEs has taken place previously.

Referring to the theoretical framework, the value proposition canvas model is used extensively. With this model, the SME needs and requirements are presented in a structured way. However, as the research included many improvements and suggestions, the model is extended for a better overview of the problem-solution fit. Therefore, further research on the value proposition canvas model may be needed. Nevertheless, the theoretical framework is applied for web-based business model tools for SMEs only.

### 5.5 Practical contribution

Referring to the relation between innovation and SMEs, SMEs in Europe want to innovate their business model to sustain competitive and potential growth. However, as some of the SMEs do not know how to do that properly, web-based business model tools may help them. As for a practical contribution, this research gives insights in how SMEs need to innovate business models with web-based tools.

As this research includes the improvements of web-based business model tools, the practical contributions are the recommendations on how these tools need to be optimized and improved. Though, as this study focussed on web-based tools for SMEs, the improvements and recommendations may be generalizable to all web-based business model tools in general. Furthermore, the recommendations will be fed back to the Envision project and used to optimize the specifications for web-based tooling.

This research has been empowered by the European Commission primarily. The European Commission is examining how to stimulate European businesses for business model innovation, focusing on small medium enterprises through Europe. The practical contribution for this is giving clear recommendations, tips and guidelines about web-based business model tools. These web-based business model tools are present in the Envision platform.

The outcomes of the experimental sessions can also be seen as a usability-experiment. During this experiment, one web-based business model canvas tool is tested briefly with some participants. The practical contribution for this is the collected feedback, tips, improvements and suggestions of current web-based business model tools. Likewise, this experiment can be extended with more exercises and participants.

## 5.6 Limitations of the study

As for the research, there are some limitations that need to be considered. First of all, there are more than 20 million SMEs through Europe and this research focussed on Dutch companies only. Besides, 3 micro enterprises participated the tool evaluation experiment. This may make the study have a low validity, as the research included limited companies that cooperated during the interview and experimental tool sessions. Additionally, the outcomes may differ by branches where companies involved in, as all participants offer services in general. It may be that other branches like, agriculture, construction, horticulture, animal husbandry could influence the outcomes of the research. Therefore the recommendations of the strong points and limitations could have been different.

The research focussed on micro enterprises only. However, there are also small, medium and large sized enterprises that are not included as focus group. Likewise, there may be a difference in usage and acceptance of the internet which may affect the usage of web-based tools and differences in the outcomes, as the Netherlands is one of the heavy users of the Internet, compared to other countries in Europe (Eurostat, 2015b). Also, the experiences with business modelling per company may influence the outcomes.

For this study, five current web-based business model tools are compared and discussed. Eventually, only one web-based tool (Canvanizer) has been used for the experiment. The results may vary if another web-based tool was used. Consequently, as the experiment included four exercises, the participants needed to execute the exercises in a certain order. However, the results could have been influenced if the participants were free in doing the exercises in a desired order.

## 5.7 Suggestions for future research

Referring to further research, the participants do think web-based business model have a future. Different field of areas can extend this study. First of all, the participants of this study stated that the usability and the colour usages of web-based tools are looking out-dated. For this, a study can be executed by focusing on the usability, shape and colour side of web-based business model tools. Moreover, this can be combined by a design theory, e.g., design thinking, whereby web-based tools can be



improved continuously. A research questions therefore could be; *“In what way can web-based business model tools be improved by design thinking?”*

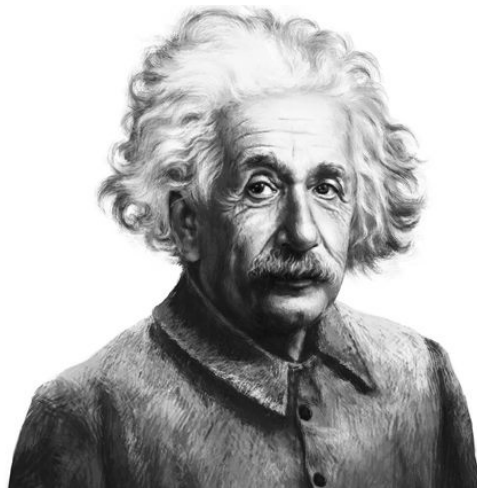
Another example can be the communication between web-based tools. Therefore web-based tools can communicate with each other by collecting information. For example, transferring filled in information for a web-based business model canvas to a web-based SWOT model. This allows companies filling in the next web-based tools easily. For this, the research question could be; *“In what way can web-based business model tools communicate with each other?”*

Subsequently, it may be that SMEs still not accept web-based tools. The reason for this may be that web-based tools look too complicated to use, the lack of time or SMEs are not interested at all. Therefore some acceptance factors for web-based tools can be analysed. For this, the cycle of acceptance can be used as a theoretical framework, which includes how companies may accept new and upcoming services. For this, a suitable research question could be: *“How can companies accept and use new an upcoming products/services?”*

As stated in this research, most of the SMEs do not know what to do after they filled in a web-based business model tool. Therefore, tools need to include a follow up step, which could be by a simple button and a popup-notification. For this, a usability inspection research can be conducted to find usability issues of current web-based business model tools. For this, a suitable research question could be: *“What are the follow-up steps of current web-based business model tools?”*

Closing quote

The important thing is to never stop questioning  
- *Albert Einstein*



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# Appendix

## 7. Appendix

### 7.1 Appendix I - Tool evaluation experiment

#### 7.1.1 Aim of the tool evaluation experience:

The aim of the tool evaluation experiment is to analyse the strong points and limitations of web-based business model tools for SMEs. Furthermore, when will SMEs feel convenient with web-based tools and how can the tools be improved so it will be more understandable and acceptable for SMEs. Eventually, the tool evaluation experiment represents an overview in what way SMEs can innovate their business model optimum.

#### 7.1.2 Structure and questionnaires

1. Introduction
2. Background information about the research (Prior research)
  - a. Introduction
  - b. SMEs lack of knowledge and/or competences
  - c. The need for innovation
  - d. Business model tools may support SMEs to innovate
3. Questions regarding to the organization (Prior research)
  - a. Introduction, position, level of education of the interviewee
  - b. Background information, mission, vision and goal of the company
  - c. Structure of the business, employees and their positions
  - d. Products/services of the business (SBU's)
  - e. Future perspectives
4. Questions regarding business innovation (Visible in the market)
  - a. How do you define innovation for you business?
    - i. Why and how do you innovate your business?
    - ii. Which new product/services did you launched recently?
    - iii. How many times do you innovate your business/product?
    - iv. What does/doesn't work during innovation your business? (Too much time or costs?)
    - v. Do you have support from other relations? Or a business coach?
  - b. How do you spot opportunities for innovation? (Folders, online, magazines). What are you doing then?
  - c. How do you come up with new ideas? What are you doing then?
  - d. What is your role during innovation?
    - i. What issues do you encounter?
    - ii. What are your biggest challenges?
  - e. In what way do you innovate your business model?

5. Introduction into business models
  - a. What are your interests in business model? Do you use any business model?
  - b. Do you have a business plan? Did you ever described your business?
  - c. Do you use any tools for your business? If yes, which one(s)?
  - d. Have you heard of web-based business models? If yes, which one(s)? Experience?
  - e. In what way would you like to use web-based business model tools to innovate your business/product?
  - f. In what way does your business model tool(s) relate to the business activities?
  - g. What do you know about the business model canvas?
    - i. Description of business model canvas
    - ii. Description of the 9 building blocks
    - iii. Example of the business model canvas
  - h. Why would you like to use a business model tool? What would you like to see as result?
6. Experimental session (60 minutes)
  - a. Discuss and evaluate previous business model canvas
  - b. Fill-in the business model canvas for your businesses (exercises)
    - i. Exercise 1: Fill in the business model canvas
    - ii. Exercise 2: Categorize the stickers/labels
    - iii. Exercise 3: Check older versions and duplicate the version
    - iv. Exercise 4: Share and print the canvas model
  - c. Discuss and evaluate the business model canvas
7. Evaluation / feedback session
  - a. Tools related questions
    - i. How did it go?
      1. Does the tool make sense?
      2. Which part(s) was hard/easy to fill in?
      3. Or not understandable?
      4. Could you have solved this by yourself?
      5. Did you encounter any difficulties in using the tool? If yes, what were they?
    - ii. Why would you (not) use the tool?
    - iii. In what way could you fill in the tool without any support?
    - iv. In what way did you use the instructions/guidelines of the BMC?
    - v. What would you do if you get stuck during filling in the BMC?
    - vi. Does the rest of your team understand the BMC?
    - vii. What did you like/not like about the web-based BMC?
    - viii. What do you think are missing?
    - ix. What part(s) can be improved?
      - x. What do you like about the visualisation/design of the BMC? (Colours, icons etc.)
      - xi. What is your general opinion of the web-based BMC?
  - b. Business related questions

- i. To what degree does the business model tool relate to you business activities?
- ii. Will the BMC let you rethink about your business?
- iii. In what way was the BMT useful for you company?
- iv. In what way will web-based BMTs will innovate your business/product?
- v. In what way does the tool help you to know your business in a proper way?
- vi. In what way does the tool help you to know your relations better?
- vii. Will the tools help you to create new ideas, strategies and/or opportunities?
- viii. In what way will you use the BMC for your future activities?
- c. General questions
  - i. Would you like the see one of the following options?
    - 1. Collaboration with other tools
    - 2. Collaboration/sharing options
    - 3. Option for support/helper on distance?
    - 4. Chat-module (for quick questions)
    - 5. Notes
    - 6. Brainstorm
    - 7. Reminders
    - 8. Any others?
  - ii. What were your expectations of web-based BMTs?
  - iii. Would you recommend the BMC to your relations?
  - iv. Could you please rate the web-based BMC? (1-10)
  - v. Do you have any questions, comments etc.?

## 7.2. Appendix II - Potential SMEs for the research

Company	Branch	Service/products	Employers
Company 1	Innovation & Security	Innovative security products	6
Company 2	Innovation & Technology	RFID technologies	<10
Company 3	Marketing & Innovation	Marketing for businesses	N.a.
Company 4	Innovation & Technology	Business Development	6
Company 5	Multimedia	Video development	<10
Company 6	Multimedia	Internet marketing	<10
Company 7	IT & Innovation	IT / Cloud computing	<10
Company 8	Software development	E-process automation	<10
Company 9	Marketing	Brand development & Marketing	<10
Company 10	Industry & Engineering	Machine development	N.a.
Company 11	High-tech & Innovation	Mechatronic systems	N.a.
Company 12	Marketing	Online platform development	N.a.
Company 13	Software development	ERP software development	N.a.
Company 14	High-tech & Innovation	Robotics	N.a.
Company 15	Multimedia	Web-applications	9
Company 16	Multimedia	Website design & Development	<10
Company 17	Marketing	Marketing & social media	<10
Company 18	Multimedia	Graphical design	<10
Company 19	Multimedia	Social media	<10
Company 20	Software development	Mobile transportation systems	4
Company 21	Recruitment agency	Recruitment	<10
Company 22	Multimedia	Website design & Development	<10

<b>Company 23</b>	Multimedia	CD/DVD duplication	<10
<b>Company 24</b>	High-tech & Innovation	Audio controller chips	<10
<b>Company 25</b>	Administration	Administration	<10
<b>Company 26</b>	IT & Innovation	IT for housing corporations	<10
<b>Company 27</b>	Accounting & Finance	Accounting & Finance	<10
<b>Company 28</b>	Recruitment agency	Recruitment	4
<b>Company 29</b>	Recruitment agency	Recruitment	3
<b>Company 30</b>	Recruitment agency	Recruitment	3
<b>Company 31</b>	Software development	Mobile transportation systems	4
<b>Company 32</b>	Software development	Mobile App development	9

*For privacy reasons, the names of the companies are concealed.*

### 7.3 Appendix III - Schedule

Phases	Time Start	Time End	Minutes	What	Comments
<b>Phase 1: Interview</b>	09:00	09:05	00:05	Introduction	Introduction and background information about the research
	09:05	09:10	00:05	Organizational questions	Questions regarding the organization
	09:10	09:15	00:05	Innovation questions	Questions regarding innovative activities of the company
	09:15	09:20	00:05	Introduction BM	Introduction and questions regarding business models
<b>Phase 2: Experiment</b>	09:20	09:25	00:05	Introduction BMT	Introduction of the Business Model Tool
	09:25	09:30	00:05	Discuss Preview BMT	Discuss and analyse the preview BMT
	09:30	10:00	00:30	Exercise 1. Fill in own BM	Fill of the business model of the SME
	10:00	10:05	00:05	Exercise 2. Categorization	Categorize the stickers
	10:05	10:10	00:05	Exercise 3. Duplicate version	Duplicate the current wbt
	10:10	10:15	00:05	Exercise 4. Share & Print	Share & Print the tool
	10:15	10:20	00:05	Discuss own BM	Discuss and analyse the business model of the SME
<b>Phase 3: Feedback &amp; Evaluation</b>	10:20	10:25	00:05	Feedback questions	Questions regarding the filled BM
	10:25	10:35	00:10	Business related questions	Questions related to the business and tools
	10:35	10:40	00:05	Additional questions	Questions regarding missing and additional web-based options
	10:40	10:45	00:05	Finalizing the interview	Finalizing the experiment