

Surview

Improving the survey industry by using chatbot technology



Bachelor Thesis in Industrial Engineering and Management

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Preface

This Bachelor's thesis was written during the spring of 2017 at the Department of Technology Management and Economics Organisation at Chalmers University of Technology.

Many thanks go out to all the companies that were involved in the process of developing Surview, either through being interviewed or agreeing to conducting tests. We would also like to thank our supervisors Yashar Mansoori and Mats Lundqvist for helping us adapting the work of the project to fit the style of an academic thesis, and Carl Josefsson at Chalmers Ventures for his support on the business side of things during the entire project.


Finally, we would like to thank our friends and family for always supporting us.



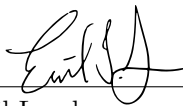
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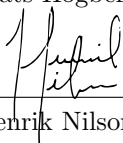
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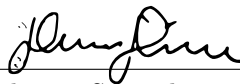
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Sammandrag

Syftet med detta kandidatarbete är att undersöka om aktuella problem inom undersökningsbranschen kan lösas med hjälp av chatbot-teknologi, och huruvida en hållbar affärsverksamhet kan byggas kring detta koncept genom att applicera Lean Startup-metodologin. Teorin bakom projektet är uppdelad i fem delar: Svarsfrekvenser för undersökningar, Net Promoter Score, Chatbot-teknologi, Att använda SMS som ett medium för undersökningar, och Hållbar utveckling. Metodologin som används i projektet består av Lean Startup-metodologin, Business Model Generation, Intervjuer och A/B-testning. Projektets resultat var att det finns ett värde i att använda chatbot-teknologi för att genomföra undersökningar tillsammans med en lämplig undersökningsmetodologi. Resultatet visade också att ett möjligt kundsegment, för ett verktyg som tillåter användaren att genomföra chatbot-undersökningar, är undersökningskonsulter och webbshoppar. För att verifiera detta behövs dock ytterligare efterforskning genomföras. Projektet visar att vidare undersökningar kring en möjlig affärsmodell, tillsammans med utformningen av en produkt, är nödvändig för att validera att en framgångsrik affärsverksamhet kan byggas runt idén att använda chatbot-teknologi för att utföra undersökningar.

Nyckelord: Undersökningar, kundåterkoppling, marknadsundersökningar, chatbot-teknologi, Lean Startup, Business Model Generation, SMS.

Abstract

The purpose of this thesis is to research if existing problems within the survey industry can be solved by applying chatbot technology, and if a sustainable business can be formed around this idea by applying the Lean Startup Methodology. The theoretical framework of the project is divided into five areas: Response rates in surveys, Net Promoter Score, Chatbot technology, SMS as a medium for surveys, and Sustainability. The methodologies applied in the project are the Lean Startup Methodology, Business Model Generation, Interviews and A/B Testing. The result of the project was that there lies value in applying chatbot technology when performing surveys with an appropriate surveying methodology. A potential customer segment for a chatbot surveying tool is survey consultants and webshops. However, in order to validate this, further research needs to be conducted. The implications of this project is that further research on a potential business model, along with packaging of a product, is required in order to validate if a successful business can be built around the idea of using chatbots to conduct surveys.

Keywords: Surveys, customer feedback, market research, chatbot technology, Lean Startup, Business Model Generation, SMS.

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Glossary

Startup A Startup is a human institution designed to create a new product or service under conditions of extreme uncertainty (Ries, 2011).

MVP (Minimum Viable Product) A product with just enough features to test an hypothesis or to be released to customers.

Product/market fit The degree to which a product satisfies a strong market demand. Product/market fit means being in a good market with a product that can satisfy that market (Andreessen, 2007).

Pivot Changing parts of a business plan while keeping other parts unchanged. A pivot can for example be a change in the product or a change of customer segment.

Corpora Plural of *corpus*, which is a large and structured set of texts.

Parsing The process of analyzing a string of symbols in natural language.

Stemming The process of reducing inflected or derived words to their base word form.

Session An interaction with one of the respondents through a survey.

Engagement rate The amount of respondents, in percent, that answered any of the questions in a survey.

Conversion rate The amount of respondents, in percent, that completed the survey either by declining to participate or completing the entire survey.

Completion rate The amount of respondents, in percent, that completed an entire survey.

Semantic level A group of tasks related to the meaning of words in their respective context.

Syntax level A group of tasks pertaining to the rules of language in terms of sentence construction, use of prefixes and suffixes, and punctuation.

Financial capital Any economic resource measured in terms of money.

Human capital Fundamental features of humans such as knowledge, intelligence and wisdom which can produce economic value to a nation or a company.

Societal capital An economic idea that focus on that the social networks between people in a group can be economically valuable.

Tangible capital All types of physical assets, for example buildings.

Intangible capital All types of assets that are not physical, for example intellectual assets.

API (Application Programming Interface) Code that allows software programs to communicate with each other.

HTTP (Hypertext Transfer Protocol) The application protocol used for the World Wide Web.

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Chapter 1

Introduction

1.1 Background

It is important for companies to make sure that their customers are happy. According to Hoyer and MacInnis, customer satisfaction is the foundation of a successful business as it leads to repeat purchases, brand loyalty and positive word of mouth (Hoyer and MacInnis, 2001). The same study also showed that a dissatisfied customer will discontinue purchasing the product or service, complain to the company, to a third party or engage in negative word of mouth communication. According to Coldwell, who performed a statistical analysis of customer satisfaction, a totally dissatisfied customer decreases revenue at a rate equal to 1.8 times what a totally satisfied customer contributes to a business (Coldwell, 2001). The analysis also concluded that a totally satisfied customer contributes 2.6 times as much revenue to a company as a somewhat satisfied customer, and 17 times as much as a somewhat dissatisfied customer. In order to keep customers happy, it is of utmost importance for companies to stay in touch with their customers, in order to identify and solve problems with their services as fast as possible.

One way to stay in touch with customers is through surveying, where two common alternatives today are web forms distributed by email (Liu and Inchaust, 2017) and phone interviews. A common problem for email surveys and phone interviews is low response rates (Bladon, 2010). In a study from 2001, where the results of several other studies on surveys were combined and analyzed, it was found that response rates for surveys done with email had been steadily decreasing between 1986 and 2000 (Sheehan, 2001). During this time the mean response rate for surveys had decreased from 61.5 percent to 24 percent. Although the number of companies that used such surveys increased, response rates still decreased. Because of this the industry seems to be in need of a change.

An interesting area that may have potential to solve the problems in the survey industry is chatbot technology. Chatbot technology refers to a computer generated response where the purpose is to simulate human-like conversation either through auditory or textual response (Lokman and Zain, 2010). Focusing on this kind of technology is believed to give a closer relation with the customer which could generate a more genuine response and a higher customer satisfaction, compared to existing surveying methods. According to a study from 2015, computer generated conversations are not yet as good as human-to-human (Hill et al., 2015), but the study still suggests that humans want and can have extensive conversations with a computer and that it adds a certain factor of satisfaction.

1.2 Purpose

The purpose of this thesis is to research if existing problems within the survey industry can be solved by applying chatbot technology, and if a sustainable business can be formed around this idea. This is done by applying the Lean Startup Methodology.

1.3 Problem Statement

From the purpose of the thesis the following research questions have been formulated:

- How can chatbot technology be applied to surveys?
- Is there a market need for a new product in the survey industry?
- Does applying chatbot technology to surveys lead to better response rates?

1.4 Scope

The project has a fixed time limit, which influences the chances of drawing feasible answers to the full set of research questions. This also means that the project may not produce a finished, validated product at its deadline. As the Lean Startup Methodology is an iterative process, it is important to realize that the product proposal can change during all of the steps in the process.

1.5 Outline

The thesis is structured with Introduction, Theoretical framework, Methodology, Process, Discussion and Conclusion. The Introduction presents the main reasons for why this project is relevant and what it aims to achieve. The Theoretical framework chapter serves the reader the essential theoretical knowledge for the project and explains the different concepts used. The Methodology chapter explains how the project was performed and the necessities in using certain methods. The Process chapter uses the Methodology chapter as its foundation and explains in a concrete way what was done during the project. The Process chapter also includes discussions on the different phases of the project. The Discussion chapter aims to review the findings from the project and give the reader an insight in areas still in need of research or improvement.

Chapter 2

Theoretical framework

In this chapter, the theoretical framework used throughout the project is explained. In order to answer the question of whether the customer feedback industry can be improved by using chatbot technology, it is important to get a clear understanding of the underlying technical concepts and ideas of chatbot technology. Section 2.1 goes into more depth on the problem of low response rates in surveys today, and common techniques used to increase response rates. Section 2.2 describes the feedback method known as Net Promotor Score, commonly used by market researchers to measure customer satisfaction. Section 2.3 goes into more depth of chatbot technology, how it works, and how it can be applied to surveys. Section 2.4 discusses the use of SMS as a medium for surveys, and lastly, Section 2.5 describes different aspects of sustainability and how sustainability relates to this project.

2.1 Response rates in surveys

Since the early 70's the dropout rates in surveys have increased significantly according to the Central Bureau of Statistics in Sweden (Japek et al., 2001). *Dropouts* refer to all respondents who choose not to participate in a survey. It can be that respondents drop out on a specific question in the survey, that respondents are not accessible or that respondents choose not to participate at all, so called *refusers*. The main problem with high dropout rates is that if significant groups of people do not respond to surveys, the results of the surveys are not reliable. There are groups which are more difficult to reach than others. A few examples are young people, people living in larger cities, and foreigners (Strandell and S., 2015). It is believed that using chatbot technology to conduct surveys will reduce dropout rates, and make it easier to reach groups that are hard to reach with existing surveying methods.

Telephone interviews generally have a higher response rate than paper forms distributed by mail, but the amount of dropouts through telephone interviews have increased remarkably the last couple of years (Strandell and S., 2015). One example is the Labour Force survey as seen in Figure 1. The Labour Force survey is a survey conducted through telephone interviews once a year, and dropout rates for this survey has risen steadily from just a couple of percent in 1970 to almost 15 percent in 1995 (Japek et al., 2001).

The use of web surveys distributed by email has grown rapidly since the beginning of the 21st century (Dahmström, 2004). The reason for the increased usage is probably that email surveys are easy to conduct at a large scale and at a low cost. Conducting such surveys often result in respondents feeling overwhelmed by constantly receiving surveys and thus stop responding to them. This phenomenon is defined as *survey fatigue*, and may be one of the reasons for increasing dropout rates (Strandell and S., 2015).

Bortfallsutvecklingen i AKU 1970-95. Övägt årsgenomsnitt i procent

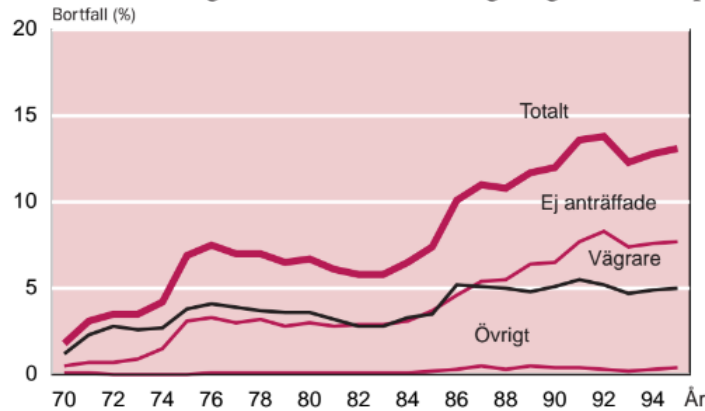


Figure 2.1: The evolution of the dropout rate for the Labor Force survey between 1970 and 1995 (Japek et al., 2001). The thick red line depicts the total dropout. The smaller red line represents respondents who were unavailable, and the black line represents respondents who refused to answer. The line at the bottom of the figure represents respondents who dropped out due to other reasons.

2.1.1 Techniques to increase response rates

The Central Bureau of Statistics has two strategies on how to reduce dropouts (Japek et al., 2001). The first is to work on reducing dropouts by sending reminders and making sure that the questions are adequate and relevant for the respondent. The second strategy is to estimate the results of the dropouts and adjusting the results of the survey. The Central Bureau of Statistics use their indexes of the Swedish population and compare it to the result of the survey (Strandell and S., 2015). For example, if only people with a high income has answered the survey, this is taken into account when estimating the results. Both of these strategies can potentially consume a lot of time and resources (Japek et al., 2001).

As described above, one way of preventing respondents from dropping out is to write adequate questions. According to Fowler there are five challenges in writing adequate questions in surveys (Fowler, 1995):

- Defining the goal of the survey, specifying what kind of answers are needed to meet the goals and after that constructing questions to achieve these answers.
- Ensuring that all respondents have a shared, common understanding of the meaning of the question. Specifically, all respondents should have the same understanding of the key terms of the questions, and their understanding of those terms should be the same as that intended by the person writing the questions
- Ensuring that people are asked questions to which they know the answers. There should not be any barriers to knowing the answers.
- Asking questions that respondents are able to answer in the terms required by the question
- Asking questions respondents are willing to answer accurately

How to write adequate questions is important to have in mind when designing a chatbot to be used for conducting surveys. One of the main challenges in this project is to use questions that fits the conversational medium of chatbots.

Mentioned earlier, a commonly used strategy to make people respond to websurveys is to send reminders. In telephone interviews, dropouts can be reduced by contacting the respondents that were unavailable or did not respond the first several times (Strandell and S., 2015).

Another way of reducing dropouts is to make sure that the respondents have an interest in responding to the survey (Galesic, 2006). Respondents who are more interested in the survey topic may be less prone to drop out. The interest in the topic in general and the topic in each question in the survey might determine if the respondent will complete the survey or not.

2.2 Net Promoter Score

Net Promoter Score (NPS) was first introduced by Frederick Reichheld in 2003 (Grisaffe, 2007). The idea is that a summary number from one customer survey question can be used as a basis to measure customer loyalty (Grisaffe, 2007). Customers answer the question: "On a 0-10 scale, how likely is it that you would recommend this business to a friend or a colleague?". Customers that rate the company between 0 and 6 are called *detractors*, customers rating 7 or 8 are called *passively satisfied* and customers rating 9 or 10 are called *promoters*. The scale is shown in Figure 2.2. The NPS is calculated by taking the percent of promoters minus the percent of detractors. For example, if 50 percent of the respondents have rated the company 9 or 10 and 30 percent of the respondents have rated the company 6 or less, the NPS is 20.

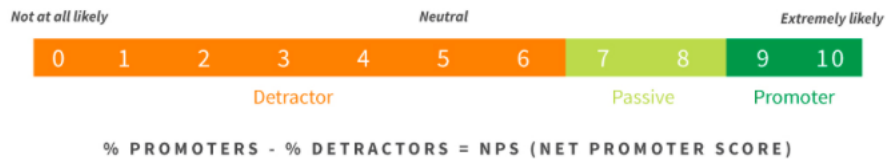


Figure 2.2: The NPS scale (Satmetrix Systems, Inc, 2017).

Many companies have adopted the NPS concept, including American Express and Microsoft. One of the reasons for its success is its simplicity and its claims of links to profitability (Grisaffe, 2007). Net Promoter Score is an interesting measurement of customer loyalty that could be used in chatbot technology.

2.3 Chatbot technology

The use of intelligent agents, such as chatbots, for commercial purposes has soared in recent years (Tsvetkova et al., 2016), and the deployment of new chatbots is at a steady increase (Radziwill and Benton, 2017). One of the more popular examples is Siri – the personal assistant developed by Apple (Lemon, 2012). The benefits of utilizing robotic intelligent agents compared to human personnel are many, but some in particular are reduced time-to-response, enhanced customer service and increased customer engagement (Radziwill and Benton, 2017).

In order to provide a service for running automated conversations, such as chat-like surveys, one must achieve a deep understanding on the development of communicating agents. In the following chapter the technicalities of intelligent agents such as chatbots, as well as their practical usage, will be discussed.

2.3.1 Intelligent agents

The formal definition of an intelligent agent is an elaborate one. It is generally agreed upon that it is a system that thinks and acts, but the many definitions vary in terms of whether it thinks or acts "rationally" or "like humans". In practice, an intelligent agent uses sensors to receive information about the environment it is in, chooses a best action to take based on the information received, and then uses its so called effectors to perform the action (Russell and Norvig, 2010). An illustration of how the intelligent agent works can be seen in Figure 2.3

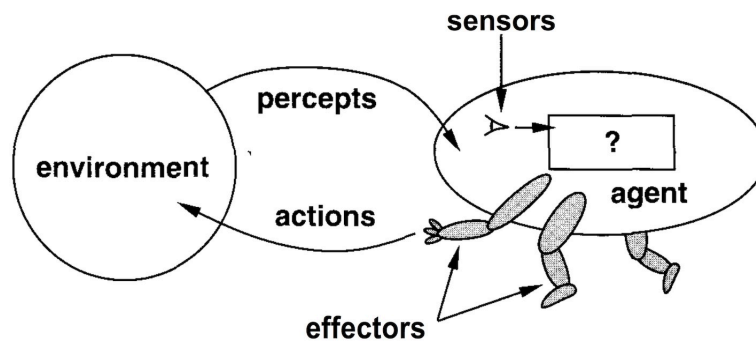


Figure 2.3: The general main components of an intelligent agent (Russell and Norvig, 2010).

There are many classes of intelligent agents, but this project is primarily focused on a specific type called conversational agents, or chatbots for short (Radziwill and Benton, 2017). Where a human agent has ears for listening and a brain for thinking, a chatbot has digital inputs which receive information and a programmed decision engine to act upon it. The decision engine could be deterministic as a series of conditional statements, or probabilistic as a chain of numerical calculations (Russell and Norvig, 2010).

An early example of a chatbot with a deterministic decision engine is Eliza, developed in the 1960's. Based on keyword matching, the agent searched for certain words in the given text input and responded accordingly (Russell and Norvig, 2010). More recent chatbots, such as Apple's Siri, often employ a mixture of deterministic and probabilistic models (Aron, 2011). One reason being that this induces more flexibility in terms of handling spelling errors or ambiguity in language.

In this sense, the development of a surveying chatbot is done best by using a combination of different models. Despite the fact that a personal assistant chatbot and a surveying chatbot has considerably dissimilar purposes, similar decision engines can still be used in both agents, with only minor changes in the way the chatbot produces output. The technical details of how these models operate is a common theme in natural language processing, and will be further outlined in the next section.

2.3.2 Natural language processing

The field of natural language processing (NLP) is concerned with the interaction between computers and human language, or on the more technical side, parsing and analyzing large language corpora (Pascal, 2007). The technicalities of a natural language processing model differ a lot depending on what task it is trying to solve. This chapter however, will mainly be focused around components involved in the development of a surveying chatbot. First, a few common NLP tasks are listed, then an explanation of how a probabilistic NLP model might be constructed, is given.

Natural language processing can be applied in many different tasks, on the syntax level in the form of parsing and stemming, and on the semantic level in the form of classification or entity recognition

(Nadeau and Sekine, 2007). Parsing and stemming are tasks related to cleaning input and normalizing word inflection, respectively. In the context of a chatbot, these tasks are most frequent when transforming the data received as input so that the decision engine can read it. Models aimed at solving these tasks range in complexity from advanced neural networks to simple rule-based models, one such example being the Porter Stemming Algorithm (Porter, 1980).

In contrast to parsing and stemming, classification and entity recognition are tasks rather related to the semantics of language. One example of a classification task is sentiment analysis, in which the NLP model is supposed to correctly annotate text with a numerical score describing its sentiment on a scale between negative and positive. Classification models are especially interesting in the development of surveying chatbots since they allow the chatbot to choose the next question to ask based on how answers to previous questions are classified. NLP tasks pertaining to analyzing the semantics of text are oftentimes more difficult to solve due to the many dimensions of semantics compared to syntax. When analyzing syntax, a word is always a word, but when analyzing semantics, a word can have different interpretations depending on context.

Many NLP models are based on mathematical equations. In the sentiment analysis task, one could for example make use of Bayes' theorem to calculate the probability that a word appears in a positive context, and thus decide on the sentiment of the word (Bishop, 2006). The task could also be solved using a neural network approach, in which the text is sent through layers of mathematical calculations which are consolidated into a final sentiment score (Bishop, 2006). In spite of the apparent dissimilarities between the two approaches, they both require training and testing before they can be used in production. Below follows a more technical description of how such a model is developed and used.

In the case of a surveying chatbot, one valuable feature is for the bot to be able to interpret different types of "yes" and "no"-answers. A somewhat simple solution is to declare two functions $p_1(\mathbf{x})$ and $p_0(\mathbf{x})$ defining the probability that a vector \mathbf{x} of words is a "yes" or "no"-answer, respectively. The goal is to define these functions so that all "yes"-answers, such as $\mathbf{x} = ["yes", "you", "can"]^\top$, gives a very high probability when applied to the function p_1 , and on the other hand a very low probability when applied to p_0 . The opposite should hold for word vectors of a "no"-answer such as $\mathbf{x} = ["no", "definitely", "not"]^\top$. This kind of natural language processing model is denoted as a probabilistic classifier, and there are a variety of such models to choose from. A few examples are naive Bayes classifiers, support vector machines, or neural networks (Bishop, 2006).

After a model is chosen, its parameters must be tuned for the specific task which the model is supposed to solve. This is called training or learning. In supervised learning, which is a branch of training often used with classification models, the model is fed a large set of samples, and the produced output is compared to expected output. If there is a difference between produced output and expected output, the parameters are tuned proportionally. In practice, the training phase is fully automated, and the parameters of the model are tuned using mathematical calculations. A classifier designed to decide whether a response is a "yes" or "no"-answer might perform well in that specific task, while still having a disastrous performance if it is used in trying to classify whether a statement is positive or negative. This is because the parameters of the model are often exclusively tuned for one specific task, which in this case is classifying "yes"- and "no"-answers. This means that for each task, a new model needs to be developed, and new data to feed it with needs to be found (Russell and Norvig, 2010).

2.4 SMS as a medium for surveys

Short Message Service (SMS) is a standardized way of communicating text messages over a GSM network and was first introduced in the 1980's (ETSI, n.d.). This paper will treat the terms SMS and

text messaging as synonyms, therefore when "texting" or "text-message" is mentioned the technology known as SMS is referred to.

The subject of SMS is of interest to this project in particular for two of its traits. First, the number of mobile cellular subscriptions per 100 people is over 98 (The World Bank, 2015), and since SMS is device independent, it works on almost all mobile phones (Hillebrand et al., 2010). Second, SMS has an inherent cost to distribute, encouraging usage with restriction and avoiding spam when compared to, for example, email. These traits could thus be attractive, from a business standpoint, when distributing conversational surveys to respondents.

2.4.1 Previous work on SMS surveys

A study named "Precision and Disclosure in Text and Voice Interviews on Smartphones" performed in 2015 showed that text-message based surveying resulted in more qualitative answers, more differentiated answers and more disclosure of socially undesirable information, when compared to traditional phone-interviews (Schober et al., 2015). This was shown by comparing text-messaging both to automated phone surveys as well as manually performed ones, with quality of answers defined mainly as precision of numerical answers (how many numbers were rounded). The authors argue that this could be attributed to the fact that responding to a text-message is much more convenient than answering the phone and allows responding while multi-tasking.

The report mentioned above is of interest because it gives indication that there is clear value in using text-message based surveying rather than traditional phone surveys. However, the study presented here differs from this thesis in that it does not leverage the use of intelligent agents to create a more natural texting experience.

2.4.2 How to send SMS programmatically

When using SMS as a medium for automated surveys, sending the SMS messages manually from a mobile phone is not a scalable solution. One solution for sending SMS messages programmatically using a computer is to use an SMS gateway, which is a device allowing for transmission or receipt of SMS messages without the use of a mobile phone (K.Katankar and Dr.V.M.Thakare, 2010). Modern API:s, such as Twilio or 46elks, expose the functionality of an SMS gateway through HTTP, which allows for easy integration by developers.

When using an API to send SMS, it is possible to use alphanumeric sender ID:s. When using this, the person receiving the SMS will see a word, such as a company name, as the sender of the SMS, instead of a regular phone number. This is often used by companies when sending out promotional SMS. When using alphanumeric sender ID:s it is not possible for the respondent to reply to the SMS (infobip, 2017), making alphanumeric sender ID:s unsuitable for two-way SMS as required when conducting surveys in a conversational manner.

2.5 Sustainability

The definition of corporate sustainability is in the book "Beyond the Business Case for Corporate Sustainability" described as: "Meeting the needs of a firm's direct and indirect stakeholders without compromising its ability to meet the needs of future stakeholders as well" (Dyllick et al., 2002). A common way to describe sustainability is in the three defined dimensions of corporate sustainability, economic, environmental and social sustainability (Adams, 2006). In the following subsections the

three dimensions of corporate sustainability are described in more detail, and it is discussed how different areas of this project relates to the three dimensions.

2.5.1 Economic Sustainability

Dyllick et al. defines economic corporate sustainability as "Economically sustainable companies guarantee at any time cashflow sufficient to ensure liquidity while producing a persistent above average return to their shareholders" (Dyllick et al., 2002). The reasoning behind this definition is that a company ceases to exist when there is no economic capital left. However, in reality a company will become economically unsustainable long before that. In order for a company to be economically sustainable, it has to be able to handle multiple types of economic capital, for example, *financial capital*, *tangible capital* and *intangible capital*.

This goal of this project relates to economic sustainability by proposing a solution that eliminates waste of financial, tangible and intangible capital in companies. If data can be collected about customer opinions in a more sufficient way, misinvestments caused by decision making based on bad or non-existent data could be minimized. In addition to minimizing misinvestments, high quality customer data can also help improve existing products and processes within a company. Thus adding value to both the company and society and by ensuring that the company focuses resources on producing tangible and intangible capital that customers actually demand.

2.5.2 Environmental Sustainability

Environmental sustainability is perhaps most commonly what people refer to when mentioning sustainability in their everyday lives. Environmentally sustainable companies can be defined as companies that only use natural resources below their natural rate of reproduction, or below the development of substitutes (Dyllick et al., 2002). Along with this the companies neither cause emissions that accumulate in the environment at a higher rate than the natural capacity of the ecosystem, or engage in activities that degrades eco-system services.

If this project is successful, it will relate to environmental sustainability by reducing the use of paper surveys in exchange for a chatbot solution. This is done by developing a product that gives the respondents a better result and experience than paper surveys. In doing this the project will reduce the use of natural resources by companies, in this case trees, possibly bringing their usage under the natural rate of reproduction.

2.5.3 Social Sustainability

Social sustainability can be understood by dividing it into two types of capital, *human capital* and *societal capital* (Dyllick et al., 2002). A socially sustainable company can then be defined as a company which adds value to the communities in which it operates by improving human capital of the individuals within that community, as well as furthering its societal capital. Managing social capital in a sustainable way means to make sure that all stakeholders in a company understands why a company is doing something, as well as broadly agree that action is justified. Human capital on the other hand primarily relates to aspects such as skills, motivation and loyalty of employees.

This project is focused on developing a product that aims to be more user friendly in terms of answering surveys. By creating a more personalized experience the survey will appear more as a conversation and could possibly provide a more positive experience where respondents feel appreciated. If the project is successful it could increase response rates from groups of society that are not reached with surveying technology today, helping boost equality and diversity of both societal and human capital.

This section has described the theory behind surveying techniques, intelligent agents, text messaging and sustainability. These theoretical subjects, combined with the methodology described in Chapter 3, provide a basis required when trying to deliver a solution to some of the problems within the survey industry.

Chapter 3

Methodology

In this chapter the methodology that was applied in the project is explained in more detail, and the reason for using this particular methodology is discussed. In Section 3.1, the Lean Startup Methodology is described and discussed. In Section 3.2, Business Model Generation is described along with the tools used when applying this methodology in the project. In Section 3.3, how interviews were performed in order to collect data for the project is described. In Section 3.4, A/B testing and how it was applied in the project is described.

3.1 The Lean Startup Methodology

This project is focused around developing a product where there are extremely high uncertainties, both about whether a problem actually exists, as well as whether a product that solves these problems can be built. Because of this, the Lean Startup Methodology introduced in *The Lean Startup* by Eric Ries, will be applied. This methodology provides a framework for startups, defined as a company operating under conditions of extreme uncertainty, in order to eliminate waste related to developing products and businesses (Ries, 2011). The theory takes inspiration from the Toyota production system described, for example, in the book *The Toyota Way* (Liker et al., 2009).

Figure 3.1 illustrates one of the core concepts introduced in the Lean Startup Methodology, the build-measure-learn feedback loop. It describes how uncertainties can gradually be eliminated with minimum waste, by breaking a business model into smaller parts where hypothesis about the different parts can be formulated and validated. This starts by working the feedback loop in reverse order.

The loop is started at the learn step, where hypotheses that express the learning that needs to be done are formulated. These hypotheses should be designed in such a way that they can gradually reduce uncertainties about the startups business model as they are validated or invalidated. The hypotheses can relate to anything regarding the startup, such as what problems customers are facing, if a proposed product can solve identified problems, how a service should be priced, and so on.

After one or several hypotheses have been formulated the next step is the measure step in which various variables are determined that supports measurement. The idea is that these variables can determine whether or not a hypothesis can be validated. To test these measurements various tests are set up in order to validate or invalidate a previously formulated hypothesis.

To support the measure step *The Test Card* will be utilized, seen in Figure 3.2, a tool used to state hypothesis, assumptions, how to test the hypothesis, how it should be measured and what is required to validate or invalidate hypothesis. As well as *The Learning Card*, seen in Figure 3.3, used in the

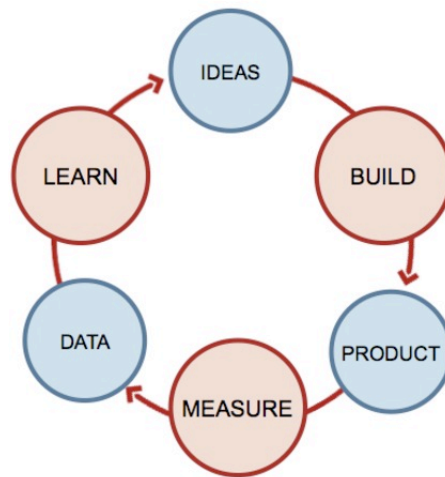


Figure 3.1: The build-measure-learn feedback loop (Ries, 2011).

learn step to state which hypothesis were tested, what was observed, what was learned and what the next steps are.

Test Card		Strategyzer
Test Name	Deadline	
Assigned to	Duration	
STEP 1: HYPOTHESIS		
We believe that		Critical:
STEP 2: TEST		
To verify that, we will		Test Cost: Data Reliability:
STEP 3: METRIC		
And measure		Time Required:
STEP 4: CRITERIA		
We are right if		
Copyright Strategyzer AG The makers of Business Model Generation and Strategyzer		

Figure 3.2: Test Card (Strategyzer, 2017).

Learning Card		Strategyzer
Insight Name	Date of Learning	
Person Responsible		
STEP 1: HYPOTHESIS		
We believed that		
STEP 2: OBSERVATION		
We observed		Data Reliability:
STEP 3: LEARNINGS AND INSIGHTS		
From that we learned that		Action Required:
STEP 4: DECISIONS AND ACTIONS		
Therefore, we will		
Copyright Strategyzer AG The makers of Business Model Generation and Strategyzer		

Figure 3.3: Learning Card (Strategyzer, 2017).

In the build step it is already known what is needed to be learnt and how to validate this learning. The purpose of the build step is to build an MVP that can be used achieve this validated learning.

What is important here is that no more than exactly what is required to perform the testing is built, thus reducing waste from building features that later might prove unnecessary.

When the loop has been set up it can be worked through in the order build, measure, learn. First an MVP is built, which is then used to measure some metric to validate learning, and then the results are analyzed in order to validate or invalidate hypotheses. The learnings usually result in new hypotheses that in turn need to be validated, which starts the loop all over again. If a business critical hypothesis is invalidated and the new hypotheses change the business model to a large extent, it needs to be decided whether to pivot away from the business model or persevere. (Ries, 2011).

By continuously testing and validating hypothesis, this methodology allows for spending as little time as possible developing product features that ultimately prove useless for the customers. As using chatbots for surveys is something that has not been done before, uncertainties about both market and product are high, making the traits of the methodology a good fit to this particular project.

3.2 Business Model Generation

To compliment the Lean Startup Methodology, tools from *Business Model Generation*, a business strategy and economics handbook by Alexander Osterwalder and Yves Pigneur (Osterwalder and Pigneur, 2010), will be used in this project. The book provides a strategy framework for businesses. In this particular project the theories and tools presented in the book provide a way to structure the strategic work and help in identifying and formulating hypothesis.

3.2.1 Business Model Canvas

One of the concepts introduced by Osterwalder and Pigneur is the Business Model Canvas, seen in Figure 3.4. The purpose of the canvas is to provide a tool that allows the creation of a perceptible model of a business idea. In this project the Business Model Canvas was used as a foundation for the learn step in the build-measure-learn feedback loop explained in Section 3.1. The canvas was used to structure and visualize a potential business model for Surview, as well as to identify different hypothesis about specific parts of the business model.

The canvas is split in nine parts that are tackled in the following order:

1. *Customer Segments*. This part of the canvas defines who the customers are and why they would buy the product. In order to create a successful business, it is important to understand who the customers are and how the business model satisfies the customers needs. This is explained in more detail in Section 3.2.2 where the Value Proposition Canvas is explained.
2. *Value Propositions*. Here the problems or needs that the business want to solve are outlined. The value proposition should describe what pains the product is solving or what gains the product is giving the customer. This too is explained in more detail in Section 3.2.2.
3. *Channels*. In this section the channels that are most suitable for delivering the value proposition to the chosen customer segments are defined.
4. *Customer Relationships*. Defines the type of relationship between the company and the customers.
5. *Revenue Streams*. Defines how a company generates income from the chosen customer segments.
6. *Key Resources*. This is the resources a company is going to use to create value.
7. *Key Activities*. This is the tasks that are viable to perform the business model.

The Business Model Canvas				
Designed for:		Designed by:		On: dd/mm/yyyy
Iteration #				
Key Partners	Key Activities	Value Propositions	Customer Relationships	Customer Segments
	Key Resources		Channels	
Cost Structure		Revenue Streams		

Figure 3.4: Business Model Canvas (Strategyzer, 2017).

8. *Key Partnerships*. The key partners are the suppliers and partners of the company.
9. *Cost Structure*. This is the key costs that the company is going to have.

The first 5 parts define how the value from the business idea is delivered to the customer, and the last 4 parts define how the business works internally.

3.2.2 Value Proposition Canvas

The Value Proposition Canvas, as shown in Figure 3.5, can be viewed as a zoomed in canvas on the customer segments and value proposition in the Business Model Canvas. The Value Proposition Canvas allows a more in depth analysis on what the customer actually wants and how the product *fits* these problems or needs. The canvas is split into two parts, the *Value Map* to the left and the *Customer Profile* to the right. The Customer Profile describes the customer, and the Value Map describes the product. The different parts of the Value Proposition Canvas are here described by using a chef at a restaurant as an example.

- *Customer Jobs*. Describes what jobs the customer is trying to get done. This would for a chef be to deliver tasty food to his guests.
- *Pains and Gains*. A pain is something that the customer perceives or could perceive as trouble before, during or after a job, and a gain is something that would benefit the customer before, during or after a job. For a chef a pain could be that he often burns food he forgot in the oven, and a gain could be more tasty food to serve to guests.
- *Products and Services*. Describes what products and services will be used and served to the customers. This could for a chef be a new spice or an automated timer to fix on an oven.

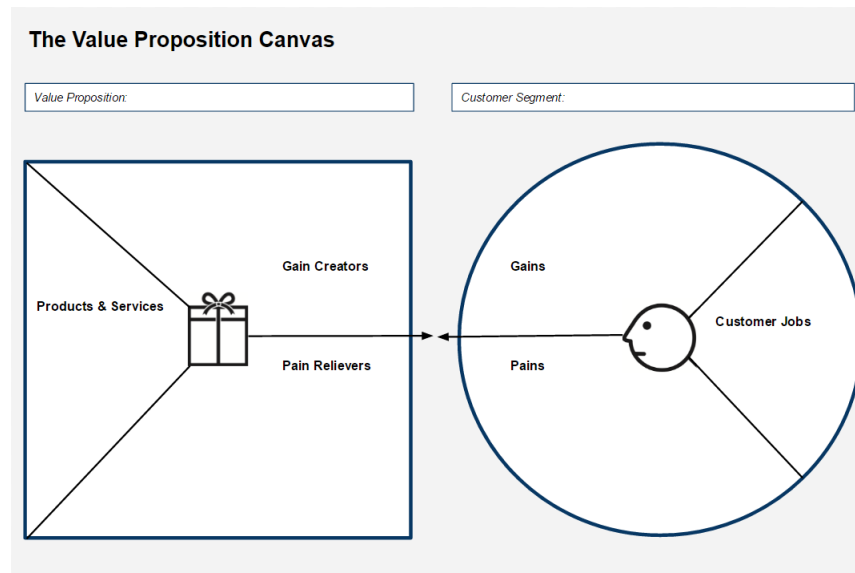


Figure 3.5: Value Proposition Canvas (Strategyzer, 2017).

- *Gain Creators and Pain Relievers.* Describe how the products and services actually eliminate pains or create new gains. The new spice will create tastier food and the automated timer will eliminate the pain of forgetting food in the oven.

3.3 Interviews

Talking to customers is a central part of the Lean Startup Methodology (Ries, 2011). By talking to customers, a startup can validate or invalidate hypotheses about its business model without having to develop a finished product or service. This allows the startup to iterate through the build-measure-learn feedback loop at a faster rate, by minimizing time and money spent on technical development.

During this project interviews with potential customers were performed in order to validate hypotheses about different business models for Surview. In order to get the maximum possible value out of these meetings, techniques from The Mom Test (Fitzpatrick, 2013) were used.

The Mom Test is a handbook that contains practical advice on how to do customer interviews. As previously discussed in Section 2.1, one thing that can largely influence the answers given in an interview is the way questions are asked. According to Fitzpatrick, the three most important things for a startup to have in mind when asking questions during a customer interview are:

1. Talk about the customer's life instead of the idea
2. Ask about specifics in the past instead of generics or opinions about the future
3. Talk less and listen more

Fitzpatrick also emphasises the importance of pushing for commitment at the end of a meeting, in order to make sure that the customer that is being interviewed actually has an interest in the product or service that the startup is developing. A commitment can come in several different form, but the most common are:

1. Risking reputation, for example by sharing contact information to a valuable contact

2. Spending more time, for example by scheduling another meeting for further discussion
3. Giving up money, for example by paying to test the startup's product or service

If the outcome of a interview has one of the three commitments listed above, the meeting was successful which outlines the process going forward.

3.4 A/B Testing

A/B testing is a method of testing that can be used to compare two different versions of a product to determine which of them performs the best. This method of testing can be used to iteratively develop a product in a data-driven way, where it is ensured that each new version performs better than the previous.

When doing A/B testing, the first step is to define the different versions that should be tested. This could for example be two different ways to ask the first question of a survey. When the different versions have been defined and implemented, they are distributed to different subsets of customers, and after some amount of time the results of the different versions are measured using one or more pre-defined metrics. In the example of testing different introduction questions of a survey, one such metric could be the number of answers to the survey. When the test is concluded, the version that performed the best in regards to the pre-defined metrics is selected as the winner, and all the other versions are discarded. The winning version can then be compared with new versions using another round of A/B testing, and the whole process is repeated all over again. This can be repeated indefinitely or until a sufficiently good result has been observed during the tests.

When doing A/B testing, it is important that the different subsets of customers that are exposed to different versions of the product are of sufficient size. If the subsets are too small, the results from tests can not be trusted from a statistical standpoint, which makes it difficult to draw conclusions and learn from tests.

A/B testing was used in this project to compare the proposed product with existing ways of conducting surveys, and also to compare different ways of asking questions in a conversational format. This will be explained in more detail in Section 4.4.

Chapter 4

Process

This chapter explains how the project was carried out. Section 4.1 starts by describing the starting point of the project, and the process is then divided into four major phases. First, Section 4.2 describes how an initial business model was hypothesized. Second, Section 4.3 describes the phase of contacting the customer segment defined as survey consultants. Third, Section 4.4 describes how testing with the consultants were performed. Finally, Sections 4.5 and 4.6 describe how a pivot of customer segment was carried out. Each section ends with a discussion, where the results and learnings are discussed. Since the work was completed in an iterative manner, each phase uses the results and learnings of the earlier phases as a starting point.

4.1 Previous work on Surview

Surview started as a project at Gothenburg Startup Hack in April 2016. Gothenburg Startup Hack is an event where developers and entrepreneurs get together for a day to build prototypes for their ideas (Gothenburg Startup Hack, 2017), and during this event a prototype for conducting surveys as conversations over SMS was built.

This prototype included functionality for asking questions and receiving answers via SMS, a landing page where sessions could be started for a pre-defined survey, as shown in Figure 4.1, and a simple dashboard where received answers could be viewed, as shown in Appendix Figure A.1 to Figure A.3. The AlchemyLanguage API (AlchemyAPI, 2017) was used to make a survey feel more like a conversation, by routing answers to different questions depending on the sentiment of the answer. This only worked for the English language, so only surveys done in the English language were supported.

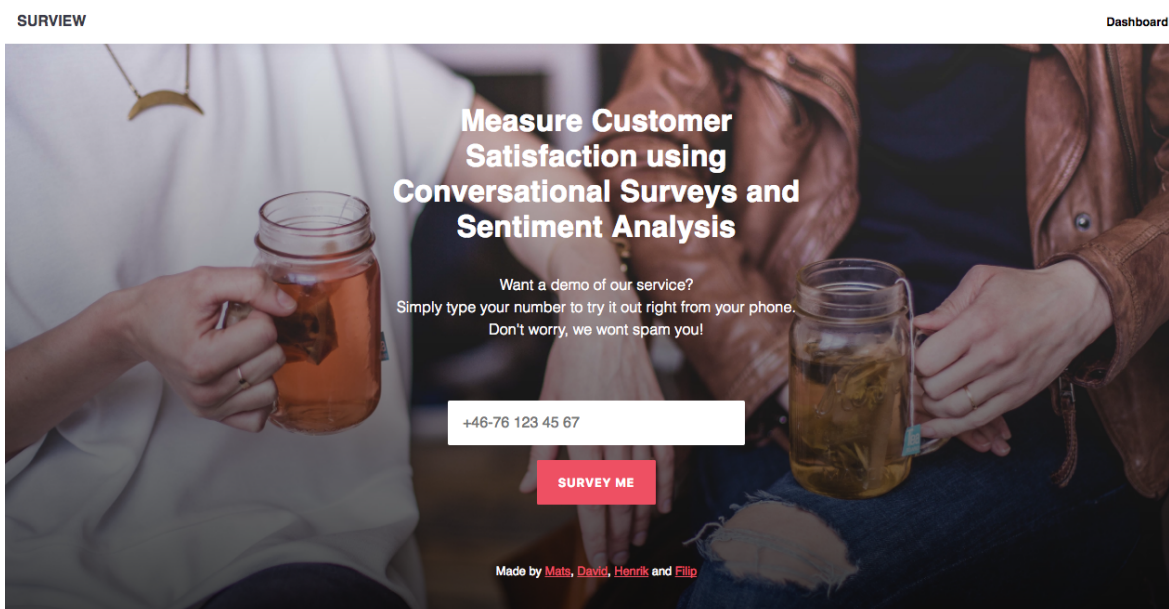


Figure 4.1: The landing page built for Gothenburg Startup Hack.

In the fall of 2016 the product was further developed into a MVP. One example survey conducted with this MVP can be seen in Figure 4.2. `AlchemyLanguage` was replaced by an internally developed algorithm that could route answers to different questions depending on polarity, sentiment, and NPS-score. This algorithm also supported the Swedish language. In addition, the dashboard was developed with more functionality for creating and modifying surveys, creating sessions for surveys and viewing received answers. The updated dashboard can be seen in Figure 4.3.

Internally, surveys built using this tool had the shape of a decision tree. Every survey had a first question that was sent to the respondent when a session was started. When an answer arrived, the next question was sent out, and the same process was repeated until the survey was over, or the respondent stopped answering. To make this feel more like a regular conversation, the next question was chosen depending on the incoming answer, and this is where the decision tree comes in. Each question had a type, and each question type had different rules for which question to ask next. In Appendix Figure 4.4 a flowchart can be seen that demonstrates how an example survey works. The rest of the dashboard can be seen in Appendix Figure A.4 to Figure A.6.

In the MVP there were five different types of questions – sentiment, yes/no, NPS, static and final. For a sentiment question, different next questions could be asked depending on whether the answer was positive, negative or neutral. For the yes/no question, the polarity of the answer was analyzed to determine whether the respondent was answering yes or no, and the next question was chosen depending on the result. This was very useful for asking questions like "Is it okay if we ask you some questions?". For a NPS question, the answer was scanned for a number from 0-10, and the next question was chosen depending on whether the respondent was passive, a detractor, or a promoter. Static questions always lead to the same next question, regardless of the answer, and final questions indicated that a survey had been completed and there were no more questions to ask.

If an answer did not correspond to any of the rules for a question, for example when answering "Maybe" to a yes/no-question, or when the routing algorithm was not sure of how to classify an answer, it resulted in the session being paused. This meant that no next question would be sent to the respondent until the session was unpaused, which was only done when a new answer that corresponded to one of the rules was received. Answers could be added to a session through the dashboard, which

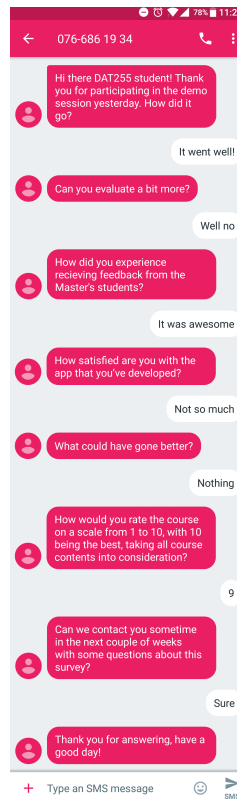


Figure 4.2: A survey conducted with the first MVP.

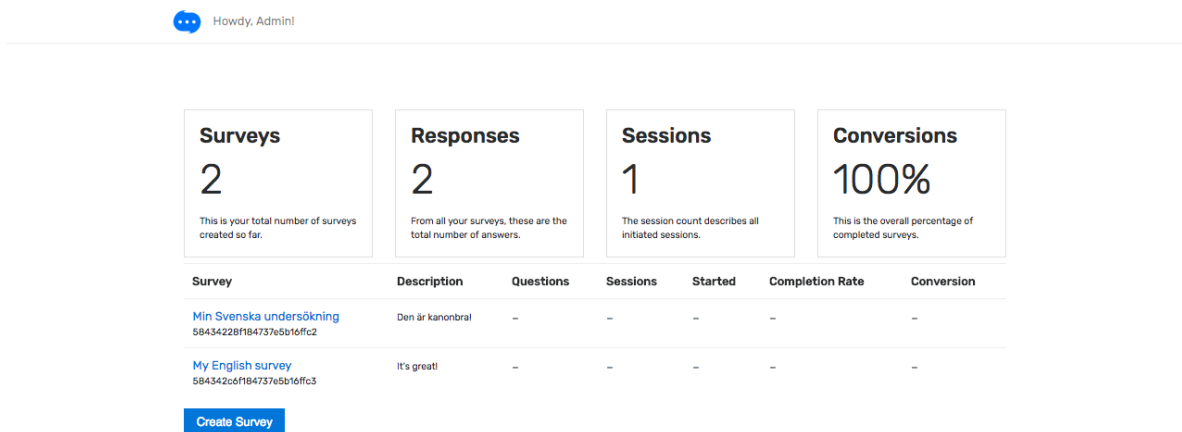


Figure 4.3: The landing page for the dashboard in the first MVP.

Flowchart

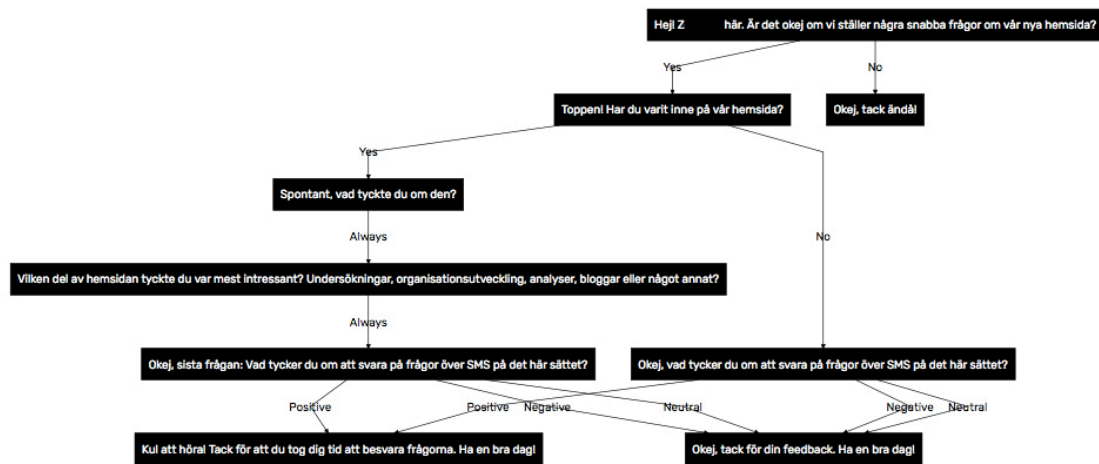


Figure 4.4: Flowchart showing an example of how a survey can be built.

allowed for manual unpausing of sessions by an administrator by adding an answer for which it was known that the algorithm would give a correct classification.

This way of designing surveys allows for great customization, but it requires that the creator has some expertise in how to ask questions in this particular format. Asking just a single question the wrong way could throw off the entire flow in a survey, which in turns could cause a respondent to stop answering.

Creating sessions for a survey in the MVP could be done either through the dashboard or through an API. The idea was that sessions for trialing purposes could be created through the dashboard, and that the API would be used by external companies to create sessions for their customers when the service was used in production.

Meetings were held with a handful of companies in parallel to developing the product in order to learn more about how companies work with surveys and customer feedback today. During these meetings it was discovered that most companies are not satisfied with just receiving collected data, but rather need extensive analysis of the data in order to make educated decisions. It was also discovered that there are a lot of consultant companies that help other companies to set up and maintain solutions for gathering, analyzing and taking actions from market research and customer feedback.

This section described the work that had been done on the product prior to starting the project. The following sections will describe the work that was done during the project, and explain all the learnings that were achieved during the process.

4.2 Coming up with a potential business model

The previous work on Surview had mainly been focused on developing a great product, and not much effort had gone towards thinking about how to design a sustainable business around it. This was why, before any new work was started, a Value Proposition Canvas and a Business Model Canvas were

set up in order to visualize a potential business model for Surview. These canvases were then used to identify hypotheses about the business model, which were later prioritized and tested using the build-measure-learn feedback loop as described in Section 3.1.

4.2.1 Designing a Value Proposition Canvas

In this section the thought process behind creating an initial Value Proposition Canvas is described. The resulting canvas is shown in Figure 4.5.

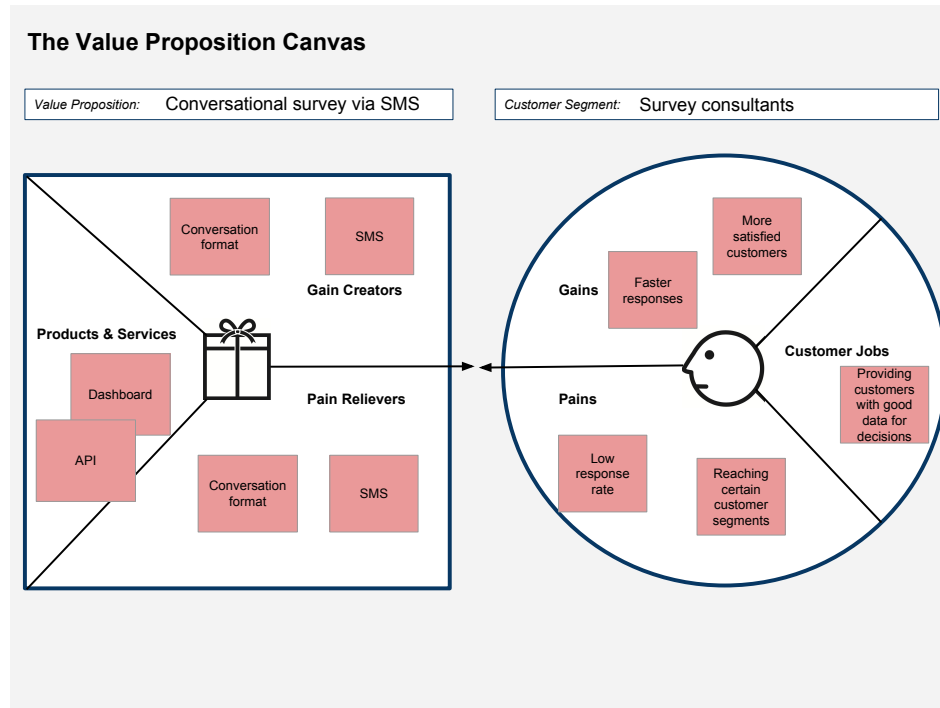


Figure 4.5: Initial Value Proposition Canvas. Notes in red indicate parts of the canvas that have not yet been validated.

It was hypothesized that the most likely customer segment for the product that had been developed would be survey consultants. There were two main reasons for this. The first reason was that a lot of companies that had been interviewed during the previous work required extensive analysis of collected data. Developing systems for this kind of analysis takes a long time, and the idea was that Surview could provide only a tool for collecting data, and that the collected data could then be inserted into the survey consultants' existing tools for further analysis. This would decrease the amount of time needed to develop a product that could be used by real customers, and also allow companies to use tools that they already know for working with the data, making the effort needed to switch from another system as little as possible. The second reason was that setting up surveys in a conversational format required a lot of knowledge of how to ask adequate questions. This was not necessarily knowledge that regular companies had, but it was believed that the survey consultants would have enough expertise in the area in order to set up adequate surveys without needing too much assistance. This was why *Customer Segment* in the Value Proposition Canvas was defined as *survey consultants*.

Survey consultants provide other companies with solutions for market research and customer feedback. There can be many reasons for hiring a survey consultant, but in the end it usually boils down to wanting data as a foundation for making qualified decisions in order to improve the business. This was why *Customer Jobs* in the Value Proposition Canvas was defined as *providing customers with good data for decisions*.

Research about problems in the surveying industry, as described in Section 2.1, together with previous interviews with companies, gave indications that low response rates and inability to reach certain customer segments are two problems that exist in the survey industry today. It was therefore believed that these two problems were pains that survey consultants want to solve. It was also believed that if customers feel like their opinions matter, for example when filling out a survey and seeing that their answers lead to actions, the customers will get a more positive image of the company that sent out the survey, leading to more satisfied customers. Increasing customer satisfaction should be a good selling point for the consultants, which was why *more satisfied customers* was identified as a potential gain. *Faster responses* was also identified as a potential gain, with the reasoning that it would be valuable for companies to receive data more quickly, for example by making it easier to turn dissatisfied customers into satisfied customers before they have time to switch to a competitor or complain to friends and family.

With the customer part of the canvas in place, the products and services part was defined as *Dashboard* and *API*. The dashboard would be used to create and manage conversational surveys, and also to view and make exports of received answers. The API would be used to create sessions for surveys created through the dashboard, and the idea was that the survey consultants could integrate their existing systems with the API in order to start sessions whenever they deemed fit. This was in line with the product that had already been developed, as described in Section 4.1.

To complete the work with the Value Proposition Canvas, the conversational format for surveys together with SMS as a medium were identified as both gain creators and pain relievers. Asking questions via SMS and allowing the respondent to answer directly by replying with a new SMS, instead of having to click a link and opening the survey in a web browser, was believed to lead to faster responses compared to existing methods. The conversational format was expected to yield more satisfied customers, since when using this format it is possible to instantly acknowledge the respondent's opinion by modifying the next question sent. The pain relief was expected to come from the fact that the SMS format along with the conversation would invite respondents to fulfill the survey and thus increase response rates. It was also hypothesized that the format would be suitable for reaching young people, as were identified as a challenging to reach customer segment in Section 2.1.

4.2.2 Designing a Business Model Canvas

With an initial Value Proposition Canvas in place, an entire possible business model could be visualised with a Business Model Canvas, using the Value Proposition Canvas as base. The resulting Business Model Canvas can be seen in Figure 4.6.

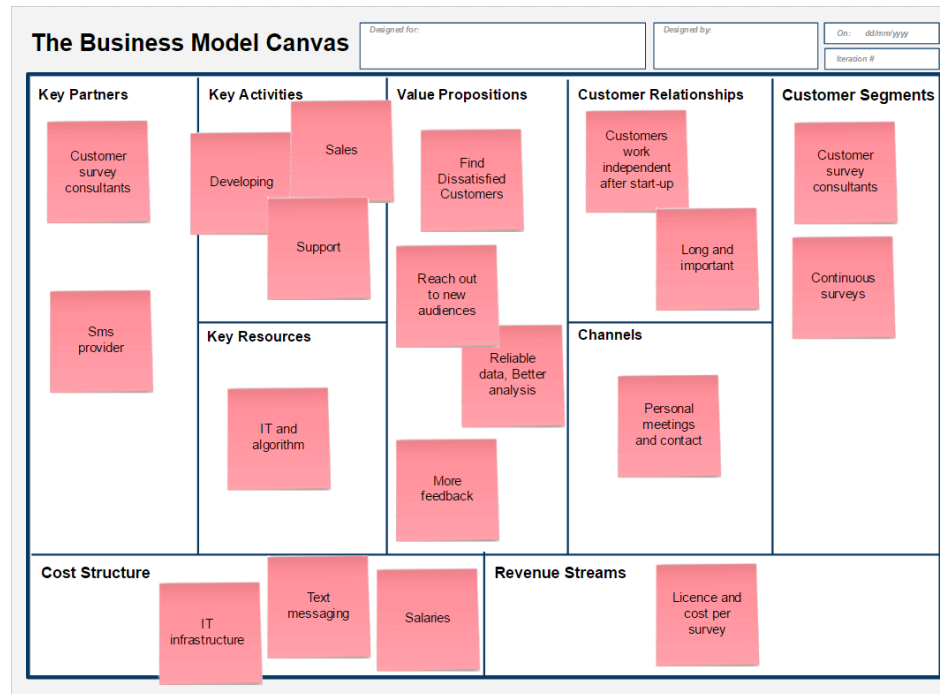


Figure 4.6: Initial Business Model Canvas. Notes in red indicate parts of the canvas that have not yet been validated.

After an initial Value Proposition Canvas had been designed, focus was on how to formulate hypotheses about the entire Business Model Canvas. Firstly translating the hypothesis from the Value Proposition Canvas into the value propositions and customer segments into the Business Model Canvas. The actual value for the customers were formulated as *Find Dissatisfied Customers*, *Reach out to new audiences*, *Reliable data*, *Better analysis*, *More feedback* as seen in Figure 4.6. The customer was, as formulated in the Value Proposition Canvas, *Customer Survey Consultants*. Here it was decided to also add *Continuous surveys* as an additional constraint on the customer segment. This was done in order to put a stricter specification on the customer segment, and because it was believed that conducting surveys as conversations via SMS would be more suitable for continuous surveys.

The rest of the hypotheses on the canvas were formulated, though they were very likely to change as the project progressed. Thus only a shallow analysis was performed on every hypothesis that was not related to customers segments or value proposition.

4.2.3 Initial hypotheses

From the Value Proposition Canvas and the Business Model Canvas initial hypotheses about the business model were set up. These were the hypotheses that were identified as necessary for the business:

- Surveys conducted in a conversational format over SMS give higher response rates than existing surveying methods
- Surveys conducted over SMS give faster feedback than existing surveying methods
- Surveys conducted over SMS reach certain customer segments that are difficult to reach today
- Surveys conducted in a conversational format over SMS result in useful data
- Respondents do not have a negative attitude towards receiving surveys via SMS
- Surveys conducted in a conversational format over SMS work best for shorter surveys, ongoing surveys and to get feedback from existing customers
- Low response rate is a problem that survey consultants want to solve
- Slow feedback is a problem that survey consultants want to solve
- Not getting answers from young people, busy people and "neutrals", is a problem that survey consultants want to solve
- Survey consultants can and want to buy and work with external tools that are not developed in-house
- Survey consultants can and want to work independently with external tools
- Survey consultants can sell better answer rates, ability to reach new customer segments and faster feedback to their customers
- License fee and a fee per survey is a good way to pay for the product

The first six hypotheses in the list above, related to the traits of SMS, were identified as important because it was critical for them to be true for the product to work. If they proved to be false, the proposed product would not work at all, and a new product had to be designed.

The hypothesis about consultants being willing to pay for higher response rates, faster feedback and reaching certain customer segments was deemed important because if this hypothesis proved to be false, it would be impossible to sell a product that addressed these problems to the survey consultants. If the hypotheses was true it would be a good indication that the problems were big enough for the customer segment to pay for a solution. The hypothesis that consultants can sell better answer rates, ability to reach new customer segments and faster feedback to their customers was also important, since if this was not the case the consultants would have no incentive to sell the product to their customers.

The hypothesis that consultants can and want to buy and work with external tools that are not developed in-house was important, since if this was not the case, it would be impossible to sell a new product to the consultants.

It was also important that the consultants could and wanted to work independently with external tools, since it was envisioned that the consultants would work independently with the product. If this was not the case, a lot of time and effort would need to be dedicated towards support and helping the consultants with using the tool, instead of focusing on just developing the tool. This was not the business model had in mind when designing the initial Business Model Canvas, so if this hypotheses proved to be false the business model had to be changed.

There are a lot of different survey consultants, and some work more with customer feedback, while some work more with market research. If it could be validated that surveys conducted in a conversational format over SMS worked better for shorter surveys, ongoing surveys and contacting existing customers, it would help in further segmenting the customer segment.

License fee and fee per survey was identified as a potential way to charge for the product. However, this was deemed as less important to validate at this point, since the pricing would not matter if the customer segment and value propositions proved to be inaccurate.

With canvases and hypotheses in place, the next step was to test the most critical hypotheses to see if they could be validated or invalidated. The process of doing this is explained in the following sections.

4.3 Talking with survey consultants

At this point, it was important to confirm the most critical hypotheses for the business, which were the hypotheses related to the chosen customer segment. If these hypothesis were proven to be invalidated, there would be no reason to start developing a product at all and a customer segment pivot would be necessary. The testing of the hypotheses related to the chosen customer segment was done by talking to potential customers, which in this case was survey consultants as defined in the Business Model Canvas and Value Proposition Canvas.

4.3.1 Setting up Learning and Measurement

Before customer interviews could be performed, hypotheses that could be validated by talking to customers were selected from the full set of hypotheses previously defined in Section 4.2.3. The selected hypotheses were:

- Low response rate is a problem that survey consultants want to solve
- Slow feedback is a problem that survey consultants want to solve
- Not getting answers from young people, busy people and "neutrals", is a problem that survey consultants want to solve
- Survey consultants can and want to buy and work with external tools that are not developed in-house
- Survey consultants can and want to work independently with external tools
- Survey consultants can sell better response rates, ability to reach new customer segments and faster feedback to their customers

To allow for reliable measurement, it was decided to perform meetings with at least ten consultancy companies. A hypothesis would be deemed validated if confirmed in at least five of these meetings. Doing this it was estimated that the collected data would be enough to validate or invalidate the formulated hypotheses. This was documented in test cards, see Appendix Figures: B.1, B.2, B.3, B.4, B.5 and B.6.

4.3.2 Building: Formulating questions

To verify the hypotheses, a necessary step is to talk to potential customers. A starting point was to contact potential customers in the set customer segment, mid sized customer feedback consultants. Moreover, a company landing page, as depicted in Appendix Figure A.14 and A.15, was built in order to improve the appearance of the business from an outside perspective. It was believed that this would improve the chances of getting in contact with the consultants.

The focus in the meetings was to ask questions in a way that would not affect the answers in any way, using the theory from The Mom Test as described in Section 3.3. Some of the questions that were asked were: "What are your problems today?", "How do you work today?", "Do you take in externally developed products?". For the entire questionnaire see Appendix Figure D.5.

4.3.3 Measuring and Learning

After meetings with ten companies, learning cards were used and five out of six hypotheses were validated. An overview of the results, and what companies validated which hypothesis, can be seen in Table 4.1.

Hypothesis tested	Low response rate is a problem that survey consultants want to solve	Slow feedback is a problem that survey consultants want to solve	Not getting answers from young people, busy people and "neutrals": is a problem that survey consultants want to solve	Survey consultants can and want to buy and work with external tools that are not developed in-house	Survey consultants can and want to work independently with external tools	Survey consultants can sell better response rates, ability to reach new customer segments and faster feedback to their customers	Agreed to test
Company Z	X			X	X		X
Company N	X	X		X	X	X	X
Company T	X	X		X			X
Company QB	X			X	X	X	
Company W	X	X		X	X	X	X
Company NG	X	X		X		X	
Company QS	X	X		X	X	X	
Company IC	X			X	X		X
Company AL*							
Company A**							
Total validations	8	5	0	8	6	5	5

*Company AL mostly worked with data analysis

**Company A had stopped using their surveying tools

Table 4.1: Table presenting the results from interviews with survey consultants. Green cells indicate that the company validated the hypothesis, red cells indicate that a hypothesis was invalidated.

For the learning cards, see Appendix Figures C.1, C.2 C.3, C.4, C.5 and C.6. The hypothesis about not reaching certain customer segments was not validated since it proved to vary a lot from type of survey, company performing the survey and medium. Learnings from the meetings was that there are some customer segments that are difficult to reach but its not a general problem for the entire customer segment. By identifying which customer segment this way of surveying reaches, data can be derived from that for further segmenting of the market.

The other five hypotheses were validated because the problems actually existed and the consultants actively tried and invested a lot of time and resources to solve these. For example some companies described how they would pay respondents in order for them to answer surveys and thus increase response rates. This was a strong indicator that the problems were important and that the survey consultants would pay to get them solved. After the meetings, a couple of the companies were interested in testing the product. According to the theory describes in The Mom Test, this is a great indicator of a "next step" and that the meeting was successful (Fitzpatrick, 2013). It was validated that companies are not reluctant to purchase external tools if it helps their business, and that they work with the technical tools on their own.

4.3.4 Updated Business Model Canvas and Value Proposition Canvas

From the interviews with survey consultants some hypotheses were validated, and the Business Model Canvas and Value Proposition Canvas were updated. The updated canvases can be seen in Figure 4.7 and Figure 4.8.

The updated Business Model Canvas includes some validated hypotheses. It had been validated that:

- Survey consultants is a good customer segment

- Survey consultants can work independently with the product after start-up.

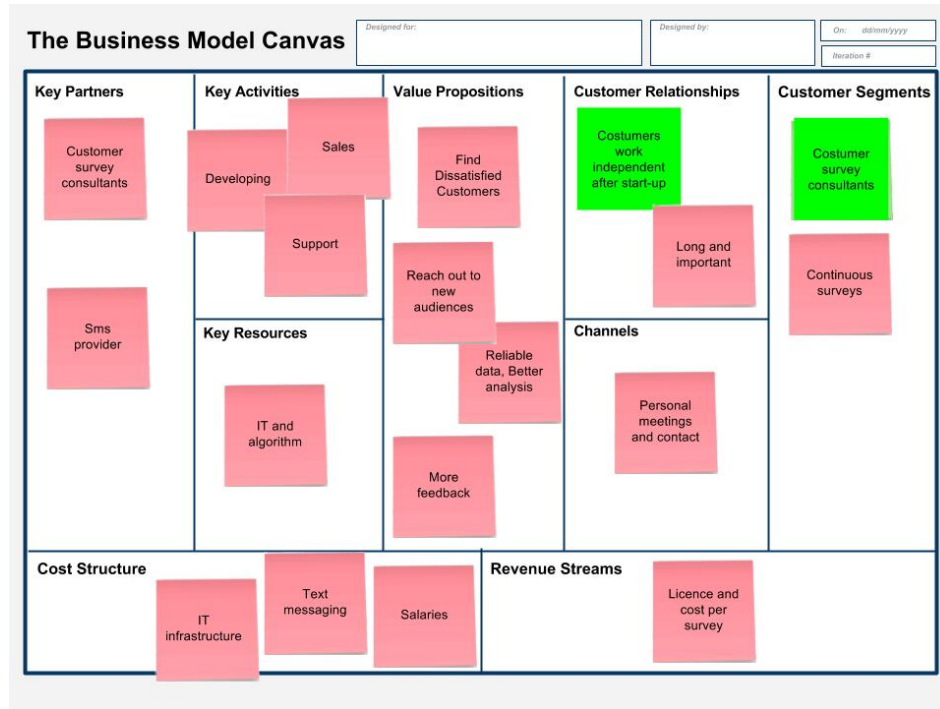


Figure 4.7: Updated Business Model Canvas after talking to survey consultants. Notes in red indicate parts of the canvas that have not yet been validated, and notes in green indicate parts of the canvas that have been validated.

The updated Value Proposition Canvas included a lot of validated hypotheses. It had been validated that:

- Customer gains include faster responses
- Customer pains include low response rate and reaching certain customer segments
- The product will provide customers with good data for decisions
- The dashboard and API will work as the delivered products and services

4.4 Testing the existing product with survey consultants

When talking to survey consultants some of the pains and gains in the Value Proposition Canvas had been validated, and there were no indications that conducting surveys in a conversational format via SMS would not work. The next step was to test the product, to validate or invalidate the Gain Creators and Pain Relievers in the Value Proposition Canvas.

Five of the interviewed survey consultants were interested in testing the product, and tests were conducted with three of them. Due to the time constraints of the project, the other two tests were not performed. This section describes how the tests were conducted and what the results of the tests were, and discusses the learnings that came from testing the product.

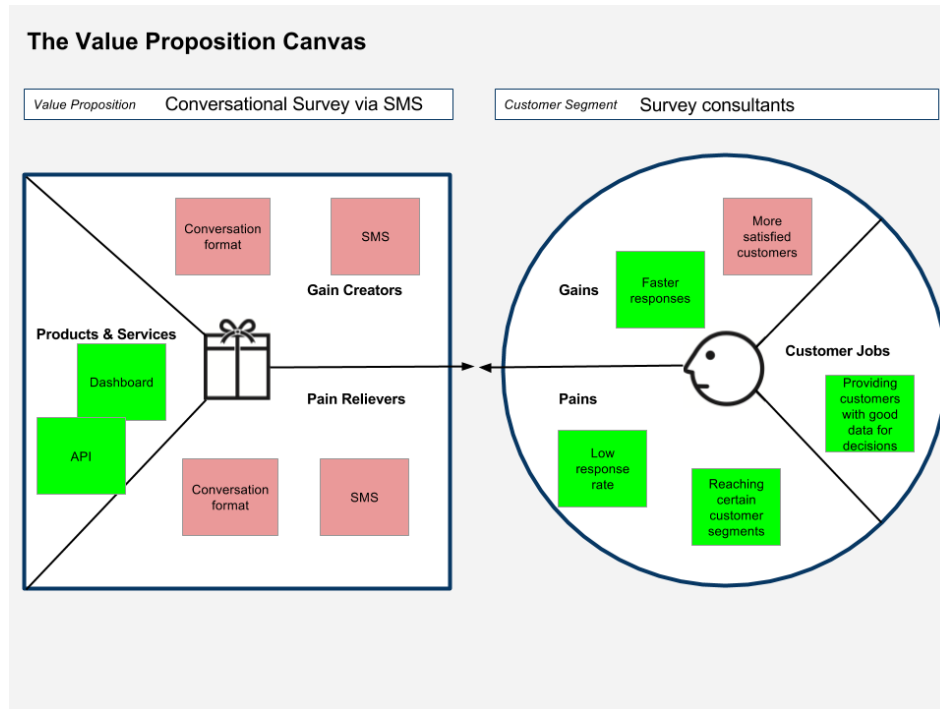


Figure 4.8: Updated Value Proposition Canvas after talking to survey consultants. Notes in red indicate parts of the canvas that have not yet been validated, and notes in green indicate parts of the canvas that have been validated.

4.4.1 Setting up Learning and Measurement

Prior to setting up any tests, the initial hypotheses were revisited to see if they were still relevant, and the hypotheses that could be validated or invalidated by testing the product with survey consultants were selected. These hypotheses were:

- Surveys conducted in a conversational format over SMS give higher response rates than existing surveying methods
- Surveys conducted over SMS give faster feedback than existing surveying methods
- Surveys conducted over SMS reaches certain customer segments that are difficult to reach today
- Surveys conducted in a conversational format over SMS result in useful data
- Respondents do not have a negative attitude towards receiving surveys via SMS
- Surveys conducted in a conversational format over SMS works best for shorter surveys, ongoing surveys and to get feedback from existing customers

In order to measure the result of a survey, three metrics were specified: *engagement rate*, *conversion rate* and *completion rate*. Engagement rate was defined as the number of respondents that answered any question divided by the total number of respondents. Conversion rate was defined as the number of respondents that completed the entire questionnaire, including respondents that opted out of the survey, divided by the total number of respondents. Completion rate was defined as the number of respondents that completed the entire questionnaire, without opting out, divided by the total number of respondents.

4.4.2 Building: Adding features to make testing easier

Since an MVP had already been built, the testing with survey consultants was initiated without doing any further development on the product. During testing some features that could make testing easier and less error prone, and also improve the quality of the surveys, were identified and implemented. These features were:

- *Statistics for conversion rate and engagement rate in the dashboard.* Since the results of tests were measured by comparing conversion and engagement rates, some way of viewing these rates for a survey was needed. Prior to implementing this functionality in the dashboard the conversion and engagement rates of a survey were calculated by exporting all answers to a spreadsheet and doing the calculations there. This made it challenging to measure the results of A/B tests while the tests were being conducted, so statistics for conversion and engagement rates for a survey were added to the dashboard so that the results of tests could be tracked and compared in realtime in an easy way.
- *Ability to start sessions for multiple phone numbers at once.* Previously the MVP only had functionality for starting one session at a time. This became very time consuming for tests with more than 100 respondents, and during one of the tests multiple sessions were started for a single phone number by accident. It was thus deemed that adding the ability to start sessions for multiple phone numbers at once was a feature worth implementing in the dashboard.
- *Ability to send reminders to respondents who have not responded to the first question of a survey.* Sending reminders is one way to reduce dropout rates as described in Section 2.1. In order to maximize the response rates of surveys, the ability to send reminders to all respondents who had not responded to the first question of a survey was added to the dashboard.
- *Functionality for manually tagging an answer with a correct analysis when a session has been paused.* As mentioned in the product description in Section 4.1, a session was paused when an answer that did not correspond to any of the rules for the current question was received, or when the routing algorithm was unsure of how to classify an answer, and paused sessions could be unpaused by an administrator through the dashboard by adding a new answer to the session. This way of unpausing sessions added answers that were not given by the respondent, which skewed the data from tests. Thus an easier way to unpause sessions was added to the dashboard, where answers could be manually tagged with a correct analysis when the algorithm was unsure of how to classify them.
- *Automatically pausing a session when a counter-question is received and ability to manually send a SMS to a respondent.* It was noticed during tests that some respondents answered questions with counter-questions, and that if the next question was sent without addressing this counter-question the respondent would be likely to stop answering. Automatic pausing of such sessions, and the ability to manually send a SMS to a respondent, was thus added in order to allow for a human to answer the counter-question, so that the flow of the survey would not be interrupted.
- *Sending a notification to Slack when a session has been paused.* Previously, no notification was sent when a session was paused. In order to find paused sessions, the dashboard needed to be monitored manually, which was a very time consuming process, and it was easy to miss paused sessions. In order to handle this more efficiently, and not miss any paused sessions, functionality was added for sending a notification to Surviv's Slack channel as soon as a session was paused. This allowed for quick action as soon as a session was paused.
- *Viewing the survey as a flowchart.* The interface for creating surveys in the dashboard, as can be seen in Appendix Figure A.5, did not give the survey designer the overview needed to determine if a survey was set up correctly. To help with this, a feature that automatically generated a flowchart for a survey was implemented. This made the process of setting up a new survey

less error prone, and helped ensure that surveys were set up in a correct way before they were distributed to real respondents.

Some work on the styling of the dashboard was also done, so that the dashboard could be shown to potential customers. The landing page of the dashboard after the changes can be seen in Figure 4.9. The rest of the dashboard can be seen in Appendix Figure A.7 to A.13.

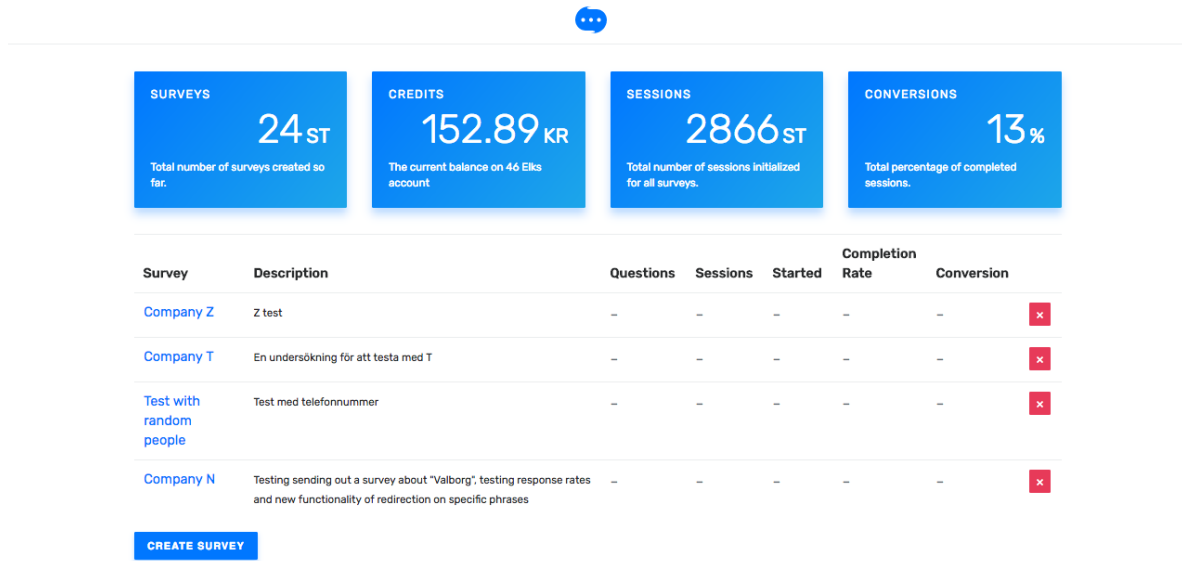


Figure 4.9: The landing page for the dashboard after implementing features for making testing easier.

4.4.3 Test with random people

Conducting tests with consultants was more time consuming than anticipated. When it had been agreed upon that a test was to be conducted, the consultants needed to talk to their customers to persuade them to try the product. This led to long lead times, which made it hard to go through the build-measure-learn feedback loop at a quick pace.

To mitigate this, a test with random people with a survey asking about Internet habits was conducted. 340 phone numbers to random people were collected, and the numbers were split up into two subgroups of 170 phone numbers each. The first group got a conversational survey via SMS, and the other group got an SMS with a link to a web form. The SMS for the conversational survey was sent from a regular mobile phone number, and the SMS with a link to a web form was sent from an alphanumeric sender ID that said "Students". The reason for not using an alphanumeric sender ID for the conversational survey was that when using alphanumeric sender IDs, it is not possible for the respondent to reply to the SMS, as described in Section 2.4.2.

The questions in the conversational survey and the web form were the same, but the questions in the conversational survey had been modified to fit the conversational format. A flowchart showing the conversational survey can be seen in Appendix Figure D.1.

The hypotheses tested in this test were:

- Surveys conducted in a conversational format over SMS give higher response rates than existing surveying methods

- Surveys conducted in a conversational format over SMS result in useful data
- Respondents do not have a negative attitude towards receiving surveys via SMS

It was also tested whether conversational surveys via SMS could be used for market research, where no prior relationship to the respondent was in place. A test card that represents this test can be found in Appendix Figure B.7.

4.4.3.1 Measuring

Test	# respondents	Engagement Rate	Conversion Rate	Completion Rate
Conversational SMS	170 st	18 %	13 %	10 %
SMS with link	170 st	N/A	9 %	9 %

Table 4.2: Results from test with random people

The result of the test can be seen in Table 4.2. 16 out of 170 people responded to the survey with a link to a web form and 23 out of 170 answered to the conversation based survey. Thus the completion rate was 9.4 percent for the link survey and 10 percent for the conversational survey. The conversational survey had a engagement rate of 18 percent and conversion rate of 13 percent. Many of the respondents that got the conversational survey responded with counter questions, asking who the sender was and why they had been chosen to participate in the survey, but other than that there were no noticeable difference in the quality of answers collected in the surveys.

4.4.3.2 Learning

Even if the results indicate that a survey done in a conversational format may lead to higher completion rates, the results from this test were not significant enough to validate any hypotheses. The tests were also not equal in their setup, since the conversational survey was sent from a regular mobile phone number and the SMS with a link to a web form was sent from an alphanumeric sender ID. This may have influenced the results of the survey, since it is possible that the alphanumeric sender ID instilled a higher sense of professionalism, which may have made respondents more inclined to answer the survey. For the same reason, not having an alphanumeric sender ID for the conversational survey may have been what caused many respondents to be suspicious of the survey.

The answers received from the conversational survey during the test were of high quality, but since only 17 respondents completed the entire survey, more testing needed to be done in order to validate that surveys conducted in a conversational format over SMS result in useful data.

There were some indications that the respondents of the conversational survey had a negative attitude towards receiving surveys via SMS. Many of the respondents of the conversational survey asked counter questions, wanting to know who the sender was and why they had been selected for the survey. Though it was hypothesised that the negativity was not caused by the survey itself, but rather had to do with not having a pre-existing relationship with the entity conducting the survey, which in this case was students at Chalmers. It was thus believed that conversation surveys most likely work better for surveys where respondents have a pre-existing relationship with the entity surveying them, and thus have a reason to be contacted.

The learning card for the test with random people can be found in Appendix Figure C.7.

4.4.4 Test with Company Z

After some waiting due to the long lead times, a test was conducted with Company Z. Company Z is a market research consultancy that showed interest in the idea of using chatbot technology for conducting surveys, and they wanted to try the concept on their customers. The aim of this test was to compare surveys conducted in a conversational format over SMS with the tool that Company Z usually used for surveys, which was a tool for sending emails with a link to a web form.

The questions in the survey were about Company Z's new website that had recently been released. 92 phone numbers to customers of Company Z were received and, just as in the test with random people, the numbers were split into two subgroups, this time with 46 phone numbers each. The first group got a regular email survey, distributed with Company Z's existing tool, and the second group got a conversational survey via SMS. The questions in the conversational survey and the email survey were the same, but the questions in the conversational survey had been modified to fit the conversational format in the same way as in the questions in the test with random people. A flowchart showing the conversational survey can be seen in Appendix Figure D.2.

The hypotheses tested in this test were:

- Surveys conducted in a conversational format over SMS give higher response rates than existing surveying methods
- Surveys conducted over SMS give faster feedback than existing surveying methods
- Surveys conducted in a conversational format over SMS result in useful data
- Respondents do not have a negative attitude towards receiving surveys via SMS

The test was active for one week, and during this time two reminders were sent out to respondents that had not yet answered the survey. These reminders were sent out at the same time for both surveys.

A test card that represents this test can be found in Appendix Figure B.9.

4.4.4.1 Measuring

Test	# respondents	Engagement Rate	Conversion Rate	Completion Rate
Company Z - sms	46 st	35 %	30 %	4 %
Company Z - email	46 st	N/A	2 %	2 %

Table 4.3: Results from test with Company Z. The engagement rate for the email survey could not be measured, since the tool used to send out the email survey only saved answers for respondents that completed the entire survey.

The result of the test with Company Z can be seen in Table 4.3. The email survey only got one answer out of 46 respondents, which represents a completion rate of 2 percent. The SMS survey got an engagement rate of 35 percent, and 14 out of 46 respondents completed the survey, resulting in a conversion rate of 30 percent. 12 of the 14 respondents that completed the survey opted-out, so the completion rate of the survey was 4 percent.

4.4.4.2 Learning

The engagement rate for the conversational survey in this test was almost twice as high as the engagement rate for the conversational survey in the test with random people. This strengthened the belief

that conversational surveys work better for surveys where respondents have a pre-existing relationship to the entity conducting the survey, as the respondents in the test with Company Z were customers to Company Z. Although the higher engagement rate can also be contributed to sending reminders to respondents that had not yet answered the survey.

The conversion rate for the conversational survey was 15 times as high as the conversion rate for the email survey, but the completion rates for both surveys were about the same. The reason for the low completion rates were probably due to the irrelevance of the questionnaire. Many of the respondents had not seen Company Z's new website, and some of them were not even customers of Company Z, which lead to a high amount of opt-outs. As discussed in the theoretical framework, it has been shown that to get relevant answers from surveying, the questions asked and the subject has to be of interest to the respondents. This was probably not the case in the test with Company Z, which caused the low conversion rates.

One of the advantages of the conversational survey over the email survey was that many of the respondents of the conversational survey actually responded and said that they had not seen Company Z's new website. This is an improvement over the survey distributed by email, where respondents who had not seen the new website simply did not answer the survey. Knowing that respondents do not want to answer the survey because they have not seen the website is more useful than not knowing anything at all, since when not knowing anything at all, it is impossible to know whether it is the content of the survey or the way the survey is distributed that causes the low conversion rates.

The conversational survey got higher conversion and completion rates than the email survey, and no respondents had a negative attitude towards receiving surveys via SMS. However, since most respondents declined the survey, the answers collected were not more useful. The answers received from the email survey did not have any associated timestamps, so it could not be measured whether or not the survey conducted over SMS gave faster feedback compared to the email survey.

The learning card for the test with Company Z can be found in Appendix Figure C.9.

4.4.5 Test with Company T

Company T is a survey consultant that was interested in performing tests with one of their customers. The customer, a company that works with optimizing meetings and meeting premises, was interested in using a conversational survey to collect feedback regarding their maintenance technicians. The main reason for the test was to try a new method of finding out how the maintenance technicians' clients felt about their contact person. By sending out a survey the customer could receive data on which technicians were the most appreciated, allowing for best practices to spread to other technicians within the organization.

In order to confirm value for the end customer, the survey questions were formulated together with the contact at Company T and also approved by a manager at Company T's customer. The entire questionnaire can be found in Appendix Figure D.3. Before conducting a live test on real respondents, the survey was tested by the contact persons from both Company T and Company T's customer, in order for them to confirm that the product worked as promised. The test was approved by both contacts and 39 phone numbers to the technicians' customers were received.

The number of respondents was deemed to be too low in order to conduct a meaningful A/B test, so all the respondents received the same conversational survey. The goal of this test was mainly to see if surveys conducted in a conversational format over SMS would result in useful data.

Answers were collected for five days, and when done the customer received a simple spreadsheet with all the received answers in plain text.

A test card for the test with Company T can be found in Appendix Figure B.8.

4.4.5.1 Measuring

Test	# respondents	Engagement Rate	Conversion Rate	Completion Rate
Company T	39 st	66 %	53 %	28 %

Table 4.4: Results from test with Company T

The result of the test with Company T can be seen in Table 4.4. The engagement rate was 66 percent, the conversion rate was 53 percent, and the completion rate was 28 percent. The answers received were generally of high quality, and most of them contained detailed explanations of how the maintenance technicians were perceived by the clients.

Some feedback was received from the customer on the way that the answers were exported. The customer found the spreadsheet with data challenging to read, and criticized the product for not being useful when used on a larger scale. The customer asked for a more advanced dashboard that could show more detailed statistics for the survey, both for the survey as a whole and for each individual maintenance technician. Developing such a dashboard was deemed too risky at this stage, given that neither the customer segment nor the value propositions had been confirmed. In order to continue working with the customer, without having to put a lot of time and effort into developing a full-fledged dashboard, a PDF report that resembled a dashboard was sent to the customer. Generating a PDF was a low effort task which could be used to validate the need for an actual dashboard in the future. The PDF report contained percentage of Promoters, Neutrals and Detractors and NPS-score, both for the entire firm and specific maintenance technicians, as well as a word cloud with keywords mentioned in the answers. The full PDF report, with dummy data, can be seen in Figure 4.10 and 4.11.

The PDF report was well received by the customer, and after receiving it the customer requested an offer to purchase a license for the product. According to the Mom Test, this is a clear indication that there is real interest in the product from this specific customer segment (Fitzpatrick, 2013). An offer was sent to the customer for review, but the purchase had not yet been confirmed by the end of the project's fixed time limit.

4.4.5.2 Learning

Since the answers received in the survey were of generally high quality, the hypothesis that surveys conducted in a conversational format over SMS result in useful data was strengthened. It was also learned that providing a more in-depth analysis of collected data might be needed in order to sell the product to real customers. Since Company T, which was a survey consultant, did not do anything with the data before sending it to the customer, it was also learned that it might not be possible to simply insert the collected data into the survey consultants' existing tools for further analysis.

The learning card for the test with Company T can be found in Appendix Figure C.8.

4.4.6 Test with Company N

Company N is one of the largest survey consultants in Sweden. Company N works with both quantitative and qualitative research, and the contact person at Company N was not sure in which segment the product would fit. The process of the contact at Company N deciding which customer to test the technology on took a lot of time, and because of different rules regarding confidentiality Company N later decided to test the technology internally within the company instead. This was not what was intended from the beginning and thus the goal of the test became less clear. However, it was decided that it was better to move forward anyway, to show Company N the technology and deliver a good presentation of the data, since Company N was believed to be a good potential future customer.

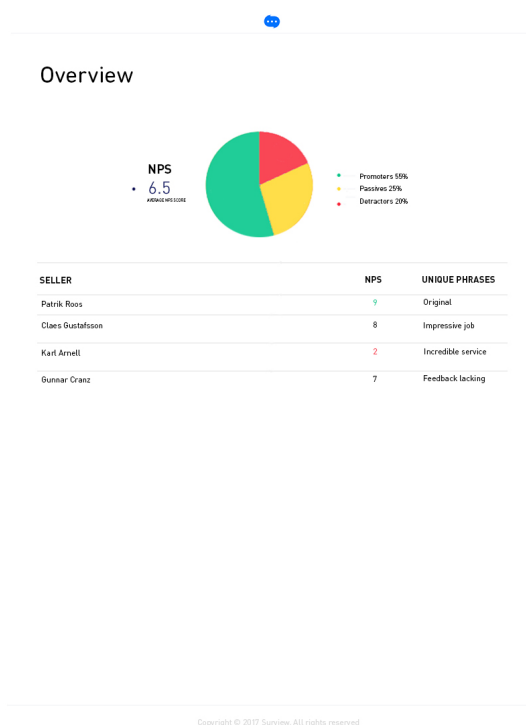


Figure 4.10: PDF file sent to Company T. Illustrating how a dashboard view could look, with an overview of data for an entire company.



Figure 4.11: PDF file sent to Company T. Illustrating how a dashboard view could look, with data for a specific individual.

Company N came up with a topic for the survey and formulated a questionnaire to be used. All the questions were static and were not adapted to the conversational format, so a template that Company N could follow was created and sent in return. The contact person at Company N then changed the questionnaire to something that was accepted by both parties, and the survey was distributed to the respondents, which was 153 people that worked at Company N. The modified questionnaire can be seen in Appendix Figure D.4.

Since the test with Company N was changed from what was intended from the start, no test card was created for the test.

4.4.6.1 Measuring

Test	# respondents	Engagement Rate	Conversion Rate	Completion Rate
Company N	153 st	63 %	47 %	32 %

Table 4.5: Results from test with Company N

The result of the test with Company N can be seen in Table 4.5. The survey got an engagement rate of 63, a conversion rate of 47 percent, and a completion rate of 32 percent, and almost all of the answers were received during the first day.

4.4.6.2 Learning

The high completion rate in this survey could be explained by this being a survey distributed internally to Company N's employees. A lot of feedback was received from the respondents, and the gist of it was that the conversational survey was a fun and innovative way to answer surveys. Comments on the format described it as being more like a conversation, and one responder even said that when performing some of the normal surveys they get bored after only 25 percent of the survey, but when doing it as a conversation as in this test, they could easily complete the entire survey.

Some of the challenges when working with a bigger company was having a long lead time, finding the correct decision makers and setting up the questions. Quick decisions could not as easily be made as with the smaller companies, due to the fact that Company N had a lot of internal rules regarding confidentiality. Letting Company N set up questions completely by themselves from the beginning was probably not optimal. The consultants at Company N were used to working with completely static surveys, which made it hard for them to set up an adequate survey for the conversational format.

Data from the result of the test was sent to Company N, and by the end of the project's fixed time limit nothing had yet been heard back from the company regarding the data. Thus conclusions about the usefulness of the data has not yet been confirmed. The early indications from the analysis, however, is that the data will be useful for Company N. The next step with N is also unclear and awaits the analysis of the results.

4.4.7 Summary of performed tests

Overall, the tests with the surveying consultants were positively received by the consultants, and a lot was learned about the product. Although none of the hypotheses that were set up before performing the tests could be validated or invalidated with certainty, some of the hypotheses were strengthened and some of them were weakened. Three tests showed that surveys conducted in a conversational format over SMS could give higher response rates than existing surveying methods, and in none of the tests the response rates were lower for the conversational survey. Nothing could be said about whether or not feedback was received faster when conducting surveys over SMS, but it was shown that the answers received were of generally high quality. Some respondents had a negative attitude towards being contacted via SMS, but this could also be due to not having a pre-existing relationship with the entity conducting the survey. When pre-existing relationships to the respondents were in place, almost no complaints were received.

The testing done with survey consultants were good for learning about how to use the product and how to ask questions in a conversational format. Though in order to with certainty validate or invalidate the hypotheses about the product, more testing needs to be done.

At this point certain challenges with the survey consultants had been identified. The challenges faced were mainly:

- Long lead times
- Consultants not being capable of designing adequate surveys in a conversational format
- Inability to analyze received answers in the survey consultants existing tools for analysis

The last two challenges were strongly related to the customer segment chosen when creating the initial Value Proposition Canvas, and it was realized that hypotheses for these challenges should have been declared and tested when talking to survey consultants earlier. If this had been done, it could have been possible to invalidate these assumptions earlier.

To book meetings with the consultancy companies was relatively simple and most of them could take time to sit down with for an interview. When testing was suggested many of the companies showed interest, but when it came to finding test cases and conducting tests it took a lot of time. The companies probably did not want to try the product on their most valuable customers, because of the risk that something could go wrong. Also, many of the survey consultants were busy with existing customers and did not have time to prioritize a test with a new product.

Previously the consultants were viewed upon as experts in setting up surveys. For the consultants to work with external tools was not uncommon, but the tools that the companies were already using were often deeply rooted in the companies' existing systems, which made it difficult to introduce a new system. It was believed that the product could be integrated into the companies' existing workflows, but this proved to be more difficult than anticipated. The consultants were used to working with static surveys, not conversational surveys. A conclusion was reached that it was probably better to have presented the survey consultants with a finished survey, instead of leaving the work with setting up questions to the survey consultants. This was due to the fact that the survey consultants had limited knowledge of how to ask questions in a conversational format, since this way of asking questions was completely different from the way of asking questions in web forms.

The tests generated data in free text form. The fact that the consultancies existing tools for analyzing data were incompatible with the free text data generated from the product, invalidated the initial belief that data could be inserted into survey consultants existing tools for analysis. Because of this a possible solution could be to provide a more complete packaging of the product, including templates for surveys and analysis of data as a feature. By developing this functionality, the product would have all the features required by the end-customer, reducing the need for consultancy companies as intermediaries.

4.5 Customer segment pivot: Talking to webshops

A few of the consultants that had been contacted had shown interest but since there were not that many consultancy companies, there were difficulties in finding new potential customers and tests in this segment. In order to keep a good tempo it was discussed if broadening the scope to webshops could be a reasonable customer pivot. It seemed likely that the webshops collected their customers phone numbers, and so a good use case would be to send out a survey after a product was delivered. Thus, it was decided that this segment could be a good fit for the product, and the investigation on a pivot of customer segment was initialized. However, consultancy firms were not rejected as a customer segment completely.

4.5.1 Setting up Learning and Measurement

The first step in this pivot was to set up new hypotheses about what needed to be learned from webshops and if webshops could be a fitting customer segment. Since webshops are very different from survey consultants, the previous hypotheses about the survey consultants could not be used. In order to identify hypotheses about webshops, a new Value Proposition Canvas was created for the new customer segment, seen in Figure 4.12.

From the Value Proposition Canvas, hypothesis related to customer pains and gains needed to be validated first. This allowed for quick validation as to whether or not webshops was an attractive customer segment to pursue and develop towards. The formulated hypothesis related to this were:

- Webshops have problems with not getting enough feedback from customers
- Webshops are willing to pay to get more feedback from customers

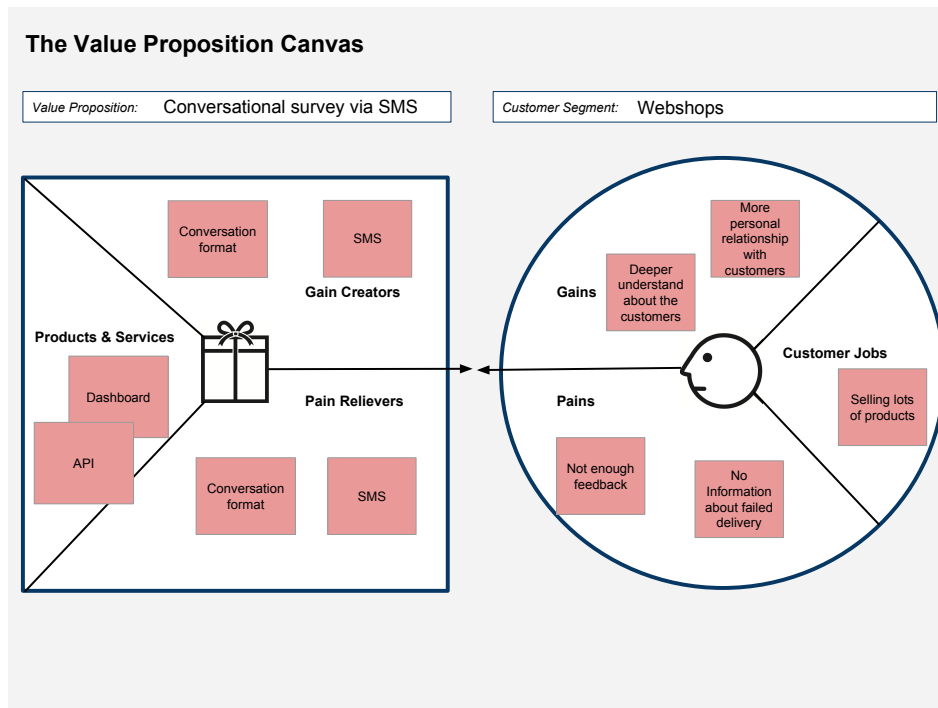


Figure 4.12: Value Proposition Canvas for the webshop customer segment.

- Webshops want to verify that all customers deliveries have been followed properly
- Webshops are willing to pay for verifying that all customers deliveries have been followed up properly
- Webshops see a value in a more personal relationship to their customers
- Webshops are willing to pay for a more personal relationship with their customers
- Webshops benefit from a deeper problem analysis of their customers
- Webshops are willing to pay for a deeper problem analysis of their customers

If these hypothesis where to be invalidated, it would be proven that webshops were not an attractive segment and thus another customer segment pivot could take place. By focusing on these particular hypothesis, time through the build-measure-learn feedback loop could be minimized, which is of utmost importance when building a startup (Ries, 2011).

To verify the previously formulated hypotheses, webshops that could be potential customers were contacted. It was estimated that by contacting twenty webshops and booking meetings with at least ten, enough data would be gathered to either validate or invalidate the hypotheses. Tests cards for webshops can be found in Appendix from Figure B.10 to B.13. In order to validate the formulated hypothesis, a questionnaire following the theory described in The Mom Test, seen in Appendix Figure D.6, was created.

4.5.2 Measuring

When contacting survey consultants it was possible to directly get in contact with one of the founders or the CEO, since the consultancy firms rarely had more then 30 employees. Getting in contact with

the right people, for example a customer experience representative, at a webshop proved to be much more difficult. Most of the time, representatives of the webshops denied requests for meetings or redirected the contact to their regular customer support.

In total, 28 webshops were contacted out of which only five agreed to sit down for interviews. The resulting data from these interviews are presented in Table 4.6.

Hypothesis tested	Webshops have problems with not getting enough feedback from customers	Webshops are willing to pay to get more feedback from customers	Webshops want to verify that all customers deliveries have been followed properly	Webshops are willing to pay for verifying that all customers deliveries have been followed up properly	Webshops see a value in a more personal relationship to their customers	Webshops are willing to pay for a more personal relationship with their customers	Webshops benefit from a deeper problem analysis of their customers	Webshops are willing to pay for a deeper problem analysis of their customers	Satisfied with existing system
Webshop E		X			-	-			X
Webshop J									
Webshop I				X	X	X	X		X
Webshop SB	X	X	X	X	X	X	X	X	
Webshop M	X	X	X	X			X		
Total validations	2	3	2	3	2	2	3	1	2

Table 4.6: Table presenting the results from interviews with webshops. Green cells indicate that the webshop validated the hypothesis, red cells indicate that a hypothesis was invalidated and yellow cells indicate that more data is needed in order to validate, or invalidate, the hypothesis.

The data collected from the interviews were not enough to validate any of the tested hypothesis. However, 7 of the webshops that denied interviews stated that the reason for denying was that they already used an established system for customer feedback. As seen in Table 4.6, this was also confirmed during two of the interviews that actually were conducted.

4.5.3 Learning

When talking to webshops, it was learned that this segment had a clear barrier to entry. Established systems for handling customer feedback allowed webshops to measure their customer satisfaction performance in comparison to other webshops. During the few meetings with webshops this was raised as a clear advantage for these systems compared to Surview. Because of this, webshops were less interested in the product than anticipated.

In total, the data collected from the interviews were not enough to either validate or invalidate webshops as a potential customer segment. Because of this, no learning cards were created. However, some interest was shown from some of the webshops and therefore webshops were not discarded as a customer segment.

4.6 Expanding customer segment

Because of the problems with getting in contact with the right people, as well as the barrier to entry, it was decided to widen the scope. Instead of exclusively focusing on webshops, the customer segment was expanded to all companies which seemed likely to gain from following up a customer after a visit, purchase or delivery, two examples being hotels or gyms. One constraint was that each company must have access to their customers phone numbers, ideally that the customers are members of the company's loyalty program. The hypotheses initially set up for webshops were deemed equally relevant for the expanded customer segment, if just broadening the definition of a "delivery" to include visits and purchases in physical stores as well. Taking the new customer segment expansion into action

meant trying to get in contact with said companies which, due to the fixed time limit, was the ending phase of the project.

4.7 Summary of process

The process chapter has described the entire process of the project. It started by describing the basis for the project and what previous work had been done on Surview. The process behind coming up with a potential business model for the product was then described, followed by a description on how survey consultants were contacted and learned from. After the consultant interviews, testing with the product was described followed by the reasoning behind a customer segment pivot to webshops. Finally, reasoning and description of an expansion of the customer segment was described. As this was the final phase of the process, the following discussion chapter will elaborate and conclude on the learning from this chapter, as well as provide a discussion on the methodology applied in the process.

Chapter 5

Discussion

This chapter elaborates and provides discussion on the aggregate findings from the Process chapter. In Section 5.1 the result of applying chatbot technology to surveys is discussed, and in Sections 5.2, 5.3, 5.4 and 5.5 the methodology used in the project is discussed.

5.1 Using chatbot technology for surveys

One of the research questions of this thesis was if chatbot technology could be applied to surveys, and if this would lead to better response rates. The medium that was chosen to distribute these surveys was SMS, as it was deemed to be a fitting medium for the conversational format.

The results of applying chatbot technology to surveys when doing tests with survey consultants was positive, and it was found that the conversational format, in combination with SMS, could lead to increased response rates compared to existing methods. This increase can be attributed to a few different factors:

- When conducting surveys as conversations via SMS, the respondent does not need to finish the entire survey in one go, but can instead answer the questions one at a time at any rate. This is in contrast with surveys done in web forms, where the entire survey often has to be completed from start to finish in one sitting. No data was collected to compare the number of respondents that started a survey without finishing it in traditional surveys and in conversational surveys, but it is believed that the nature of the conversational survey would decrease this number compared to traditional surveys.
- Answering a survey by responding to an SMS lowers the barrier of entry for starting a survey, compared to sending an email or an SMS with a link. Lowering this barrier makes it easier for respondents to start answering the survey, which may lead to higher engagement rates.
- The conversational format may have induced a feeling of a more personal relationship with the entity conducting the survey. It was believed that, since the conversational format was more like a conversation with another human being rather than simply answering questions in a form, the respondent would get a feeling that they were being more cared about. Since maintaining a good relationship with the respondent is important when conducting surveys, this was believed to increase response rates.

In contrast to conversational text message surveys, web forms have both aesthetical and textual parameters which might change the outcome of the survey. In the case of the text message survey however,

the only parameter left to tamper with is how to ask the questions. Thus figuring out how to make the most out of conversational surveys was a major part in conducting surveys in this format. Many survey consultants did not know how to set up adequate conversational surveys, so this was something that was done through testing.

It was found that using only subtle additions to questions, where the answers of the respondents were instantly acknowledged by the next question, made the respondents react more positively than when using a strictly static format. Though being able to do only subtle additions rested on the assumption that the respondents answered questions in a way that they were supposed to be answered. In the tests that were conducted, this was often the case, but in order to handle more intricate conversations, a more advanced chatbot needs to be created.

5.2 The Lean Startup Methodology and Value Proposition and Business Model Canvases

Initially the goal was to ensure that everybody in the group were on the same track, the Business Model Canvas was a very useful tool to make sure that everybody had the same vision for Surview. In the beginning it felt like too much time was wasted discussing and building the Business Model Canvas, though after a couple meetings with potential customers the time invested in thoroughly building the Business Model Canvas was shown to not be wasted, rather the opposite, it was extremely valuable. Since the whole group had the same idea and vision in the meetings with customers no uncertainty was presented and it was easy to motivate why the customers could benefit from using Surview's product. The Value Proposition Canvas made gave a good start and made sure that the workflow could stay focused on first confirming that there was actual customer need, before focusing to much on other parts of the business model such as pricing.

As mentioned in Section 3.1 the Lean Startup Methodology includes a build-measure-learn feedback loop which iterates with help from the Business Model Canvas, continuously updating the Business Model Canvas with support from learnings in the measure and learn steps. During the first half of the project a consistent workflow with iterations lasting in two week periods helped to successfully have a coherent process validating and updating the Business Model Canvas hypotheses. When the point was reached that there were no more survey consultants to contact and lot of time were spent on waiting for the survey consultants to start tests, the process with updating the Business Model Canvas was paused. The iterative working process with the build-measure-learn feedback loop also suffered from the disruptive period, which made it more difficult to stay in sync with the development of Surview.

Utilizing the Lean Startup Methodology, together with Business Model Canvas and Value Proposition Canvas, in the future, emphasis should be put on keeping a more constant workflow. Continuously revisiting the canvases and reminding the team of why these particular hypothesis are of interest, would provide a much needed structure in the workflow of a startup.

5.3 Test Card and Learning Card

The Test Card and the Learning Card were utilized during the project to give structure to both the interviews and testing of the product. At the start of the project these were continuously updated and refined, which resulted in valuable, data driven learning. During some of the tests, difficulties arose as to how to measure more subjective hypotheses which in no clear way could be connected to a fixed data point. For example when defining quality of answers from a survey, which requires a more

subjective analysis. Utilizing the Test and Learning Cards made sure that these subjective data points were thoroughly analyzed and clearly defined before starting actual testing.

As the project progressed, the Test and Learning Cards were not updated continuously which created gaps between the Test Card, the actual test, and the corresponding Learning Card. This was mainly a result of the long lead times related to testing the actual product. This lack of continuity resulted in difficulties when a test finally got approved, since the prerequisites of the test might have changed from what was formulated in the Test Card. Updating the Test Card was often forgotten before launching a test, resulting in difficulties when translating the results to the Learning Card.

In utilizing Test and Learning Cards in the future, teams should make sure that all prerequisites of a test is clearly defined before formulating an actual Test Card. In doing this the teams could avoid having to formulate Test Cards twice for the same test.

5.4 Interviews

Interviewing potential customers gave a lot of insight for the project. Many hypotheses were validated and some were invalidated through the interviews. The techniques from the Mom Test were a great way to understand if the companies were actually interested or just wanted to be nice. A lot of time was put into preparing good questions, but it was felt that this was time well spent, it that helped a lot to have done this when conducting the interviews.

Getting in touch with the survey consultants and book meetings with them was a pretty easy task. The companies did not have that many employees so it was easy to reach out to the right person. Also, most of the times the interviews were held with a person who had a lot of knowledge and could answer all of the questions. The people that were interviewed had no problem talking about how they work today and what problems their company are facing which provided a lot of useful information and insights about the industry. From almost all survey consultants a commitment was given at the end of the meetings. The commitments were either a new contact, a new meeting or a test with the product. Some consultants were even willing to pay to test the product.

When it came to the webshops the problem was to get in touch with the right person. The actual interviews that were held with the webshops went well when the techniques from the Mom Test were used. The same questionnaire as was used for the survey consultants, was also used for the webshops with some small changes, and this worked fine.

In hindsight, one of the most important aspects of interviewing is to make sure that the right questions are asked, as well as defining clear next steps to take depending on the outcome of a meeting. It is surprisingly easy to fall into the trap of asking questions in a way that the respondent feels obliged to give a certain response, or flat out lie (sometimes completely unaware of it). Furthermore, even if the right questions have been asked, creating value from the insight might take some time, which is where having well-defined next steps really comes in handy.

5.5 A/B testing

A/B testing was in theory a appropriate way to compare different ways of doing surveys, but during this project it proved to be difficult to set up tests with sufficiently large sample sizes for it to be useful. It was also difficult to set up tests that compared one specific thing, since the companies that the tests were conducted with had a lot to say about how the tests were to be performed.

Going forward, the method of A/B testing different ways of doing surveys to conclude which way is the best is encouraged, but it is recommended to focus on getting larger sample sizes in order to

ensure statistical significance. It is also important that all parameters are the same for the different tests, except for the one thing that is being compared in the test. For other projects in the future one important note when applying A/B testing is to have enough test cases to create a statistical significant result, and also try to define extremely distinct test parameters.

Chapter 6

Conclusion

The project started with an MVP for conducting surveys as conversations over SMS, and without much knowledge about the survey industry, how to create a startup, how a business could be formed around the idea, and if the product actually solved any real problems. During the project, much has been learned, both in terms of the company and personally for the members in the team. The work has shown that low response rates is a problem in the survey industry, and that there is a need for a new product that solves this problem. It has also been shown that using chatbot technology for surveys can prove to be successful, and that the technology can create value for customers when used in the right way. Survey consultants and webshops might be the right customer segments for a product like this, but this has to be investigated further in order to be certain. It was also learned that, since conducting surveys in a conversational manner is a completely new way of doing surveys, even experts in the survey industry do not necessarily know how to use this new format to its full potential. Therefore, for a product that uses chatbot technology to conduct surveys to work, the product needs to be packaged in a way that makes it easy and intuitive to create surveys where questions are asked in the right way. It must also be easy to distribute these surveys and to analyze the received answers.

The use of the Lean Startup Methodology has been useful for this project, and the use of the techniques in The Mom Test has been an important part of gaining insights when interviewing potential customers. The Business Model and Value Proposition Canvases were good tools for visualizing a potential business model, and to make sure that the entire team had the same vision for Surview. The Test Card and the Learning Card were good tools for knowing what to measure during a test, and to make it clear when the result of a test could validate or invalidate an hypothesis. Keeping the canvases and the cards updated was a time consuming process, and due to long lead times with customers there were sometimes discrepancies between the tools and the things they were designed to represent. Going into the future, more effort should be spent on keeping the canvases and cards updated, since they clearly add value to the process of developing a startup. Investigating whether license fees would be a good payment model for the business was given little attention due to the fact that validating customer needs was more important and the time frame for the project was limited. Moving forward, this would also be a good thing to look deeper into.

Conclusively there lies great potential, both from a business perspective and in regard to sustainability, in Surview and the idea of conducting surveys as conversations over SMS. The project has come a long way during the thesis, but in order for Surview to become a successful business a lot more time and work have to be put into the project. Additionally, more interviews with potential customers need to be conducted in order to find the perfect customer segment, and more testing of the product needs to be done in order to determine if it solves the identified problems in the survey industry.

Chapter 7

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Appendix A

The product

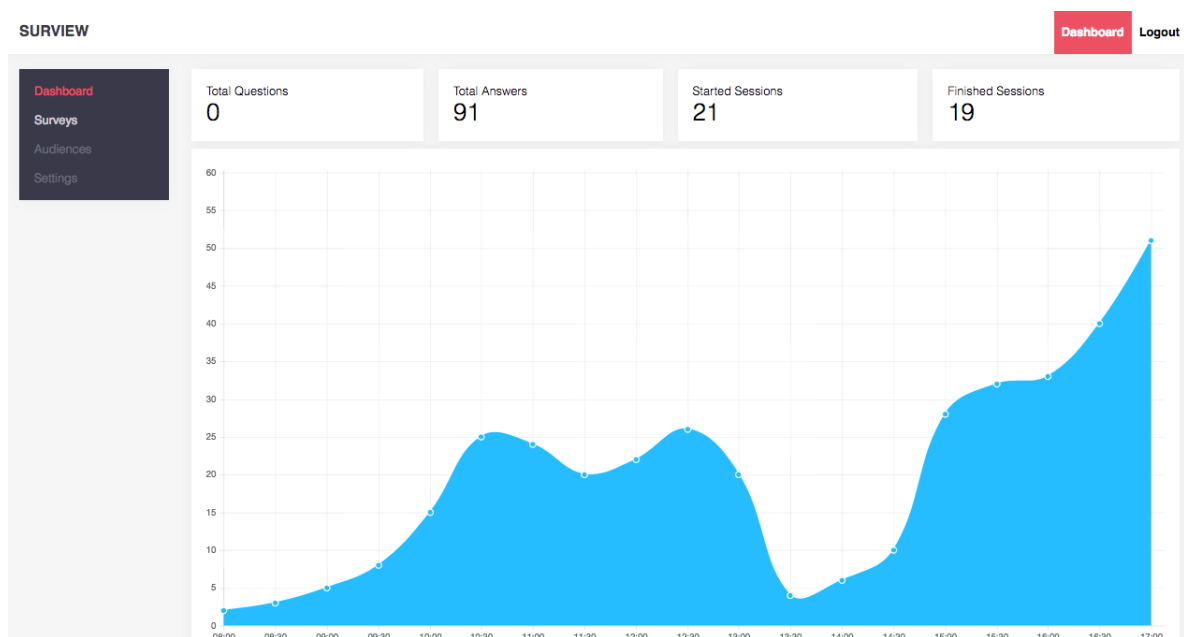


Figure A.1: The landing page of the dashboard built for Gothenburg Startup Hack.

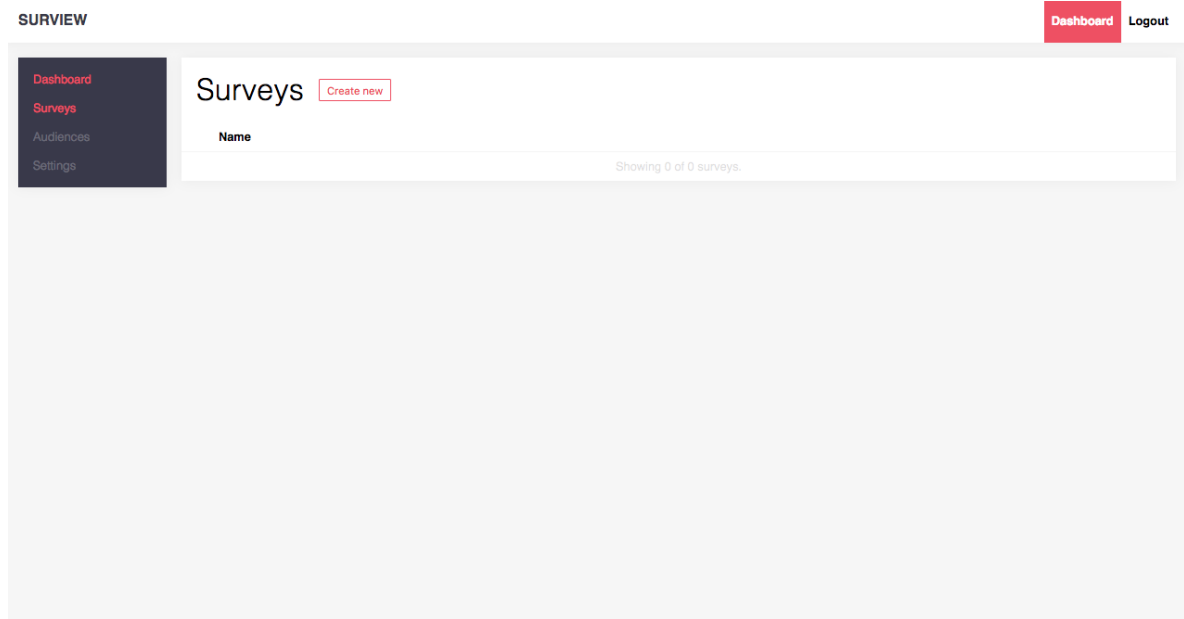


Figure A.2: The page for creating a new survey in the dashboard built for Gothenburg Startup Hack.

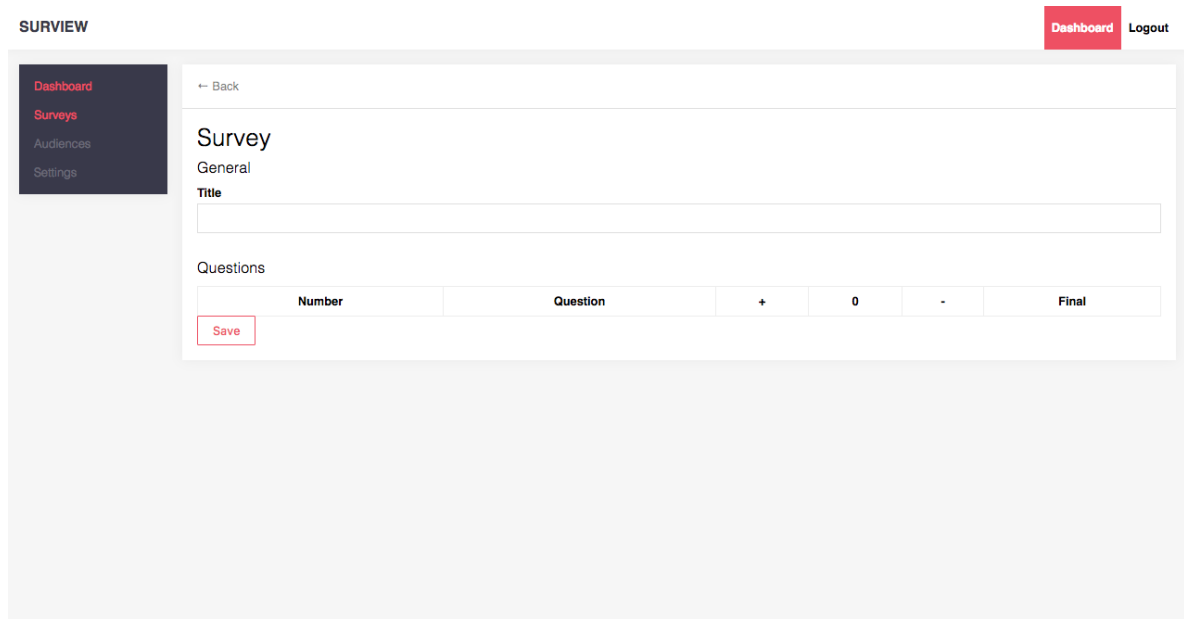


Figure A.3: The page for modifying a survey in the dashboard built for Gothenburg Startup Hack.

Min Svenska undersökning

Overview Questions Sessions Test Export

Overview

Name

Min Svenska u

The name will only be visible to you.

Description

Den är kanonb

A short description of the survey

Survey ID

58434228f184

This is the unique id of your survey.

Language

Swedish

Select input language

Update

Figure A.4: The overview of a survey in the dashboard in the first MVP.

Min Svenska undersökning

Overview Questions Sessions Test Export

Questions

static

Question

Hej och välkommen till denna undersökning! Vad tycker du?

This is the text that will be presented to the respondent.

Always

Sista frågan: Vad var bäst? ↕

Independently of the answer

Delete Question

sentiment

Question

Sista frågan: Vad var bäst?

This is the text that will be presented to the respondent.

Figure A.5: The options for a survey in the dashboard in the first MVP.

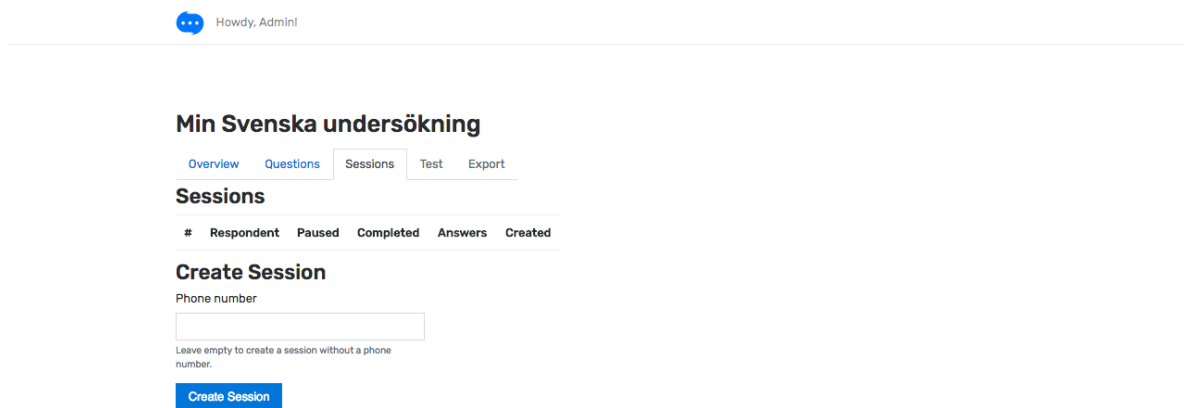


Figure A.6: Creating and managing sessions in the dashboard in the first MVP.

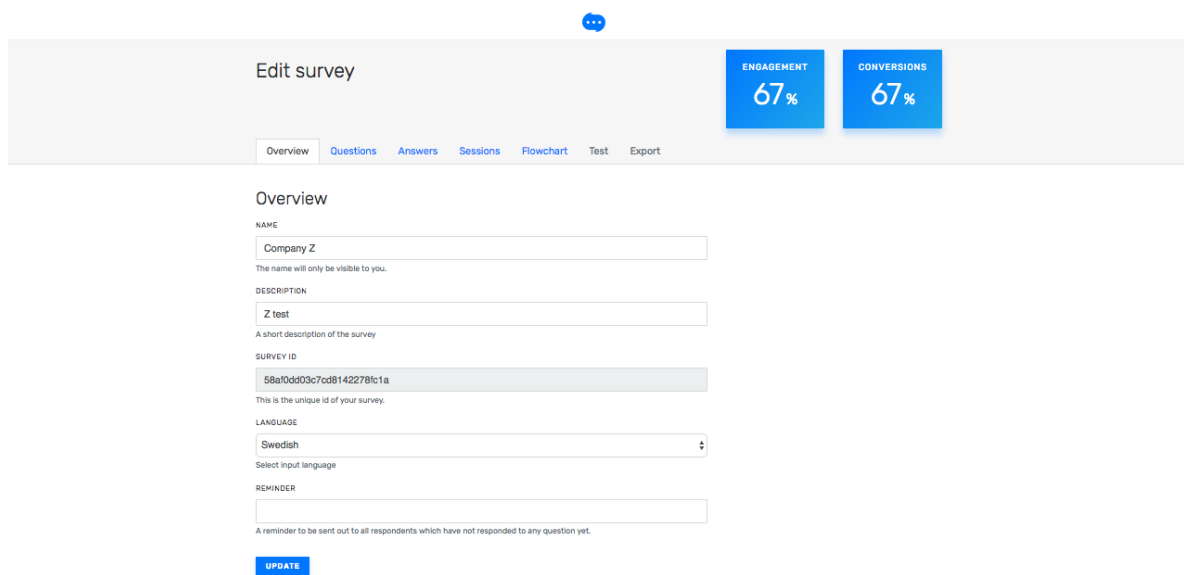


Figure A.7: The overview of a survey in the dashboard after implementing features for making testing easier.

Edit survey

ENGAGEMENT

67%

CONVERSIONS

67%

Overview

Questions

Answers

Sessions

Flowchart

Test

Export

Questions

QUESTION

Hej! Nyligen skickade Z ett nyhetsbrev med information om lansering av en ny hemsida, har du sett det nyhetsbrevet?

YES

NO

INCONCLUSIVE

Spontant, vad tyckte du om den nya hemsid

Spontant, vad tyckte du om den nya hemsid

Spontant, vad tyckte du om den nya hemsid

Delay

0

QUESTION

Spontant, vad tyckte du om den nya hemsidan?

ALWAYS

Hej! Nyligen skickade Z ett nyhetsbrev med

Delay

0

+ Add question

UPDATE

Figure A.8: The interface for adding questions to a survey in the dashboard after implementing features for making testing easier.

Edit survey

ENGAGEMENT

67%

CONVERSIONS

67%

Overview

Questions

Answers

Sessions

Flowchart

Test

Export

Hej! Nyligen skickade Z ett nyhetsbrev me...

2 st

Ja

10:28 24/02 2017

{ "value": 0.5084043166747572, "type": "yes" }

Skrattade åt "Hej! Nyligen skickade Z ett nyhetsbrev med information om lansering av en ny hemsida, har du sett det nyhetsbrevet?"

14:31 03/03 2017

{ "value": 0, "type": "inconclusive" }

Spontant, vad tyckte du om den nya hemsidan?...

1 st

Inge vidare

14:31 03/03 2017

Nyligen skickade Z ett nyhetsbrev med inf...

0 st

Vilken del av Z hemsida är mest intressa...

1 st

Blåg

14:32 03/03 2017

Figure A.9: Viewing received answers in the dashboard after implementing features to make testing easier.

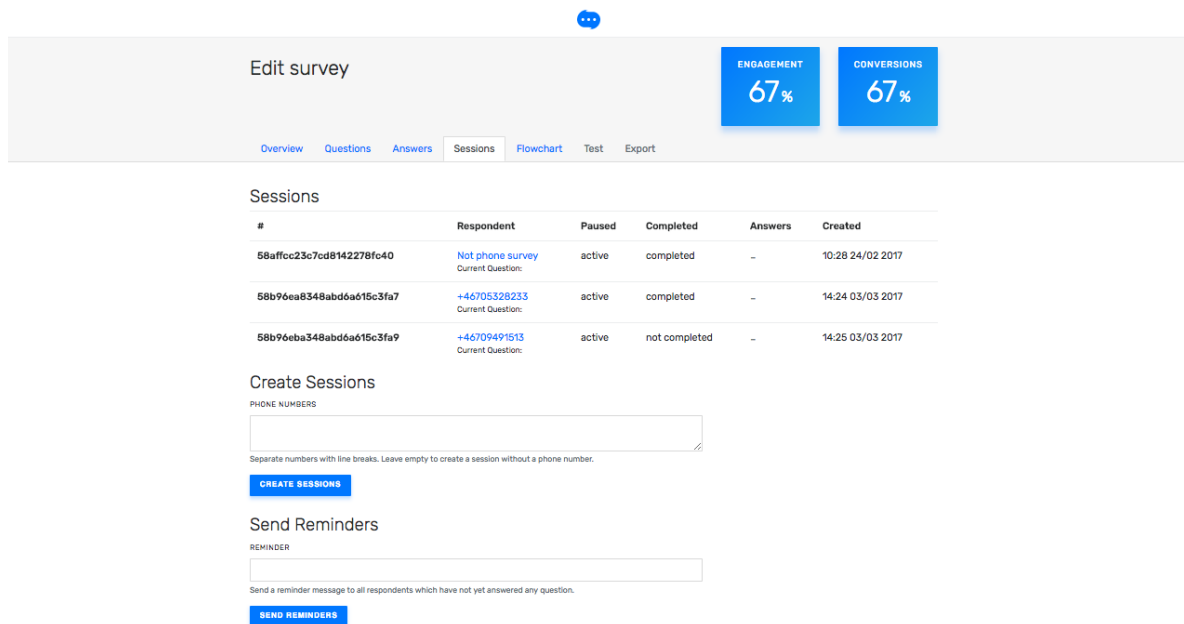


Figure A.10: An overview of created sessions for a survey in the dashboard after implementing features to make testing easier.

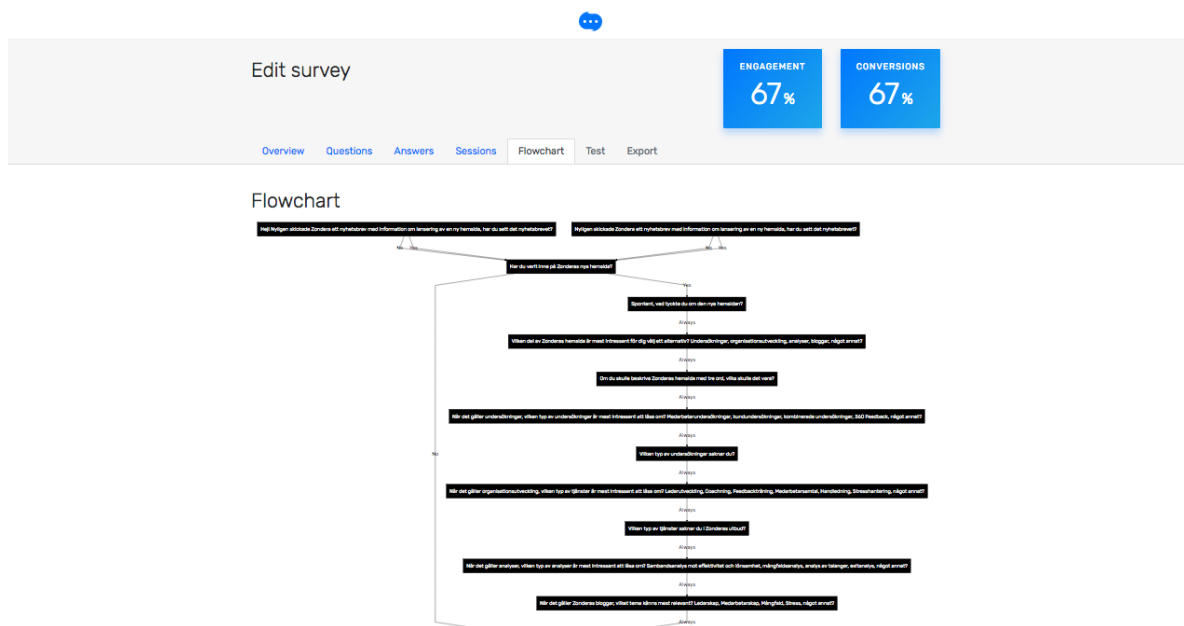


Figure A.11: The flowchart view of a survey in the dashboard.

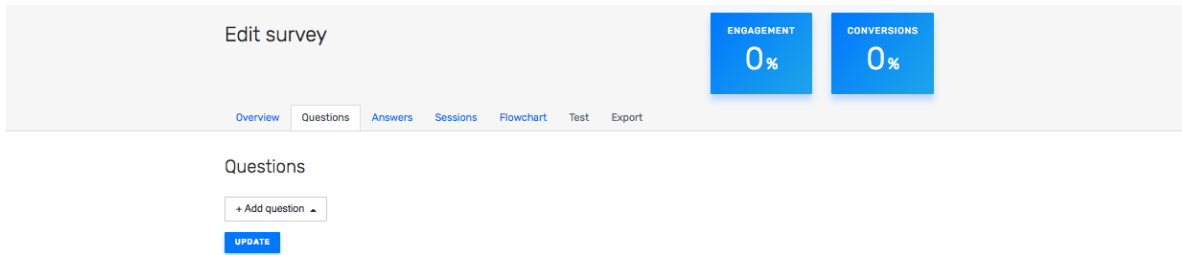


Figure A.12: The view for creating new surveys in the dashboard.

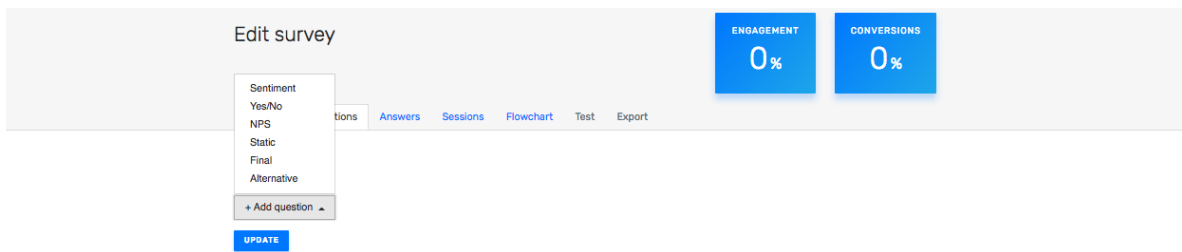
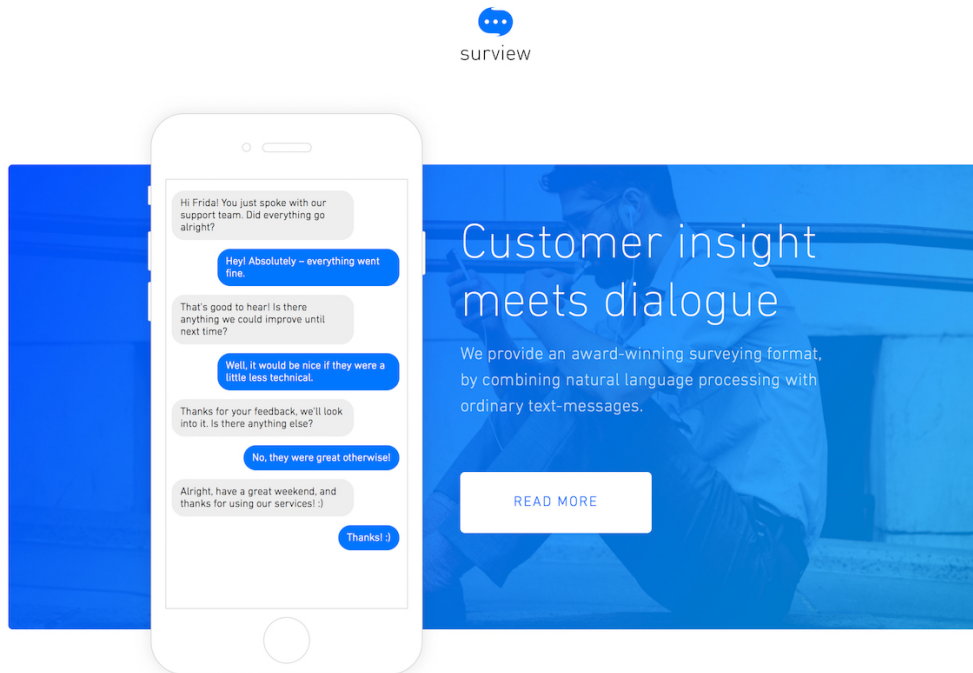


Figure A.13: Dropdown showing all available question types in the dashboard.



By combining natural language processing with text-messaging we allow surveys to be performed in a conversational, fully automated manner.

Automated yet personal

Our state-of-the-art machine learning models makes asking questions easier than ever before. In fact, it's so easy you don't have to do anything at all.

Supercharged responses

Surview completely mitigates survey fatigue by letting the respondents fill out the survey using directly in their phone. Launch a survey and receive answers seconds later.

Hassle-free integration

Real-time or post-survey export? We offer both. Pick your poison and easily integrate Surview with your current workflow.

Award-winning technique

Being able to stand out from the crowd is a considerable challenge for any company these days. Our award-winning technique connects you to your audience without having to compete for the top spot in your customers' inbox.

Fast and effective

Everyone does text-messaging, which is why the conversational format makes for even better response rates, and even faster response times.

Unique insight

Surview brings you real actionable data and the tools you need make those actions happen. We annotate and verify the data for you – so that you can focus on building a great business.

Figure A.14: The upper part of the landing page.



Our format connects you to your audience on a personal level,
while also improving response rates and response times.

Contact us

✉ info@surview.se

📍 **Vasa (Startup Camp & Encubation)**
Vera Sandbergs Allé 8, 4 trp
411 33, Göteborg

👤 David Helldén	👤 Henrik Nilson
👤 Mats Högberg	👤 Filip Hallqvist
👤 Johanna Sigvardsson	👤 Emil Lundgren

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Figure A.15: The lower part of the landing page.

Appendix B

Test Cards

Test Card		Strategyzer
Customer interviews	2017-02-06	
Product owner (David)	2 weeks	
STEP 1: HYPOTHESIS We believe that Low respons rate is a problem that consultant firms want to solve Critical:		
STEP 2: TEST To verify that, we will Talk to at least ten consultant firms Test Cost: Data Reliability:		
STEP 3: METRIC And measure How many consultant firms that have problems with low respons rate and want to solve it Time Required:		
STEP 4: CRITERIA We are right if At least five consultant firms confirm our hypothesis		

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Figure B.1: Test Card describing testing whether low response rate is a problem survey consultants want to solve.

Test Card		Strategyzer
Customer interviews	2017-02-20	
Product owner (David)	2 weeks	
STEP 1: HYPOTHESIS We believe that Consultant firms can sell better answer rate, ability to reach new costumer segments and faster feedback to their costomers Critical:		
STEP 2: TEST To verify that, we will Talk to at least ten consultant firms, and try to figure out if our hypothesis is right Test Cost: Data Reliability:		
STEP 3: METRIC And measure How many consultant firms that can sell better answer rate, ability to reach new costumer segments and faster feedback to their costomers Time Required:		
STEP 4: CRITERIA We are right if At least five consultant firms confirm our hypothesis		

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Figure B.2: Test Card describing testing whether survey consultants can sell potential gain creators and pain relievers to their customers.

Test Card		Strategyzer
Customer interviews	2017-02-06	
Product owner (David)	2 weeks	
STEP 1: HYPOTHESIS We believe that Slow feedback is a problem that consultant firms want to solve Critical:		
STEP 2: TEST To verify that, we will Talk to at least ten consultant firms Test Cost: Data Reliability:		
STEP 3: METRIC And measure How many consultant firms that have problems with slow feedback and want to solve it Time Required:		
STEP 4: CRITERIA We are right if At least five consultant firms confirm our hypothesis		

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Figure B.3: Test Card describing testing whether slow feedback is a problem survey consultants want to solve.

Test Card		Strategyzer
Customer interviews	2017-02-06	
Product owner (David)	2 weeks	
STEP 1: HYPOTHESIS We believe that Not being able to get answers from young people, busy people and "neutrals" is a problem that consultant firms want to solve Critical:		
STEP 2: TEST To verify that, we will Talk to at least ten consultant firms Test Cost: Data Reliability:		
STEP 3: METRIC And measure How many consultant firms that have problems with reaching certain customer segments Time Required:		
STEP 4: CRITERIA We are right if At least five consultant firms confirm our hypothesis		

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Figure B.4: Test Card describing testing whether reaching certain customers segments is a problem survey consultants want to solve.

Test Card

Strategyzer

Customer interviews

2017-02-06

Product owner (David)

2 weeks

STEP 1: HYPOTHESIS

We believe that

Consultant firms can and want to use tools not developed in-house, and are not hard bent on developing everything themselves

Critical: 

STEP 2: TEST

To verify that, we will

Talk to at least ten consultant firms

Test Cost:  Data Reliability: 

STEP 3: METRIC

And measure

How many consultant firms that can and want to use tools not developed in-house

Time Required: 

STEP 4: CRITERIA

We are right if

At least five consultant firms confirm our hypothesis

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Figure B.5: Test Card describing testing whether survey consultants can and want to use tools developed externally.

Test Card

Strategyzer

Customer interviews

2017-02-06


Product owner (David)

2 weeks

STEP 1: HYPOTHESIS

We believe that



Consultant firms can and want to work with the product by themselves and we can just provide a tool for them to use without giving too much support

Critical: 

STEP 2: TEST

To verify that, we will


Talk to at least ten consultant firms

Test Cost:  Data Reliability: 

STEP 3: METRIC

And measure

How many consultant firms that can work with tools by themselves

Time Required: 

STEP 4: CRITERIA

We are right if

At least five consultant firms confirm our hypothesis

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Figure B.6: Test Card describing testing whether consultants can use a external tool independently.

Test Card

Strategyzer

Test with random numbers

2017-03-05


Product Owner (Johanna)

2 days

STEP 1: HYPOTHESIS

We believe that



Conversational surveys over SMS give higher response rate than alternative mediums, conversational surveys over SMS give useful data, respondents do not have a negative attitude towards surveys over SMS

Critical: 

STEP 2: TEST

To verify that, we will


Conduct a survey where half the respondents get a web survey and half the respondents get a SMS survey

Test Cost:  Data Reliability: 

STEP 3: METRIC

And measure

Engagement rate, completion rate and if the data from the SMS surveys is useful

Time Required: 

STEP 4: CRITERIA

We are right if

The engagement rate and conversation rate is higher with our tool and if we get useful data

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Figure B.7: Test Card describing the test with random people.

Test Card

Strategyzer

Test with company T

2017-02-27


Product Owner (Emil)

1 week

STEP 1: HYPOTHESIS

We believe that



SMS gives useful data
SMS gives consultants useful data

Critical: 

STEP 2: TEST

To verify that, we will


Conduct a survey and send the result to the company that requested the test

Test Cost:  Data Reliability: 

STEP 3: METRIC

And measure

Engagement rate, completion rate and check to see if the data from the surveys is useful by sending it to the customers and by verifying it ourselves

Time Required: 

STEP 4: CRITERIA




We are right if

The consultants respond that they can use the data and that we ourselves see that it's useful for us.

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

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Figure B.8: Test Card describing the test with Company T.

Test Card		Strategyzer
Test with company Z	2017-04-06	
Product Owner (Johanna)	2 weeks	
STEP 1: HYPOTHESIS		
We believe that		
Conversational surveys over SMS give higher response rate than alternative mediums, conversational surveys over SMS give faster feedback, respondents do not have a negative attitude towards surveys over SMS. Critical: 		
STEP 2: TEST		
To verify that, we will		
Conduct a survey where half the respondents get an email survey and half the respondents get a SMS survey. Test Cost:  Data Reliability: 		
STEP 3: METRIC		
And measure		
Engagement rate, completion rate and if the feedback from the SMS surveys is faster. Time Required: 		
STEP 4: CRITERIA		
We are right if		
The engagement rate and conversation rate is higher with our tool and if we get faster feedback		





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Figure B.9: Test Card describing the test with Company Z.

Test Card		Strategyzer
Test with Webshops	2017-03-30	
Product Owner (David)	1 month	
STEP 1: HYPOTHESIS		
We believe that		
Webshops want to verify that all customers deliveries have been followed properly. Webshops are willing to pay for verifying above. Critical: 		
STEP 2: TEST		
To verify that, we will		
Talk to at least ten webshops. Cost:  Data Reliability: 		
STEP 3: METRIC		
And measure		
How many webshops that verifies customer deliveries and check that they are willing to pay for a solution. Time Required: 		
STEP 4: CRITERIA		
We are right if		
At least five webshops confirm our hypothesis		

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Figure B.11: Test Card describing testing whether webshops want to, and are willing to pay for, verifying that deliveries are followed up properly.

Test Card		Strategyzer
Test with Webshops	2017-03-30	
Product Owner (David)	1 month	
STEP 1: HYPOTHESIS		
We believe that		
Webshops have problem with not getting enough feedback from customers. Webshops are willing to pay to get more feedback. Critical: 		
STEP 2: TEST		
To verify that, we will		
Talk to at least ten webshops. Test Cost:  Data Reliability: 		
STEP 3: METRIC		
And measure		
How many webshops that have problems with feedback and if they are willing to pay for a solution. Time Required: 		
STEP 4: CRITERIA		
We are right if		
At least five webshops confirm our hypothesis		

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Figure B.10: Test Card describing testing whether webshops have problems with, and want to pay for more, feedback.

Test Card		Strategyzer
Test with Webshops	2017-03-30	
Product Owner (David)	1 month	
STEP 1: HYPOTHESIS		
We believe that		
Webshops sees a value in a more personal relationship to their customers. Webshops are willing to pay for a more personal relationship. Critical: 		
STEP 2: TEST		
To verify that, we will		
Talk to at least ten webshops. Cost:  Data Reliability: 		
STEP 3: METRIC		
And measure		
How many webshops that sees a value in a more personal relationship to their customers and see if they pay for a solution. Time Required: 		
STEP 4: CRITERIA		
We are right if		
At least five webshops confirm our hypothesis		

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Figure B.12: Test Card describing testing whether webshops want, and are willing to pay for, a more personal relationship with their customers.

Test Card

Strategyzer

Test with Webshops	2017-03-30
Product Owner (David)	1 month

STEP 1: HYPOTHESIS

We believe that

Webshops benefit from a deeper problem analysis of their customers

Webshops want to pay for a deeper analysis

STEP 2: TEST

To verify that, we will

Talk to at least ten webshops

Cost: =

Cost: =

Data Reliability: =

STEP 3: METRIC

And measure

How many webshops that benefit from a deeper problem analysis and how many that pay/are willing to pay for a solution.

Time required: =

STEP 4: CRITERIA

We are right if

At least five webshops confirm our hypothesis

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Figure B.13: Test Card describing testing whether webshops benefit from, and are willing to pay for, deeper analysis of their customers.

Appendix C

Learning Cards

Learning Card

Strategyzer

Customer interviews

2017-02-20

Product owner (David)

STEP 1: HYPOTHESIS



We believed that

Low respons rate is a problem that consultant firms want to solve

STEP 2: OBSERVATION

We observed




Eight consultant firms have problems with low respons rate

Data Reliability:  

STEP 3: LEARNINGS AND INSIGHTS

From that we learned that

Low respons rate is a problem today with consultants, and they are actively trying to get higher respons rates

Action Required:   

STEP 4: DECISIONS AND ACTIONS

Therefore, we will

Update our Business Model and Value Proposition Canvases, and try to find out if we can get higher response rate with our product

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Figure C.1: Learning Card describing learning from testing if low response rates are a problem survey consultants want to solve.

Learning Card

Strategyzer

Customer interviews

2017-02-20

Product owner (David)

STEP 1: HYPOTHESIS



We believed that

Slow feedback is a problem today that consultant firms want to solve

STEP 2: OBSERVATION

We observed




The market is heading towards faster feedback. Five consultant firms have confirmed that faster feedback would create value

Data Reliability:  

STEP 3: LEARNINGS AND INSIGHTS

From that we learned that

Faster feedback is a gain with costumers, but not necessarily a pain today

Action Required:   

STEP 4: DECISIONS AND ACTIONS

Therefore, we will

Update our Business Model and Value Proposition Canvases, and test if our product can get answers faster that existing alternatives

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Figure C.3: Learning Card describing learning from testing if slow feedback is a problem survey consultants want to solve.

Learning Card

Strategyzer

Costumer interviews

2017-02-20

Product owner (David)

STEP 1: HYPOTHESIS



We believed that

Consultant firms can sell better answer rate, ability to reach new costumer segments and faster feedback to their costumers

STEP 2: OBSERVATION

We observed




All the consultant firms that we talked to confirmed our hypothesis.

Data Reliability:  

STEP 3: LEARNINGS AND INSIGHTS

From that we learned that

This tells us that consultants want a new tool that helps them get this

Action Required:   

STEP 4: DECISIONS AND ACTIONS

Therefore, we will

Continue focusing on the identified problems, to see if we can solve them.

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Figure C.2: Learning Card describing learning from testing if survey consultants can sell the potential gain creators and pain relievers to their customers.

Learning Card

Strategyzer

Customer interviews

2017-02-20

Product owner (David)

STEP 1: HYPOTHESIS



We believed that

There was a problem reaching certain customer segments, namely young, busy and "neutrals"

STEP 2: OBSERVATION

We observed




Some companies found young people hard to reach, some found busy hard to reach, and some found "neutrals" hard to reach

Data Reliability:  

STEP 3: LEARNINGS AND INSIGHTS

From that we learned that

There are customer segments that are hard to reach, but which segment this is varies a lot from company to company and mediums.

Action Required:   

STEP 4: DECISIONS AND ACTIONS

Therefore, we will

Identify which costumer segment that our way of surveying reaches. This can be useful for further segmenting our market.

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Figure C.4: Learning Card describing learning from testing if reaching certain customer segments is a problem survey consultants want to solve.

Learning Card Strategyzer

Customer interviews 2017-02-20

Product owner (David)

STEP 1: HYPOTHESIS



We believed that

Consultant firms can and want to use tools not developed in-house, and aren't hard bent on developing everything themselves

STEP 2: OBSERVATION

We observed




Eight consultant firms either had bought external tools in the past, or would be interested in doing it

Data Reliability:  

STEP 3: LEARNINGS AND INSIGHTS

From that we learned that

It is not a problem for consultants to take in external tools, which means that we can sell them another tool to use

Action Required:   

STEP 4: DECISIONS AND ACTIONS

Therefore, we will

Develop a tool for consultants

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Figure C.5: Learning Card describing learning from testing if survey consultants can, and want to, use external tools.

Learning Card Strategyzer

Customer interviews 2017-02-20

Product owner (David)

STEP 1: HYPOTHESIS



We believed that

Consultant firms can and want to work with the product by themselves, and that we can just provide a tool for them to use without giving too much support

STEP 2: OBSERVATION

We observed




Six consultant firms work independently with their tools today

Data Reliability:  

STEP 3: LEARNINGS AND INSIGHTS

From that we learned that

It is okay for us to develop a tool that consultants use without any help from us

Action Required:   

STEP 4: DECISIONS AND ACTIONS

Therefore, we will

Develop a product that the consultants can use without our help

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Figure C.6: Learning Card describing learning from testing if survey consultants can, and want to, use external tools.

Learning Card Strategyzer

Test with random numbers 2017-03-05

Product Owner (Johanna)

STEP 1: HYPOTHESIS



We believed that

Conversational surveys over SMS gives higher response rate than alternative mediums, conversational surveys over SMS gives useful data, respondents do not have a negative attitude towards survey over SMS

STEP 2: OBSERVATION

We observed




That the test did not confirm any of our hypotheses. Using a random number makes people suspicious

Data Reliability:  

STEP 3: LEARNINGS AND INSIGHTS

From that we learned that

SMS is more personal than alternative mediums, it probably works better when the respondent have a reason for being contacted

Action Required:   

STEP 4: DECISIONS AND ACTIONS

Therefore, we will

Test our product with respondents that have a reason for being contacted by a company

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Figure C.7: Learning Card describing learning from the test with random people.

Learning Card Strategyzer

Test with company T 2017-03-04

Product Owner (Emil)

STEP 1: HYPOTHESIS



We believed that

SMS gives useful data
SMS gives consultants useful data

STEP 2: OBSERVATION

We observed




That the end-customer wanted the data in a more representable way than excel for it to be useful

Data Reliability:  

STEP 3: LEARNINGS AND INSIGHTS

From that we learned that

That wether or not the data is useful depends on how the end-customer is used to receive it.

Action Required:   

STEP 4: DECISIONS AND ACTIONS

Therefore, we will

Present the data in a suitable way depending on the customer

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Figure C.8: Learning Card describing learning from the test with Company T.

Learning Card

Strategyzer

Test with company Z

2017-04-06

Product Owner (Johanna)

STEP 1: HYPOTHESIS

We believed that

Conversational surveys over SMS give higher response rate than alternative mediums, conversational surveys over SMS give faster feedback, respondents do not have a negative attitude towards survey over SMS

STEP 2: OBSERVATION

We observed

That the test did not confirm any of our hypotheses. Our tool was better to get in touch with respondents

Data Reliability:

STEP 3: LEARNINGS AND INSIGHTS

From that we learned that

Useful answers are provided if the questions are relevant to the responder. Reminders are a good way to get more answers

Action Required:

STEP 4: DECISIONS AND ACTIONS

Therefore, we will

Start using reminders for tests

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Figure C.9: Learning Card describing learning from the test with Company Z.

66

Appendix D

Surveys and questionnaires

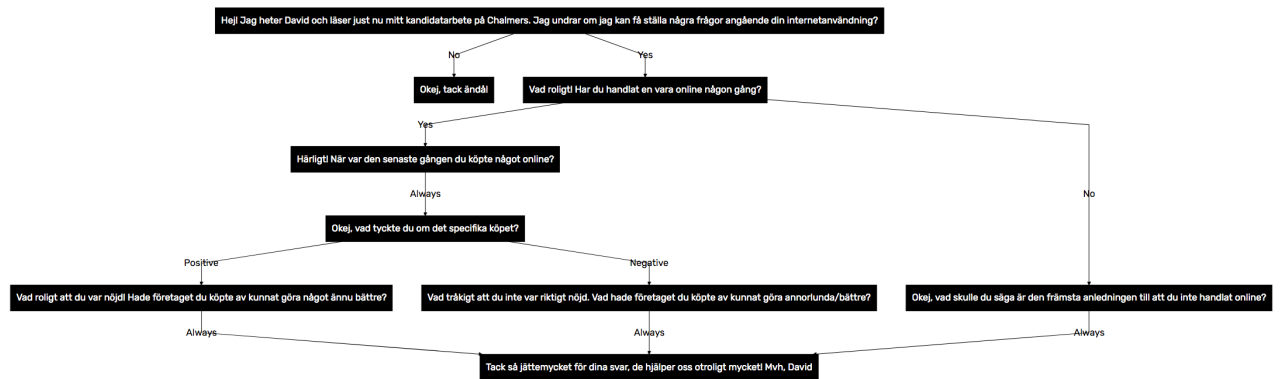


Figure D.1: Flowchart showing how the survey sent to random people about their Internet habits was designed.

Flowchart

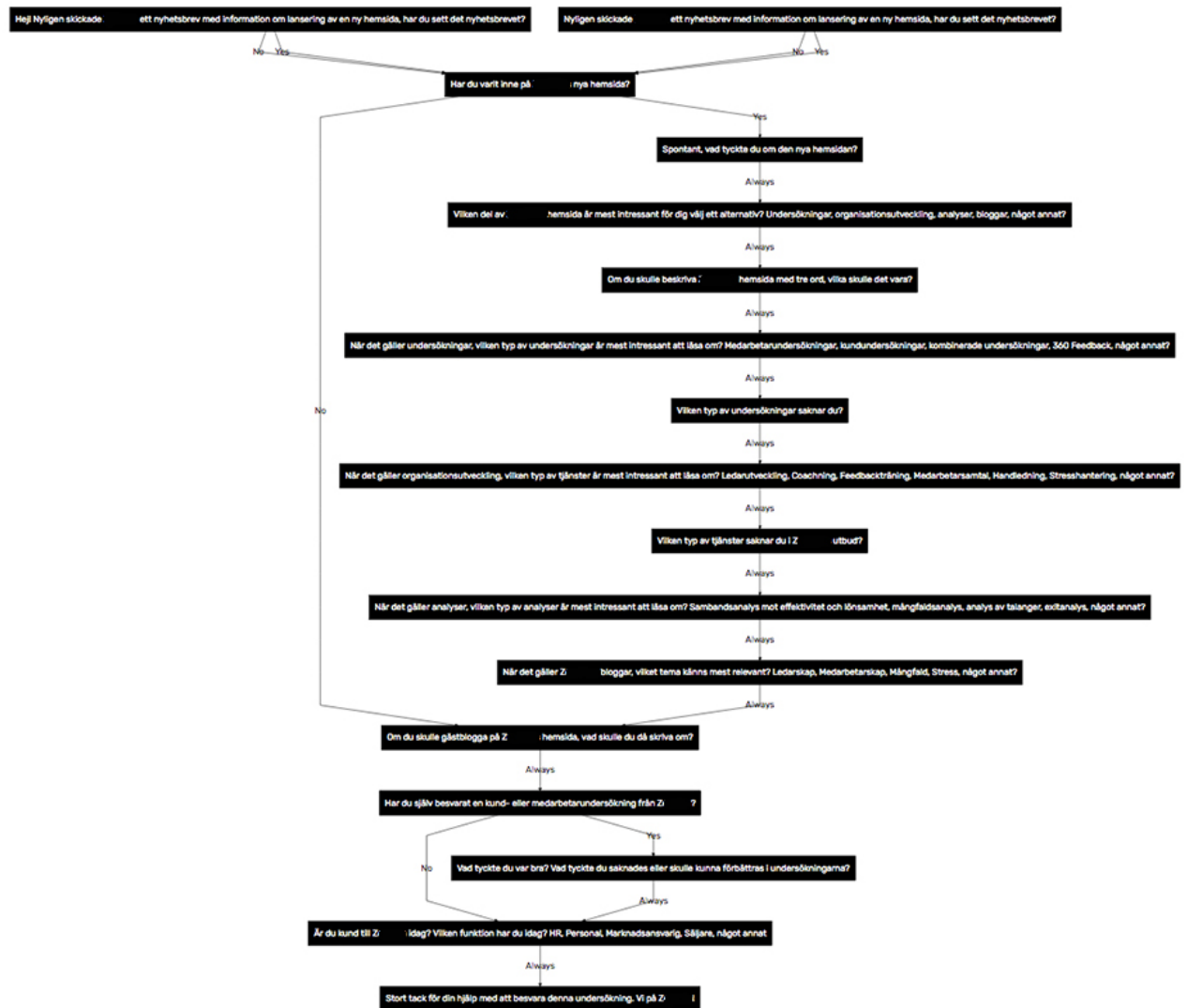


Figure D.2: Flowchart showing how the survey sent to Z's survey participants was designed.

Flowchart

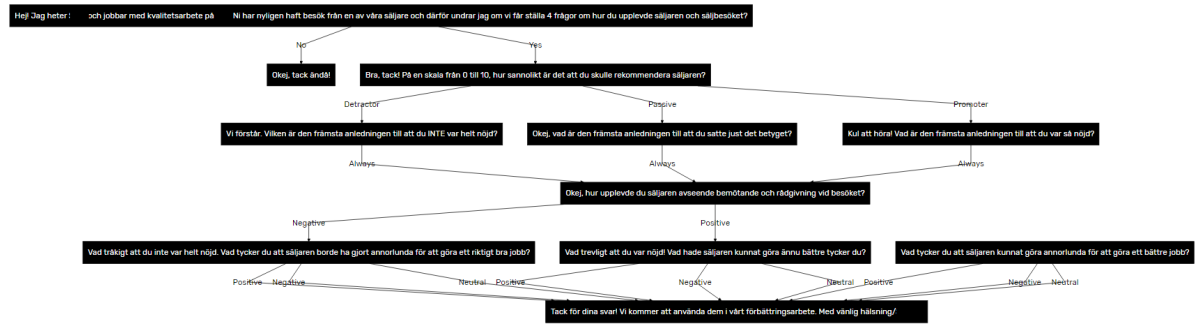


Figure D.3: Flowchart showing how the survey sent to T's customers technicians was designed.

Flowchart

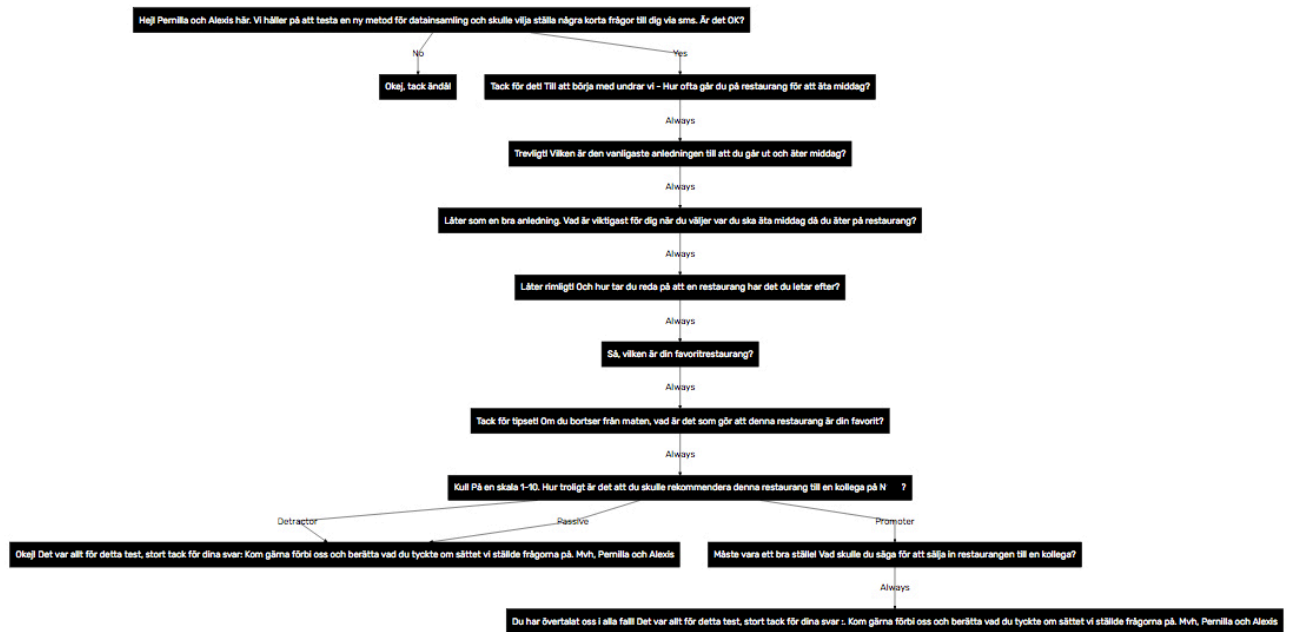


Figure D.4: Flowchart showing how the survey sent to N's co-workers was designed.

Interview questions, Consultants

What does your company do?

What is your role at the company?

Take us through your workflow

Which parts are the most difficult?

What are you doing to solve these issues today?

How much are you spending? (time, money etc.)

Take us through the last time this happened

What would be the consequences if this problem was solved?

How do you treat, and act on, data collected?

How often do your customers receive collected data?

How much more do you charge for faster data?

Do you develop all your tools in-house?

Why/why not?

Have you used external developed tools previously?

Why are customers hiring you in particular?

In which situations do you provide the most value?

What do you do to add more value in those situations?

How did you do this the last time it happened?

What are the consequences of not being able to provide this value?

Figure D.5: Questionnaire used as a framework when interviewing consultancy companies.

Interview questions, Webshops

What does your company do?

What is your role at the company?

Take us through your workflow

Which parts are the most difficult?

What are you doing to solve these issues today?

How much are you spending? (time, money etc.)

Take us through the last time this happened

What would be the consequences if this problem was solved?

How do you treat, and act on, data collected?

How often do you receive/illustrate collected data?

Take us through the last time you acted on data collected

What happens if there is a delay in data collected?

How much more do you pay for faster data?

Why are you surveying your customers?

In which situations do surveying provide you with the most value?

What do you do to add more value in those situations?

How did you do this the last time it happened?

What are the consequences of not being able to provide this value?

Figure D.6: Questionnaire used as a framework when interviewing webshops.