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The Jenga Tower Framework

A Qualitative Study of Lean Startup in the
Large Company Context

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Abstract

Motivation

The motivation for the research conducted in this thesis was the velocity of the software industry, and seing small startups emerging everywhere, only to cause disruption in the existing market, and taking small pieces of the market segment previously dominated by large software companies.

Problem statement

The problem investigated in this thesis is how the large companies can adopt the mindset of these startups, implementing lean startup methodology to invent innovative products that helps them stay on top of the market, and be competitive against the disruption services.

Approach

The study was guided by a research model derived from the background literature. To gather empirical data for the study, four (three) persons affilated with projects running lean startup in three distinct corporations belonging to the SME definition interviewed. Interviews was recorded and transcribed verbatim for analysis.

Results

While an innovative product is what they are creating by running lean startup projects in the large companies, at this point, the companies are more interested in the learning done both by the teams about the customer and market segments, and proving that internal startup is something that the company can do, rather than hoping to invent the world's greatest software product.

Conclusions

From the empirical case study, 11 primary empirical conclusions were drawn, and *The Jenga Tower Framework for Sucessful Implementation of Lean Startup in Large Companies* was derived.

Keywords

Agile Development, Large Company, Lean Corporation, Lean Startup, Innovation, Intrapeneurship, Market Disruption, SME, Software Development

Sammendrag

Motivert av den raske utviklingen i programvareindustrien, og observasjonen at små oppstartsfirmaer skaper ubalanse i det esksiterende markedet for å overta små deler av markedssegmentet hittil holdt av store programvareselskaper, tar denne studien for seg hvordan store selskaper kan tilnæreme seg tankegangen til slike oppstartsfirmaer for å implementere lean startup metodikk for å skape innovative produckter som helper dem opprettholde sin status i markedet, og holde seg konkurransedyktige.

Studien var guidet av en forskningsmodell utledet fra bakgrunnslitteratur innen feltet. For å samle empiriske data til studen ble fire (tre) personer med tilknytning til prosjekter som kjører lean startup i tre forskjellige norske bedrifter i SME kategorien intervjuet. Disse intervjuene ble tatt opp og deretter ordrett transkribert for videre analyse.

Studien fant at selv om innovative produkter ble utviklet ved bruk av lean startup metodikk, var disse bedriftene mer interessert i læringen de kunne oppnå ved å kjøre slike eksperimenter. Eksempler på læring tilegnet var kunnskap om kunde- og marketssegmentene, og det å bevise at intern innovasjon ved bruk av lean startup metodikk var noe bedriften var i stand til å gjøre. Utledet fra studien ble *The Jenga Tower Framework for Successful Implementation of Lean Startup in Large Companies* foreslått som et rammeverk for suksessfull implementasjon av lean startup metodikk i store norske programvarekonsern.

Acknowledges

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To friends and family; and those not mentioned, but definitely not forgotten.

"Experience is simply the name we give our mistakes"

– Oscar Wilde

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List of Acronyms

- **AARRR**: Pirate Metrics; Acquisition, Activation, Retention, Referral, Revenue
- **BML**: Build-Measure-Learn
- **CD**: Customer Development
- **CPS**: Customer-Problem-Solution
- **IC**: Innovation Colony
- **ICV**: Internal Corporate Venture
- **IV**: Internal Venture
- **JiT**: Just-in-Time
- **KPI**: Key Performance Indicator
- **LS**: Lean Startup
- **MVP**: Minimum Viable Product
- **NOK**: Norske Kroner
- **PEC**: Preliminary Empirical Conclusion
- **PMF**: Product-Market Fit
- **RQ**: Research Question
- **RoI**: Return on Investment
- **SME**: Small and Medium-sized Enterprises
- **UVP**: Unique Value Proposition
- **UX**: User Experience

- **VC**: Venture Capital/Venture Captitalist
- **WIP**: Work-In-Progress

1 Introduction

1.1 Motivation for Research

The software industry is constantly evolving, and popular software fast goes out of fashion. New companies are born out of nothing, and taking over the market. An example of such is Google[1]. They came from nothing, and has now overtaken well known media corporations, and is now the largest media corporation in the world. (O'Reilly, 2016; Forbes Media LLC, 2016)

We see this behavior in our everyday life, and there is nothing to say that what we know well to be the lead product in a market is not overthrown – and barely remembered – in a few years. To keep up, large corporations can not keep producing software just to produce software, they need to become more innovative in their approach.

When it comes to the large companies[2], they are already established, but with that comes a sense of safety. We have learned that no market is safe, and thus the large companies needs to stay innovative to keep up in a fast moving world. (Blank, 2013, p. 9; Cusumano, 2015, p. 32)

[1] Stock held by Alphabet. (Page, 2016)

[2] A large company is defined as a corporation with more than 250 employees. (European Commission, 2015, p. 10)

1.2 Research Questions

The research objective of the thesis is: *How to implement lean startup in a large company?* The objective is divided into the following subquestions:

RQ 1: What characterizes a lean startup team doing innovation in a large company?

RQ 2: How should a lean startup team interact with its parenting company?

RQ 3: What should a large company do to encourage and support innovation among its employees?

1.3 Scope of Work

The goal of this study is to understand how large companies can incorporate lean startup principles. To understand the how large companies should do this, we look at the background of lean startup, the concepts that make up lean methodology, and how innovation is managed in the large companies.

This thesis concentrates on startups within large companies belonging to the SME definition, and how they can adapt lean thinking into their work. And suggests 11 primary empirical conclusions on the subject, guided by the research model.

The thesis also proposes a framework for successful implementation of lean startup within the large company, namely *The Jenga Tower Framework*.

1.4 Research Method

This chapter describes the research model chosen for the collection of data.

1.4.1 Data Collection

Data for the research is collected through thematic interviews (section 1.4.1.2) in a descriptive case study (section 1.4.1.1).

1.4.1.1 Case Study

The technical definition of a case study is: *"A case study is an empirical inquery that investigates a contemporary phenomenon within its real- life context."* (Yin, 2003, p. 13) Thus allows the researcher to discover the relation between the context and the phenomenon.

For this thesis, case studies are the preferred method as we want to investigate the correlation between the context of the large company that may play a part in the execution of the lean startup development methodology.

The aim of the case study is analytical generalization, which as opposed to statistical generalization is not based on statistical frequencies as quantitative research, but is a qualitative approach. (Yin, 2003, p. 10; Gummerson, 2000, p. 88-91) To ensure the validity of the qualitative generalization we want our theory, model and concepts to describe reality as accurate as possible. (Gummerson, 2000, p. 91-93) In theory, it could be sufficient to conduct research on only one case. But then the context would be too specific for the purpose. We would then achieve a study of lean startup in Company X, instead of large companies in general. To get closer to the reality of the large company context, we conduct studies on three different cases and compare these. (Gummerson, 2000, p. 95-97) Read about the cases in Chapter 4.

1.4.1.2 Thematic Interviews

When conducting the thematic interviews, the interviewer will not be forced to stay on a sequential plan of questions, but is allowed to do semi-structured informal interviewing approach to probe for more information on topics that arises. (Gummerson, 2000, p. 127; Oates, 2006, p. 188)

Four (three) interviews was conducted in each case, to get an understanding of aspects of running lean startup within the large company, people with different roles within the company and startup was interviewed. Each interview lasted 60 minutes. The interviews was recorded, transcribed verbatim, and then translated to English when necessary. Commentary was added to transctibions when there was differences in the Norwegian and English language that could cause confusion in the contextual interpretation.

1.4.2 Data Analysis

As we might think that we get closer to the truth by following a longitudinal approach where we follow the projects for a longer time span, the timeframe for this thesis forces us to conduct a short-term conteporary study. As some of the cases are told in retrospective, the study also contains some historical views. (Oates, 2006, p. 144) We must keep in mind that each interviewee might have his/her own understading of the events in question, and that to narrow down to the truth, we needed to find the common denominators of the stories told by the interviewees.

1.5 Structure of the Thesis

Chapter 2 describes findings already made in the field of startups in large companies. It introduces the concept of startup, what a lean startup is, and its characteristics, metrics and tools. The chapter introduces innovation in a large company from the startup perspective, and investigates research already done on lean startup in a large company.

Chapter 3 describes the research model. The research model guides the empirical cases, and is the foundation for answering the research objective.

Chapter 4 describes the empirical cases that are the foundation for the findings made in this thesis. This chapter also contains the primary empirical conclusions drawn from the research.

Chapter 5 discusses the limitations for the study, and what implications we draw from the findings.

Chapter 6 concludes the thesis by answering the research questions, This chapter introduces the Jenga Tower framework proposed for implementing lean startup in a large company. It also lists proposals for future research.

2 | Background

This chapter takes a look at existing research on the subject of the research objective for this thesis to identify background knowledge on the topic of lean startup and innovations done in large companies. It explains the main characteristics of lean startup, and the most important tools used as an aid to acheiving successful innovation through the use of the lean startup methodology. It looks into methods of measuring and validation of the work put into the lean startup.

2.1 What is a Startup?

A startup is characterized by the challenges they face. Sutton (2000) defines these challenges as being young and relatively inexperienced, having limited resources, multiple influences, and dynamic technologies and markets. (Sutton, 2000, p. 33-34) Paternoster et al. (2015) defines the characteristics of software development in a startup as innovative product- and market driven development in small companies, with short time-to-market. (Paternoster et al., 2014, p. 1215)

Ries (2011) defines a startup is as follows: "(. . .) a human institution designed to deliver a new product or service under conditions of extreme uncertainty." And continues on to say that it has nothing to do with the size or economy of the company, or to which industry it belongs. (Ries, 2011b) In short, Ries' definition of a startup tells us that a startup is an experiment.

When talking about the time-span, a startup is often limited to a 5-year period, having revenues below $20 million, and less than 80 employees. (Robehmed, 2013)

Selling the startup business is a clear definition of when it ceases to be a startup. Blumberg (2013) tackles this issue, and states that while you may still be the CEO of your business, the startup is now owned by, and part of, a corporation.

The next step in the life cycle will then be to set the team up for success in this new environment. He also states that one should " (...) remember that going public is not an exit. It's the next stage in your company's evolution and in fact it requires that you and your senior team double down on the business and your jobs for several years." (Blumberg, 2013, p. 357-358)

2.2 Characteristics of a Lean Startup

In this chapter we will look at the characteristics of a lean startup. The key concepts and goals, how agile methodology and customer development plays their role in the quest for the first MVP, and how testing hypotheses are the basis for decisions on whether to pivot or preservere.

2.2.1 Key Concepts

"Lean Startup" is a mix between Agile Software Development (Chapter 2.2.2) and Customer Development (Chapter 2.2.3), set in the context of Lean Manufacturing Strategy. (Maurya, 2012) The key concepts of the Lean Manufacturing Strategy are Jidoka: If malfunction or defect is discovered, all production stops; and Just-in-Time (JiT): Making only "what is needed, when it's needed, and in the amount it's needed", thus eliminating waste. (Toyota Motor Corporation, 2016)

When we talk about JiT in lean startup, we think of the minimum viable product (MVP). Ries (2011) defines the MVP as the version of the product that enables a full turn of this cycle with the minimum amount of effort and development time, that also is aimed at the early adopters. (Ries, 2011a, p. 77) The MVP can provide useful measures, validate learning, and minimize risk. The MVP may include a landing page where views are a metric of public interest in the product, a technology demonstration, and a prototype. (Cooper and Vlaskovits, 2010, p. 39-40)

The life cycle of a lean startup follows the pattern of Build-Measure-Learn, shown in Figure 2.1. The BML loop starts off with the build phase containing the ideas and hypotheses that creates the foundation for the experiment. A MVP is built and tested on users in the measure phase. The data collected is then used in the learning phase, from which new ideas and hypotheses are derived. (Ries, 2011a, p. 75-78; Maurya, 2012, p. 12)

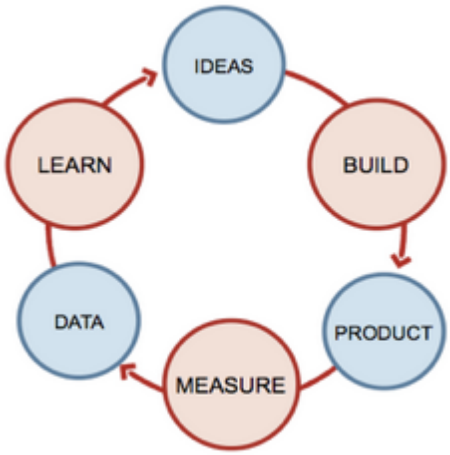

Figure 2.1: Lean Startup life cycle: Build-Measure-Learn (LeanStack, n.d.)

As mentioned, lean startup is influenced by customer development. An important aspect of the customer development process is the pivot (changing the direction of the development if the hypotheses fail) or preservering (continuing investigating the current path). As in the Lean Manufactoring Strategy, where Jidoka is the concept of stopping all production if malfunction or defect is discovered (Toyota Motor Corporation, 2016), pivoting plays the same role in lean software development. If an hypothesis is invalidated, it's time to stop moving forward on the same track, and pivot. Taking another look at the BML-loop in Figure 2.1 we see that the natural point for pivoting is after the learning-step, and before the new ideas emerge, as this is where the hypotheses are validated or invalidated.

When experimenting in a startup the goal is to find a plan that works before running out of resources. Speed is therefore one of the most essential traits of the lean startup. Another essential trait is learning, mainly learning about the customers. When lacking learning, the experiment is at risk of premature optimalization. The optimal experiment has both speed and learning, but it also needs focus. The focus aspect somewhat explains itself, and lack of it could run the team off track into inefficiency and experiments leading nowhere. As illustrated in Figure 2.2, Maurya compares the lack of focus with a dog chasing it's tail. (Maurya, 2012, p. 60-61)

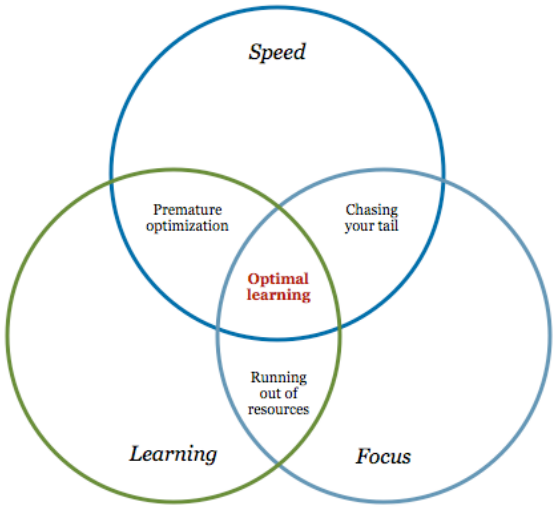

Figure 2.2: Speed, Learning and Focus (Bakjaeho, 2013)

2.2.2 Agile Software Development

As mentioned in Chapter 2.2.1, agile software development is a part of lean startup, or more generally; lean startup is an agile methodology.

Agile methodologies are alternatives to traditional project management used in software development. Use of agile methodologies helps teams respond to unpredictability through incremental, iterative work periods, known as sprints. (agilemethodology.org, 2008) Agile methodologies emphazise close collaboration between the development team and business stakeholders. They promote frequent delivery that has a business value, tight, self-organizing teams, and smart ways to create, confirm, and deliver code. (Agile Alliance, 2015) To support these teams, the Agile Alliance developed the Agile Manifesto, from which the following 12 principles are derived:

1. Our highest priority is to satisfy the customer through early and continuous delivery of valuable software
2. Welcome changing requirements, even late in development. Agile processes harness change for the customer's competitive advantage
3. Deliver working software frequently, from a couple of weeks to a couple of months, with a preference to the shorter timescale

4. Business people and developers must work together daily throughout the project
5. Build projects around motivated individuals. Give them the environment and support they need, and trust them to get the job done
6. The most efficient and effective method of conveying information to and within a development team is face-to-face conversation
7. Working software is the primary measure of progress
8. Agile processes promote sustainable development. The sponsors, developers, and users should be able to maintain a constant pace indefinitely
9. Continuous attention to technical excellence and good design enhances agility
10. Simplicity – the art of maximizing the amount of work not done – is essential
11. The best architectures, requirements, and designs emerge from self-organizing teams
12. At regular intervals, the team reflects on how to become more effective, then tunes and adjusts its behavior accordingly (Beck et al., 2001)

Implementing the principles of the Agile Manifesto makes a good frame for working with development. Focusing on efficiency, good technical solutions and simplicity, and regularily evaluating the project is a good start. What agile development lacks, compared to lean development, is validation.

Kerievsky addresses this issue in his talk at the GOTO Conferences (Kerievsky, 2013). As mentioned in Chapter 2.2.1, JiT is a key concept of lean startup, and lean development. What JiT contributes to is eliminating waste. Instead of spending a lot of time and resources on developing a feature, the developers can validate the need for such feature by testing it on real users beforehand, basing a decision to pivot or perservere on scientific data. (Kerievsky, 2013)

2.2.3 Customer Development

Having looked at how agile development have affected lean development, we now look at how customer development plays its part.

Blank (2014) defines Customer Development as a method containing the following main characteristics:

- Speed

- Starting with a series of core hypotheses – what the product is, what problem the product solves, and who will use/pay for it
- Finding "product/market fit" where the first variable is the customer, not the product
- Pursuing potential customers outside the building to test your hypotheses
- Trading off certainty for speed and tempo using "Good enough decision-making"
- Rapidly building MVPs for learning
- Assuming your hypotheses will be wrong so be ready for rapid iterations and pivots (Blank, 2014)

These characteristics are organized into four steps: Customer discovery, customer validation, customer creation, and company building, as seen in Figure 2.3. In addition to the characteristics, the steps also include steps to build the business – The business model, sales and marketing roadmap, scaling of organization and operations.

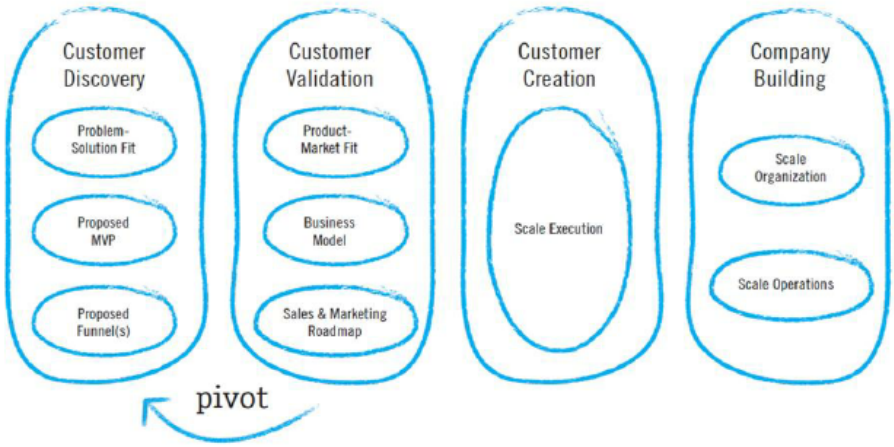

Figure 2.3: 4 Steps of Customer Development (Cooper and Vlaskovits, 2010, p. 18)

In a lean startup, the customer development process and procuct development are interrelated. The CD team works on testing hypotheses about the customers: product and solution to fit (CPS); as well as hypotheses about the business: market positioning and customer/market acquisition. The product development

team works on the solution for the platform and architecture features. Both the customer- and product development teams share their report with each other, and when iterating, they each incorporate knowledge about the other. (Cooper and Vlaskovits, 2010, p. 41-43) Figure 2.4 illustrates how this feedback loop works in a figure-eight.

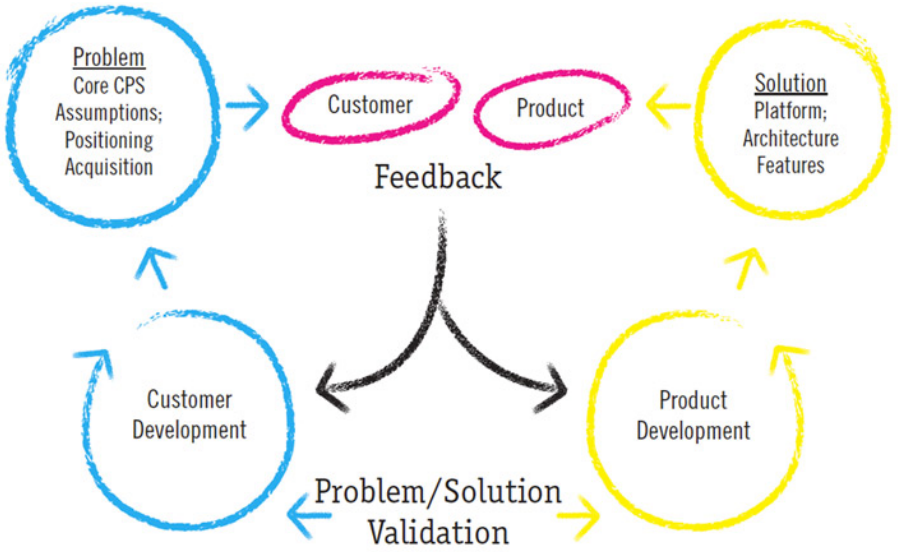

Figure 2.4: Customer and Product Development Interrelatedness (Cooper and Vlaskovits, 2010, p. 42)

Customer development also introduces the aspect of the early adopters. They are the passionate, early users of a new technology or product who understand its value before the mainstream market. What makes the early adpoters so important is that they seek out new technologies to solve problems, not just for the sake of owning the newest technology. They don't rely on references from others to make buying decisions, and they want to help the project succeed. (Cooper and Vlaskovits, 2010, p. 29-30)

Another aspect introduced by customer development is the pivot, as mentioned in Chapter 2.2.1. We see from Figure 2.3 that pivoting occurs between the customer validation and the customer discovery phase where the hypotheses are tested. Ries (2009) emphasises three types of pivoting: customer segment pivot, customer problem pivot, and feature pivot. (Ries, 2009) A customer segment pivot is a pivot

where the group of customers is changed, and the product is transfered to solve the same problem for another group of users. Customer segment pivots are used to find the market fit. A customer problem pivot is a pivot where the aim is to solve a different problem for the same set of users. In a feature pivot, the entire company is reoriented around a specific feature. That could be abandoning the development of many average features to focus on making one feature excellent. (Ries, 2009)

Every pivot is fueled by hypotheses and learning. If the learning is that the project is on the right track, there's no need to pivot. (Ries, 2011a, p. 77; Feinleib, 2011, p. 10-11)

2.2.4 Measuring and Validation

From customer development we have the set of core hypotheses, and assuming them to be wrong. (Blank, 2014) As a prerequisite for learning, it is important to have good practices for measuring and validating these hypotheses, as unvalidated measurements have little to no value. In this chapter we look at the core practices used in lean startup for measuring and validating, and the importance of staying clear of vanity metrics.

2.2.4.1 Vanity Metrics

Vanity metrics is the name given by Ries (2011) to metrics that lures you into thinking that there is more progress than it really is, and paints a rosy picture of the project status. This can be measuring page views, when what is really important is how to get users to register, or it can be the number of registered users, when the focus should be on returning registrants. (Ries, 2011a, p. 128-130) Metrics like these are also metrics that are easily doctored by inviting friends and family to register for the service instead of reflecting the number of actual users. Owens and Fernandez (2014) gathers that the metrics themselves are less important to whether or not they are vanity metrics or not, but that the importance rather lies in context in which they are presented. (Owens and Fernandez, 2014, p. 133-134)

Allowing the entrepeneurs to live in an illusion of a rosy project progression can be devastating for pivot evaluations. The metrics tells you that everything is good, and that there is no need to pivot, while in reality the focus is completely off. (Ries, 2011a, p. 161) Preventing falling into the trap of vanity metrics is where the three A's come in.

2.2.4.2 The Three A's

The counter measure of vanity metrics is by Ries (2011) explained as the three A's. As a way of supporting the Innovation Accounting Framework (Chapter 2.2.4.3, Ries (2011) proposes that validation can be done using the tree A's: Actionable, accessible, and auditable. (Ries, 2011a, p. 77)

An actionable report must demostrate a clear cause and effect to not be dismissed as a vanity metric. Understanding of actionable reports gives a better ability to learn from the evaluated actions.

When a report is accessible, it means that it is easy to understand. The best way to achieve this is, according to Ries (2011), to use tangible, concrete units.

Ensuring that the data is credible to employees makes the report auditable. In stead of protecting customer privacy, think of the metrics as people. Ries (2011) emphasises the need to being able to test the data by hand, by talking to the customers. This way we can check if the report contains the true real-world facts that we are looking for in validating our product. Another aspect of auditability is making sure the reports aren't too complex, and not prone to falsities. (Ries, 2011a, p. 143-147)

2.2.4.3 The Innovation Accounting Framework

Ries (2011) proposes a measuring tool he calls "Innovation Accounting". Innovation accounting measures learning in a startup. This is a three-step process containing 1) Use of the MVP to establish the current situation of the company. 2) Attempt to tune the engine from the baseline to the ideal. 3) Pivot or persevere. When the company pivots, it starts the process over again. The innovation accounting framework thus makes it clear that when a company is stuck, it needs to change its direction. (Ries, 2011a, p. 118; Euchner, 2013)

McClure (2008) introduced "Pirate Metrics" to measure the customers' journey through the marketing pipeline. Pirate Metrics is the name of the acronym AARRR, which would be the cry of a one eyed, peg legged pirate with a parrot on his shoulder AARRR stands for aquisition, activation, retention, referral and revenue. The goal of pirate metrics is to move customers through the pipeline in the highest possible volume, at the lowest cost. (McClure, 2008)

Acquisition is the transformation of people into customers. It could be through visitation or registration on an online service, through purchase, or a contract.

Activation is the transformation of customers into happy customers. This could be measured by how much time they spend on the product, number of clicks, or amount of money spent.

Retention measures customer loyalty. This includes return visits, subscription renewals, and membership duration.

Referral is the rate at which existing customers bring in new people to the product, and includes the activity rate of those new people.

Revenue is the income generated from customers using or buying the product, as well as the rate of response to upgrade offers and recommendations. (Owens and Fernandez, 2014, p. 134-135)

In addition to this, Owens and Fernandez encourages the shutdown of projects that dones not show immediate promise. If a team keeps pivoting enlessly, it is a sign that the project fails to develop significant momentum, and killing them thus avoids wasting time and effort on a project that struggles to find a path worth pursuing. (Owens and Fernandez, 2014, p. 154)

2.2.5 Tools

Acheiving JiT, unneeded, redundant, and rarely used items should be removed from the process, (Chaneski, 2014) which transfers to the statement that all adaption of tools must benefit the supply chain. (Manzouri et al., 2014, p. 9183)

While the word "tool" has been an aspect of ambiguity throughout the literature, covering everything from the lean mindset, to techniques, to actual tangible tools, we want to narrow it down in this chapter. We want to look at the tangible tools that can be used in lean startup processes to visualize or manage. The most mentioned tools within this definition are the Kanban board and the Lean Canvas.

2.2.5.1 Kanban

The Kanban board is a tool for keeping track of progress in agile development processes. It is adaptable, and there are many existing versions of this tool. Developed by Toyota as part of the JiT-strategy, "kanban" translates to "list", and a Kanban board is a board of lists. When choosing the number of lists, it's easy to overdo it, adding too many different lists. Lean development teams can easily fall into the trap of adding too many lists, and following the formula of *"number of kanbans = daily production * (lead time + safety margin)capacity"*

is a good way to calculate the number of needed kanbans. (Chiraini, 2013, p. 88-93) For the purpose of this thesis, we will look at the traditional Kanban in it's most basic form: Todo-Doing-Done (see Figure 2.5).

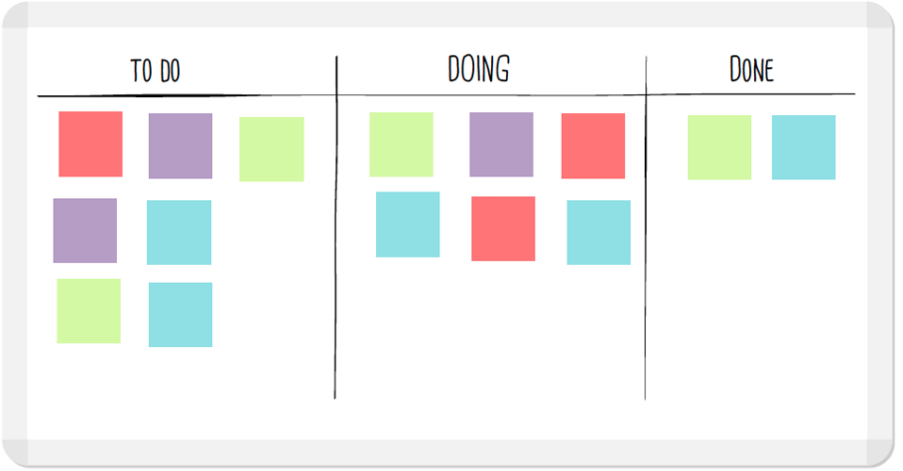

Figure 2.5: Kanban Board (MarketerGizmo, n.d.)

Kanban is valued for its simplicity. Its simple mechanics of moving sticky notes on on a board helps a team visualize workflow, limit WIP, and measure flow. A Kanban board should include all known tasks that should be done to achieve different goals. The identified tasks are listed under "Todo", and then moved to "Doing" when they are being processed. When a task is done, the note is moved to "Done". Limiting the number of tasks in the "Done" tab, gives the team control over their WIP. A rule of thumb is that only one task should be in "Doing" per team member, not limiting how many members can work on the same task at the same time. Throughput and completion of tasks on the board, usually investigated at a weekly meeting named a sprint backlog, measures the project flow. (Poppendieck and Cusumano, 2012)

2.2.5.2 Lean Canvas

The Lean Canvas (Figure 2.7) is a tool for brainstorming business models, prioritizing where to start, and tracking ongoing learning. The Lean Canvas is derived from Osterwalder's Business Model Canvas (Figure 2.6). (Osterwalder and Pigneur, 2010, p. 15-51; Maurya, 2012, p. 4-7)

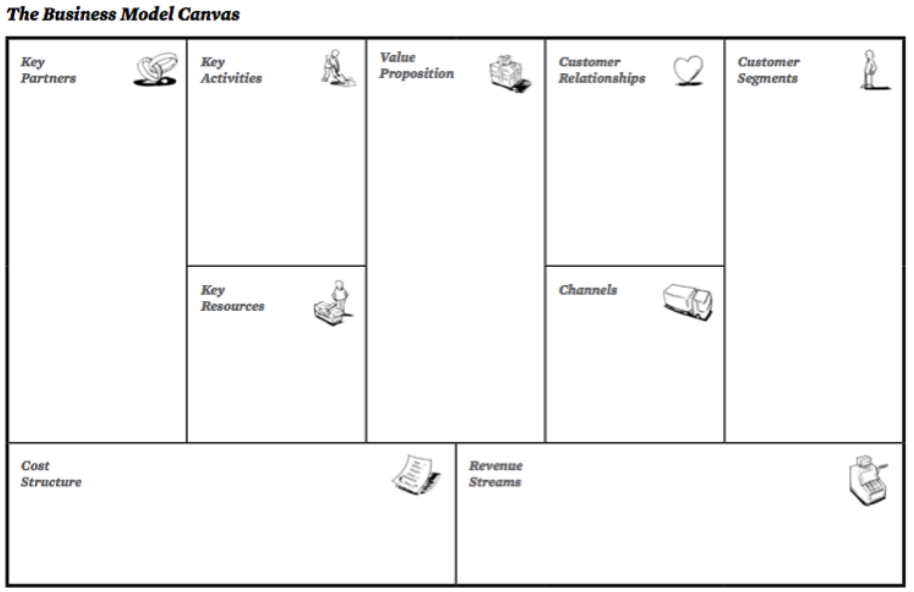

Figure 2.6: Business Model Canvas (Osterwalder and Pigneur, 2010, p. 44)

A business canvas eliminates possibly wasteful hours devicing a formal business plan. While a formal business plan averages between 25 and 40 pages, takes a long time to compile, and is inflexible (Schroeder, 2015, p. 8-12), a business canvas is a one-sheet piece of paper with limited space to fill in; thus limiting time that can be used on it. It helps visualizing the business, and establishes a common language and framework between colleagues. (Osterwalder and Pigneur, 2010, p. 50-51)

While the Business Model Canvas focuses on customers, investors, consultants and advisors, the Lean Canvas focuses purely on the entrepreneurs. Table 2.1 explains the differences between the Business Model Canvas and Lean Canvas further.

Table 2.1: Business Model Canvas vs. Lean Canvas (Roos, n.d.)

Element	Business Model Canvas	Lean Canvas
Target	New and existing businesses	Startup businesses
Focus	Customers, investors, entrepeneurs, consultants, advisors	Entrepreneurs
Customers	Lays emphasis on customer segments, channels and customer relationships for all businesses	Does not lay much emphasis on customer segments because startups have no known or tested products to sell
Approach	Lays down the infrastructure, lists the nature and sources of financing and the anticipated revenue streams of the business	Begins with the problem, a proposed solution, channels to achieving the solution, costs involved, and the anticipated revenue streams
Competition	Focuses on value proposition in quantative and qualitative terms as a way to stay smart in the market	Assesses whether the business has an unfair advantage over the rest, and how to capitalize on it for better grounding
Application	Fosters candid understanding, creativity, discussion and constructive analysis	Is a simple problem-solution oriented approach which enables the entrepeneur to develop step-by-step

Maurya suggests the best way of filling out the canvas is in one 15 minute sitting. Filling out the canvas quickly reveals what issue is most pressing at the exact point of the development. Maurya (2012) calls this Plan A. When scetching out the Plan A, one should rather leave some sections blank than debating the right answers. As the canvas is to be updated at every iteration, filling in sections when the issue arises is the right way to go. Updating the canvas each iteration also promotes thinking in the present. Based on the current stage, one should focus on the next set of hypotheses that needs to be tested. The canvas also works like a restraint. Limited space boils the business model down to its essence. The last point in the process of filling out the canvas is being customer centric. Lean startup is a customer-driven approach, and as such, the team should always have

the customer in mind when filling out the canvas. (Maurya, 2012, p. 23-43)

The canvas is divided into nine sections, filled in in sequential order; Problem, customer segments, Unique value proposition, solution, channels, revenue streams, cost structure, key metrics and unfair advantage. These are explained by Maurya (2012) in the list below:

Problem and Customer Segments

The problem and customer segments sections are tightly linked. To find the problem, it's important to know who the customers are, and what their roles are. To be consise, one should list only the top three problems at max. These are the most important jobs the customer needs done.

Unique Value Proposition

Maurya defines the UVP as "Why you are different and worth getting attention". This section of the canvas is one of the most important, and also the hardest to get right. The UVP is about selling your product, and most importantly getting the user's attention. A new user spends on average eight seconds to make up their mind on your product. It is therefore incredibly important to make your product interesting for the customers. When crafting the UVP it is recommended to be different, but also to make sure this difference is one that matters. Target the early adopters (these are the customers that are most likely to stay with your product), focus on finished story benefits (the benefits your customers derive after using the product), picking your marketing words carefully, and create a high-concept pitch. When doing all this, it is important to consider the following three questions: What is the product? Who is the customer? Why should they use this procuct?

Solution

As the canvas is part of the iterative process, it can be dangerous to define the solution early on. The solution should be based on the problems, but as these can be redefined, the solution should be bound as late as possible. In this section of the canvas, only the top three features should be noted. These features correlate to the top three problems.

Channels

When trying to connect with new users, it's important to use the right channels to do so. Every business wants a landing page (small website that tells the essentials about the product), but having a landing page does not

necessarily expose you to the customers. When conducting interviews, you already have exposed yourself to the interviewees, and some of which may turn into your early adopters.

Revenue Streams

Revenue streams and cost structure are used to model the viability of the business. A common mistake when talking about revenue is that an MVP is too small to charge the customers. Asserting charge issues as early as in the MVP is part of the hypothesis validation process. It automatically gives the product a value, and if the MVP is useful, early adopters will pay for even the small service you provide in the MVP. The trap is not chariging from day one. When introducing a product as a payed service after getting a core of early adopters means you could possibly loose a few - if not a lot - of them.

Cost Structure

When filling in the cost structure, it is hard to accurately estimate for the future. Therefore this section too should have it's focus on the present. Aspects to take into consideration are the following: The cost of interviewing 30 to 50 customers. The cost of building and launching the MVP. The ongoing burn rate in terms of fixed and variable costs. When calculating the viability of your product, revenue streams and cost structure is used to calculate the break-even point, as well as it helps estimate time, money and effort needed to get there.

Key Metrics

How the business is performing. These metrics are key for both measuring progress and identifying hot spots in the customer life cycle. Usually Pirate Metrics are used. (Explained in Chapter 2.2.4.3)

Unfair Advantage

An unfair advantage is that little thing that makes your company stand out from others who attepmt to build the same thing. Examples of unfair advantages are insider information, expert endorsements, your development team, community and existing customers. The essence to this section is how you differ, and how this difference matters. (Maurya, 2012, p. 23-43)

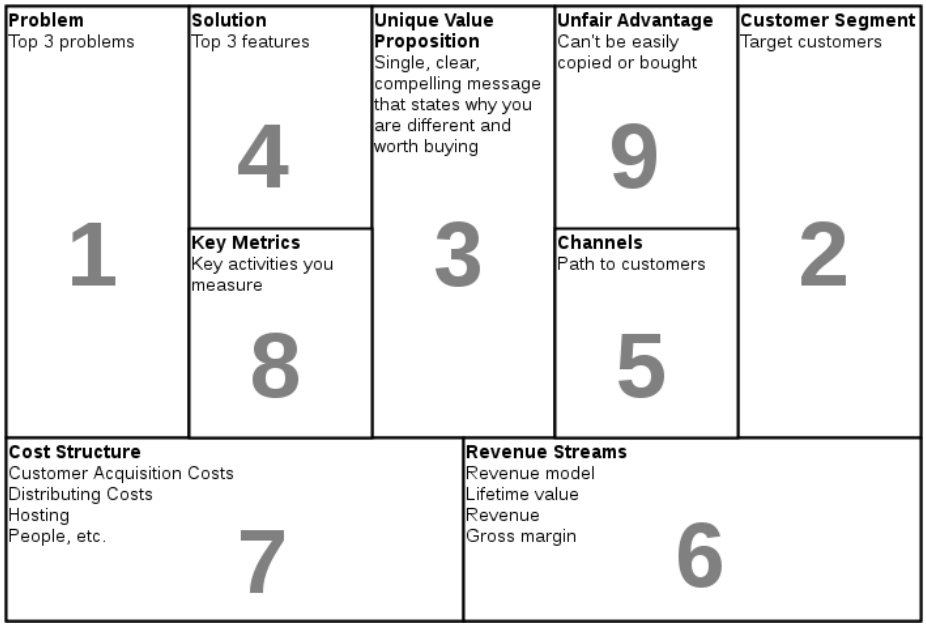

Figure 2.7: Maurya, Lean Canvas with Fill Order (Maurya, 2012, p. 27)

When having filled out the canvas, it's time to look at what it really tells you. Looking at the risk iteration paths in Figure 2.8, we can identify product risk (blue/circle), customer risk (green/square) and market risk (orange/polygon).

The product risk is about getting the product right. Measuring this risk is an analysis of the problem, the soulution, the UVP and the key metrics.

The customer risk is about building a path to the customers. Measuring this risk is an analysis of exisitng alternatives, revenue streams and cost structure.

The market risk is about building a viable business. Measuring market risks is an analysis of customer segments, early adopters and channels to reach these. (Maurya, 2012, p. 50-51)

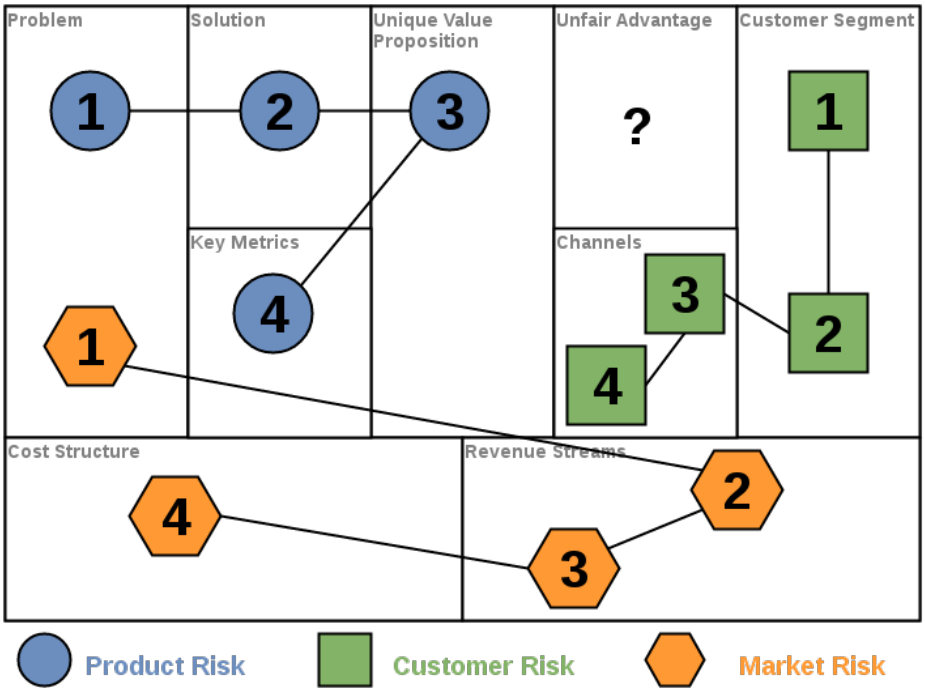

Figure 2.8: Lean Canvas Risk Iteration Path (Maurya, 2012)

2.3 Startup in the Large Company Context

After having looked at the classical small-scale startup, and lean startups, this chapter explains how startups work in the large company context, and how lean thinking can be incorporated in this new setting.

2.3.1 Motivation

The motivation for innovation in the large company origins from the realization that new startup companies are coming to take a part of the market share held by the large company. To keep up with the small-scale startups, the large company therefore see the need to start implementing innovative approaches to their strategy. (Blank, 2013, p. 9; Cusumano, 2015, p. 32; Owens and Fernandez, 2014, p. viii) In the study "Commitment Nets in Software Process Improvement", Abrahamsson (2002) found the incentives for oranizational commitment to improving

the software process to be competetiveness, development capability, company values, product quality, organization efficiency, market segment, product sales, and shareholder satisfaction. (Abrahamsson, 2002, p. 433)

2.3.2 Intrapreneurship

Encouraging employees to spend some percentage of their work hours on innovative ideas is an approach to intrapreneurship that has proven succesful in large companies, leading to the invention of the 3M Post-it as an example. (Shanley, 2001, p. 21) Owens and Fernandez (2014) argues that "The roles of employee and entrepreneur are mutually incompatible", meaning that companies who invests in employee innovation tend to steer the way for this innovation, thus blocking the free flow of ideas. This leads them to the claim that the fall of intrapreneurship programs on the following three reasons: First, the incremental innovations intrapreneurs are forced to address only leads to marginal growth, and prevents them from being able to focus on the high-growth opportunities. Second, intrapreneurs are paid a salary. With a steady salary, the motivation that drives real entrepeneurs are removed. There is no risk of losing everything, and with a steady income, intrapreneurs have a more distanced relationship to the big payoff. Lastly, the financial structure in intrapreneural projects are lacking. They compete internally for funding, or can become mired in departmental backwaters. (Owens and Fernandez, 2014, p. xiv)

An intrapreneur program aims to commercialize employee ideas. This can be achieved by putting the best heads in an organization together in an innovation lab, and letting the ideas flourish, or in a more detatched innovation colony (described in chapter 2.3.3). (Owens and Fernandez, 2014, p. 41-42)

While innovation colony teams are like VCs, the innovation teams are like startup founders. Team members typically get stock parts in the new startup they founded, but unlike a stand-alone startup, they also get their salary from their employer. The enterprise in which they are employed also needs to stay on top of the situation at all times, and be able to provide a better deal for the startup than it would get from investors if they were to leave. (Owens and Fernandez, 2014, p. 61-63)

2.3.3 Internal Venture

While intrapreneurship is founded on a free initiative, internal ventures are founded on an organized initiative as an empowerment system. (Edison et al., n.d.) Owens and Fernandez (2014) describes this organized initiative as an innovation colony. (Owens and Fernandez, 2014, p. 2-3)

Members of the innovation colony must not only think like venture capitalists, they also need to be as committed as VCs. This means some degree of personal risk investment in the project. Simulating an independent VC-firm in an innovation colony can boost personal commitment, and distance the VCs from the enterprise they are a part of. To make this distance work, managing directors must have close contact with the startups, to ensure both parties' interests are sustained. Owens and Fernandez (2014) also goes as far as to say that such a team should be made up of employees who agrees to take on the personal financial risk. (Owens and Fernandez, 2014, p 41-49)

Taking on the personal risk in an IC ensures autonomy in the project, and in combination with thinking like VCs makes it an internal venture. In a large company context this IV is also called an internal corporate venture (IVC) (David, 1994), or as named by Ries (2011), an innovation factory. A self-sustained (autonomous) group that has end-to-end responsibilities, even if backed by a larger company, is according to Ries (2011) the only sustainable way for a company to sustain economic growth in a startup. (Ries, 2011a, p. 34)

2.3.4 Failure

Feinleib (2011) addresses the issue of bad product-market fit as a way for a startup to fail. Ways to miss the PMF are, according to Feinleib (2011), spending too much time on technology, that is, building a product for the product's sake, not for the customers'; failing to face the reality of the data, and accepting incorrect hypotheses and ignoring the need to pivot; never reaching the market although it exists; and last, but not least: achieving PMF only to discover that the market is very small. (Feinleib, 2011, p. 3-4)

Another way for a startup to fail is going down a path lacking one of the three aspects on the road to optimal learning (Figure 2.2). As explained in chapter 2.2.1, lacking either speed, focus or learning in the startup can lead to running out of resources, premature optimization, or chasing your tail.

2.3.5 Success

For many enterprise development teams, success is determined wether or not the product ships. From an innovation perspective, the success criteria differs. It depends on the degree to which it can move the needle from high uncertainty towards certainity. The progress is a measure of the number of ideas considered, cost per prototype, cost to reach product/market fit, and return on investment (RoI). (Owens and Fernandez, 2014, p. 52-53)

Of course getting a couple of million users, or even better, a million paying users, can be a way of saying the project has achieved success. But there is also the aspect of success along the way. Ries (2011) talks about the dangers of using learning as a measure of success. Yes, we may have learned that we were wrong in our hypotheses, but was it meaningful learning? Being wrong for the sake of learning adds up to vanity metrics. And pivoting for the pivot's sake is equally meaningless. The pivot is a success if it helps the project move on to testing a new hypothesis. Having a validated pivot is also a metric for success. (Ries, 2011b)

2.4 The Lean Corporation

Whether it is based on intrapreneurship or internal venture, implementing lean startup in the large company should be based on the same key concepts that makes up the lean startup methodology, mentioned in Chapter 2.2. Those concepts are summarized as Jidoka and JiT by BML, using the aforementioned concepts of hypothesis validation (Chapter 2.2.4) and tools (Chapter 2.2.5).

Edison et al. (2015) found that to be able to run lean startup projects within a large company, the startup teams need full support from the corporate management. This means that the management needs entrepeneural insight. (Edison et al., 2015) As a human centered approach, Ries (2016) suggest contextual adaption, as he states that there are no two projects or teams that are exactly similar, and that the methodology should be implemented and adapted accordingly. (Ries, 2016, p. 12-14)

2.5 Chapter Summary

This chapter sums up the background knowledge gathered from the literature for this study. We have looked at the characteristics of a lean startup (Chapter 2.2), including concept of hypothesis validation and tools. We have looked at how startups live in the large company, and the motivation for which. (Chapter 2.3)

2.5.1 Process

As we have learned, the definition of a startup is a relatively inexperienced innovative product- and market driven development team characterized by the chal-

lenges they face, designed to deliver a new product or service under conditions of extreme uncertainty as an experiment. (Paternoster et al., 2014, p. 1215; Ries, 2011b; Sutton, 2000, p. 33-34)

Summing up the methodology process after learning that lean startup is an adaption of agile methodology and customer development, Table 2.2 shows the distinctions and common factors between agile methodology and customer development and how lean startup have adapted iterativity, pivoting, delivery frequence, engineering driven motivation, urgency, and customer aspiration as a mix of the two.

Table 2.2: Characteristics of the Process

	Iterative	Pivoting	Frequent Delivery	Engineering Driven	Urgency	Customer Aspiration
Agile Methodology	Sprint			✓		Needs
Customer Development	✓	✓	✓	✓	✓	Desires
Lean Startup	BML	✓	✓	✓	✓	Needs

As we learned in Chapter 2.2.1, the lean startup methodology process follows the Build-Measure-Learn loop (Figure 2.1), where ideas lead up to the MVP, which in turn are used to measure and validate hypotheses. Learning is then the basis for new ideas, and the loop continues.

2.5.2 Team

When it comes to the lean startup team in the large company, we have seen the differences and similarities between intrapreneurship, internal venture, innovation colonies, and the lean startup team, as shown in Table 2.3. We note that the lean startup is not of an organized initiative by itself, but in the context of the large company, we saw that it can be.

Table 2.3: Characteristics of the Team

	Hypothesis Driven	Free Initiative	Organized Initiative	Autonomous
Intrapreneurship		✓		
Internal Venture			✓	
Innovation Colony			✓	✓
Lean Startup	✓	✓		✓

As lean startup is an agile methodology, a prerequisite is that the team plays agile, and have focus on the end user. They should strive to gain optimal learning, and manage to keep themselves from the trap of vanity metrics. This means having some distance to the company, as we have seen that the success criteria for many enterprise development teams is shipping the product.

2.5.3 Toolkit

Going back to the broad definition of tools, this chapter summarizes both the tangible tools, and the concepts for measuring, and hypothesis validation in the lean startup. Table 2.4 provides an overivew of which of these tools and methods provides value for either measuring or validation – or both.

Table 2.4: The Lean Toolkit Summarized

	Measure	Validate
Kanban	✓	
Lean Canvas	✓	
Innovation Accounting Framework	✓	✓
Pirate Metrics	✓	✓
Three A's		✓

While the Kanban board is a process tool for the team to track where they are in the progress of making a product, the Lean Canvas is a business tool to assess the frames for the project identifying product-, customer-, and market risk. The Lean Canvas helps the team discover project cost and revenue, the problem and solution, their customer segment and channels to reach the customers, the key metrics, and what makes their product unique compared to other products on the market. (See Chapter 2.2.5.2)

The Three A's supports the Innovation Accounting Framework as a measure to steer clear of vanity metrics when measuring the project status. A good set of metrics are the Pirate Metrics, measuring the customer journey. (McClure, 2008; Owens and Fernandez, 2014, p. 134-135)

3 | Research Model

Chapters 3.2 through 3.6 describes the layers of the research model, where each layer describes one building block based on findings in the background literature study in Chapter 2. The model, Figure 3.1, can be seen in Chapter 3.1, and is the basis for the empirical case research described in Chapter 4.

3.1 A Layered Model for Research

Based on the findings in Chapter 2, the successing chapters describe the layers of the research model (Figure 3.1) that was the foundation for guiding the study conducted during the work with this thesis. The model was subject to an iterative approach, and was updated as new aspects proved interesting to the study. The findings in the study is described in Chapter 4, discussed in Chapter 5, where a revised model (Figure 6.1) is based on an analysis of the empirical case findings and the background literature.

The model is read bottom-up from layer 1 with the large company, to the agile team, the lean startup methodology, tools and metrics used in the lean startup, and the end result being innovative product as layer 5.

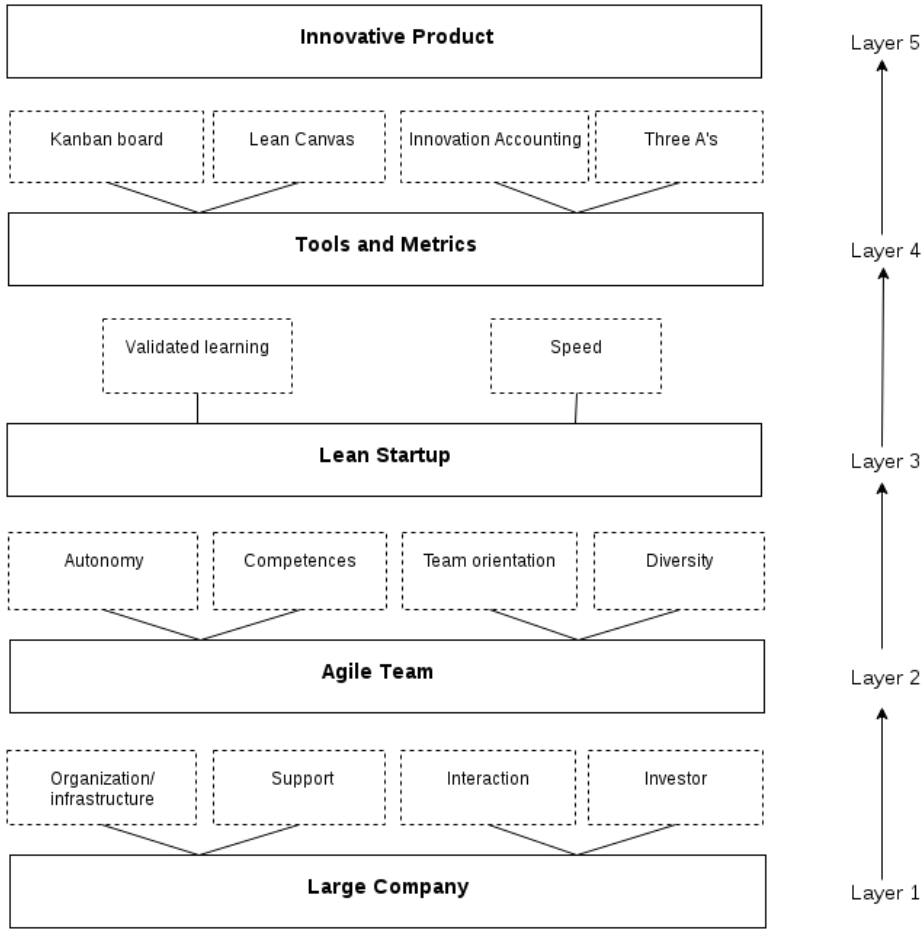

Figure 3.1: A Layered Model for Researching Lean Startup in the Large Company

3.2 Layer 1: The Large Company

In the bottom of the model we have the large company. It is the foundation of the study. The large companies are challenged by new startup companies taking parts of their market. The large companies therefore need to start innovating. (Blank, 2013, p. 9; Cusumano, 2015, p. 32; Owens and Fernandez, 2014, p. viii) The way innovation can be organized in a large company can be both in an Innovation Colony, (Owens and Fernandez, 2014, p. 2-3) or it can be of free

initiative. (Edison et al., n.d.) From this we draw that the company must have the infrastructure to do innovations, this being the office space and equipment needed by the developers. We also assume that there needs to be some interaction between the large company and the agile team.

The large companies act as the parent and source of resources for the internal startups, and should, as according to Owens and Fernandez (2014), "be able to provide a better deal for the startup than it would get from investors" (Owens and Fernandez, 2014, p. 61-63). They should have innovations in their budget, and thus act as an investor for internal startup projects. They should also encourage their employees to do innovations. (Frigo, 2015, p. 37) As shown by Abrahamsson (2002), strategic decisions are taken by the organization. (Abrahamsson, 2002, p. 433)

3.3 Layer 2: The Agile Team

In the second layer we have the agile team as a second prerequisite for running an agile methodology like lean startup in the large company. The agile team is characterized by being self-organizing, as derived from the eleventh statement of the Agile Manifesto: "The best architectures, requirements, and designs emerge from self-organizing teams". (Beck et al., 2001) Backing this, we saw that Ries (2011) suggests that the best implementation of lean startup comes from a self-sustained group with end-to-end responsibilities, even if they are backed by a larger company. (Ries, 2011a, p. 34) Looking at the studies done by Karhatsu (2010), we see that shared responsibility is a key factor to success in an agile team. (Karhatsu, 2010, p. 84)

Karhatsu (2010) also suggests that an agile team is characterized by team orientation so that they set their own goals, does their own iteration planning, and set clear prioritizations. The model found by Karhatsu (2010) also suggests that the agile team should have communication and collaboration with the customer. (Karhatsu et al., 2010) Combining shared responsibility and team orientation, we get personal involvement in the team, and personal risk, as in turn can be a strong motivator for autonomy in the project. (David, 1994)

The optimal team needs some degree of diversity, whether it is in age, gender, culture, background, education, or skill. (Aston et al., 2008) And lastly, we have no team without a set of people with field competence.

3.4 Layer 3: Lean Startup

In the third layer we have lean startup methodology. The key aspects that makes up this layer are validated learning and speed. As we saw in Chapter 2.2, these are the key outcomes of the lean startup lifecycle (Figure 2.1). Using the Build-Measure-Learn loop is the path to creating a validated, user centric product. Building a MVP is a practical strategy to test and validate hypotheses about the product, market and users. When these hypotheses are disproved, it is time to decide whether or not to start pivoting, and which type of pivot that is appropriate. We saw that there Ries (2009) emphasised three types of pivoting: customer segment pivot, customer problem pivot, and feature pivot. Going through these stages and finding the product-market-fit before running out of resources places speed as another key aspect in the lean startup layer of the research model. Speed and focus on the right things during the development are, as we have seen in Figure 2.2, prerequisites for optimal learning, which again relates back to the use of hypotheses in the BML-loop. (Ries, 2009; Ries, 2011a, p. 75-78; Maurya, 2012, p. 12; Bakjaeho, 2013)

3.5 Layer 4: Tools and Metrics

The fourth layer describes the main tools metrics in lean startup, which are assumed necessary for achieving successful implementation of lean startup in the large company. We have the Kanban board as a process tool for tracking progress of tasks, usually in a minimalistic pattern of Todo-Doing-Done. (Poppendieck and Cusumano, 2012) The next tool is the Lean Canvas. Derived from Osterwalder's Business Model Canvas (Figure 2.6), the Lean Canvas is used to identify the problem, customer segments, the unique value proposition, solution, the channels to the customers, revenue streams, cost strucutre, key metrics, and the unfair advantage that makes sure that the product are not easily copied or bought. These project aspects are identified in that order. (See Figure 2.7). The Lean Canvas is also used to identify product-, customer-, and market risks. (Maurya, 2012, p. 50-51)

The Innovation Accounting Framework ensures that the startup is measured in accountable metrics, and avoid falling into the trap of vanity metrics. The Innovation Accounting Framework contains the Pirate Metrics; aquisition, activation, retention, referral, and revenue. Supported by the Three A's, we know that the Pirate Metrics need to be actionable, accessible, and auditable to keep them from falling into vanity metrics. (Ries, 2011a, p. 77; Ries, 2011a, p. 116-118; Euchner, 2013; McClure, 2008; Owens and Fernandez, 2014, p. 131-135)

3.6 Layer 5: Innovative Product

The fifth layer represents the assumption that the goal outcome of implementing lean startup in a large company is an innovative product. This was based on the first- and seventh statement in the Agile Manifesto: "Our priority is to satisfy the customer through early and continuous delivery of valuable software", and "Working software is the primary measure of progress". (Beck et al., 2001) The assumption was motivated by learning that no marked is safe, even if controlled by a large, stable corporation, and thus we see the need for these large companies to stay innovative to keep up in a fast moving world. (Blank, 2013, p. 9; Cusumano, 2015, p. 32) This assumption is also backed by the findings of Edison et al. (2015) that "lean startup methodology helps the large company to build the right product and to find the market segment faster". (Edison et al., 2015)

4 | Empirical Cases

This chapter describes the empirical cases that were researched. The companies are anonymized, as were corporate request. All corporations belong to the SME definition of having more than 250 employees. (European Commission, 2015, p. 10), and are referred to as *Listr* (Chapter 4.1.1), *N-Com* (Chapter 4.1.2), and *Connect Bank* (Chapter 4.1.3).

The chapter also describes the case study findings, and primary empirical conclusions derived from these findings.

4.1 Background

To gain a better understanding of the cases, this section describes the background of the companies, people, and projects that participated in the research.

4.1.1 Listr

Listr is a Norwegian technology company within the ecommerce industry. It has grown from 4 employees at its establishment in 2000, to 400 employees in 2016, and is now one of the largest inhouse software development companies in the country. (Interviewee A1, 2016)

As a true technology company, developing software or solutions that really solves user needs and of course are successful in that respect is vital to Listr. And according to Interviewee A1, the core of the business. (Interviewee A1, 2016)

Listr is a modular company, where innovations happen in every module. To learn how Listr does this, two different projects was investigated, TrinketTrunk, WeKey and WorldQ. WeKey was a project that was halted due to the nature of

the project. The purpose of the project was to make e-retaling easier and safer, but because the nature of the project potentially could cause internal disruption, Listr decided to shut it down. (Interviewee A3, 2016) TrinketTrunk is the general module for e-retaling within Listr. WorldQ is the module for international retailing within Listr. The latter two projects are still going. (Interviewee A2, 2016; Interviewee A4, 2016)

In Listr, the following people were interviewed:

Interviewee A1 is director of innovation and performance, and with 4 years of experience in Listr, his role is acting as an innovation catalyst in Listr. His main responsibility is to ensure that innovation doesn't happen by chance.(Interviewee A1, 2016)

Interviewee A2 is a business developer within the product department of Listr. Interviewee A2 works on a project named TrinketTrunk, where his main responsibilities are research through market studies, and creating prioritized tasks for the project. He has 2 years experience in the company. (Interviewee A2, 2016)

Interviewee A3 is also a business developer within the product department of Listr. Interviewee A3 worked on a project named WeKey, that got stopped due to the management group seeing WeKey as putting existing revenue streams in Listr at risk. He has 9 years of experience in the company. (Interviewee A3, 2016)

Interviewee A4 is area manager of the WorldQ project. Her responsibilities are delivery, process and personell. She has 10 years of experience in Listr. (Interviewee A4, 2016)

4.1.2 N-Com

N-Com is a Norwegian telecommunications company who has proven its worth internationally, taking market positions in both Eastern Europe and Asia. With over 4000 employees in Norway alone, it is one of the largest companies in the country.

N-Coms interest in doing startups started in 2011 with a couple of employees that foresaw the disruption of the existing business, and wanted to explore how N-Com could stay competetive in the new emerging market. A group of 25 people joined the research group, conducting research on how N-Com could create products to take new market positions, and also have a more direct relation to the end users. During the next 2-3 years, this division grew from the 25 first people, to an

organization with about 200-250 employees, with an aim to compete on a global basis. (Interviewee B1, 2016)

As an example of lean startup projects in N-Com, SeeSay was closely investigated. SeeSay is a communication tool aimed at both the private- and professional market. The project was started in June 2013 as an internship project with 4 employees, and now consists of 20 full time employees. (Interviewee B1, 2016; Interviewee B2, 2016)

In N-Com, the following people were interviewed:

Interviewee B1 is a board member of N-Com as an independent employee representative, and co-founder and product development manager at SeeSay, where she works with product development. She has 6 years of experience in the company. (Interviewee B1, 2016)

Interviewee B2 is founder, vice president and head of SeeSay, and works as project leader. During his 7 years in N-Com, he also has experience as tech lead in other projects within the company. (Interviewee B2, 2016)

Interviewee B3 is chief product and innovation officer with 5 years experience at N-Com. (Interviewee B3, 2016)

Interviewee B4 is vice president of product management in N-Com with 2 years experience from both her VP position, and from SeeSay. (Interviewee B4, 2016)

4.1.3 Connect Bank

Connect Bank is a cooperative of independent Norwegian banks working together as an alliance. The total employee number in Connect Bank exceeds 4500 people, and 200 of which are employed in the Digital Development Department, developing and operating the alliance's IT systems. (Interviewee C1, 2016)

Connect Bank started doing lean startup in January 2016, and has since started several internal startup projects. Of those projects, Moneynizer is the one we have used as an example in this thesis. Moneynizer was one of the projects that started the lean startup adventure in Connect Bank, and was started in January 2016. The product is a web based portal where people can donate money to different causes. (Interviewee C1, 2016; Interviewee C2, 2016) Another internal startup project in Connect Bank is Yo!. This project is a result of the bank wanting to test new banking functionality before it reaches the public market. Yo! is an app that notifies the user about the status of their bank accounts.

In Connect Bank, the following people were interviewed:

Interviewee C1 is the development leader in the Digital Development Division in Connect Bank. He has more than 6 years of experience in the company, and in addition to being development leader, he was project leader of the Moneynizer project in the initial phase, and now has a position in the project review group for the Moneynizer project. (Interviewee C1, 2016)

Interviewee C2 is a developer on the Moneynizer project team. He is a consultant belonging to one of the largest consultancy companies in the country, and has been on the Moneynizer project since the it was started in January 2016. (Interviewee C2, 2016)

Interviewee C3 is a developer on the Yo! team. He is an internal employee, not a consultant like the other startuppers in Connect Bank. He has 2 years of experience in the company. (Interviewee C3, 2016)

4.2 Findings

This chapter describes the findings from the empirical research.

4.2.1 The Large Company

This chapter descirbes the case findings related to the first layer of the research model, the large company.

4.2.1.1 Organizing

Looking at the inititative for lean startup within the large company, it depends on the corporate strategy whether it is free- or organized initiative. The WeKey project was a part of an organized inititative, as a result of a change in the corporate strategy, shifting the focus over to end-to-end services. (Interviewee A3, 2016)

> *"In 2014, Listr got the new corporate strategy, it was replaced now in 2016, and that strategy focused on building end to end services. So then in 2014, the end to end project was formally started."*
>
> – (Interviewee A3, 2016)

The SeeSay project, on the other hand, was a result of stumbling upon a technology, while actually in another project. This caused two N-Com employees to get the idea for SeeSay. As a free initiative it was motivated by the employees' vision. (Interviewee B1, 2016; Interviewee B2, 2016; Interviewee B3, 2016)

> *"SeeSay was a result of our own vision about the product. Me and Interviewee B2 was hired to work with other things, and we saw a potential in the product, and we saw that it could be big, and we said that we wanted to work on it."*
>
> – (Interviewee B1, 2016)

In addition to free inititatives for startup project, N-Com also recently launched the Sparkl program as a project incubator to encourage employees to come up with great ideas. Although the Sparkl program is an organized initiative, becoming a part of it, and all the ideas coming up inside of Sparkl, are based on free initiative. N-Com sees themselves as an enabler of growing ideas.

> *"The inititative for Sparkl projects comes from people who has a dream about creating a product they have close to their heart as a part of their hobby, or from people that are looking for a change in their career. "*
>
> – (Interviewee B3, 2016)

In Connect Bank, employees initiated the focus on lean startup. The bank was positive to the intiative, and gathered a group of developers to conduct a workshop supervised by a team of experts. One of the outcomes of this gathering was Moneynizer. The other lean startup project investigated in Connect Bank, Yo!, was a result of the bank wanting to test a new functionality before it hit the public marked. They therefore gathered a group of developers to make a product that utilized the new bank functionality. The developers was not given any frames on exactly what they should make, as long as it incorporated this new functinality that the bank wanted to test. (Interviewee C1, 2016; Interviewee C2, 2016; Interviewee C3, 2016)

The strategy in N-Com is to encourage all innovations, but they still want to steer the teams in the direction of the telco area of expertise. Interviewee B4 explains the breakdown of innovations in the Sparkl-program into a 70-20-10 pattern, where 70% of the innovations are related to the core business, 20% are reasonable things that they are able to build on top of the existing services, and

the last 10% are the ground breaking innovations that has nothing to do with the N-Com core business. (Interviewee B4, 2016)

> *"What we'd like to do is actually start innovation on the products that exist alongside and around this technology. So things like making more efficient networks, having better storage, so things that are not only just expanding the footprints of the N-Com network, so for example putting wifi on bicycles and having people ride around and having hotspots, but also things like what kind of internet services would exist on top of the network."*
>
> – (Interviewee B4, 2016)

4.2.1.2 Interaction

The development teams of TrinketTrunk and WeKey are, and were, reporting to Listrs management group for product and innovations, and still have to follow corporate strategy on branding and design. By the current Listr strategy of running innovations as increments on the Listr product, both TrinketTrunk and WeKey needs to follow guidelines set by the corporate management on UX. (Interviewee A2, 2016; Interviewee A3, 2016)

During the interview, Interviewee B1 revealed that her project partner spends all his time on stakeholder management. That is, his work is aimed upwards at the management of N-Com. To have one dedicated resource to handle these communications was a relieve to the developer team, as it freed them to work on the tasks of the project. (Interviewee B1, 2016) The dangers of not keeping the stakeholders at a distance was explained by Interviewee C2 as a matter of keeping in mind that stakeholders might have their own agenda, that is not necessarily directly beneficial for the project.

> *"The stakeholders can have different agendas for what they're trying to achieve that they don't tell tell you about initially, but they will always try to steer it towards achieving their goal."*
>
> – (Interviewee C2, 2016)

He suggests that creating new companies for the startup projects with a board is a possible solution to problems with communication with both stakeholders and the parenting company in general.

> *"Ideally I would have started Moneynizer as a separate company, because then you would have a board, and a board is like a communication*

protocol that the rest of the company understands. Then Connect Bank people would be in the board, but it would still have a CEO that were in charge."

– (Interviewee C2, 2016)

4.2.1.3 Support

As mentioned in the previous chapter, the SeeSay team has a dedicated resource working on stakeholder management. Interviewee B1 also revealed that they had been conducting workshops in how N-Coms management and support system should act towards a startup and an autonomous team. (Interviewee B1, 2016) The specific details of the contents of these workshops was not revealed.

In addition to free inititatives for startup project, N-Com also recently launched the Sparkl program to enable their employees to coming up with great ideas. This program works as a type of incubator, and the participants get access to a creative environment, good mentoring and supervision. (Interviewee B1, 2016; Interviewee B2, 2016; Interviewee B3, 2016)

"When we started Sparkl as an initiative to see if "OK, it's pretty smart to enable people with knowledge of our stack, maybe they have a passion for some service where they have seen that we may have some competitive advantage we can utilize with the competence inside the telco." Sparkl is a program to make it possible for intrapreneurs in N-Com to come up with things."

– (Interviewee B3, 2016)

When it comes to the supporting organization, Interviewee A2 is worried that being a small startup team within the large organization might cost them the resources they might be able to get as a part of the whole.

"The drawback is of course that we might not always get the best competences, because we– perhaps there's someone in another team that is extremely good at app development, but we may not be able to use them because we have to use our own resources."

– (Interviewee A2, 2016)

4.2.1.4 Investor

When talking about their relationships to Connect Bank, it is clear that both the Moneynizer and Yo! teams think of Connect Bank as the investor for their projects, even thought the company is the parent of the startup projects.

> *"When we need money, we have to ask the bank to get more money, and that's like having an investor in many ways."*
>
> – (Interviewee C2, 2016)

The experiment for Yo! was ordered by Connect Bank, so in that project, the company has both the customer- and the investor role.

> *"It's the corporation that ordered it, they are the ones that fund this kind of project"*
>
> – (Interviewee C3, 2016)

The same is the case in SeeSay. They see their parenting company, N-Com, as an investor, but one more forgiving than maybe a venture investor would be.

> *"We see N-Com as an investor. A long term investor. It has probably given us the opportunity to be more long term than we would with a venture investor. And to have a bigger team to work with, at an earlier point."*
>
> – (Interviewee B1, 2016)

In the case of WeKey, Interviewee A3 revealed that it got stopped due to putting existing revenues in Listr at risk. This may be one of the greatest challenges to doing innovation in the existing business. When innovating, you have to look forward into the unknown, and try to foresee disruption in the market. You do not know if the existing business model will generate income for another day, year, or decade. WeKey was a project that could generate internal disruption. We see that this type of cannibalization in the WeKey case was seen as too dangerous for Listr to invest further. (Interviewee A3, 2016)

> *"I think the main challenge is being able to focus on innovation and the running business at the same time. It's very hard to get the management to invest money in something that involves quite a lot of risk. Especially if the risk involves your own core business. And when the strategy in the organization is to innovate on the basis of the core, then*

> *I think all innovation opportunities will involve some kind of risk on your existing revenues. The problem is that the existing revenues, you can't always count on them forever, because the revenues are based on old business models. I believe that's the dilemma all big organizations face. The ambidextrous approach. I don't think many organizations succeed at that because existing core business always wins, unless you organize differently."*
>
> – (Interviewee A3, 2016)

4.2.2 The Agile Team

This chapter descirbes the case findings related to the second layer of the research model, the agile team.

4.2.2.1 Autonomy

The startup teams that participated in this research strive for autonomy. They identified their need for autonomy as a need for a workspace where they have freedom to work independently, to furnish their workspace according to team needs (they specifically mentioned the ability to add whiteboards and notes to walls), and to address issues ad hoc without having to compete with the rest of the employees for scheduling of-, and relocating to meeting rooms. (Interviewee A3, 2016; Interviewee B1, 2016; Interviewee C2, 2016)

The startups within Listr and N-Com differ in to which extent they achieved autonomy. While SeeSay is located in an environment where they can work as an independent project aside from the core business in N-Com (Interviewee B1, 2016; Interviewee B2, 2016), the startup projects in Listr did not achieve this independency. (Interviewee A3, 2016). While the management group in Listr wants a larger portion of control in the projects, N-Com lets their projects have a greater degree of autonomy, where the management group just enters the mix once every 3 months through product review meetings. (Interviewee B1, 2016; Interviewee B2, 2016; Interviewee B3, 2016; Interviewee B4, 2016)

> *"Representatives from the management group was close on the project, participating in meetings, participating in meetings with the industry, so and we saw that as a big problem for us to be the autonomous team that we wanted to be."*
>
> – (Interviewee A3, 2016)

Although N-Com was not as close to SeeSay, as Listr to WeKey, the team had experienced difficulties in justifying their means.

> *"There is a great challenge that only a few people in the large business understands what it means to be an innovation project. That means we have spent a lot of our time explaining why we had to do things this way, and why the old way they did follow up projects doesn't work anymore."*
>
> – (Interviewee B1, 2016)

In a large company, routines and policies are well worked in, and can stand in the way for true entrapreneurship. As intrapreneurs, this proves to be one of the main reasons the startup teams want the same autonomy as true startups.

> *"And the mentality was that we wanted to be as decoupled from Listr as possible. We wanted our own separate room, we wanted to sit as far away from the other people as possible. We wanted to have our own brand, we wanted to be freed from using the user experience manual that Listr uses, just to have all the highest level of freedom as possible. (. . .) We really needed our own because this was an entirely new set of thinking. (. . .) I believe that is important. Especially in Listr where everybody sits in an open landscape. We can't just be a row in that open landscape, because then we won't be able to build the culture that we need to be an autonomous team that we needed to be."*
>
> – (Interviewee A3, 2016)

Although the teams express that they always need more authonomy than they are able to get (Interviewee A2, 2016; Interviewee A3, 2016; Interviewee B1, 2016; Interviewee B2, 2016), the importance of autonomy is clear to the management.

> *"I think that being able to organize some innovations in separate teams and giving them autonomy and making them optimized for speed, is very important for a company that in some ways are getting slower and slower. If you are a larger organization and a huge success that you are going to make sure is a success tomorrow, it takes more and more capacity from the organization just to keep our existing solutions a success. And doing incremental innovations and incremental improvements. so it's important to get some teams to get some freedom and find out new ways that we can solve user problems, or maybe also competing with the existing Listr organization."*
>
> – (Interviewee A1, 2016)

In SeeSay the wish for autonomy differ a bit from the traditions. They see that being a part of the developer community in N-Com, that is being located in the same space as the N-Com developers, would be a large advantage for them if they could have their whiteboards and note boards in close approximity. Interviewee B1 said that having the community of developers close by would give them a greater opportunity for utilizing the collective knowledge, and share what they learned as a startup with the internal developer community. As the situation is now, developers come to sit with the SeeSay team to get insight in their learnings and technological advancements. (Interviewee B1, 2016) Interviewee B2 sees this a bit differently, and wishes to move out from the N-Com offices.

> *"Generally, we wish to rather maybe have our office down town. I think that would be better for us. We feel like a startup in N-Com, we're working very closed in our team, and very little with the rest of N-Com. And that means we really could move somewhere else."*
>
> – (Interviewee B2, 2016)

One thing that came up when talking about autonomy was staying clear of dependencies. The SeeSay team did not have any dependencies to N-Com, and thereby working more as a true startup in a sense. Every responsibility falls on the team, causing them to have the need for every role within the team. (Interviewee B1, 2016; Interviewee B2, 2016)

> *"We're a pretty independent project, so we don't have any dependencies, or don't work together with any other teams in N-Com at the moment. We're actually working as a pure startup, and we do all our marketing and sales directly."*
>
> – (Interviewee B1, 2016)

The same is the case with Moneynizer. They have managed to distance themselves from the existing processes and tools in Connect Bank, and in the current state of the project, the team fills every role needed.

> *"The team does everything. We develop the solution, we create the hypotheses, we do the measuring, we're the product owners, we have every role you need."*
>
> – (Interviewee C2, 2016)

Locationwise, the Moneynizer team is seated within the open landscape in Connect Bank. Interviewee C1 explains how they still manage to stay distanced from

the core dependencies by having a completely different way of working than the core of the company.

> *"They sit here, but they work in a completely different way than our other teams. Because the other teams have a lot of structure around them, they have to sit in house because they have access to a lot of sensitive data, and there's a lot of rules and routines on how to do it. (...) If something we do demands us sitting on the internal systems, and takes a lot of time, and we have to install a lot of large painful things, then we just don't do that. Then we'll find other ways to do it."*
>
> – (Interviewee C1, 2016)

The reason for Moneynizer to stay distanced was explained by Interviewee C2 as the existing processes not working for a team like Moneynizer, when the rest of the company works in a different phase, with a different mindset.

> *"The main challenges by doing it [startup] in large companies is to get away from the existing processes, because they don't work. (...) If you have a product that is very close to the core product of Connect Bank, then Connect Bank, or the gravitational force, automatically pull it closer to working in the same way that the other does, but you can't, because they work in what's called Exploit phase. They work with exploiting what they already have. In Explore you have to work in a completely different way. The processes doesn't match, so that's what the project leader works on. Keeping us far enough from the existing processes."*
>
> – (Interviewee C2, 2016)

Interviewee B2 addressed the downfalls when it comes to being too dependent of the core business. Being dependent on other people doing work for you leads to risk that they get more important tasks to complete, and thus delaying a task that your project depends upon, and then you are at risk of wasting valuable time.

> *"And my goal is to avoid us getting a lot of dependencies to a lot of other teams in the large company. We could for example have chosen to build on technology developed other places within N-Com. Then we would easily become dependent of others prioritizing us in their continued development. And that fails fast. Because the others also have other aspects to consider, and one can usually not count on them doing anything for you. But it's easily done in a large company that you get promised something from some other internal team, and they say*

> *yes we'll fix this for you, we'll make it, just trust us. And they maybe mean it seriously, but their priorities can change fast, so if what you need takes ½ years, then maybe after 2 months they say "no, we need to make this instead", then you have already lost a lot of time because you trusted them to do it."*
>
> – (Interviewee B2, 2016)

One of the problems found in correlation to being an autonomous team is that by being separated from the core business, the team is also separated from the opportunities of fully utilizing the resources existing in the core business. That means both the knowledge inside the core business, the marketing resources, and financial resources. Regardless of the nature of the resource, the autonomous team will always be competing with the core business for priority. Being a part of a large company means that the autonomous team will have to answer to a central management team which conducts all the final decision. If a request for resources may compete with the area of responsibility of a member in the management group, the autonomous team will always lose, and the resources will accrue the core business. (Interviewee A3, 2016; Interviewee B1, 2016; Interviewee C2, 2016)

> *"The drawback is of course that we might not always get the best competences, because we– perhaps there's someone in another team that is extremely good at app development, but we may not be able to use them because we have to use our own resources. Involvement, ownership within the organization is perhaps being reduced because there are few people involved in the product."*
>
> – (Interviewee A2, 2016)

A theory as to why this happens is presented by Interviewee B2 as the innovator's dilemma.

> *"It's the classic innovator's dilemma: how do you work with innovation when there's so many things you could do to improve the existing business."*
>
> – (Interviewee B2, 2016)

Interviewee A1 wishes the corporations would be more able to give life to startup projects like WeKey, that can potentially cause internal disruption. He states that change is hard for a large company, and with an uncertain future it its still easier to stay on the same path than it is taking a new risk.

> *"Some of the money and revenue we get today will not be there in 3 years time, but to know what kind of revenue you have to shift to new models and new products is very difficult for every established company. And you get a little bit risk averse when you know that you have that to lose if you fail. So that's something I would – it would be great to work in an organization where everyone feels that it's OK to say that the things we do today, we're not going to do that tomorrow."*
>
> – (Interviewee A1, 2016)

4.2.2.2 Competences

When asked about his role in the team Interviewee C3 mentioned how his team is a cross functional oriented team, where every team member takes on every part of the project when and where it is needed at the time.

> *"I am a developer, but we are a cross functional team, where I also can put on the interaction designer hat, and call users, and explore posibilities, work on operations, I can do a lot that isn't only developing."*
>
> – (Interviewee C3, 2016)

Interviewee A1 agrees with the approach taken in Yo!, and states that to be an agile company, you need to have cross functional teams that are fully committed to their project.

> *"Listr is very based on a scrum and agile mindset, and those development frameworks they state that very clearly you have to have committed teams with different competences, and they need to be fully engaged and not just partially."*
>
> – (Interviewee A1, 2016)

When N-Com puts together their startup teams, they have in mind that they got to have people with every needed skill inside that team. A team should include researchers, UXers, developers, designers, and testers. These do not need to be different people, on the other hand.

> *"It's important that the team includes both the one doing the user research, and have worked with user needs, and a developer that can understand what is possible, and a designer to lead the creative part, and figure out what we actually can do, and test the design."*
>
> – (Interviewee B2, 2016)

4.2.2.3 Team Orientation

Interviewee B1 talked about how her team has developed over the span from they were only 5 people, and until now that they are almost 20 people in the team. On that matter, she explained how the group dynamics changed when they put together a completely new team after the initial prototypee had been created by the interns. How the initial development phase was characterized by confusion and insecurity to what was the roles of the different team members, what was their strengths and weaknesses. Then when the team got to know each other they dared to speak their opinions on the product, and the results was spending a lot of time on discussions. The really good work does not, according to Interviewee B1, occur until the team knows each other, and knows who is the authority on the different aspects of the project. From there, she mentions that it is important to keep the small worries from the team, to ensure that the team lives and thrives, and are able to do their best work as a team. (Interviewee B1, 2016)

> *"The team has changed a lot since we were 5 people, til now when we're almost 20. It's a pretty radical change. We always encounter new challenges all the time, so it's a good way to take the temperature of the team, and catch and eliminate small worries like "it's too hot in the office" or "we want soda in the fridge" and things like that."*
>
> – (Interviewee B1, 2016)

Interviewee C2 comments that a way to solve this for startups, is indeed to hire a team from a consultancy firm, where the team members know each other, and has worked with each other in previous projects, and knows the strengths of each other. Such a team does not need the phase where they explore the team, they can just go right ahead and explore the problem and the project.

> *"Imagine the risk as a startup hiring people. Hiring 1 is very risky, but hiring 5, and making them work together and so on, that's an insane risk, and it can be what determines whether the startup is successful or not. But hiring a consultancy, with a team that has worked together the last 5 years, and that been through several of these processes together, that lowers the risk radically for the startup."*
>
> – (Interviewee B1, 2016)

4.2.2.4 Diversity

The diversity aspect was not commented upon by any of the interviewees, but the interviewer made the observation that the teams participating in the research was of different degrees of diversity. The Moneynizer and Yo! teams both consisted of young Norwegian men in their late twenties to mid-thirties, in positions where the market demands an university degree in computer science. The SeeSay team was more diverse, having both men and women, in a wider age range, and of different nationalities. The TrinketTrunk and WeKey teams was not observed.

No benefits or drawbacks was deducted from this observation.

4.2.3 Lean Startup

This chapter describes the case findings related to the third layer of the research model, the lean startup methodology.

4.2.3.1 Validated Learning

When we talk about validated learning in a lean startup, we talk about the MVP, and hypothesis driven development.

A problem adressed by Interviewee A3 was that in Listr, the management group and the WeKey project team had different views on what the WeKey MVP should be:

> *"We could launch a MVP in a part of Oslo, or a part of a part of Oslo, or a few blocks of Oslo. So if you live in that particular area, you could get an offer to join WeKey. This could be only for a few months, so we could see what the problems are, what we have to tune, what parts of the value proposition we have to alter and so on, but it was very difficult to get the board of management to understand how lean startups work, and how you can reduce risk by focusing on MVPs. even though– I think the problem is that we have different interpretations of what an MVP actually is."*
>
> – (Interviewee A3, 2016)

When the management was convinced that the MVP approach was actually making just a bare minimum, but the developer team saw a need for a larger base of functionality before they could hit the market, the WeKey case faced problems trying to convince the management group to follow this approach.

> *"The problem we were trying to address consists of several pain points, and the original view in Listr was that an MVP was to take one of the pain points and make a feature of that. My opinion is different, because through the interviews we saw that OK there are many pain points, but what's important for the users is everything. So we have to solve everything, it's not enough to solve one pain point, we have to solve everything. So the MVP would not be that particular feature, or that feature, it would be a low– or a manual process, but handling all the pain points. And it was difficult to convince the management group that this approach to an MVP was right. So they had more belief in the component approach, and decided upon doing that instead."*
>
> – (Interviewee A3, 2016)

In SeeSay, the view on the MVP differs. Instead of hoping to hit every nail at once, they have a more rapid approach doing one and one small feature.

> *"We're trying to prototype and design features as easy as possible to make them narrowed down towards solving a specific problem, and not designing a really big feature. And our entire product is really based on that too. It should be narrowed down towards simplicity and simple user experience, and we did care less about everything looking pixel perfect in this product, but cared more about shipping things."*
>
> – (Interviewee B1, 2016)

In SeeSay, they explained their process model to be iterative and hypothesis driven to discover the true user need.

> *"First we figure out the need, then we create a hypothesis about the solution, and then we go out and test it on the users."*
>
> – (Interviewee B2, 2016)

In Connect Bank validated learning in the Build-Measure-Learn loop is important, and Interviewee C1 explains to how the MVP is the foundation of this approach, and is the basis for pivoting decisions.

> *'We want a validated product, not a successful product with a lot of users, but a product we feel that is so good that we want to take it further and scale it. Having used Lean Canvas, and having focus on knowing instead of believing, and less guessing and more knowing, and actively using hypotheses, both value hypotheses and growth hypotheses.*

> *MVP is obviously something that lies behind it all, Build-Measure-Learn loop is something that we have used actively, and also what is a bit hard, what lean startup calls pivot or persevere. That you're supposed to either pivot, or stay where you are, or stop the project. We have pivoted to a smaller degree, and now we're on seeing that this service is a good match in the private market."*
>
> – (Interviewee C1, 2016)

4.2.3.2 Speed

Another thing that the corporation needs to understand is the speed of a project doing lean startup. The team members needs to cover every role in the project to maintain this speed, and that can cause conflicts in interest between the team and the corporation.

> *"When you're sitting on a project working in that way, and you have other departments and other roles around in a large professional organization, that has responsibility and get measured on making sure everyone does what they are supposed to, that can be a bit demanding. (. . .) When we get to the marketing department in week 3 and say "Hey, we launched the service 2 weeks ago" then there's an uproar. "We need control on everything that goes out, we need to have control on the brand, we need control on everything, we can't just push on like this." Then there's discussions like that. That's very demanding, because we don't have time for marketing to send this case to a bureau that are to– and as we do with so many other things– that they are to conjure up how this will impact our brand, and how it should look, and if they work fast then maybe we get it in a month, but then we might have changed our direction and do something completely different in Moneynizer. We don't have time for that."*
>
> – (Interviewee C1, 2016)

Interviewee C2 backs up this statement by stating that to be able to be a part of making the right decisions in a fast moving project, you need to be a part of the team full time to be able to keep up and understand how decisions may affect the project.

> *"Because to know what happens, and to be able to be a part of the decisionmaking, then you have to be 100% in the team because we move*

so fast. And that makes it pretty hard to sit outside the team and make decisions about something you don't really understand why is why it is."

– (Interviewee C2, 2016)

Contradicting to the statement made by Interviewee C2 in Chapter 4.2.2.3, Interviewee B1 sees internal competences as a prerequisite to speed in development. Using internally employed developers also reduces the need for an excessive onboarding-offboarding process.

"There's an increasing understanding that having inhouse software development is a prerequisite to fast iterations, and that way staying competetive. If you have the competence internally, and have developed it internally, it gives you the ability to pivot quickly, and then you are able to pick up new technologies, and new possibilities that derives from that technology."

– (Interviewee B1, 2016)

4.2.4 Tools and Metrics

This chapter descirbes the case findings related to the fourth layer of the research model, the toolkit.

4.2.4.1 Kanban

While mentioning using Trello as a progress tracking tool, the Moneynizer team are trying to keep the process management to a bare minimum.

"We're really not using a lot of tools on process. We're trying to minimize tools and process. But if we see that there's an issue with our process, and a tool can solve that, then we start using it."

– (Interviewee C2, 2016)

The other participants in this study did not mention the Kanban board, but it was mentioned that the SeeSay team had their own self-developed iterative process sheet, where they moved sticky notes with tasks through the process. This was not subject to further investigation during the research period.

4.2.4.2 Lean Canvas

Interviewee C1 mentioned how hypothesis driven development can be a foreign thing to large corporations. To achieve understanding for this, he mentions that presenting a Lean Canvas can be a good way to get the corporation on board when asking for funding.

> *"If you come to a lean startup project, and you come and ask for money, and at the same time you're asked about "What are you making?" and we answer "well, we don't quite know yet, but we think we're on to something, we have some hypotheses, but we don't know if it's water proof" "Ok, what are we earning money off then?" "we don't know. We have some hypotheses. We have 10 different income models in Moneynizer, but we have no idea, we have to experiment" Then it's hard for someone to say that you will get 2 million, or 1 million, or 4 million, when that's your entry. And these are things that we've learned that there are mechanism for doing these things better, for example by using the Lean Canvas, that actually pulls a lot of these things into the light. (...) It should be OK that we come and say that we can't create any complete business case, because we're not completely sure what we're making, and we're not completely sure how we are going to earn money off it, but we have hypotheses, a lot of hypotheses on what we can earn money on, and we start with one hypothesis, and we try it out. And we see if it's viable, and if not, then we jump onto the next hypothesis and test it out. And it has to be understanding on it being OK to work like that, and if you don't know that methodology and that way to work, it sound really crazy. It sounds like you're starting something without really having a purpose at all. So that's understandable."*
>
> – (Interviewee C1, 2016)

The Lean Canvas solved communication problems for Moneynizer outwards to their steering group in Connect Bank. The steering group is the group of people in the corporation who has interest and responsibilities toward the startup project, and is part of the framework for communication between the project and the company.

> *"Every project here have a steering group which is a group of people who meet on a regular basis and takes decisions, and goes through feedback. So it [Lean Canvas] was a very nice tool that answered a couple of the things we always got asked. And we used it as a means of communications, and that works great."*
>
> – (Interviewee C1, 2016)

Not everyone has the same positive experience with the Lean Canvas. Interviewee B3 mentions how he has experienced the Lean Canvas to be demanding that the team knows everything they need to fill out every section, even in a very early phase. He mentions that he does not think the SeeSay project would have been started if they were to be judged on their ability to answer the Lean Canvas in the very beginning of the project.

> *"For me the Lean Canvas shows signs of demanding you to have all the answers right away. That's at least how I've seen it being used. Before you can start the project, you have to have filled in the entire canvas, and you don't always have all the answers to everything in an early phase. For example how to earn money. And that's a part of Lean Canvas. And I'm certain that you don't have the answer to that in an early phase project."*
>
> – (Interviewee B3, 2016)

Another reason to why they avoid using the Lean Canvas in the SeeSay project is mentioned as it taking too much time. Interviewee B1 states that this applies to most exercises following a rigid methodology, and that speed is more a valuable aspect to her team.

> *"We're really not that big fans of following methodologies at point, we rather pick inspiration from things that could work with us, and combine it into something that actually works. (. . .) But we don't estimate other than trying to scope the tasks to be doable, but that happens by sitting down and talking to the developers. We don't fill in a form or anything like that, that's just waste."*
>
> – (Interviewee B1, 2016)

When it comes to the Listr cases, Interviewee A3 said that the TrinketTrunk project followed the "Running Lean" instructions thoroughly, and thus implementing use of the Lean Canvas into their work. Interviewee A2 stated that they had not seen the need for the Lean Canvas in WeKey. How and why the Lean Canvas was used, or not used, in the Listr cases was not commented upon.

4.2.4.3 Innovation Accounting

When it comes to measuring the startup, N-Com has come to a solution of measuring different things in different phases. So in a learning phase, they measure the learning done. That could be measuring the number of hypotheses tested,

how many A/B tests that has been ran, or how many iterations they have had on the prototype. (Interviewee B1, 2016; Interviewee B3, 2016) N-Com uses the analogy of a space project to describe their different stages of innovation (see Figure 4.1). The first stage is the Star phase, where you have a dream of reaching space, you have an idea. The second stage is the Bottle Rocket phase, where you experiment by making a simple bottle rocket in your back yard, maybe achieving a little air time. This is the prototyping phase. Then they have the Satellite phase, where you have managed to send a satellite into space. This is the stage where the project MVP is released and starting to get a customer base. Then you have the Space Shuttle phase, where your project is a space shuttle with a steady course towards the goal. The project is past MVP, and have launched a first full version. The last stage is the Space Station phase. You have reached the stars, and the project is a success. Developing may continue as continued development and improvement of the product. The SeeSay project is in the Satellite phase, while Sparkl, a newly started intrapreneur program that works as an innovation colony, is in Star phase. (Interviewee B3, 2016)

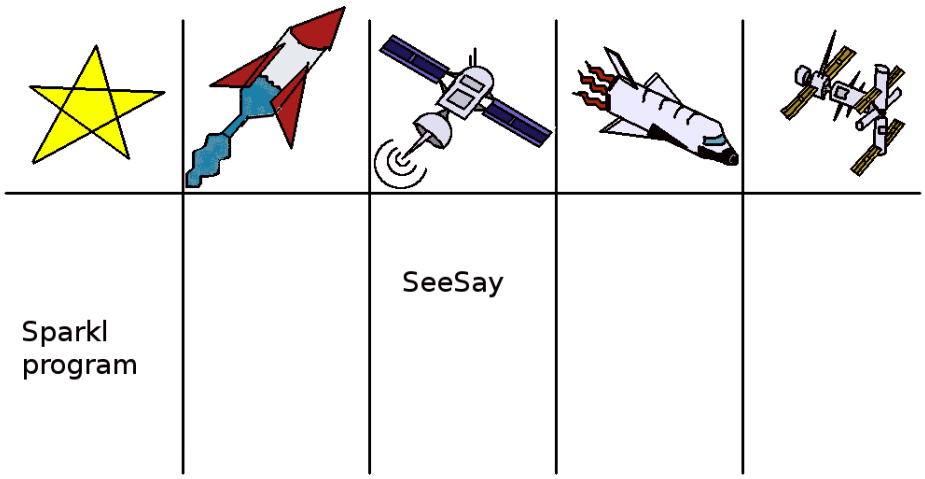

Figure 4.1: N-Com Innovation Stages (Interviewee B3, 2016)

Looking at the different stages of this scale, and the differences between the SeeSay project, and any idea emerging in Sparkl, it only makes sense to measure them on different KPI's. Interviewee B3 addresses this, and how measuring the wrong things can be an incentive to doctoring results, which we learned in Chapter 2.2.4.1 is a trait to vanity metrics.

> *"Me and my boss we just discussed this. About what should be the KPI for us, that is, measured for innovation. Yes, we can measure the number of projects launched. But that's dangerous, because then you give me incentive to accelerate this process, and launch products from here to the moon, that's not hard. But those projects could probably fail further down the road. But that's after I won on paper. But then we agreed to measure the number of pilots. Then it becomes important to do as many pilots as possible. If you manage to do a great lot of pilots, and it's not a wrong thing to do a lot. Or it could be you do a lot of pilots in the wrong area, so it's still possible to doctor such a parameter. It's possible to doctor all sorts of parameters. But number of pilots are really the least evil, or the best area you can measure innovation. At Sparkl it means that "OK, how many projects do you allow, or do you want to do?" We never measure how many pilots actually passes to product phase, that's a dangerous incentive. It cost so much to take the pilot out to product phase. We don't measure users, we basically only measure how much money spent. It's not optimal, but it's the best we've reached on a higher level. We have an innovation funnel where we have too few problems that solves the problem in early phase, then the rest of the funnel falls in place. (...) And then it's like what KPI is relevant for what phase. It's about having enough user insight before starting to build, and that we're measuring the right things i the right phase."*
>
> – (Interviewee B3, 2016)

While everything is about measuring the right things at the right time, this has not been clearly and agreeably stated from every interviewee in a single case. As we learned in Chapter 2.4, there is no 100% correct solution to implementing lean startup methodology, so deviations will occur. Even considering this, one set of metrics that has been mentioned in the SeeSay case, are the Pirate Metrics (see Chapter 2.2.4.3).

> *"It varies based on phase. In very early phase it's simply customer insight, or what the problem statement is. What is it you're solving? And is it actually a problem? And eventually, if you get to Satellite phase, then we're using Pirate Metrics. Then it's those metrics we're using when we've come to such a phase where we're done with pilots and starting to work with real customers. But before Pirate Metrics, there's a lot of emphasis on what's the problem, and being clear on what's to confirm and disprove."*
>
> – (Interviewee B3, 2016)

This is backed by Interviewee B1, who mentions aquisition, retention, and the time and effort the users invest in their product.

> *"We're using the same metrics as a startup would do. In the beginning when it's a small, new project, it doesn't make sense to measure growth, because the product isn't ready for growth. So you should rather measure if you are able to get 10 users to be really into the product and keep using it. Then when you achieve that, you get into a phase where you have to increase the number of users a bit. I.E. 100 or 1000 users. And then you'd rather have to measure if you're able to get them to use it on a regular basis, that is retention, and that they are returning to the product, and not just use it once and then disappears. That has actually been a large problem for us, because our product is so easy to start using. But that also means that the users don't invest as much in it. So if you're able to solve retention, then you can start working on the engagement of the users. How much time do they spend on your product every day? Is it good enough compared to what you want them to? Is the use meaningful? Do you take a piece of the market? And when you feel that you're on a right level there, then you can start working on growth. Measuring growth and the number of monthly active users, and that type metrics."*
>
> – (Interviewee B1, 2016)

As with N-Com, Connect Bank uses phase-based metrics. With Moneynizer and Yo! in explore phase, and the existing business in exploit phase, the interviewees emphasizes that it is important to measure projects in different phases on different things. Table 4.1 shows the innovation phases in Connect Bank, and the position of both the core business, Moneynizer, and Yo!.

Table 4.1: Development phases in Connect Bank

Explore	Scale	Exploit
Moneynizer Yo!		Core business

Interviewee C2 talks about what it means to belong in the different phases:

> *"If you take the 3 phases you can go through: You've got Explore, and if everything goes well in Explore, then you go to Scale. And lastly*

> *you're in Exploit. Because that's the product phases you go through as a product. And you need different people in all of the different phases. It's very hard to be the person that is both the guy figuring out how to get to the moon, and also the one that does construction on the moon. (...) The rest of the organization is in the exploit phase, they sit and utilize what they have, so they aren't used to the mindset of exploring new opportunities. (...) Permanent employees are measured per hour into a in a normal large organization doing IT, that's fascinating, right? In a startup you would never have been measured like that. (...) We actually set our own goals, and that way said that this is what they should be measuring us on. Right now we're focusing on a goal that we're going to make money in some or another way. The goal is to be self- sufficient. Right now we're costing money. So that's a goal we're measured on now that causes us to work more on the business model."*
>
> – (Interviewee C2, 2016)

When it comes to what Moneynizer measure themselves on, he adds:

> *"That's maybe something of the most difficult aswell, to find the right things to measure, and that's something we spent a lot of time doing. It's easily done measuring metrics that don't matter. And it doesn't matter for the product if the main goal is "we're having as many as possible.."– Right now that's our goal– "we're having as many successful donations as possible", that is as many as possible being able to collect money. It's not necessarily important to us to measure how many lines of code we have in our base, to do a very banal example. So figuring out what you should measure at any given time is important. And that changes as you change your goals, the main goal, then the subgoals also changes."*
>
> – (Interviewee C2, 2016)

Interviewee C1 was a bit more specific when asked about what metrics Connect Bank uses to measure their startups:

> *"We're measuring the number of registered users, number of collections, the number of successful collections, and a couple of other parameters."*
>
> – (Interviewee C1, 2016)

What we can see is that both N-Com and Connect Bank has implemented an innovation ladder, or stage based metrics, and both companies mentions measuring aquisition, retention and revenue as their main metrics. As we learned in Chapter 2.2.4.3, these are part of the Pirate Metrics.

In Listr we saw that the startup teams followed the same iterative model as the core business. They did not implement a ladder or stage based reviews, but do instead hold monthly gatherings for the entire company, where teams get up on stage and demonstrate their work.

4.2.4.4 Three A's

As we saw in Chapter 4.2.4.3, measuring the right things at the right time, in the right phase of the project was important to all the teams participating in this research. As we learned in Chapter 2.2.4.2, the Three A's supports the Innovation Accounting Framework, which we have seen is something used by the teams in the shape of Pirate Metrics. The Three A's was not commented upon by the participants, and was not investigated further in the study.

4.2.5 Innovative Product

This chapter descirbes the case findings related to the fifth layer of the research model, the outcome of doing lean startup in a large company. What we have seen throughout this study is that the main focus is not on the acutal product, as hypothesized. The main focus of the participant in this study is the learning they are able to do. This is the learning about the customers, about the product, business aspects, and perhaps most importantly the learning the company does when running a lean startup project.

Talking about the status meetings with the projects in N-Com, both Interviewee B3 and Interviewee B4 clearly values learning as their main point of interest when examining the progress of the teams. After having worked so much upwards in the organization with understanding of the startup needs and process, Interviewee B1 gathers that the outcome of the efforts of the SeeSay team is a very important learning aspect in N-Com as a company.

> *"The people we have worked with out in the N-Com business have learned so much of the process we've been on. So I think that it's been part of spreading the learning out has been important to be able to achieve the big change in N-Com."*
>
> – (Interviewee B1, 2016)

Learning in the company is also the main focus for Connect Bank to do internal startups.

> *"Our goal was split in two. The first part was coming up with Moneynizer. The second was to learn more about running lean startup in our organization. So we really had, even if Moneynizer was gonna be a failure, we had still reached a lot of the goal only by running lean startup in Connect Bank, and learned what it does with us. And that was important."*
>
> – (Interviewee C1, 2016)

Talking about how the WeKey project was shut down, Interviewee A3 explains how a project stopped not necessarily is a waste. As Listr learned from this project, he classifies it as successful.

> *"Waste is if you put some effort into things that doesn't give any value for the organization or your customers. And of course this process isn't entirely waste. We have learned a lot and all the insights are definitely not waste."*
>
> – (Interviewee A3, 2016)

Interviewee A1 backs up this statement, that learning is more important in Listr, than the immediate success of a product.

> *"I think that one of the things that we have used all the time is trying to describe and trying to build a culture around, is that we must be able to face the failures and learn from them. So that's very important cultural kind of travel that we have been doing."*
>
> – (Interviewee A1, 2016)

4.3 Primary Empirical Conclusions

From the case study, we gather the following empirical conclusions:

The Large Company

PEC 1: The initiative for doing lean startup in a large company can come from both free- and organized initiative.

PEC 2: The large company is the context for intrapreneurship and acts as the investor with business powers over the team.

The Agile Team

PEC 3: The startup team should be freed from rigid routines and corporate policies to be able to work freely in an autonomous environment, and be allowed to steer clear of dependencies to other departments of the company, while still maintaining relevance to the core business.

PEC 4: The optimal team for doing lean startup in a large company is cross-functional and able to fill every role needed in the project.

PEC 5: The startup should have a project leader, or an internal board as a communication framework between the startup and the large company to protect the intrapreneurs.

Lean Startup

PEC 6: To both lean startup teams, and the parenting company, the MVP is the main tool for validated learning throught hypothesis driven development.

PEC 7: A team running lean startup in a large company is characterized by a significant higher velocity than the rest of the development in the company. This is used as another argument for authonomy.

Tools and Methodology

PEC 8: The team should be free to iterate on their own process model, but should have some physical overview of where the tasks are in the process.

PEC 9: The Lean Canvas should be used as a communication tool for the startup team to easily communicate their status to the parenting company.

PEC 10: The Innovation Accouting Framework covers metrics that have proven to be the metrics measured by startups in large companies, but should only be used as a guideline for assembling phase specific metrics relevant to the project status.

Innovative Product

PEC 11: The outcome and motivation for doing lean startup within the large company is not product or profit, but learning.

5 | Discussion

This chapter discusses limitations and the implications for the research.

5.1 Limitations for Research

Seeing as how lean startup has not been done in the Norwegian IT industry for more than 3 years, and there are few projects that truly use lean startup as their method of work, it has been hard to get quantitatively reliable data. This resulted in an early realization that this research had to be based on qualitative data.

Most large companies has just recently discovered the value of using lean methodology (Interviewee B1, 2016; Interviewee C2, 2016), and simultaneously one of the cases researched, namely Listr, has changed their approach to internal innovations and moved away from the groundbreaking innovations, and adapted lean methodology as a means of iterating on their current product. (Interviewee A1, 2016; Interviewee A2, 2016)

Other limitations for the research is the availability of articles on previously done research in the field. A substantial ammount of research has been done on applying lean startup in different fields, but not a lot has been written on adaption in large companies with already established products and steady revenue streams.

Inconsistency between answers between two people from the same team, with a concrete example of SeeSay talking about their views on autonomy, could be due to individual preferences on the matter, or the fact that some time had passed between interviewing the participants, so there could have been internal discussions, or iterations on the matter.

As the had implemented iterative measures into every aspect of their work, the

analysis could only reflect the ad hoc situation, with no guarantee for when the next iteration might be, and how the outcome of that iteration could interfere with the findings done, and conclusions drawn, from the empirical case study.

5.2 Implications

Despite the limitations, we have managed to get a clear view of the current status in the companies participating in the study. This chapter disusses the findings in the case study, and which inplications they have to the proposed framework (Figure 3.1, Chapter 3.1)

From the primary empirical conclusions we learned that the initiative for doing lean startup in a large company can come from both free- and organized initiative. We also saw that the large company is the context for intrapreneurship and acts as the investor with business powers over the team. In agreement with Owens and Fernandez (2014), this thesis suggests that the corporations build an innovation environment where innovation oriented employees can both have access to resources, collaborate with other internal startups within the organization, and at the same time achieve the autonomy they seek.

Autonomy means detaching the startup from everything in the large company that might slow down the learning. To ensure that the startup needs and the company interests are maintained while the internal startup are fully autonomous, a protocol for communication between the two should be in place. This can be a single person from the startup with full-time responsibility outwards to the corporation, or it can be done by creating the startup as an own company, with a board as a communication protocol. Using the Lean Canvas is a valuable tool for proving project state in terms that the parenting company can understand. The importance of this was emphasized by the participants in the empirical research, and the thesis therefore suggests drawing the communication protocol out as a separate layer in the proposed framework (Chapter 6.2).

As suggested by the customer development framework, and the lean startup methodology, the MVP was the product approach the teams in the study used to validate or disprove their hypotheses on the customers, market, and needs. The definition of the MVP was not clear across all the teams, and had caused disputes within Listr when the corporate board and the WeKey team could not agree on the best approach to the MVP. As Ries (2011) explained, the MVP is the first validated minumum, and that companies doing lean startup should avoid falling into the trap of trying to force an MVP to solve every problem in the first step of the process, which this is backed by the findings in this thesis.

Measuring the internal startup should be left to the team. If a corporation tries to set KPIs for the startup without the necessary insights, they are easily measuring the wrong metrics. The startup should be measuring based on what phase of he project they are in, but a common denominator is adapting Pirate Metrics into the different phases. The team should then have the responsibility of reporting the progress in form of these metrics, and what they mean for the project, to the corporation throught the set communication protocol. They should also be able to see that if the project is not viable, they should be able to suggest a project halt to the corporation.

With the assumption being that the large company needs to generate innovative products to fight disruption in a fact moving market. Lean startup is a way for a large company to build the right product for the right market segment. As we saw in the study, this is not a major prioritization for the companies investigated. The main focus was on learning, whether it was learning about the market, the customers, or if it was learning about doing lean startup, and whether or not the company was able to do intrapreneurship, the learning was the most valued outcome for the participants in this study.

6 | New Toys

This chapter represents the last chapter of my 20 ½ years of school. From being a mere child, wanting to play all day, and least of all wanting to do my homework. I remember the day when I was 16 years old and thought I would never have a day more in a math class in my life. I had a dream of becoming a world champion in alpine skiing. Less school, more play, right? Fast forward only a couple of years, and you find me at the university. In math class. Why did I end up there? The answer is simple. After both ups and downs in life, I found myself a new toy. My new dream was to become a software engineer. Software engineering is basically just playing with building blocks. You can build what your mind can imagine. And you even have every block imaginable, because if it is not already there, you can build it yourself.

Now it is time for me to wrap up all these years into a piece of manipulated forest. (Or for those reading the digital version: a collection of ones and zeros) In this chapter I answer the research questions, and I propose to you the Jenga Tower as a framework for implementing lean startup in a large company. This is my gift to you, a new toy. In the end I also give my remarks on future work.

6.1 Answer to Research Questions

RQ 1: *What characterizes a lean startup team doing innovation in a large company?*

What characterizes a lean startup team doing innovation in a large company is the strive for autonomy. They act and think just like a regular startup outside of the large company context. They have the user needs in mind, and focuses on discovering as much as possible about the customer segment before going ahead and developing a product or service. They aim to validate or disprove hypotheses,

and they pivot when they see the need. Speed is a main characteristic of a lean startup team in a large company. Where the large company is used to a certain speed and have routines and guidelines to be followed, the lean startup team needs to be freed from those boundaries, and be able to move at an incredible haste. The lean startup team that belongs to a large company does have all the entrepreneural mind sets that exists in the venture world.

RQ 2: *How should a lean startup team interact with its parenting company?*

When running a lean startup project within a large company, a communication framework should be implemented to ensure that both parties' interests are catered to. Such a framework operate between the startup team and the company board to maintain distance and autonomy for the team. The communication framework should consist of the product owner, a startup board, and use the Lean Canvas as a tool for the startup to communicate their progress.

RQ 3: *What should a large company do to encourage and support innovation among its employees?*

In the eyes of the lean startup team, the parenting large company acts as an long term investor. The large company should be a part of the large decisions, but let the startup team handle as much as possible of the small- to medium desicions. The large company should show interest in the startup project, as to encourage the team to continue their best work. They should also listen to the startup when they have specific needs that could affect the future of the project. This must be done with caution, and the wishes of the startup team should not be followed blindly. The best tool for communication is, as mentioned, the Lean Canvas. The large company should therefore be familiar with the canvas, and how it should be used and analyzed. A good way to encourage internal employees to do innovations is by creating an innovation colony where employees can brainstorm and develop small ideas in collaboration with other innovative minds within the company.

6.2 The Jenga Tower

The Jenga Tower (Figure 6.1) is the proposed framework for successfully implementing lean startup in a large corporation. Derived from the primary empirical conclusions made from the case study. (See Chapter 4.3) The thought behind the name "The Jenga Tower" is that we suggest that each building block is a tool for ensuring implementing internal startups within a large company, and that for each block you remove from the implementation, the harder it is keeping The Jenga Tower standing, and achieving learning.

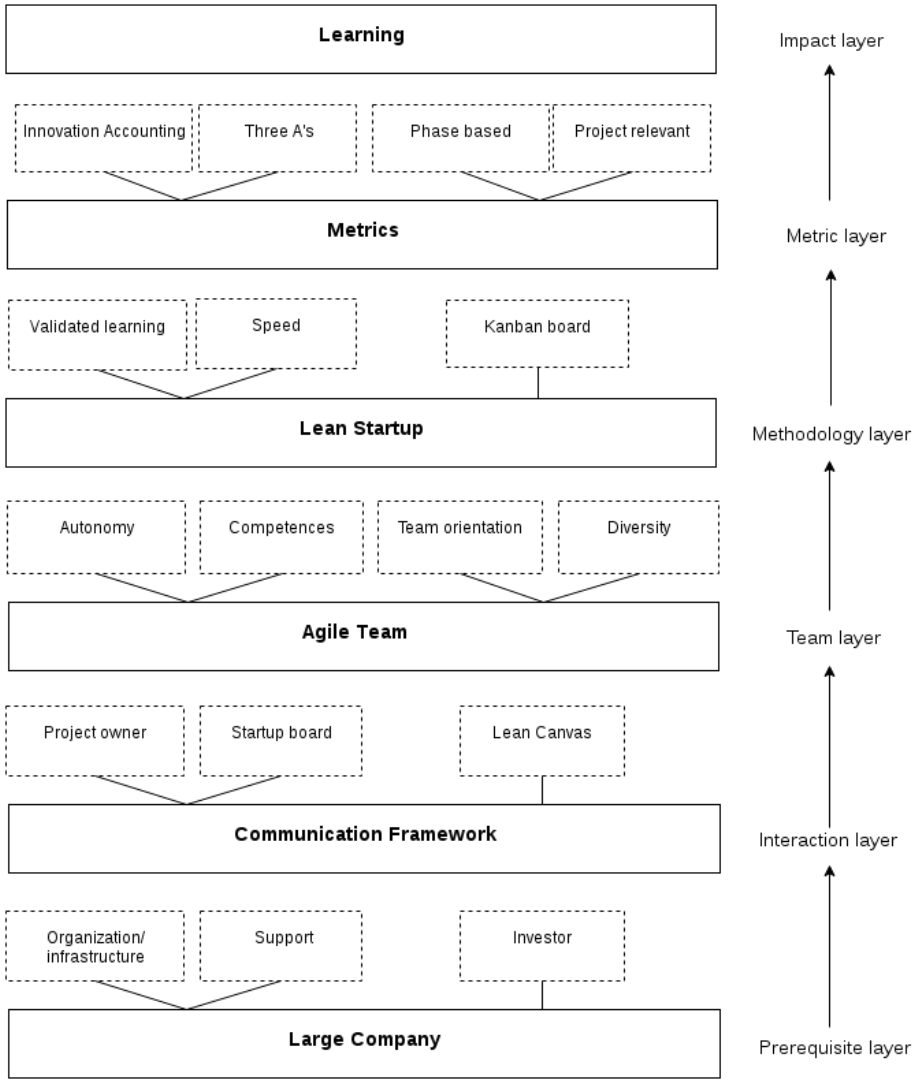

Figure 6.1: The Jenga Tower Framework for Sucessful Implementation of Lean Startup in Large Companies

Understood in a bottom-up manner, the following is an explanation of the layers building The Jenga Tower:

6.2.1 Perequisite Layer

The prerequisite layer is what is the contextual factors for running lean startup in a large company. You have the large company as a building block, which functions as both the investor, the motivator, and the giver of operational freedom. Simultaneously as it has the business power to shut the project down.

The motivation for internal startup projects can be both a free initiative from one or more employees, or it can be an organized initiative with a guided framework set in a corporate strategy. This was backed by our findings in the study *Success and Challenge of Lean Startup based Internal Startups for Software Product Innovation in Large Companies*, which is under review for Journal of Systems and Software, Special Edition: Software Business, 2016, by Edison, H., Smørsgard, N. M., and Wang, X.

6.2.2 Interaction Layer

To make interaction with the corporation work, the corporation needs to have an understanding for the needs and methods of the startup team. One of the most important needs of the internal startup teams are autonomy. The use of a communication layer is a way of protecting the autonomy. By implementing roles as project leader, or by appointing a project board, as a communication protocol outwards to the parenting organization, you reduce the collective effort of the team spent on dealing with external forces. Then the corporation will understand to whom they should approach.

The Lean Canvas is proposed to be the best tool for the startup team to express the status of the project in terms understandable to the parent corporation. By using the Lean Canvas, the team have an easily compilable overview over product-, customer-, anr market risks, and identification of problem, customer segments, the unique value proposition, solution, the channels to the customers, revenue streams, cost strucutre, key metrics, and the unfair advantage that makes sure that the product are not easily copied or bought.

6.2.3 Team Layer

By implementing a communication protocol like in the previous layer, the rest of the team is protected from external disturbance and additional responsibilities, and can focus on the project, product, users, and learning. To ensure a team is able to stay autonomous, cross functionality needs to be in place. To avoid becoming dependent of other divisions in the parenting company, a team doing lean startup in a large company needs to make sure they can fill every role and complete every aspect of their development themselves. This means having people doing both UX, design, development, marketing, and business handling inside the team.

An agile team doing lean startup should be able to set their own goals, do their own iteration planning, and set clear prioritizations for themselves. When a team is completely fresh, and the team members does not know each other, the productivity may be low. Not until the team knows each other, and knows the strengths and weaknesses of each other, that is when the productivity starts.

In the literature we saw that the optimal team needs some degree of diversity, whether it is in age, gender, culture, background, education, or skill. (Aston et al., 2008) In the field research, this was not commented upon, but an observatin was made that the teams participating in the research was of different degrees of diversity.

6.2.4 Methodology Layer

This is where the team implements their adaption of lean startup.

Using the Build-Measure-Learn loop is the path to creating a validated, user centric product. Building a MVP is a practical strategy to test and validate hypotheses about the product, market and users. When these hypotheses are disproved, it is time to decide whether or not to start pivoting.

A startup using the MVP approach is moving faster than a large company doing contineous development across a large platform full of dependencies. To be able to do so, the team should keep their distance from parenting processes, and be able to support themselves by building a cross functional team.

To help the startup team have a full overview of all the tasks, the Kanban board is suggested as a good tool. As we have stated, no team and no project are the same, so it is recommended that it deemed necessary, the team should develop their own process board to keep track of the task progress.

6.2.5 Metric Layer

Innovation Accounting is a good framework to follow to ensure that you have metrics that are useful to the startup and the parenting company. The Pirate Metrics, which are part of the Innovation Accounting Framework, are aquisition, activation, retention, referral, and revenue. Supported by the Three A's, metrics should be actionable, accessiben and auctionable to not be what is called vanity metrics. Following the Innovation Accounting Framework blindly is on the hand not suggested, as the metrics should be relevant to both the project and the phase of the project in question.

6.2.6 Impact Layer

On the top of the Jenga Tower, we have the impact layer. This layer describes what is the outcome the large company looks for in running a lean startup project internally. The assumption that this was an innovative product fell through in the case study, and we saw that learning is what the participants was looking for. The participants saw it as a successfully ran project if they had managed to gather some form of learning from it. This could be learning about the existing customer base, the market segment, learning about lean methodology, and learning if and how the company can implement lean startup.

6.3 Future Work

For the future there are a still some things that needs further investigation. Diversity in a lean startup team residing within a large company was not investigated at depth, and should therefore be subject to further analysis. It would be interesting to see how homogeneous teams are able to run a lean startup to success in comparison with the results of a heterogeneous team with multiple diversity points. Another aspect that should be looked into is also how pre-engineered teams that know each other and work well together progress in a lean startup project compared to a completely fresh team. The main contribution of this thesis is the Communication Layer, which we would like to see further research on, comparing companies where this is implemented and well executed versus companies that does not add this aspect to their running lean startup projects.

"Well we got no choice
All the girls and boys
Makin all that noise
'Cause they found new toys
Well we can't salute ya
Can't find a flag
If that don't suit ya
That's a drag
School's out for summer
School's out forever"

– Alice Cooper

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