Lean Startup Approach to Develop Ideas for Internal Systems and Processes

Creating Guidelines for Working with Ideas within Software and Service Companies

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Abstract

Creating innovations has becoming increasingly important due to the digital transformation of the business world. In order to create innovations, the Lean Startup approach has been successfully used. It is an approach for quickly evaluate ideas to see if there is any business case behind them. But, how could the Lean Startup approach be used in large companies to help improve internal development? Internal development is for creating, maintaining and improving systems and processes used within companies. They are usually developed following the Waterfall method, which is slow and does not generate enough ideas. Through semi-structured interviews, the Lean Startup approach designed at a case company and their internal development team’s needs, have been identified. These interviews later served as a foundation for comparing the Lean Startup approach used at the case company and the needs of their internal development team. As a result, guidelines have been compiled on how the Lean Startup approach could be adapted to suit the needs of the case company’s internal development team. This thesis presents the guidelines.
Acknowledgements

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Innovative companies are the leading companies in the business world\(^1\) and those companies that do not innovate risk losing their positions to other industrial players or startups\(^2\) p. 59 – 61. Some examples of digital innovations that have revolutionized entire industries are iTunes\(^1\), Skype\(^2\) and Netflix\(^3\). The high importance of innovations in the business world can be explained due to the digital transformation, which can be summarized as\(^2\) p. 7:

"Anything that can be digitalized, will be digitalized, anything that can be digitalized can be copied, and anything that can be copied decreases in value."

The digital transformation has led to that anyone, anytime can launch a product on a global scale\(^2\) p. 46, which has increased the competition and thereby the importance of being innovative\(^2\) p. 61. For instance, the travel industry has been radically changed since digital companies were brought to market\(^2\) p. 51. They can among other functions use Big Data and Artificial Intelligence (AI) to find personalized travels. Other industries that have changed or are changing because of the development of digital innovations are Video, Information Technology (IT) and Commerce. An example of a pioneering innovation from 2007 is Apple’s iPhone\(^2\) p. 201. Since then, mobility has become increasingly important and many companies consider mobilizing their systems as a part of their digital strategy\(^2\) p. 204.

Not only does the digital transformation affect companies externally, but also internally since a fundamental part of each company’s infrastructure is made up of supportive digital IT systems\(^2\) p. 81 – 83. These IT systems are usually complex, inflexible and incoherent, while coworkers expect the same user experience when using digital systems at work as they get outside work\(^3\) p. 33. Traditionally, the digital IT systems in companies have been developed

\(^{1}\)https://www.apple.com/itunes
\(^{2}\)https://www.skype.com
\(^{3}\)https://www.netflix.com
and implemented according to the waterfall method [2, p. 81 – 83]. A common issue with the waterfall method is that the need to modify or reject an idea is usually identified late in the development process, which causes time, money and effort to be wasted [4]. However, one example of how companies have tried to meet the challenge with the user experience of the digital IT systems used internally is by mobilizing the companies’ digital IT systems as employees have become more used to smartphones [2, p. 204]. With new technologies that surface, companies are given the ability to create new products and services that transform how they use their IT systems in order to sell, market, communicate, collaborate, innovate, train and educate [5]. It is therefore not longer enough for companies to only maintain existing systems [5]. They also need to drive internal innovation by generating ideas based on what their employees want and what digital enterprise systems exist on the market. However, no matter how many ideas that are being generated, they should be evaluated before unnecessary time, money and effort are wasted.

When creating innovations, the Lean Startup approach has been utilized widely [6], since it has been shown to fast minimize an idea’s risks and failures [7].

The approach was founded by Eric Ries [7]. He describes the background to Lean Startup as many years of experience with new business ideas that fail, despite the fact that much money and time have been invested. His Lean Startup approach has been successfully used by startups and large companies like Dropbox [4] and Tieto [5] to quickly identify qualitative innovations which could be valuable for external competition.

Previous research about the Lean Startup approach have shown that earlier use of the Lean Startup approach have aimed at successfully and quickly creating and improving products or services based on what customers want [6, 8, 9]. No research have been found on how the Lean Startup approach could be utilized for quickly developing and improving internal systems or processes in companies, based on what employees want.

1.1 Problem Statement

The Lean Startup approach has been shown to help companies develop external digital innovations by generating ideas based on what their customers need. This study will therefore focus on how the Lean Startup approach can be adapted to the development of internal systems and processes within software and service companies, which are aiming at developing ideas based on what their employees want. Adapting the Lean Startup approach to suit the development of internal systems and processes is of interest since previous research and literature describe that companies have the similar internal and external needs [3][2][5]. For

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instance, they need to innovate both internally and externally, and their focus should be on the users and thereby on the customers or the employees when it comes to internal IT systems. Despite these similarities, there is still much uncertainty in using the approach for internal reasons since no research have been found on how it could be done. Neither is the Lean Startup approach’s purpose to develop products and services for employees’ needs since it is designed for creating products and services based on external customers’ needs. Therefore, it is of interest to compare the Lean Startup approach with the needs of internal development teams. Comparing the Lean Startup approach with internal development teams’ needs will create an understanding of how the Lean Startup approach could be adapted to be used for development of internal systems and processes.

1.1.1 Research Objectives

The aim of this study is to investigate how software and service companies can adapt their Lean Startup approach to the development of internal systems and processes. In order for the study to fulfill its aim, four questions have been produced to guide the work as it progresses. The answers to these questions will serve as the basis for the analysis as well as the conclusions drawn regarding how the Lean Startup approach could be adapted to suit the development of internal systems and processes used within a company.

Q1: How is the Lean Startup approach designed and utilized within a software and service company?

The first question intends to create an understanding of how the Lean Startup approach is designed at a case company, representing software and service companies. The first question is thereby intended to work as a foundation for providing knowledge of the Lean Startup approach and later for identification of areas where the designed innovation process could be adapted to suit the development of internal systems and processes.

Q2: What are the needs of the internal development team within a software and service company?

The focus of this study is based on the needs and requirements of the internal development team within software and service companies. In order to give recommendations regarding how the Lean Startup approach could be adapted to suit the development of internal systems and processes used within the case company, the needs and requirements of the internal development team must be understood.
Q3: What differences can be identified between the Lean Startup approach used within a software and service company, and the needs of the internal development team in the same company?

The third question is intended to identify differences between the Lean Startup approach within the case company and the needs of the internal development team in the same company. An understanding of what differences exist and how they affect the Lean Startup approach used within the case company, will enable conclusions to be drawn as to how these differences can be eliminated and how the Lean Startup approach could be adapted to suit the internal development team’s needs.

Q4: How can a software and service company adapt their Lean Startup approach to the needs of their internal development team?

Based on the previous questions, the final question will combine the knowledge gained in order to present suggestions regarding how the Lean Startup approach used within the case company could be modified to suit the needs of the internal development team.

1.2 Limitations

This study will result in guidelines on how the Lean Startup approach used within software and service companies could be adapted to suit the development of internal systems and processes. Thus, the effects of the guidelines will not be measured. Due to limitations in time, only one software and service company will be studied.
Chapter 2

Background

The background chapter gives an introduction to important concepts in this thesis. These concepts are the innovation process, Lean Startup and internal development in companies. A short description about the case company and why this study is relevant for them is presented as well.

2.1 Innovation Process

Innovation is the act of developing something new and original that is different from old items or processes [10], and it arises from ideas [11]. A sustainable flow of innovation ideas is a first step in the innovation process [11]. To increase the probability that the outcome from the innovation process will be successful innovations, the quality of the generated ideas is important to consider [11, 12]. Therefore, the second step in the innovation process is to evaluate the ideas in order to see if the ideas suit the companies’ strategic goals and benefit the stakeholders [11].

2.1.1 Generating Ideas

Idea generation or ideation is the act of forming ideas [13]. Ideas are the results of the creative or rational thinking processes [11]. When generating ideas, brainstorming is a common technique [14, p. 16]. It usually generates a lot of ideas in a short time. Generating as many ideas as possible is according to Berg et. al. [3, p. 230 – 232] the goal with idea generation. When generating ideas, innovative companies encourage their employees to actively participate since they highly value their opinions and different points of view [14, p. 17]. This is in line with what Berg et. al. [3, p. 62] say. They argue that companies benefit from gathering people with different knowledge and experiences to
generate ideas since ideas can then be discussed on the basis of all its aspects. Negroponte [15, p. 62] is another author who says that new ideas come from differences, and creativity comes from unlikely juxtapositions. Furthermore, Girotra and Ulrich [16] suggest that groups that first work independently and thereafter together are able to generate more and better ideas at the same time as they better realize the quality of the ideas they generate, in comparison with groups only working together. In addition to the way a company should organize a team to generate ideas, it is also of great importance to define what they should focus on when generating ideas. In the area of service design, Berg et. al. [3, p. 230 – 232] argue that the generated ideas should be based on the users’ needs, problems and opportunities. For that reason, it is important to first create an understanding of the users.

2.1.2 Evaluating Ideas

After ideas are generated, the next step is to evaluate them in order to make sure they suit the companies’ strategic goals and fulfill the needs of the people that the ideas are supposed to be based on [11]. The more ideas, the more time is required to evaluate them [14, p. 16]. Nevertheless, the evaluation phase should according to Cantzler [14, p. 44] not be done directly after the idea generation phase. His experience of creativity in companies and organizations is that a pause is usually needed in order to get an insight in which ideas are worth working further on. When the evaluation is in progress, the focus should be on creating an understanding of how the idea may work when it is finished [3, p. 233]. The first step is to evaluate the ideas in consideration of the company’s strategic goals and the needs of the people who the ideas are supposed to benefit [11]. When this is done, it is in the field of service design, important to test the service idea [3, p. 233 – 234]. Testing the service idea can be done by prototyping and user testing.

2.2 Internal Development

A compulsory part of any employee’s everyday life is IT systems used in companies [14, p. 81 – 82]. These are usually categorized in Core System or Supportive System [14, p. 81 – 82]. Core Systems are all digital solutions that are crucial for companies and Supportive Systems are digital solutions that support companies by helping people collaborate, communicate and interact [14, p. 83, 87]. Descriptions of common IT systems in companies can be seen in the two sections as follows [14, p. 83 – 93]:
Core Systems

- **Customer Relationship Management (CRM) systems** collect information about customers, support the sales process and help the sales person to focus on the most important tasks, give a forecast for future sales and give the sales leadership team the tools needed to manage their organization.

- **Enterprise Resource Planning (ERP) systems** usually support processes in purchase, stock, production, sales, economy and Human Resource (HR).

- **Product Lifecycle Management (PLM) systems** handle information about the whole lifecycle of a product - from the innovation phase until the dismantling of it. In these systems, information about the product could be created and stored. Even information about different product versions can be handled.

- **Master Data Management (MDM) systems** are platforms for data and are integrated to make the sharing of data between systems and people more effective.

Supportive Systems

- **Learning Management Systems (LMS)** are platforms for learning. When learning on the platforms, the user studies the material on the platform and conducts exercises about the specific subject the education aims to teach.

- **Collaboration Management** are platforms for collaboration and sharing of resources. An example of such a platform is a company’s intranet.

- **Feedback Management** is about giving customers, employees and other relevant people the opportunity to share their opinions, in order to collect these opinions and learn from them.

- **Human Resource (HR) Management** are systems for personnel administration. The HR Management area includes payroll systems, time reporting systems, staff planning systems, bonus- and incentive systems. These systems also support processes for attracting, recruiting, incorporating, developing and dismantling employees.

- **Digital Engagement** is a new area within Supportive Systems in companies. The area is about engaging the users by visualizing the development. Platforms for Digital Engagement could be advantageously integrated in the other IT systems.
2.2.1 Development Methods

Companies’ IT systems have traditionally been developed according to the waterfall method [14, p. 81]. This method is based on that projects in the planning stage are divided in distinct activities like requirements gathering, design, implementation, verification and maintenance [14, 17, p. 81]. These activities are in the Waterfall method executed sequentially or in parallel. After all activities have been completed, a project has reached the stage of its operational start. However, the Waterfall method can not keep up with the pace of an increasing demand due to the digital transformation [17]. Neither is it suitable when requirements change in the middle of a development process, which is quite usual [17]. A number of various iterative development methods have therefore been created, e.g. Scrum and XP [17]. The iterative methods have made it possible to manage the risk of changing requirements [17]. Unfortunately, iterative methods do not guarantee that users want the products that have been built since the only way to ensure that customers want the product being built is by engaging them continuously [17]. The Lean Startup approach was therefore created aiming at continuously engaging users in order to learn what they want.

2.3 Lean Startup

The Lean Startup was developed by Eric Ries [7] as an approach for evaluating a new business idea to fast minimize its risks and failures by working in a build-measure-learn cycle and continuously asking for customer feedback. Ries [7] argues that the approach can work in any company size, even in a large one [7]. A success story of applying the Lean Startup approach in a large company, is a case study conducted by Edison et. al. [9]. The study showed that applying the Lean Startup approach helped a large case company to build the right product and to find the right market segment faster [9]. Other companies like F-secure[1] and OP Finance Group[2] have used the approach to develop new business ideas [6]. As a result, OP Finance developed a mobile wallet - Pivo. Pivo generally gets higher ratings when compared to other OP finance services, and its average rating is 4.5 of 5 in Apple’s App Store. F-secure tried the Lean Startup approach when they developed Lokki, a location-sharing service for people protection. Lokki was so successful, so that after the development of Lokki, F-secure started to mainly use the approach in new product development projects.

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1https://www.f-secure.com
2https://uusi.op.fi
2.3.1 Lean Canvas

Ash Maurya \cite{18}, has successfully used the Lean Startup approach when producing business ideas. Since he experienced the process to create plans for bringing ideas to the market as time consuming, he developed the Lean Canvas \cite{18}. The Lean Canvas is a one-page template for rapidly creating plans for bringing ideas into the market. An initial idea is mainly build on untested assumptions \cite{19, p. 3–4}. By defining an initial idea on a Lean Canvas and later test and define the idea, the result will be a plan for an idea that is based on facts instead of assumptions \cite{19, p. 3–4}. Maurya \cite{19, p. 5–6} says that the main advantages with the Lean Canvas is that it is fast, concise and portable. It is fast because it is possible to draft multiple plans for successful operation of a business on a canvas in one afternoon, compared with writing a similar plan which can take several weeks or months. Also, the Lean Canvas forces people to focus on what is the most important and create a well-reasoned plan. Since it is portable it is much easier to share with others and might also be more frequently updated.

The Lean Canvas, seen in figure 2.1, consists of nine building blocks with a clear connection to product or market. The nine building blocks are presented and explained in the list below \cite{18, 20}:

1. **Problem** - to build a proper understanding of the problem from the start. It is crucial since Maurya argues that most startups fail because they waste time, money and effort building the wrong product.

2. **Customer Segments** - to identify the customers of the solution. If there are multiple target customers, separate canvases for each should be

<table>
<thead>
<tr>
<th>PROBLEM</th>
<th>SOLUTION</th>
<th>UNIQUE PROPOSITION</th>
<th>UNFAIR ADVANTAGE</th>
<th>CUSTOMER SEGMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4</td>
<td>3</td>
<td>9</td>
<td>2</td>
</tr>
<tr>
<td>KEY METRICS</td>
<td>8</td>
<td>CHANNELS</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>COST STRUCTURE</td>
<td>7</td>
<td>REVENUE STREAMS</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>PRODUCT</td>
<td>MARKET</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 2.1: The Lean Canvas \cite{19, p. 5, 27].
created, since it is likely that there are other pieces like problem, solution, channels, etc. that will be different too.

3. **Unique Value Proposition** - to capture a customer’s attention. E.g. Facebook’s Unique Value Proposition is “Connect and share with the people in your life”.

4. **Solution** - to define a possible solution for the problem defined. This building block is a smaller box on the canvas, since it aligns well with the concept of a ”Minimum Viable Product” (MVP) that Lean Startup strives for.

5. **Channels** - to identify how the customers can be reached.

6. **Revenue Streams** to identify where the revenues come from, e.g. subscriptions and ads.

7. **Cost Structure** - to identify all fixed and variable costs.

8. **Key Metrics** - to avoid wasteful activities like premature optimization or running out of resources while chasing the wrong goal.

9. **Unfair Advantage** - or competitive advantage is to continually encourage people to work forwards finding/building the unfair advantage. Without unfair advantage, competitors and copy-cats become a risk.

## 2.4 Design Thinking

“The design-thinking ideology asserts that a hands-on, user-centric approach to problem solving can lead to innovation, and innovation can lead to differentiation and a competitive advantage [21].” In other words, Design Thinking is an approach used for establishing a deep understanding of users needs and creating innovations based on them [21]. The approach covers the following six phases [21]:

1. **Empathize** - to gather knowledge about the users including how they act, think and feel. The knowledge is gathered through observations.

2. **Define** - to identify the users needs by combining the research conducted from the empathize phase.

3. **Ideate** - to generate ideas based on the users needs identified in the define phase. The idea generation can be done by gathering a team and brainstorm ideas together.

4. **Prototype** - to visualize the idea in order to learn what works. This could be done by drawing out a wireframe, getting feedback and modify it based on the feedback.
5. **Test** - to verify if the idea fulfills the users needs. Should be continuously tested on real users.

6. **Implement** - to transform the idea into something real. Without implementation, an idea can not lead to innovation.

All phases in the approach are equally important and all of them are meant to be iterative and performed in a cycle \[21\]. Each phase could be repeated as well \[21\]. In a research paper Müller et. al. \[22\] compared the Lean Startup approach with Design Thinking. Their analysis shows that both approaches could learn from each other and they suggest that the approaches should be merged together. While Lean Startup has advantages in quantitative testing and iteration loops, Design Thinking benefits from idea generation techniques and better describes how qualitative customer input could be collected. The Lean Startup approach is used first after ideas have been generated in order to evaluate the ideas, but Design Thinking consider three steps before evaluation in order to generate ideas based on real user needs. However, combining Design Thinking and Lean Startup could help creating an understanding of the customers’ needs and problems. This will generate ideas based on real customers needs and continuously validate or falsify hypotheses about them. This is in line with how the Finnish company Symbio works \[23\]. They use Design Thinking to generate ideas, and Lean Startup to validate if they fulfill the customers’ needs.

### 2.5 Tieto

This study was done in collaboration with Tieto\[^3\]. Tieto is a software and service company that creates tools and solutions for modernization, digitalization and innovation \[24\]. The company is headquartered in Espoo, Finland. They have approximately 14 000 employees in almost twenty countries and their shares are listed on NASDAQ in Stockholm and Helsinki.

\[^3\]https://www.tieto.com
Chapter 3

Methods

The method chapter presents and motivates the research method applied in the study to answer the research questions and fulfill the study’s aim. The chapter includes information about the selected research strategy, how the data collection has been performed and how objects to study have been selected. A detailed description of the conditions during the data collection is presented as well.

3.1 Literature Study

Literature studies are used for creating a better understanding of subjects that are going to be studied and for clarifying research questions [25, p. 60]. In this thesis, a literature study was performed to enhance the knowledge of subjects like Internal development, Design Thinking, Lean Startup, Digital transformation and Innovation process. Relevant literature were in forms of books, theses and articles. These were gathered from different search engines such as the DiVaportal and Google Scholar, and from Stockholm’s city library. The literature are presented in chapter 1, 2 and 4: Introduction, Background and Results. In the Results chapter, the literature are presented in section 4.1 Literature Study.

3.2 Research Strategy

When conducting research on an organization’s unique feature, e.g. processes at work, the case study strategy is a suitable research strategy [26, p. 10]. Especially suitable is the case study strategy when the focus of the research is on current phenomena like company processes when behavior can not be
This study was based on the Lean Startup approach designed at a software and service company with the aim to make suggestions as for how the Lean Startup approach can be adapted to internal development. Therefore, the case study strategy was determined to be a suitable research strategy for this study. This case study was done in collaboration with the case company and conducted at their office in Stockholm. An introduction to the case company is presented in section 4.2. However, when using case study strategy there are, according to Yin [27, p. 38], four case study designs to distinguish between:

- single case (holistic)
- single case (embedded)
- multiple case (holistic)
- multiple case (embedded)

Yin says [27, p. 7, 38] that a single case study is preferable over a multiple case study when conducting research on a unique case, and that a multiple case study design is a more suitable alternative when more than one case is going to be studied.

Only the Lean Startup approach designed and used within a software and service company will be investigated in this thesis. Therefore, the single case study design was selected to form this research. Another choice that, according to Yin [27, p. 41 – 42], has to be determined when conducting a case study, is whether the design should be embedded or holistic. An embedded case study is according to Yin [27, p. 41 – 42], a study that focuses on a specific part of a program, while a holistic focus on the global nature of a program. If the study focuses on elements of the case, instead of the whole case in general, an embedded study is said to be the most appropriate alternative compared with holistic, [27, p. 41 – 42]. Since this study focuses on the needs of the internal development team, the embedded case study design was determined to be the most suitable alternative.

### 3.3 Sample Selection

Sampling is a technique used to consider what sub-units of data that should be collected, instead of collecting data from an entire population, since it is usually not possible due to restrictions in time, money or access [25, p. 210]. There are two different kinds of sampling techniques: probability sampling and non-probability sampling. Non-probability sampling should be used when the probability of each case in a total population is not known, e.g. in case study research [25, p. 233]. Hence, the non-probability technique has been chosen for selecting samples in this case study. There are several non-probability sampling methods, and in this case the snowball method was selected. This method is
suitable in research where it is difficult to identify members of the desired population [25, p. 240]. In snowball sampling, the first step is to make contact with a small group of people relevant to the research topic, and then ask these people to identify more relevant people to collect data from [25, p. 240]. In this study, all selected samples were employees within the case company. The first contact was made with the Digital Office manager and an Enterprise Architect in the internal development department. They identified more relevant coworkers with experiences of the Lean Startup approach or the development of the internal systems and processes. The people identified can be seen in table 3.1.

Table 3.1: Overview of the selected samples.

<table>
<thead>
<tr>
<th>Employee</th>
<th>Experiences</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Digital Office manager</td>
<td>Internal development and the Lean Startup approach</td>
</tr>
<tr>
<td>Enterprise Architect</td>
<td>Internal development and the Lean Startup approach</td>
</tr>
<tr>
<td>Business Developer</td>
<td>The Lean Startup approach</td>
</tr>
<tr>
<td>The Chief Digital Office</td>
<td>Internal development</td>
</tr>
<tr>
<td>The Customer Experience manager</td>
<td>Internal development</td>
</tr>
<tr>
<td>The Core IT</td>
<td>Internal development</td>
</tr>
<tr>
<td>The User Experience manager</td>
<td>Internal development</td>
</tr>
</tbody>
</table>

3.4 Data Collection

In order to answer the research questions of this thesis, a combination of secondary and primary data was collected. Primary data is new data that is collected for the specific purpose of a study, while secondary data is data that has already been collected earlier for some other intention [25, p. 256]. The following sub sections will provide greater detail about the respective sources of data. This study was initiated with studying primary data, which identified sources of secondary data. Secondary data was used to identify details in the Lean Startup approach and the internal development.

3.4.1 Primary Data

Primary data was collected in order to validate the secondary data about the Lean Startup approach and the development of the internal systems and processes, but also to collect new data about the needs of the internal development team. The results from the primary data collection is presented in chapter 4 Results. To collect primary data, qualitative interviews with the selected samples as interviewees were conducted. Qualitative interviews were selected
because they are suitable when it is important to understand the research participants’ attitudes and opinions [25, p. 324], like in this study where the needs of the internal development team should be understood. All interviews were designed as semi-structured. Semi-structured means that a list of themes and questions to be covered works as a basis for the interview, including a scope for changes [25, p. 320]. As a preparation for each interview, an interview guide with a list of themes and questions were prepared and pilot tested. These can be found in Appendix A. All interviews were recorded with either the Voice Memo app on iPhone or Skype recording, depending on the location of the interview. The interviews were later transcribed. A description of how each interview was conducted can be seen in Table 3.2.

Table 3.2: Overview of the interviews.

<table>
<thead>
<tr>
<th>Interviewee</th>
<th>Subject</th>
<th>Location</th>
<th>Language</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Digital Office manager</td>
<td>Internal development</td>
<td>Meeting room</td>
<td>Swedish</td>
</tr>
<tr>
<td>Enterprise Architect</td>
<td>Internal development and the Lean Startup approach designed at the case company</td>
<td>Meeting room</td>
<td>Swedish</td>
</tr>
<tr>
<td>Business Developer</td>
<td>Lean Startup approach designed at the case company</td>
<td>Coffee room</td>
<td>Swedish</td>
</tr>
<tr>
<td>The Chief Digital Officer</td>
<td>Internal development and the Lean Startup approach designed at the case company</td>
<td>Meeting room</td>
<td>Swedish</td>
</tr>
<tr>
<td>The Customer Experience manager</td>
<td>Internal development</td>
<td>Skype</td>
<td>English</td>
</tr>
<tr>
<td>The Core IT manager</td>
<td>Internal development</td>
<td>Meeting room</td>
<td>Swedish</td>
</tr>
<tr>
<td>The User Experience manager</td>
<td>Internal development</td>
<td>Skype</td>
<td>English</td>
</tr>
</tbody>
</table>

3.4.2 Secondary Data

Secondary data was collected to partly answer the question on how the Lean Startup approach is designed at the case company, but also to describe the internal development team with their respective areas of responsibility and tasks. The secondary data that was collected originated from the case company’s internal documents about the Lean Startup approach and their internal development. The results from the secondary data collection is presented in chapter 4.

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3.5 Data Analysis

According to Saunders [25 p. 490], there is no standardized procedure for analyzing qualitative data, but qualitative data can be categorized. Categorizing data is about developing categories and thereafter pair the categories with the data. In this study, the data categorization has been selected to analyze the findings from the interviews and the internal documents. The categories were developed based on the data from the interviews about the Lean Startup approach, and they later served as a basis for a data analysis guide. The data analysis guide were used as a template for analyzing the results from the interviews. In the data analysis, both differences and similarities between the Lean Startup approach designed at the case company and their internal development team’s needs and requirements were analyzed. The data analysis is presented in chapter 5.1.1, Data Analysis.

3.6 Guideline Compilation

From the data analysis, conclusions could be drawn regarding how the Lean Startup approach within a case company could be adapted to suit the needs and requirements of their internal development team. The conclusions resulted in guidelines, which are presented in chapter 5.1.2, Guideline Compilation.
Chapter 4

Results

The Results chapter presents findings from the literature study and the case study based on the case company’s internal documents and interviews with its employees. The results from the literature study show how ideas have been generated and evaluated with Design Thinking, Lean Startup and Lean Canvas. The findings from the interviews describe the case company, how they use the Lean Startup approach and their internal development team.

4.1 Literature Study

The Literature Study chapter presents literature and research about the subjects touched in this study. The section presents how ideas are generated and evaluated with the help from Lean Startup and Design Thinking. The section intends to create an understanding of the Lean Startup approach and how it could be successfully designed.

4.1.1 Design Thinking to Generate Ideas

Gibbon [21] states that Design Thinking is about developing an idea based on a real user problem and creating a solution that is continuously tested. In order to use the Design thinking approach for generating ideas, the three first steps in the Design thinking approach should be followed [21]. These are “Empathize”, “Define” and “Ideate”. The “Empathize” step is about collecting information about the users in order to creating an understanding of them [21]. Creating an understanding of the users can be done with the help from techniques like user interviews, focus groups, user diaries, observations, task analysis and data analysis [5 p. 230 – 232]. These techniques result in a collection of user data that can be analyzed by creating personas and user journeys. Analyzing the data
is the “Define” step in Gibbons \cite{21} explanation of Design Thinking. Personas are made-up, realistic descriptions of typical or target users of a product or service \cite{28, 21}. They can for example be used as a tool in order to identify what systems or processes are needed for the various ways employees work \cite{29}. User journeys are visual process descriptions that describes the interaction the user needs with a digital service to reach a goal \cite[3, p. 232]{3}. The personas and user journeys later serve as a foundation for brainstorming ideas in the “Ideation” steps \cite{21}. There are three characteristics of the ideation step \cite{30}. These are:

- Ideas should not be evaluated.
- Ideas should be recorded and documented.
- Diverse ideas come from collaboration and participants with different knowledge.

It is important that all participants in the idea generation understand the personas and thereby the users’ needs \cite{21}. In order to develop as many unevaluated ideas as possible, the brainstorming technique is often used \cite[3, p. 230 – 232, 30, 14, p. 16]{3}.

4.1.2 Lean Startup to Validate Ideas

The Lean Startup approach is used first after ideas have been generated, and aims at evaluating them \cite{7}. It consists of a build-measure-learn cycle, which is a continuous process used to learn what customers want. It helps to recognize if an idea is worth bringing to the market, and it creates less waste of time and money than development processes that do not test an idea before it is brought to the market. Ries \cite{7} describes the three steps in the cycle as following:

1. **Build** - Develop minimum viable products (MVP) based on ideas that aim to solve customers’ problems. A MVP is an early prototype representing the hypothesis about what customers need. The MVP is developed with a minimum amount of effort and time, and its impact should be measurable.

2. **Measure** - Measure the impact of the MVP in terms of cause and effect.

3. **Learn** - Learn the cause and effects of the MVP. A decision based on the learning should be made, whether to change or continue working with the idea.

**Lean Canvas to Document Ideas**

Maurya \cite[19, p. 16]{19} suggests that creating a plan for taking an idea into the market with Lean Canvas as a method should be done by first creating an initial plan with the Lean Canvas as a template. The plan should later be tested to
determine if it is worth implementing. When creating a Lean Canvas, the first step is to quickly sketch an initial canvas, containing only the primary thoughts of the idea [19, p. 26]. With that said, it is not necessary to fill in all sections since the canvas will evolve as the process iterate. Leaving a section blank might even indicate what the riskiest part about the idea is. However, Maurya [19, p. 27] says that when he creates the initial plan, he goes through each building block in the canvas in the order figure 2.1 shows. Maurya [19, p. 27] first starts with the problem and customer segments since he thinks these sections together serve as a foundation for the rest of the canvas. However, when the initial plan is written down, he shares it with someone else in order to get feedback from another person's point of view [19, p. 17].

After the plan is written down and shared with someone else, the most risky parts of the plan should be identified. The choice of identification method depends on the stage of the idea [19, p. 7 – 8]. The idea can be either in the Problem/Solution Fit stage, the Product/Market Fit stage or the Scale stage. In the Problem/Solution Fit stage, the key question is if there is a problem worth solving [19, p. 8]. The question is answered by qualitative customer observations and interviewing techniques aiming at finding out if customers like the way the problem is solved, if they will pay for it and if the problem can be solved. In this stage, the focus is on learning what the customers demand, validate hypotheses made about their needs and change the plan if the hypotheses were refuted [19, p. 9]. When all hypotheses are validated, a MVP should be developed based on the results from the Problem/Solution Fit stage. The next stage is the Product/Market Fit. This phase is about finding out whether the MVP solves the customers' problems [19, p. 8 – 9]. Building a MVP that solves the customers' problems, is the first significant milestone for an idea brought to the market since the plan on how an idea should be brought to the market is starting to work and customers are signing up. After this stage, the Scale stage has been reached. The Scale stage is all about growth.

4.2 Case Study at Tieto

In Tieto, the Chief Digital Office (CDO) is the department responsible for the internal development. Another department in Tieto is the Data-Driven Business (DDB) unit, which uses the Lean Startup approach to quickly develop qualitative external innovations based on Artificial Intelligence (AI) solutions. In this case study, concepts as ideas, solutions and problems are frequently used. The definition of an idea is in this case, a solution that solves a problem. However, with qualitative interviews and review of internal documents and Tieto's website, the Lean Startup approach designed at Tieto and the needs of the CDO have been identified. The following sub sections present these findings.
4.2.1 Lean Startup in Tieto

In Tieto, there is a specific department working with the Lean Startup approach. This department is the Data-Driven Business unit (DDB). Their responsibility is to create innovations by generating ideas based on external customers’ problems and AI solutions, and testing if there is a business case behind them. When generating and evaluating data-driven ideas, DDB uses the Lean Startup approach combined with Design Thinking and Lean Canvas. One example of a successful idea developed by DDB is Tieto’s Empathic Building. The Empathic Building is a human-centered digital service and design platform that focuses on improving employees’ well-being, happiness and increasing individual performance by solving user problems. However, the way in which the Lean Startup approach is used within Tieto has been identified through internal documents supported by interviews. Details on with whom and how these interviews were conducted are found in section 3.4.1.

Purpose

Through internal documents, the aim of the Lean Startup approach as currently implemented in Tieto was identified. The aim is described as:

“...to develop data-based ideas and turn them into mature business opportunities based on artificial intelligence (AI) via idea incubation and commercialization, following Lean Startup methods.”

Idea incubation is in an internal document described as the phase where ideas from employees or partners are generated and collected, and where the ideas are analyzed and evaluated. As a result of the idea incubation phase, there should be a selection of viable ideas ready to be worked on to take to the market. Bringing ideas to the market is called the commercialization phase. However, the objective in this paper is to describe how ideas are generated and evaluated only, so the focus will be on the idea incubation phase, which is creating, collecting, refining, planning, co creating and prototyping ideas. The interviewed Enterprise Architect said that idea incubation is the same as generating and evaluating ideas. Furthermore, the interviewed Enterprise Architect explained that the main activity in the Lean Startup approach designed at Tieto is a workshop. The workshop is facilitated by the DDB unit in Tieto and used frequently. The interviewed Business Developer mentioned that DDB’s Lean Startup approach aims at generating as many AI solutions as possible that solve a problem and are qualitative enough to bring to the market. Furthermore, the Business Developer states that the process for bringing ideas to the market including the workshop takes a long time since approximately thirty-six workshops should be held in order to get three ideas with valid business cases. Valid business cases is in DDB’s case, defined as ideas that solve a problem and are based on AI.

1https://campaigns.tieto.com/empathicbuilding
Preparing for the Workshop

The Business Developer explained that the preparation before a workshop is at least as important as the workshop itself. Their preparations have been shown to generate more qualitative ideas. Preparing for the workshop includes the activities listed below:

1. Make contact
2. Choose a theme
3. Construct a workshop team

Before a workshop can be held, a theme should be chosen and a workshop team should be constructed. Building a team and deciding a theme is done by first making contact with people within the firm or external customers. Making contact is in this case about presenting the workshop - what it is and what it takes to participate, and also to find out if people are interested in taking part in a workshop. Either it is made by the people responsible for the workshop contacting coworkers or external customers, or in the opposite way. There is in other words no systematic way to make the initial contact.

When the first contact is made and somebody wants to participate in a workshop, a preparatory meeting is held, aiming at scoping the field by deciding a theme for the workshop. A theme is an area where people are interested in participating, have great knowledge in and know what problems exist. It could for example be management or HR. The key factors when deciding a theme are that experts in the specific theme is needed in the workshop and that there should be much data within the theme since AI solutions need data to learn. Selecting a theme has shown to be a success factor, which is further described in the words of the Business Developer.

“The theme based workshop has been shown to be a great way to find people who know what they talk about and who have the capability to develop the reasoning about the ideas, which has led to ideas of better quality than we generated before we started with the theme based workshop.”

After a theme is decided, the workshop team should be constructed. A workshop team should consist of six to twelve people with knowledge in the theme, who are willing to share their experiences, take time for the workshop and participate on location, face-to-face for the workshop. Apart from the experts in the given theme, workshop managers are participating in the workshop. The workshop facilitators’ role in the workshop is to lead it, help participants focus on each step throughout the workshop and ensure that the workshop team consists of the right people. Additional, two to three people without knowledge in the theme are invited to participate in the workshop. These people are able to ask the team to explain the outcomes in detail. The outcome will then, according to the interviewed Enterprise Architect, become more well-reasoned.
**Workshop**

The Business Developer explained that the purpose of the workshop is to identify what pain points the workshop participants have experienced within the given theme, and investigate if there are any AI solutions for these kinds of problems or if there is a possibility to build a new AI solution. The workshop is held during two half days since it lets participants think between the sessions and be able to get a new perspective before the second workshop day.

The activities in the workshop day one was identified through an analysis of internal documents. The first day of workshop activities are listed below:

1. **The theme, time schedule and the Lean Canvas are presented for the workshop participants.**

2. **The team of six to twelve people is divided into two or three groups.** Dividing the workshop team affects the efficiency of the evaluation of ideas in a positive way. If more than one team has similar ideas, it is seen as a validation that these ideas are good and thereby extra interesting for further evaluation.

3. **Ten minutes of individual brainstorming.** Every team member should individually come up with spontaneous problems within the given theme. The problems should then be written on Post-It notes.

4. **Twenty minutes of discussion about all problems.** Each participant should present their Post-It notes with problems for their group members. In this step, it is important that all group members understand the problems and their contexts. Therefore, the workshop managers help each group to define the problems by asking questions about what the problem is and for whom the problem exists. These questions are of great importance since many people tend to focus on what they want to do (the solution) instead of why there is a need to do it (the problem).

5. **The problems are prioritized and approximately four problems are selected.** When all problems are understood by the entire group, the problems should be compared with each other. If needed, this can be done by clustering and merging the problems. The outcome of this step, should be approximately one to four problems or problem areas to work further on.

6. **A Lean Canvas for each problem area is made.** After one to four problems or problem areas have been selected, these problems should be further evaluated by using the Lean Canvas. If there is more than one problem area, a Lean Canvas should be made for each of them. When making the Lean Canvas the problems should be written down in the problem box. As a second step, solutions should be discussed in detail and there should be one AI-based solution for each problem. These solutions should later be written down in the solution box of the Lean Canvas. By
focusing on details like problems and potential solutions, the resulting ideas from the workshop will be more well-reasoned.

As a result from day one, there should be Lean Canvases including problems with associated AI solutions for each problem area. Before the second workshop day, the people managing the workshop evaluate the canvases further and choose the three problems with the greatest potential from each group that they want to work further on. When evaluating Lean Canvases, there is according to the Business Developer no specific method to use. They just choose the ideas they see the most potential in:

- if there is a problem to be solved
- if the problem is experienced by many people
- if there is any AI solution for the problem
- if it is potential to build an AI solution for the problem

The interviewed Enterprise Architect said that the second workshop day is all about discussing the problems with associated solutions together in the whole workshop team. First, the ideas decided to be further worked on are presented for the whole workshop team. If an idea is identified by more than one group, the Enterprise Architect said it is more likely that the problem behind the idea is a real problem experienced by many people. Therefore, comparing the resulting ideas from each smaller group can be seen as a validation. After the presentation, the ideas are discussed in detail and questions about customer segments like “Is this for employees or managers?” are asked. Details about unique value proposition are also discussed to identify how a specific solution is unique compared to other solutions. The reason for the detailed discussions is that as much information as possible about the specific problems and proposed AI solutions is needed in order to evaluate the ideas further after the workshop.

**Workshop Post Process**

The workshop post process was identified in an interview with the Enterprise Architect. When the workshop is finished and detailed knowledge about the ideas is gained, DDB (that is responsible for the workshop) tests if the ideas have valid business cases. Key factors for valid business cases are that there is an underlying problem many people have experienced that can be solved by an existing AI solution or an AI solution that can be created with existing technique. Two to three months after the workshop has been held, the workshop team is invited for another meeting. In this meeting the results from the business case test are presented including an early prototype of the solution, commonly in the form of a wireframe. If the results indicate that there is a business case in some idea, a project will be started.
4.2.2 Chief Digital Office (CDO)

This section provides a description of the internal development team in Tieto and their needs. The description includes information of who they are, what they do and how they have experienced the way they currently work with internal development, as well as a section presenting what they think about the Lean Startup approach designed at Tieto. The Chief Digital Office (CDO) is the department responsible for the internal development in Tieto. CDO maintains and delivers services and processes for all employees within Tieto. The department consists of four subdivisions, which are Core IT, Customer Experience, Employee Experience and Digital Office. The subdivisions have their own focus area, but their common goal is to drive the digitalization within Tieto and one of their common focuses is to facilitate employees work with IT systems and processes used within Tieto. As can be seen in figure 4.1, every subdivision includes several domains. For instance, the domain “HR and Time Management” belongs to the Employee Experience subdivision. Each domain contains internal systems and processes used by employees within Tieto. Some examples of internal systems and processes are collaboration systems, travel booking sys-

Figure 4.1: CDO organizational model, found in an internal document.
tems and recruitment processes. However, some domains are big and consists of several internal systems and processes. Therefore, even the domains can be divided into smaller parts.

**CDO’s aspiration**

CDO should be able to inform employees how, when and to what the internal systems and processes should be used. Employees should for example be able to easily share and find information. In an internal document, CDO’s winning aspiration 2018 is described as following:

“All Tieto employees shall have delightful experiences for easily working and collaborating together; any time, any place.”

To reach this goal, CDO has four guiding stars in everything they do. These guiding stars are that the internal systems and processes in Tieto should be:

- simple and easy to use
- mobility friendly
- contribute to valuable improvements
- operational excellence

The interviewed Enterprise Architect argues that employees’ experiences affect external customers and potential employees. By creating delightful experiences for employees in Tieto, employees will do a better job, which will increase external customers’ experiences and make Tieto a more attractive recruiter. CDO is therefore a key when it comes to Tieto’s intend to keep their competitive advantage.

**Roles within CDO**

The roles within CDO was found in Tieto’s internal documents and their descriptions were complemented with interviews. The findings showed that Chief Digital Office (CDO) consists of:

- The Chief Digital Officer
- Employee Experience manager
- Customer Experience manager
- Core IT manager
- Digital Office manager
- Solution owners within the specific domains
- Enterprise Architects
- Project Management Office (PMO)

These roles are together with other employees outside CDO involved in the early stage of projects regarding internal systems and processes in Tieto. The coworkers outside CDO who are involved in the development of internal systems and processes are end users and business owners. All roles are further described below. The *end users* are Tieto’s employees. They are working in different departments within Tieto and they are using Tieto’s internal systems and processes. Based on around a hundred interviews with end users and statistical data about them, Tieto’s User Experience manager created several internal Tieto personas, a summary and a user guide to support their usage. The internal personas describe software developers, support specialist, project manager, sales manager, line manager, head of delivery and sales, executive assistant, consultant, technical specialist and Human Resource (HR) specialist in Tieto. In addition to the description of their occupation, the personas describe the context in which the end users are working and which devices, systems and processes they use. The aim of the internal personas, the summary and user guide was to create an understanding of the end users and their needs in order for CDO to be able to create a delightful user experience for employees. The internal personas, summary and user guide were created from 2016 until 2017 and are continuously updated. However, the internal personas, summary and user guide are currently not systematically used in the development of internal systems and processes in Tieto.

The *solution owners and business owners* are responsible for the internal systems and processes in Tieto, but from different perspectives. Solution owners are employees within CDO and business owners are corresponding stakeholders outside CDO located in different departments. Together they are responsible for the different internal systems and processes within the employees specific work area. For instance, the Human Resource (HR) system is owned by a business owner in HR and a solution owner in Employee Experience in CDO. The business owner is responsible for the content in the system and the solution owner is responsible for technical maintenance and security. With that said, business owners should share requirements coming from end users of the internal systems and processes in Tieto, and solution owners should share the requirements coming from CDO such as strategy goals or legal requirements. Together, both kinds of owners, should generate ideas for the internal systems and processes.

The *Enterprise Architects* are responsible for bridging the gap between employees needs, the different business departments strategies and CDO’s strategy. In the development of internal systems and processes in Tieto, they evaluate and prioritize all collected ideas for major projects and make sure they understand all of them by asking solution owners questions about ideas that are not motivated enough. At the same time, they make sure the different proposals are not repeated, overlapping or contradictory.

The managers within CDO have different areas of responsibility. *The Digital*
Office manager is responsible for the Enterprise Architects, Security and PMO, while the Employee Experience manager, Customer Experience manager and the Core IT manager are responsible for solution owners within their specific field. The managers are involved in collecting ideas for internal systems and processes, and evaluating them. When collecting ideas they get ideas from solution owners and when evaluating them they decide whether it is an idea for a major project or if it is of smaller size by calculating the expected cost of the idea. Typically major projects and initiatives are in need of a larger budget than projects and initiatives of smaller size.

The Project Management Office (PMO) consists of one person who is responsible for high-level following up all projects associated to the development of internal systems and processes in Tieto. The PMO role is not involved in generating and evaluating ideas for the internal systems and processes, only afterwards when the projects are proceeding.

The Chief Digital Officer has the overall responsibility over the Chief Digital Office (CDO) and its coworkers, and is heading Tieto’s internal digital transformation and support. The Chief Digital Officer’s main focus is on balancing the internal IT support with the internal digitalization. In the process of generating and evaluating ideas for internal systems and processes, the Chief Digital Officer is involved in the evaluation step of ideas for major projects and initiatives. Together with the Enterprise Architects and PMO, the Chief Digital Officer suggest what ideas for internal major projects or initiatives CDO should work on the coming year.

Internal development

In order to understand CDO’s needs, their main activities regarding the development of internal systems and processes were identified. The activities were identified through internal documents and interviews. When working with development of internal systems and processes, CDO has two different processes to handle development ideas:

- **Yearly development process** - for major projects and initiatives in Tieto, typically in need of a larger budget.
- **Continuous development process** - is used to manage and improve already existing systems in Tieto, typically included in the continuous development budget.

The Core IT manager says that an idea’s expected cost indicates if the idea should belong to the yearly development process or continuous development process. In the continuous development, each system has a dedicated budget to keep the system operational. This budget is granted to managers once a year. If more money is needed to make a system or process work, a request to get more money could be sent. If an idea is within the budget for continuous development
and has an obvious value, it is brought to development. Ideas for major projects and initiatives are yearly collected in a document associated the yearly internal development process. The budget for each project in the yearly development process is granted to managers twice a year. It is granted out twice a year in order to give managers the flexibility to cancel projects that have been shown to not contribute the expected value. Earlier the budget was granted once a year, which led to that projects usually continued because their was more money to spend on the projects.

The yearly development process follows the waterfall method and is performed once a year. It is managed by CDO and the Finance department in Tieto. The time line of the process is explained in the list below:

1. The process starts in August every year with an e-mail sent to solution owners of different systems and processes. The e-mail reminds the solution owners and stakeholders to start thinking about what they need to develop the coming year.

2. After the e-mail, solution owners and stakeholders are supposed to share project ideas, motivate why their ideas should create a value for Tieto and write them in a shared document around two months after they have received the initial e-mail.

3. When the date has passed the deadline for sharing ideas, the Enterprise Architects make sure that all ideas are understood and clearly described. All ideas should have an obvious why, expected outcome and expected cost. If the Enterprise Architects think that something is missing, they invite solution owners to meetings to discuss the idea in more depth.

4. After the Enterprise Architects have gone through all ideas, they discuss the ideas with the Chief Digital Officer and the PMO. The result from the discussion should be a list with proposed project ideas and a requested budget for these. In these discussions, a prioritization of the ideas is made. Priority one is always legal requirements, for example if the laws regarding data change, then a solution must be implemented. The second priority aspect is end-of-life development ideas, for example if a license expires. Third, projects from last year’s budget that are not finished yet. At last, the rest of the ideas are prioritized based on value and cost.

5. The final outcome with proposed project ideas and a requested budget for the coming year is then decided by Finance.

6. Finance go through the ideas, may make adjustments in the proposal and approves the ones they believe in.

7. As a last step, solution owners create their projects. The projects are followed up every third month by the PMO.

Approximately, the yearly development process generates fifty ideas a year that become projects and it yearly collects ideas from stakeholders like business own-
ers and solution owners. The Digital Office manager says that CDO has no given process for generating and evaluating ideas for *continuous development*, but that there are some ways for users to share their feedback. These ways are by writing feedback on social intra, Happy Signal[^2] or just sharing feedback via a call, e-mail or face-to-face. Tieto’s *Social intra* is a platform reminiscent of Facebook[^3]. On this platform, employees are able to connect and communicate. Employees could for instance post their ideas about internal systems and processes. *Happy Signals* is a tool used to get feedback from users of internal systems. The User Experience manager explains users interaction with Happy Signals as following:

1. Users answer a form where they rate their experience of the service they use on a scale from zero to ten.

2. Users are asked to write a comment to motivate their grade

The solution owners who are responsible for the internal systems and processes, interact with Happy Signals by visiting a feedback site showing feedback statistics and comments. However, Happy Signals makes it possible to compare different services, get constructive feedback and see trends over time. To benefit from Happy Signals it is according to the User Experience manager, important that people know how they should work with feedback, but there is currently no specific way of working with it. *Feedback via call, e-mail or face-to-face* are other ways users have shared their ideas for internal systems and processes with CDO.

**CDO’s Experiences of Internal Development**

In interviews with the Digital Office manager, Customer Experience manager, Core IT manager, an Enterprise Architect and the Chief Digital Officer their experiences of the development of internal systems and processes in Tieto have been asked about. Drawbacks with the yearly development process and the continuous development process have been identified through the interviews. The first drawback is that *CDO does not get enough ideas from employees*. The Digital Office manager says it is because employees do not know that they can share their ideas with CDO. Neither do they know enough of what CDO does or what they strive for. To meet the challenge with a low idea flow from employees, the Digital Office manager and the interviewed Enterprise Architect believe CDO would benefit from having a systematic way to communicate and collaborate with business owners and employees. They think a systematic way would help employees creating a better understanding of CDO and CDO creating a better understanding of employees. The Core IT manager says that they believe a good communication could be reached by doing the following:

[^2]: http://happysignals.com
[^3]: https://www.facebook.com

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“Collect information about what all units within Tieto do, present for the units what CDO is planning to do within three to six months, and ask the units what they think about it.”

When CDO presents what they are planning to do, the Core IT manager says that the solution owners and an Enterprise Architect should take part in the presentation. Currently, the communication between CDO and employees is between solution owners and business owners. Solution owners do not have any specifically defined way of working in order to cooperate with business owners. In an interview with the Customer Experience manager, it was said that conversations with business owners in the Customer Experience field are held on a daily basis, in form of meetings or common workshops. Sometimes the communication is done in a structured way and sometimes in an unstructured way. Thus, it is up to the solution owners themselves to decide how they should create the relationship with business owners. The Customer Experience manager highlights that it is crucial that a good relationship is created between solution owners and business owners. By creating a good relationship with business owners, CDO’s and business owners’ perspectives can be combined and discussed to create new ideas for supporting Tieto’s employees in their work. The desired relationship between CDO and business owners is described by the Customer Experience manager as:

“We are able to ask the business owner the right questions and maybe also provide insights that our business owners have not thought of so much. We need to be proactive, not only a support but we need to have this co-creation process in place.”

In addition to the importance of creating a good relationship with business owners, the Customer Experience manager says that CDO should be proactive in suggesting ideas in their communication with business owners since CDO has knowledge from another point of view than the business owners have. Business owners are responsible for representing the employees as end users and solution owners are responsible for representing CDO and “listening in” on their business owners needs. For proposing new things, it is according to the Customer Experience manager, relevant for CDO to look at different internal systems and processes and to have insights in the market to know what external systems and processes exist in the market. Furthermore, the Customer Experience manager says that CDO needs to have courage and self-confidence to propose new things and interact with the business owners. The interviewed Enterprise Architect agrees with the Customer Experience manager in the statement that CDO must be proactive, and adds that CDO would benefit from a process that is easy to follow when creating the relationship between CDO and business owners.

The second drawback is according to the Digital Office manager, Core IT manager and the interviewed Enterprise Architect that many of the generated ideas are difficult to evaluate. The Digital Office manager says that ideas are difficult to evaluate since many of the ideas are rarely motivated. They are rarely motivated because of a complicated and time consuming way to collect the ideas, in
combination with a too unstructured way to generate them. Every idea should be motivated by a problem it aims to solve, its expected outcome and expected cost. If an idea description lacks any information, CDO contacts the people who generated the idea and help them to motivate it better. According to the Chief Digital Officer, the internal development process became much better after they made it more structured by adding the requirement to describe what problem an idea solves and the expected outcome of the idea. However, the ideas are reviewed by the Enterprise Architects before they reach the Chief Digital Officer. In the stage where the Enterprise Architects look at the ideas, they are usually not motivated enough. The interviewed Enterprise Architect said that CDO would benefit from a more structured way of generating ideas and directly focusing on the problem it solves, and what its expected cost and outcome are. Also, the Chief Digital Officer has said that CDO wants a more clear way to work with ideas from other units in Tieto. The Core IT manager says that it is difficult to evaluate whether an idea is good or bad. The challenge is further described in the words from the Core IT manager:

“We can get big requirements that are very specific but we have to find the solution that helps the most people. It is not easy. Sometimes we have to say no to ideas and sometimes we can see that other people have the same needs. Sometimes we work too much on an idea that does not generate the expected value, so we have to remove what we have built.”

The Core IT manager says that ideas about for example products or services should be systematically evaluated. First they have to make sure that the idea meets enough people’s needs. Thence, they should fast prototype the idea and test it on a smaller group of people. By testing ideas systematically, they can evaluate the idea and recognize whether they should continue developing it or cancel it. Nevertheless, the Core IT manager says that the way to systematically evaluate ideas is not suitable when requirements regarding e.g. network are received. The reason is that employees are dependent on a network that works when they are performing the majority of their tasks.

CDO’s Attitudes towards the Workshop

The Chief Digital Officer, Digital Office manager and the interviewed Enterprise Architect have participated in the workshop facilitated by Data-Driven Business (DDB). Therefore, they were asked about it. Additionally, the workshop and the Lean Canvas were explained for the interviewed Core IT manager and Customer Experience manager so their opinions about the workshop and Lean Canvas could be in the results as well. All of the interviewees think that the workshop is of a great format, but that a specific personality is needed in order to facilitate the workshop. The “workshop personality” is further described from the thoughts of the Chief Digital Officer:

“There are challenges with workshop skills and to take place in that way, since
CDO is traditionally as an IT organization more reactive than proactive and would like less space than more space.”

The interviewed Enterprise Architect mentioned that Tieto offers their coworkers Design Thinking Moderator training. This training aims at improving the participants’ workshop facilitator skills. In addition to the thoughts about workshop skills, the Chief Digital Officer says that the workshops with the Lean Canvas as a tool were very inspiring, fun and engaging. Nevertheless, in order to suit the development of internal systems and processes, the interviewees argue that the elements in the Lean Canvas must be modified. When it comes to the problem element all interviewees agree that it is a crucial part and that people must be able to clarify their problems. The solution element is important as well since every problem should have a solution. However, the Chief Digital Officer says that a solution is not always needed and explains it with the following words:

“We might not need to come up with a solution right away because it might be necessary to make a prestudy to come up with a solution.”

Even if a prestudy would be necessary for identifying a solution, the Chief Digital Officer states that the problem is still very important and that every solution should solve a problem. Therefore, a problem should be the foundation in all ideas and the solution could be either performing a prestudy or implementing a product or service. When looking at the customer segments element, the interviewees agree that employee segments should be a more suitable name since CDO’s target group is employees and not customers. In the current way the Lean Startup approach is used within Tieto, customer segments is about finding the focus area and customers whose problems should be solved. The employee segments element is important for CDO since they need to see how many employees the idea is relevant for and to identify their specific needs. When evaluating ideas, CDO should speak with the people identified in the employee segments element to test if the idea meets their needs. Another important element in the Lean Canvas, that is in need of a modification to suit CDO, is the unique value proposition. The Core IT manager argues that unique should be removed from unique value proposition so the element in CDO’s case, will be called value proposition. The reason why unique should be removed is that CDO does not need to develop unique ideas. The ideas they develop still need to generate a business value for the company and its employees. Therefore, value proposition is a crucial element. According to the Chief Digital Officer, business value is determined in terms of costs, expected benefits and saving. An example of how the value proposition element could be used by CDO is described with the words from the Enterprise Architect:

“Internally, Tieto functions even though the problems written in the Lean Canvas exist. Imagine someone manually working in an excel list. If we could get an automatic solution, what is the value proposition then? Well, it is that it is automatic and the person could engage in more important things.”
Costs could according to the interviewees be written in the cost structure element in the Lean Canvas. To make sure an idea generates the expected value proposition the Core IT manager argues the importance of key metrics. In key metrics they could specify how they are going to measure if the effects of implementing an idea have reached the expected value. All interviewees say they want to keep key metrics as an element. When it comes to unfair advantage, all interviewees except the Core IT manager say that it is unnecessary. The Core IT manager says that unfair advantage or only advantage could be used for writing down all expected advantages of a product. When comparing it with the value proposition element the Core IT manager says the following:

“Value proposition is more about why we should do it in this specific way, while advantage is an overview of the benefits.”

Channels on the other way is an element both the Core IT manager and the Enterprise Architect say is important. The importance of channels is by the Enterprise Architect described as:

“I think it is important because it is a problem we generally have. How do we communicate with the rest of the company? I think we have done it very rarely. There are many solutions people do not know about.”

The last element in the Lean Canvas is the revenue streams. Revenue streams is according to the Enterprise Architect and the Core IT manager, relevant when ideas are brought to sales after they have been implemented internally. The Core IT manager suggests that the name of the element should be References instead of Revenue Streams. References are for showing external customers what problems Tieto has experienced and how the problems have been tackled. By showing how Tieto has solved similar problems, external customers can see that they have a validated solution.
Chapter 5

Discussion

The discussion section presents a discussion of this study’s aim fulfillment and a critical review of the methodological choices made in this study.

5.1 Aim Fulfillment

The discussion of aim fulfillment includes a data analysis of the findings in the results chapter, aiming at answering research question Q3. Thus, the data analysis presents identified differences between how the Lean Startup approach is used within Tieto, and the needs of the Chief Digital Office (CDO). Not only does this section consist of a data analysis, but also a guideline compilation. The guideline compilation aims to answer research question Q4. As a result, this section describes how Tieto can adapt the way they use the Lean Startup approach so it suits CDO’s needs.

5.1.1 Data Analysis

In this sub section, the data analysis is presented. The data analysis follows an analysis guide that can be seen in Appendix B. Since the research is based on how the Lean Startup approach is used at Tieto, the categories in the analysis guide were identified from the results regarding Q1. The outcome from the data analysis were areas where the Lean Startup approach should be adapted in order to suit CDO’s needs.
Purpose

Before analyzing the categories in the analysis guide, a comparison between the purposes and targets of the Lean Startup approach used at Tieto and CDO’s needs was carried out. The purpose of the Lean Startup approach used at Tieto is to gain competitive advantage by generating ideas based on AI solutions that solve Tieto’s external customers’ problems. While the purpose of CDO’s development of internal systems and processes is to create a delightful employee experience, which CDO believes will improve Tieto’s competitive advantage as well. The foundation for ideas (solutions) coming from both the Lean Startup approach designed at Tieto and CDO’s needs are real problems that their targets have experienced. As can be seen in table 5.1, the Lean Startup approach and CDO’s needs might seem to have many differences, but at second glance, it is clear that they actually have more things in common. CDO could for example develop AI solutions that solve external customers’ problems and improve Tieto’s competitive advantage, but CDO’s solutions do not necessarily have to be based on AI. The ideas CDO generates should be based on problems employees have experienced regarding internal systems and processes in Tieto. These systems could for example be Customer Relationship Management (CRM) systems, Collaboration Management and Human Resource (HR) Management [14, p. 83 – 93]. Basing solutions on real problems experienced by the target group is a crucial step in the Design Thinking approach and by doing that, competitive advantage can be reached [21].

Preparing for the Workshop

The first identified category from how the Lean Startup approach is used within Tieto, is the workshop preparation category. The main activities in this phase is making contact, selecting a theme and constructing a workshop team. In the text below is the data analysis of the workshop preparation category presented, focusing on similarities and differences between the Lean Startup approach designed at Tieto and the needs of CDO.

<table>
<thead>
<tr>
<th>Category</th>
<th>Lean Startup approach</th>
<th>CDO’s needs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purpose</td>
<td>Gain competitive advantage</td>
<td>Create a delightful employee experience, which CDO believes will improve Tieto’s competitive advantage</td>
</tr>
<tr>
<td>Kinds of solutions</td>
<td>AI solutions that solve customers problems</td>
<td>Any kinds of solutions including AI that solve employee problems</td>
</tr>
<tr>
<td>Target</td>
<td>Customers</td>
<td>Employees</td>
</tr>
</tbody>
</table>

Table 5.1: Comparison of purposes.
Making contact is only about communicating with potential stakeholders like employees or external customers. Communicating what the Lean Startup approach is, how it is designed at Tieto and what it takes to participate has been shown to help finding people who are interested in participating in a workshop. interviewed employees in CDO have said they are in need of a better way to communicate with people outside CDO. By presenting the internal development processes and sharing CDO’s ideas, more employees outside CDO might gain knowledge in what CDO does and what they strive for. However, there is no systematic way to make the initial contact in the Lean Startup approach designed at Tieto. Neither CDO has a systematic way of making contact, but the relationship between CDO and employees in other departments should preferably be made between the solution owners and the business owners. Since Gibbons argues the importance of involving users in the development process in order to create a deep understanding of their needs and create innovations based on them, CDO should involve the end users more and not only the business owners. End users should for example participate in user tests and when designers identify their needs. However, Tieto has already created personas in order to understand the employees needs and these are continuously updated by the User Experience manager. When identifying people to make contact with, the personas could be used since they explain which employees who use systems and processes belonging to different domains.

Selecting a theme for the workshop has been shown to help easily identifying experts who know the theme and what problems exist. As a result, the ideas generated are of good quality. A theme-based way of working is nothing new for CDO since their solution owners are currently responsible for internal systems and processes in different domains. Domains are similar to themes since both domains and themes aim at specifying an area. The solution owners are together with their respective business owners supposed to generate ideas regarding their domain. The domain could for example be Customer Relationship Management. In cases were the domain is too big, it could be further scoped by dividing the domain into smaller parts. Identifying experts in a specific theme is closely connected to the act of constructing a workshop team since the team should consist of people who know what the theme is about and thereby who are able to generate ideas for solving existing problems in the selected theme. Preferably, CDO should include their solution owners and at least one Enterprise Architect in the workshop team. This is based on that the Core IT manager said that the solution owners together with at least one Enterprise Architect should present CDO and their respective business owners. Relevant experts outside CDO are respective business owners of internal systems and processes in the specific domain. Other potential experts within a given theme are end users since they have hands-on experience of the internal systems and processes, which the internal development aim to maintain and improve. To improve the quality of the outcomes from the workshop, two to three people without knowledge in the domain should be invited to participate. If following the advice to construct a team with various competences and experiences,
the workshop team will according to Negroponte [15, p. 62] and Berg [3, p. 62] generate ideas that are well-reasoned since they have been discussed in different parts of view.

Making contact, selecting a theme and constructing a team are all important preparations before the workshop. CDO has stated that they need to better communicate with business owners and end users, but the ”making contact” stage in the Lean Startup approach does not describe how to systematically make the contact. However, the workshop itself might fulfill this need. Selecting a theme is similar to the way CDO works with business owners and solution owners within specific domains. Therefore, it might be beneficial for CDO to hold domain specific workshops. Since each domain consist of solution owners and business owners who are experts within their specific domain, potential participants for the workshop team should be easy to find. The analysis of the preparation phase of a workshop indicates that the work method could work for CDO. Therefore, no additional adjustments to the Lean Canvas approach designed at Tieto is needed.

Workshop

Another identified category is the workshop category, which is the main activity in Tieto’s Lean Startup approach. Through this section a comparative analysis between the workshop in the Lean Startup approach designed at Tieto and CDO’s needs is presented. When analyzing the workshop category, the workshop schedule is considered. The workshop starts with an introduction to the theme, time schedule and the Lean Canvas. The theme is decided in the preparation phase and the time schedule of the workshop is divided into two half days. The Lean Canvas is presented since it is a tool used to motivate ideas generated in the workshop. The introduction is followed by a division of the team into smaller groups. Since research [15, p. 62], [3, p. 62] recommend gathering people with different knowledge and experiences when generating ideas, CDO should consider having at least one person from CDO and one person from outside CDO in each smaller group.

After smaller groups have been constructed, the workshop continues with ten minutes of individual brainstorming of existing problems in the theme. Focusing on existing problems before solutions should be beneficial for CDO since they have expressed that it is important that each idea is based on a problem. This is also in line with the focus of the Design Thinking approach [21]. After problems have been individually brainstormed, each participant presents their problems for their groups. The groups discuss the problems further by talking about for whom the problem exist. Personas could be used to identify employees who have experienced a problem and create an understanding of them [3, p. 230 – 232]. Since CDO’s User Experience manager already has created personas presenting Tieto’s employees, these could be used in the workshop. In CDO’s case, a large group of employees should have experienced a problem before
its worth solving. Consequently, CDO might get helped with selecting and prioritizing problems by defining which employees who have experienced the identified problems. Selecting and prioritizing problems is the next step in the workshop. By discussing problems in groups, the groups can compare each problem and categorizing them if they are similar. As an outcome, about four problems should have been selected. So far, the steps in the workshop do not have to be adapted in order to suit CDO’s needs, but the step to use the personas should be added. Neither is adaption of the workshop needed in the next step that is to document the problems with associated potential solutions on the Lean Canvas. Solutions for each problem are brainstormed in the smaller groups. When all selected problems with associated potential solutions are written down on Lean Canvases, the first workshop day has come to its end. In the second workshop day, the problems with associated potential solutions are discussed further in the entire workshop team. As said by the interviewed Enterprise Architect, problems that have been identified by more than one team is more likely to be real problems experienced by many people. However, questions about for whom the problems exist and what makes each solution different from the others, are asked. The discussions for workshop day two are made in order to create a better understanding of the ideas, so there will be a good ground for later evaluating them. By first individually brainstorming problems and later discussing them in group, more and better ideas will be generated than when only working in group [16].

The Lean Canvas template serves as a foundation for the discussions in the workshop, but it contains many elements that are not adequate for CDO’s needs. To make it plain, the Lean Canvas is used for structuring thoughts about external business ideas [19]. All important aspects of what makes a successful business idea should be systematically thought out. Contrary, CDO does not aim to bring their ideas to the market. They aim at developing internal ideas valuable for Tieto’s employees, but not explicitly for their external customers. Therefore, CDO does not need to define customer segments, unique value proposition, revenue streams or unfair advantages as they are defined by Maurya [18, 20]. Instead, they should look at employee segments, value proposition, advantage and references. The suggestions on new elements for the Lean Canvas are based on the results from section 4.2.2 in the results chapter. These element suggestions are in addition to problem, solution, cost structure and key metrics, as the Lean Canvas already covers. The differences found between the current Lean Canvas as it is used in the workshop and CDO’s needs are presented in table 5.2.

**Workshop Post Process**

When the workshop has been held, the outcome are Lean Canvases with potential external business ideas. According to Maurya [18], there are two different stages of testing. The first one is to test the Problem/Solution Fir: if the
Table 5.2: Current Lean Canvas vs. CDO’s needs.

<table>
<thead>
<tr>
<th>Current Lean Canvas</th>
<th>CDO’s needs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Problem</td>
<td>Problems</td>
</tr>
<tr>
<td>Customer Segments</td>
<td>Employee Segments</td>
</tr>
<tr>
<td>Unique Value Proposition</td>
<td>Value Proposition</td>
</tr>
<tr>
<td>Solution</td>
<td>Solution</td>
</tr>
<tr>
<td>Channels</td>
<td>Channels</td>
</tr>
<tr>
<td>Revenue Streams</td>
<td>References</td>
</tr>
<tr>
<td>Cost Structure</td>
<td>Cost Structure</td>
</tr>
<tr>
<td>Key Metrics</td>
<td>Key Metrics</td>
</tr>
<tr>
<td>Unfair Advantage</td>
<td>Advantage</td>
</tr>
</tbody>
</table>

problem is real and if it can be solved with the purposed solution. Testing Problem/Solution Fit is done by observing and interviewing customers to find out if there is a problem to be solved and if external customers really need it. In CDO’s case, the potential ideas are based on problems with associated solutions, exactly like external business ideas are. Hence, even internal ideas could be tested by observations and interviews but with employees. If there is no problem to be solved nor if there is no possible solution that customers need, the idea should be modified or rejected, according to Maurya [18]. Modified ideas are still in the Problem/Solution fit stage and have to be iteratively tested and modified until it has been shown to solve a real problem in a way that meets the external customers needs. When an idea has been shown to be based on a real problem with a solution that meets external customers need, the evaluation has according to Maurya [18] reached another stage: the Product/Market fit. In this stage, a MVP based on the idea should be developed and validated. If the MVP does not meet the external customers needs, it should be modified and tested again until it has been shown to fulfill the needs of the external customers. When a MVP has been shown to solve a real problem, it should be launched, but should still continuously tested and validated. In the Lean Startup approach designed at Tieto, the resulting ideas from the workshop are evaluated in the following terms:

- Is there an underlying problem?
- Can the underlying problem be solved by an existing AI solution?
- Can an AI solution be created with existing techniques?

For CDO, only the first question is relevant. They should also test if coworkers need the idea by interviewing employees. In the current Lean Startup at Tieto, wireframes are created and presented for the workshop team after two to three months. Prototyping wireframes to test and present is another step CDO could benefit from. Interviewing employees to test if there is a problem and if they need it to be solved can be seen as the Problem/Solution Fit stage, while prototyping and testing wireframes can be seen as the Product/Market Fit
stage. Since CDO does not aim at bringing products to the market, the “Product/Market” Fit stage should be better called “Product/Business”. “Business” is from “business owners” and stands for the company in general. CDO has no use of the Scale stage since they do not strive for launching a idea on the market. Therefore, CDO’s internal ideas do not have to be brought to the market. On the other hand, if an internal idea has shown to be successful within Tieto, Tieto might benefit from bringing the internal idea to external customers. When an idea first has been implemented internally, the idea can be seen as a reference case. Reference cases are used to show customers how Tieto has tackled the problem behind the reference case and that Tieto is able to solve that kind of problem. In the Design Thinking approach, the importance of continuously evaluating an idea during its lifetime is argued [21]. When evaluating existing systems, CDO uses Happy Signals. However, there are challenges in using this tool, e.g. is there no systematic process of using it.

5.1.2 Guideline Compilation

In this sub section, the guideline compilation based on the data analysis is presented. The outcome from the guideline compilation answers research question Q4: how the Lean Startup approach designed in Tieto could be adapted to suit the needs of Chief Digital Office.

Make Contact with Business Owners

First, CDO’s solution owners should contact their respective business owners with the aim to create an interest in the Lean Startup approach adapted for internal development. Since solution owners and business owners are already working within a specific domain, a theme may necessary not be chosen. The solution owners should encourage the business owners to invite relevant end users to a workshop facilitated by CDO, and solution owners should invite Enterprise Architects. Relevant end users can be found in the personas created by Tieto’s User Experience manager. Together the invited people constitute a workshop team experienced in their respective domain and with different perspectives. If a domain is large, it can with advantage be divided into sub-domain for clarity. The workshop team should consist of six to twelve people with different knowledge in the specific domain.

Workshop day one

Preferably, CDO’s employees should participate in the Design Thinking moderator course, in order to gain knowledge in how to facilitate workshops. The workshop should progress in the order the list below shows.
1. Presentation about the workshop, its time schedule and the Lean Canvas adapted for internal development, as can be seen in figure 5.1.

2. The workshop team should be divided into two to three smaller groups consisting of people with distinct knowledge within the domain, e.g. at least one Enterprise Architect in each group, various kinds of end users, solution owners and business owners. Various kinds of end users could be employees who perform different tasks within the domain. Additionally, each team should consist of at least one person without knowledge in the specific domain.

3. Ten minutes of individual brainstorming of problems within the specific domain. Each problem should be written down on a Post-It note.

4. Each workshop participant should present their identified problems for their respective smaller group. When all group members have presented their problems, each problem should be discussed in detail. Questions that should be answered are: ”Why is it a problem?” and ”For whom does the problem exist?” This step should last for twenty minutes.

5. Each smaller group should prioritize and select problems. If needed, they could cluster and merge problems that are similar. As a result, approximately four problems should be selected to work further on.

6. A Lean Canvas should be created for each problem or problem area. The elements the groups should focus on are problem and employee segments. When problems and employee segments have been written down, the group should brainstorm and discuss all possible solutions together. The Lean Canvases should be created for one problem or problem area at a time.

As a result from workshop day one, there should be Lean Canvases including problems with associated solutions for each problem or problem area. Workshop participants from CDO should then choose the three problems with the greatest potential from the smaller groups.

**Workshop day two**

In the second workshop day, the participants from CDO should present the Lean Canvases of the three problems with the greatest potential from each smaller group. The problems should then be discussed in the entire workshop team, focusing on why it is a problem and for whom. When the problem and employee segments are discussed in the entire team, the solutions and their value proposition should be discussed. In this discussion, all solutions should be explained and there should be a clear why for solving the problem in the purposed ways.
Workshop Post Process

In accordance with the current Lean Startup approach for external usage, the ideas from the workshop should be evaluated. The evaluation of internal ideas should be done the way Maurya [19, p. 27] describes. The evaluation steps is listed below:

1. All elements in the Lean Canvases should be rapidly filled in, in the following order: problem, employee segments, solution, channels, references, cost structure, key metrics and advantage.

2. The Lean Canvases should be shared with at least one other person e.g. the manager within the specific domain. This is done in order to get that person’s feedback. Modifications based on the feedback should be carried out.

3. The most risky part of the Lean Canvas should be determined. This is done by first testing the Problem/Solution Fit. The Enterprise Architects who have the responsibility to evaluate the ideas before they reach the Chief Digital Office and Finance might be an appropriate role for evaluating the Problem/Solution fit. When doing this, they should ask employees whether the problem the idea is based on is a problem they have encountered. Another question to answer is whether the proposed solution solves their problem and if they like how it solves it.

4. When the Solution/Product Fit is tested and the internal idea has been shown to solve a problem that users is in need of, the findings should be presented for the workshop team.

5. When the findings are presented for the workshop team, they should decide who should bring the idea to development.

The evaluation of the ideas should not stop there, but they should be continuously evaluated during its entire lifecycle. As a suggestion, they should first create a MVP, just like the way Maurya does. Another proposal is that CDO should use Happy Signals more systematically in order to get feedback for the continuous tests.

Guidelines Summary

*Guideline one:* Facilitate domain-based or sub domain-based workshops. Ideas will then be of a bigger quantity and a better quality since it is easier to find employees with experience in the specific domain who can generate ideas based on real problems.

*Guideline two:* Use the personas to construct a workshop team and to define customer segments. When constructing a workshop team, employees with experience in a specific domain but with different perspectives should be invited
to participate. The personas describe which employees use which systems and thereby in which domains. The description of what systems a persona uses, helps when defining customer segments as well.

*Guideline three:* Construct a diverse workshop team. Invite service owners, business owners, enterprise architects, end users with knowledge in the specific domain but with different perspectives and employees without knowledge in the specific domain. Employees with experience in the domain know what problems exist and can explain them, while employees without experience in the domain can ask the right questions that define and motive an idea better.

*Guideline four:* Use the adapted Lean Canvas (see figure 5.1) as a tool in the workshop for internal development. During the workshop the three first elements should be filled in. The other elements should be quickly written in the workshop post-process. The elements in the adapted Lean Canvas should be validated and modified as soon as some hypothesis in any element has been shown to be incorrect.

<table>
<thead>
<tr>
<th>PROBLEM</th>
<th>SOLUTION</th>
<th>VALUE PROPOSITION</th>
<th>ADVANTAGE</th>
<th>EMPLOYEE SEGMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4</td>
<td>3</td>
<td>9</td>
<td>2</td>
</tr>
<tr>
<td>What problem have you experienced in the specific domain?</td>
<td>How could the problem be solved?</td>
<td>What are the benefits of developing this idea?</td>
<td>Which employees have experienced this problem?</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>KEY METRICS</th>
<th>ADVANTAGE</th>
<th>EMPLOYEE SEGMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>How should the effects of the idea be measured?</td>
<td>How can the employees be reached?</td>
<td>Which employees have experienced this problem?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>COST STRUCTURE</th>
<th>REFERENCES</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td>Total cost, e.g. licenses, development hours, servers, etc.</td>
<td>Can this idea be used as a reference case? How?</td>
</tr>
</tbody>
</table>

**Figure 5.1:** The adapted Lean Canvas.

*Guideline five:* Test Problem/Solution Fit by asking the following questions to employees who have not participated in the workshop where the idea came from:

- Have they experienced the underlying problem of the idea?
- Does the solution solve the underlying problem?
- Do they like how the underlying problem is solved?
Guideline six: Test Product/Business Fit by first prototyping the idea and then conducting tests on real end users. The focus of the test should be on identifying if the prototype solves the underlying problem and if the users like how it is solved.

Guideline seven: Conduct user tests continuously in order to quickly adapt a product to changing needs. Happy Signals is a tool that could be used more systematically when testing existing systems and processes.

Guideline eight: CDO’s employees should participate in Tieto’s Design Thinking moderator course. This will improve the team’s skills in facilitating workshops.

5.2 Critical Review

The critical review presents drawbacks, but also advantages with the methodological choices made in this study, as well as what has been done to meet these challenges. There are both advantages and disadvantages with the case study design. The major benefit with the case study strategy is its ability to collect data with various methods [27, p. 3, 6], and a common concern with case studies is regarding generalization [27, p. 10]. Hence, this study does not aim at generalization, but rather to illustrate a case regarding the use of the Lean Startup approach and how it can be adapted to the needs of an internal development team.

This study does not aim to generalize or represent the entire population. Therefore, a non-probability sampling method was chosen. The snowball method has worked well identifying people to interview, but reaching them have been more difficult. When it comes to the first research question, to answer how the Lean Startup approach is designed within the case company, the access to interviewees was poor. Potential interviewees were often out of office since they work with external customers. Neither were the Lean Startup experts located close to the author of this thesis, since there were several floors in between. To get data about the Lean Startup approach, the author interviewed people who have experiences of participating in the approach and were easier to reach, instead of people maintaining the approach. The internal development team’s needs were easier to identify because the author was sitting next to them and were able to get to know them during the period this thesis was written. In addition, this group of people were often at the office since they are working internally. However, the internal development team consists of many people with different roles and who are located at different offices and the selected interviewees do not represent this entire team. With respect to the time frame for this thesis it was not an alternative to interview the whole team, nor even all roles within the team.

Both secondary and primary data were collected in order to answer the research
questions. The main advantage of using secondary data is the saving in resources like time [25, p. 268], and one disadvantage is that there is no control over the quality of the data [25, p. 268]. In this thesis, the primary data was collected first, and then combined with secondary data, identified in interviews. When gathering primary data through interviews, some challenges were encountered. A common ground in these challenges was the language. One of the challenges was interviewees that spoke with many technical terms. The interviewer found it difficult to interrupt in order to ask the meaning of difficult words and sentences, and tried to focus on asking supplementary questions as soon as a word or sentence were recognized. Another challenge were interviews held in English, which was not the mother tongue of neither the interviewer nor the person being interviewed. The interviewer found it difficult to ask questions based on what the interviewee had said in previous answers. Also, the transcription for all interviews required much time. To save time, some standardized questions could have been asked in a questionnaire, completed with interviews including open-ended questions [25, p. 362]. For example, the questions about the interviewees attitudes towards the Lean Canvas could have been asked in a questionnaire, which could have been sent to more people than those interviewed. When it comes to the environments in where the interviews were held, no influences of the locations were noted. However, according to Saunders [25, p. 329], an interview should be hold in a location where the interviewee is comfortable and unlikely to get disturbed. No interviewees were disturbed during the interviews, so the interview locations seem to have been appropriate choices. In order to gain a high quality of the recording, it should be hold in a quiet place. Since all recordings were of high quality and all words could be identified, the choices of locations seems to have been suitable regarding this aspect as well. Saunders [25, p. 350] also says that there are researchers arguing that it is implausible to achieve the same high levels of communication that can be obtained with face-to-face interviewing, while other researchers suggest that online interviews might facilitate more open and honest responses than face-to-face interviews. In this study, no differences between the quality of the outcome from the face-to-face interviews and the Skype interviews, were identified. The data analysis was a complicated process since there was no systematic way of doing it. The use of computer-assisted qualitative data analysis software could have made the process easier [25, p. 516].
Chapter 6

Conclusion

This thesis aimed at identifying the Lean Startup approach used in a software and service company, and the needs of their internal development team. Through a literature study, review of internal documents and qualitative interviews with employees either experienced of the Lean Startup approach or the internal development, the first and second research questions were answered. The first question was to describe how the Lean Startup approach is designed at a case company, which is presented in the results chapter. The second question was to describe the needs of the internal development team in the case company, which is also presented in the results chapter. Together, both descriptions served as a basis for the data analysis, aimed at comparing the Lean Startup approach and the needs of the internal development team. Based on this data analysis, guidelines were compiled, on how the Lean Startup approach used in the case company could be adapted to the needs of the internal development team.

6.1 Suggestions for Future Research

This thesis resulted in guidelines on how the Lean Startup approach could be used for internal development. The effects of the guidelines have thereby not been measure. Hence, further research should be done on how the proposed guidelines affect the development of internal systems and processes. There are many factors that could be investigated, for example, how long time it takes, how many ideas it generates, the quality of the ideas but also how the participants experience the Lean Startup approach, adapted for internal development. Another aspect to consider is what kind of ideas the guidelines are suitable for. Ideas for internal development could for example be about systems, processes or even services like network.
References


Appendix A

Interview Guides

A.1 Interview with the User Experience manager

Hi User Experience,

The purpose of this interview is to talk about Happy Signals.

- What is Happy Signals?
- When is it used?
- How is it used?
- Where is it used? On what tools?
- Why is it used?
- Benefits?
- Challenges?

A.2 Interview with the Business Developer

Hi business developer,

Thanks for letting me interviewing you! My Name is Sandra Waldenström and I am CDO’s master thesis student. Before we start, I will tell you short about my master thesis. My subject is about idea generation for internal development, ideas for developing internal systems and processes in Tieto, e.g. social intra. My supervisors have told me about your workshop that is used to develop data-based ideas and transform then to business opportunities. I am really curious
about how you work with developing ideas, how you experience the way to work and what you think about using it for internal purpose.

Is it ok if I record the interview, so I can listen to it later when I write my report? I will use the interview as a result in my master thesis.

- What are you doing before a workshop?
  Preparations?
- What are you doing during a workshop?
  How is it performed?
- What are you doing after a workshop?
  How do you work further with ideas from a workshop?
- How have you experienced the process?
  How long time does the different steps take?
  What competences do you need?
  How have you experienced the participants engagement?
  How do you communicate with the participants?
  Have you done any change in the process?
  How efficient is the process?
  What are the challenges with the process?
  What are the success factors with the process?
- How do you think the process should work for internal development?
  What should we pay attention to?

A.3 Interview with the Customer Experience manager

Hi Customer Experience manager,

Thanks for letting me interviewing you! Before we start, I will tell you short about my master thesis. My subject is to adapt DDBs innovation workshop to idea generation for the internal IT portfolio. One of the objectives is to identify CDO’s needs, and what they expect from the internal idea generation process. Therefore, I am curious about how you work with these ideas, how you have experienced the current internal development process and what needs your role has.
Is it ok if I record the interview, so I can listen to it later when I write my report? I will use the interview as a result in my master thesis.

- Describe your role in short.
  
  Strategy for the group?
  
  How does the internal development process help and not help the strategy?
  
  What are your responsibilities as a manager of Customer Experience?
  
  What roles do you cooperate with?
  
  How do you work with problems (ideas) in the Customer Experience field?
- What is your experience of the internal development process?
- What roles do your employees have?
- *Describe DDBs idea generation workshop*
  
  Key factors: data-driven ideas, theme-based, experts in the field as participants, two half days, workshop managers, lean canvas, two half days, several meetings
- Do you think DDBs idea generation workshop could be something for CDO?
  
  What do we have to change?

A.4 Interview with the Chief Digital Officer

Hi Chief Digital Officer,

Thanks for letting me interviewing you! Before we start, I will tell you short about my master thesis. My subject is about idea generation for internal development, ideas for internal systems and processes My supervisors have told me about the yearly development process, and I am curious about how you work with that.

Is it ok if I record the interview, so I can listen to it later when I write my report? I will use the interview as a result in my master thesis.

- Describe your role in short.
  
  Strategy for the group?
  
  How does the internal development process help and not help the strategy?
What are your responsibilities as the Chief Digital Officer?
What roles do you cooperate with?
How do you work with ideas?
• What is your experience of the internal development process?
• Can you describe the decision process when it comes to internal ideas?
• Do you think DDBs idea generation workshop could be something for CDO?

What do we have to change?

A.5 Interview with the Enterprise Architect

Hi Enterprise Architect,

Thanks for letting me interviewing you! The purpose if this interview is to identify how the idea generation workshop is designed, what pros and cons it has and you experiences of the process.

Is it ok if I record the interview, so I can listen to it later when I write my report? I will use the interview as a result in my master thesis.

• Can you explain each step in the workshop?
  Which steps?
  What is important in each step?
• What is your experience of the process?
  Example of idea from the process?
  When has the process succeed?
  When has the process been less successful?
  What are the benefits with the process?
  What are the drawbacks with the process?

A.6 Interview with the Digital Office manager

Hi Digital Office manager,

Thanks for letting me interviewing you! The purpose if this interview is to identify how Tieto works with internal ideas today, what pros and cons this way of working has and what your experiences of the process are.
Is it ok if I record the interview, so I can listen to it later when I write my report? I will use the interview as a result in my master thesis.

- Can you explain each step in the process?
  - How do you prepare for it?
  - What resources are needed?
  - Who participates in the process?
  - How long time does it take?
  - Why do you use it?
  - How do you communicate with the participants?
  - How do you market the process for the employees?
- What is your experience of the process?
  - Example of idea that has been developed in the process?
  - When has the process been successful?
  - What are the cons?
  - What are the pros?

A.7 Interview with the Core IT manager

Hi Core IT manager,

Thanks for letting me interviewing you! The purpose if this interview is to identify how Tieto works with internal ideas for continuous development today, what pros and cons this way of working has and what your experiences of the process are. But, also to talk about how DDB’s workshop could be adapted for internal development.

Is it ok if I record the interview, so I can listen to it later when I write my report? I will use the interview as a result in my master thesis.

- Can you explain the continuous development process.
  - What makes it different from the yearly development process?
  - What do you think about the process?
  - How do you work with ideas?
- *Describe DDBs idea generation workshop*
  - Key factors: data-driven ideas, theme-based, experts in the field as participants, LEAN CANVAS
• Do you think DDBs idea generation workshop could be something for CDO?

    What do we have to change?
Appendix B

Analysis Guide

Lean Startup in Tieto
- Purpose
- Goal
- Target Group

Preparing for Workshop
- Contact making
- Theme
- Team

Workshop
- Kinds of ideas
- Lean Canvas

Workshop Post Process
- Testing problem/solution
- Testing product/market