

Key Success Factors for Collaborative Innovation in Silicon Valley

Jonathan Eng Stensson
Mattias Wessman

Copyright © Eng Stensson, Jonathan; Wessman, Mattias

Department of Automatic Control
Faculty of Engineering, Lund University
Box 118
SE-221 00 Lund, Sweden

Department of Business Administration
School of Economics and Management, Lund University
Box 7080
SE-220 07 Lund, Sweden

Master Thesis, Technology Management - Nr 278/2015
ISSN 1651-0100
ISRN LUTVDG/TVTM--15/5278--/SE
Tryckeriet i E-huset, Lund University, Lund 2015
Printed in Sweden

Key Success Factors for Collaborative Innovation in Silicon Valley

ABSTRACT

| | |
|--------------------------|--|
| Title: | Key Success Factors for Collaborative Innovation in Silicon Valley |
| Authors: | Jonathan Eng Stensson and Mattias Wessman |
| Supervisors: | Charlotta Johnsson, Associate Professor, Department of Automatic Control, Faculty of Engineering, Lund University Stein Kleppestø, Associate Professor, Department of Business Administration, Lund University Johan Sjöberg, Innovation Program Manager, Ericsson, Stockholm Kristoffer Gronowski, Principal Researcher, Ericsson, Silicon Valley |
| Problematization: | Given that collaboration is vital for innovation, a first step is to find a suitable collaboration partner. A company that is looking for a collaboration partner needs to create a suitable value proposition that focuses on the benefits for the potential partner. These needs are complex to understand and might be affected by the surroundings and context of the collaboration. Furthermore, it is probably not enough to know only <i>what</i> the collaboration partner is asking for, but also <i>how</i> to cope with it and make it available. |
| Purpose: | The purpose of this master thesis is to facilitate for large multinational technology companies when designing their value proposition toward collaboration partners in Silicon Valley. |
| Methodology: | This explorative master thesis started by generating an understanding about the Silicon Valley ecosystem and its characteristics. Through multiple interviews, the empirical data collection apprehended the needs of different players in a collaboration with a large multinational technology company. Deeper interviews, aiming to present a broad range of insights, were conducted to study large multinational technology companies' thoughts and ways of working to fulfill the players' needs. A brief literature review was used to complement the findings. |

- Conclusions:** The Silicon Valley ecosystem has six main characteristics. The characteristics themselves are not unique but it is instead the critical mass of each individual aspect, and the mixture of them, that characterizes the Silicon Valley ecosystem.
- In the creation of a suitable value proposition toward collaboration partners, there are many needs that are essential. Large multinational technology companies are well aware of the above needs, but some of them are regarded as complex and challenging to cope with in an optimal manner.
- Companies in Silicon Valley agree that collaboration with external partners is vital. A large multinational technology company should focus on offering financial incentives such as licensing deals or incentives for increased sales, as well as corporate synergy, as a part of their value proposition toward external partners.
- Keywords:** Co-innovation, Collaboration, Innovation, Silicon Valley, Startups, Corporations, Value Proposition

ACKNOWLEDGEMENTS

Foremost, we want to express our gratitude to our host company Ericsson and our supervisors Kristoffer Gronowski and Johan Sjöberg. Without their support, we would not have been able to navigate through Ericsson's extensive organization, and without Ericsson we would not have gotten the possibility to experience Silicon Valley and California.

We also want to thank Charlotta Johnsson at Lund University for creating the possibility to connect with Ericsson and for always having such a positive and encouraging attitude. Without her, it would have been much harder to keep up our pace during more difficult periods.

Furthermore, thank you Stein Kleppestø at Lund University for your sharp and valuable reflections when it was needed the most. Your guidance has truly affected this master thesis.

Also, we want to direct an enormous gratitude to all participants and interviewed companies for patiently offering your time to help us out without any demand of something in return. We truly hope that you will receive some valuable insights from our findings.

Finally, we want to thank each other for a developing journey filled with laughter, joy and happiness.

Jonathan Eng Stensson and Mattias Wessman

Lund, 2015-06-04

TABLE OF CONTENTS

| | | |
|-----------|--|-----------|
| 1 | INTRODUCTION | 10 |
| 1.1 | Background..... | 10 |
| 1.2 | Problematization..... | 11 |
| 1.3 | Purpose | 11 |
| 1.4 | Research questions | 12 |
| 1.5 | Delimitations | 12 |
| 1.6 | Target Audience | 12 |
| 1.7 | Outline | 12 |
| 2 | METHODOLOGY | 14 |
| 2.1 | Research design | 14 |
| 2.2 | Research process..... | 14 |
| 3 | LITERATURE REVIEW | 18 |
| 3.1 | Defining a business ecosystem | 19 |
| 3.2 | Collaboration as a prerequisite for innovation | 19 |
| 3.3 | Advanced R&D models..... | 20 |
| 3.4 | About Silicon Valley | 20 |
| 4 | PHASE ONE: THE SILICON VALLEY ECOSYSTEM..... | 25 |
| 4.1 | Empirical data..... | 25 |
| 4.2 | Key Take-Aways | 30 |
| 5 | PHASE TWO: THE NEEDS OF THE PLAYERS IN THE SILICON VALLEY ECOSYSTEM | 31 |
| 5.1 | Empirical data..... | 32 |
| 5.2 | Key Take-Aways | 38 |
| 6 | PHASE THREE: THOUGHTS AND WAYS OF WORKING TO FULFILL THE MAPPED NEEDS | 40 |
| 6.1 | Empirical data..... | 41 |
| 6.2 | Key Take-Aways | 53 |
| 7 | ANALYSIS AND DISCUSSION..... | 55 |
| 7.1 | Individual overview of the three phases | 55 |
| 7.2 | The Silicon Valley characteristics | 56 |
| 7.3 | Bringing the three phases together | 58 |
| 7.4 | Criticism of the research process..... | 65 |
| 8 | CONCLUSIONS..... | 67 |
| 9 | FURTHER RESEARCH | 69 |
| 10 | REFERENCES | 70 |
| | APPENDIX | 73 |

Key Success Factors for Collaborative Innovation in Silicon Valley

1 INTRODUCTION

This chapter first introduces the background and problematization of this master thesis, followed by the purpose and chosen research questions. It also presents the delimitations, target audience and outline.

1.1 Background

Before factors such as globalization, companies could survive focusing on doing incremental improvements on existing products, updating them only to a level that retained their competitiveness. Today, customers are better informed and have more alternatives. This creates higher demands on the companies to provide superior solutions toward their customers. Globalization has also made competing with other companies on price more difficult, why innovative products and services stand out as an alternative way to differentiate a company. (University of Western Sydney) Technology-driven innovation is integral in today's global high technology companies (Sidhu, 2015). Innovation is often regarded as difficult, especially for larger and more established companies. The reason for this is that their structures often focus on efficiency, making it difficult to be innovative. Therefore, rankings of the most innovative companies are often lacking large established companies in favor for smaller and newer ones. Nevertheless, large companies need to be innovative to make business on a long-term basis. (Örmgård, 2014)

The company Telefonaktiebolaget LM Ericsson, from now on referred to as Ericsson, is the world's leading provider of communications technology and services. The company estimates that half of the world's data traffic goes through its networks. (Ericsson) The rapidly growing amount of data used all over the world attracts competitors to the industry, which sharpens the competition. This creates demands on Ericsson to develop and innovate its product portfolio to be able to retain competitiveness. To facilitate innovation, Ericsson's headquarter in Kista, Sweden, implemented a function for idea incubation in 2014 named Ericsson Garage. The ambition is that the Garage will brand Ericsson as an innovative company through new groundbreaking innovations, by supporting the transition from an idea to an applicable product. Garage is not only meant to be a physical place, but also a mindset transparent throughout the organization, aiming to change the mindset and ways of working among the employees. Ericsson now wants to globalize the concept and has decided that the first step is for the office in Silicon Valley to host another Garage.

The Silicon Valley region is located in the San Francisco Bay Area, in the northern part of California, and is commonly described as the primarily global hub for technology innovation (Accenture). Google, Intel and HP - the list of large multinational technology companies that originate and have headquarters in Silicon Valley is long. Ericsson employees state that the region is regarded as the place where "everything happens" within IT, and that a large multinational technology company, such Ericsson, needs to be present in Silicon Valley to not miss out on opportunities.

Thoughts of why Silicon Valley is so innovative differ, but the people responsible for setting up the new Garage mention the willingness to collaborate and share experiences between partners as fundamental. These persons believe that the Garage needs a continuous flow of new ideas from startups and other players in the ecosystem, in order to utilize Ericsson's presence in Silicon Valley in the best possible way. Also, the benefits of collaborating are regarded as so great that even the biggest rivals sometimes collaborate. Innovation processes where successful innovations are created, such as the iPhone, are nowadays often a result of a collaboration between different players (Davis, 2014). This is strengthened by the CEO of Alcatel Lucent, Michel Combes, who states that *"innovation can only be delivered in an open ecosystem with partners"* (Wagner, 2014). Innovation, and specifically radical innovation, is often a result from collaboration and new connections between different areas of knowledge. Therefore, *"if we want to innovate there is nothing better than collaboration"* (Von Stamm, 2013). This further strengthens that collaboration with other organizations is a critical aspect to facilitate the success of a Garage functionality in Silicon Valley.

1.2 Problematization

Given that collaboration is vital for innovation, a first step is to find a suitable collaboration partner. Questions regarding whom a corporation should collaborate with are frequently discussed in today's business environment and academic research.

A company that is looking for a collaboration partner can use a value proposition to present the potential value of a collaboration and persuade partners to enter into alliances (Wikipedia, a). The company needs to create a suitable value proposition that focuses on the benefits for the potential partner. The reason for this is that a value proposition that focuses on the partner's priorities is probably more attractive than one that focuses on aspects that the partner does not value as much. Therefore, a potential partner's needs regarding a collaboration are vital to understand to be able to convince the partner that a collaboration would be fruitful for them. These needs are complex to understand and might be affected by the surroundings and context of the collaboration. For example, the characteristics of the Silicon Valley ecosystem could influence a partner's priorities.

Furthermore, it is probably not enough to know only *what* the collaboration partner is asking for, but also *how* to cope with it and make it available. Understanding how other companies think about their value propositions and ways of working to cope with the partner's needs, might facilitate the design process of a suitable value proposition. Today, there are not any studies made that bring together these aspects and applies it into the specific context of the Silicon Valley ecosystem.

1.3 Purpose

The purpose of this master thesis is to facilitate for large multinational technology companies when designing their value proposition toward collaboration partners in Silicon Valley.

1.4 Research questions

Three research areas, with corresponding research questions, were defined to fulfill the purpose of this master thesis:

1. Define aspects that could influence a company's presence in Silicon Valley by answering: *What characterizes the Silicon Valley ecosystem?*
2. Define what large multinational technology companies need to focus on in their value proposition by answering: *What needs do companies in the Silicon Valley ecosystem have regarding a collaboration with a large multinational technology company?*
3. Define how a large multinational technology company should cope with these needs by answering: *What do large multinational technology companies in Silicon Valley think about these needs and how are they working with them?*

1.5 Delimitations

All interviews focused on technology collaboration, and due to the limited time spent in Silicon Valley, the amount of interview subjects was limited. To make the reasoning more clear and easy to follow, further delimitations will be discussed throughout this master thesis together with the reasoning in the research phases. This master thesis revolves around a large multinational technology company, why the findings can only be seen as applicable for this kind of companies.

1.6 Target Audience

The primary audience of this master thesis is people working with, or responsible for, innovation collaborations in Silicon Valley. The results are also meant to motivate and inspire other academics and researchers to further study the involved topics.

1.7 Outline

This master thesis contains nine chapters, described in short below.

| | |
|---------------------------------|---|
| Chapter 1 - Introduction | This chapter first introduces the background and problematization of this master thesis, followed by the purpose and chosen research questions. It also presents the delimitations, target audience and outline. |
| Chapter 2 - Methodology | This chapter describes and justifies the chosen research methodology and its implications on the result. After the research design has been discussed, the chapter continues to describe the research process. This includes the literature review and empirical approach as well as the analysis and discussion. |

Key Success Factors for Collaborative Innovation in Silicon Valley

| | |
|--|---|
| Chapter 3 - Literature review | This chapter presents the literature review, starting with relevant literature defining a business ecosystem and after that describing connections between innovation and different types of collaboration between companies. Thereafter, an introduction to Silicon Valley and its characteristics is presented. |
| Chapter 4 - Phase one: The Silicon Valley ecosystem | This chapter presents the findings from the empirical research process regarding the Silicon Valley ecosystem and its characteristics. The process is briefly described before the results are presented. |
| Chapter 5 - Phase two: The needs of the players in the Silicon Valley ecosystem | This chapter presents the findings from the empirical research process regarding the needs of the players in Silicon Valley. The process is briefly described before the results are presented. |
| Chapter 6 - Phase three: Thoughts and ways of working to fulfill the mapped needs | This chapter presents the findings from the empirical research process regarding the interviewed companies' thoughts and ways of working with the needs in the previous chapter. The process is briefly described before the results are presented. |
| Chapter 7 - Analysis and discussion | This chapter presents the authors' analysis and discussion regarding the findings. The chapter is divided in six distinct sections: <i>General opinions</i> , <i>The Silicon Valley characteristics</i> , <i>Bringing the three phases together</i> , <i>Intersections between the three phases</i> , <i>Additional insights</i> and <i>Criticism of the research process</i> . |
| Chapter 8 - Conclusions | This chapter connects the findings with the purpose of this master thesis. |
| Chapter 9 - Further research | Based on the findings, this chapter highlights what the authors believe would be suitable as further research. |

2 METHODOLOGY

This chapter describes and justifies the chosen research methodology and its implications on the result. After the research design has been discussed, the chapter continues to describe the research process. This includes the literature review and empirical approach as well as the analysis and discussion.

2.1 Research design

For the purpose and nature of this research, the exploratory research was regarded as a suitable alternative. The goal with this research design is to gain new insights about, and try to understand, a phenomenon in order to formulate a more precise problem or hypothesis. The results from an exploratory research are mainly used to provide significant insight into a situation, rather than being used for decision-making. With this in mind, this research design is not typically used to make generalizations outside the context of the research. (Wikipedia, b)

In most exploratory studies, qualitative data is the main element (Given, 2008). The collected data was initially assumed to be mainly qualitative, collected during interviews with stakeholders, companies, experts in the area as well as from previously conducted empirical studies. Using a qualitative research strategy has an *“unrivalled capacity to constitute compelling arguments about how things work in particular contexts”* (Mason, 2002). Because of the above reasons, the qualitative research strategy was chosen.

2.2 Research process

The research process illustrated in Figure 1 was used to fulfill the purpose:

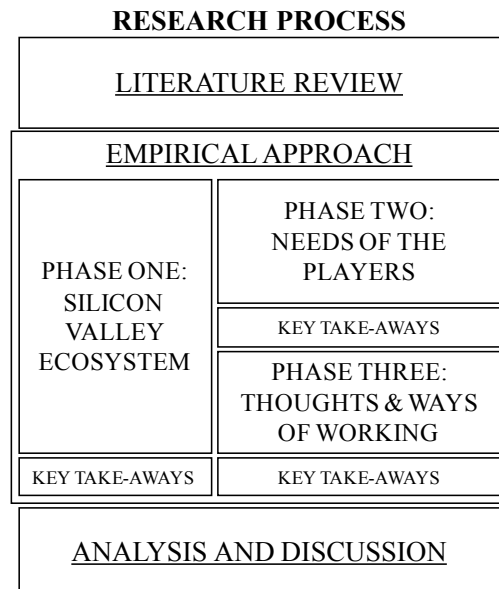


Figure 1. Illustration of the research phases.

2.2.1 Literature review

A framework based on relevant literature was regarded as crucial for the results to have an academic foundation and relevance. The authors continuously had an open mind regarding insights about potential literature that could strengthen the findings. The literature review was done in the end of the empirical data gathering and the reason for this was twofold. The purpose of the literature review was to complement the empirical findings, rather than generate insights guiding the research process. Furthermore, since the three research phases were on a broad level initially, the authors wanted to truly understand their frames before compiling the literature, to ensure that the literature review became relevant. Gathering the literature in the end might result in that the findings and authors' insights affect the compiled literature review. However, the reasons mentioned above for doing it in the end are believed by the authors to outweigh this aspect.

When conducting the literature review, focus was on literature recommended from people with extensive knowledge in the context of this master thesis as well as from literature searches. People that had a main influence in the literature review were Adjunct Professor Ikhlaq Sidhu at the Center for Entrepreneurship and Technology at UC Berkeley as well as high-level executives, responsible for external collaboration and innovation, within Ericsson. The literature search focused on research areas involving keywords such as *innovation*, *collaboration*, *partnership*, *value proposition* and *co-innovation* that were put into a Silicon Valley context from a company perspective. LUBsearch and Google Scholar were used as main databases and the amount of citations was used as an initial indication of trustworthiness. The authors found an absence of literature directly connected to the purpose of this master thesis. This absence in the academic research is supported by Sidhu, stating that this research area is not thoroughly researched (Sidhu, 2015). Therefore, the literature review is on a rather general level and the presented research is adjacent to the master thesis' purpose. Further information about the literature search and its findings can be found in Appendix A.1. The literature was clustered into three major areas, presented in Chapter 3.

2.2.2 Empirical approach

Empirical data was the most crucial part of this master thesis and the collection was mainly based on conducting interviews throughout the research process. Interviews were chosen as the main data source because of the specific context of this master thesis, without an extensive amount of available data from previous studies. New inputs throughout the process were allowed to continuously affect the direction of this master thesis, since this was assumed to increase the quality of the final result. Some of the empirical areas were collected in parallel to others, since they largely depended on external parties and therefore had to span over a larger time period. This method was also efficient since many of the interview subjects were relevant for several areas.

Throughout the data gathering, the respondents and their answers were promised to be treated under anonymity, since this was a prerequisite for them to share knowledge. Because of this, specific sources are not stated throughout the presented empirical data.

This master thesis focuses on three different types of companies, as illustrated in Figure 2 below. A large multinational technology company, LMTC, which for example could be Ericsson, is a basis in this master thesis. This LMTC collaborates with startups and corporations, defined as external players, and it is collaborations between these players that this master thesis revolves around. A thorough motivation regarding the selection of these specific external players are found in Appendix A.2.

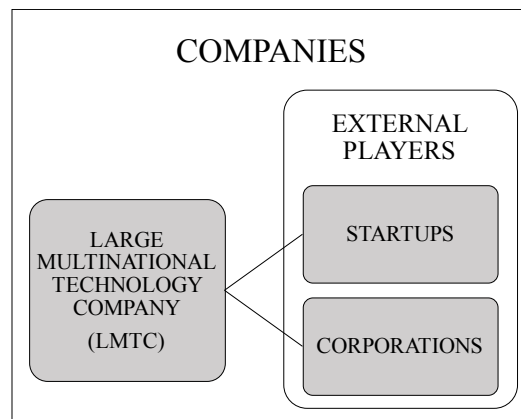


Figure 2. Illustration of the LMTC and external players: startups and corporations.

The structure of the empirical approach is derived according to the research questions presented in Chapter 1. It is therefore focused on three distinct areas, as illustrated in Figure 1 above, constituting the research phases in this master thesis: *The Silicon Valley ecosystem*, *The needs of the players in the ecosystem* and *interviewed companies' Thoughts and ways of working to fulfill the mapped needs*. These phases are described briefly below. The processes, as well as motivations and criticism toward different choices, are described in Chapters 4 to 6 of the respective research phase. The purpose of this clustering is to ease the reader's understanding by presenting vital information at the same place.

Phase one: The Silicon Valley ecosystem

The goal with this research phase was to generate an understanding about the Silicon Valley ecosystem and its characteristics. As a complement to the reviewed literature about this, interview subjects were used to gather further data. This research phase is presented in Chapter 4.

Phase two: The needs of the players in the Silicon Valley ecosystem

This part of the empirical data collection contains the needs of two types of external players in the ecosystem and multiple companies were selected as interview subjects for each type. The goal with these interviews was to apprehend the needs of different players in a collaboration with a large multinational technology company, such as Ericsson. This research phase is presented in Chapter 5.

Phase three: Thoughts and ways of working to fulfill the mapped needs

More comprehensive interviews were conducted to study large multinational technology companies' thoughts and ways of working to fulfill the needs of the previously studied players in the ecosystem. The goal with this was to present a broad range of insights regarding the mapped needs. This research phase is presented in Chapter 6.

Interview strategy

A qualitative interview is often less structured and referred to as either unstructured or semi-structured (Bryman & Bell, 2005). With a structured approach, the interviewer might not get the needed level of deep understanding of the problem context. Furthermore, an unstructured approach might not be preferred when the researchers have some topic areas that are especially important in a specific problem context (Lantz, 1993). A semi-structured approach was therefore chosen as the most suitable interview approach. This approach enabled to have specific topics to address during the interviews and that the interviewees then had a freedom to form the answers in their own way. With this approach, the interviewer can also ask new questions that may arise continuously during the interview in response to the interviewee's answers. The semi-structured approach is also appropriate when the study contains both multiple researchers and multiple cases. (Bryman & Bell, 2005) A semi-structured approach was always preferred in the interviews, but depending on the interview subject and the purpose of the interviews, the level of structure varied.

People holding managerial positions, with good insights into the demanded topic areas, were preferred interview subjects for all interviews to increase the quality of the findings. The interviews were conducted in a mix of face-to-face meetings, telephone meetings as well as email conversations. Since these interviews created large empirical data sets, focus was on really understanding the responses, why some second round interviews were performed to ensure this.

2.2.3 Analysis and discussion

The analysis and discussion were merged together in Chapter 7 to reduce repetitiveness and increase the reader's understanding. Another incentive for mixing these two parts together was that the exploratory research design yielded that no extensive theoretical analysis was going to be made. The reviewed literature was therefore used more as a way to complement aspects in the empirical findings, as mentioned before, and the true emphasis was on the discussions and reflections regarding all gathered data.

The procedure for the analysis and discussion was based on the compilation of each of the three research phases, presented in each phase's Key Take-Aways. To be able to analyze and discuss the Silicon Valley characteristics in a neutral way, this was done separately before bringing all the phases together in a common context.

3 LITERATURE REVIEW

This chapter presents the literature review, starting with relevant literature defining a business ecosystem and after that describing connections between innovation and different types of collaboration between companies. Thereafter, an introduction to Silicon Valley and its characteristics is presented.

The gray area in Figure 3 below illustrates this chapter's position in the research process.

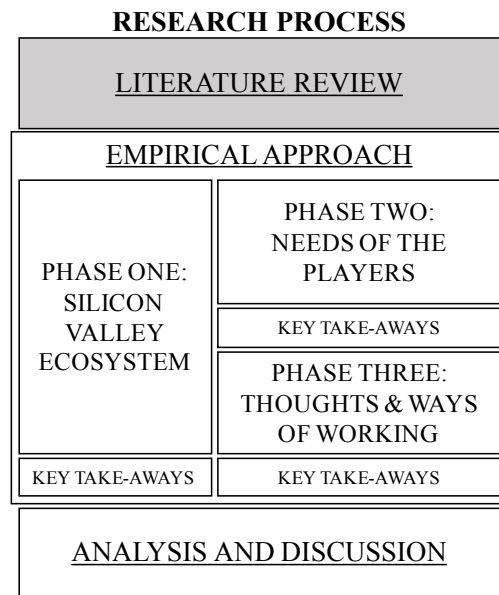


Figure 3. Current position in the research process.

The reviewed literature originated from a couple of major themes, as identified during the research process, mainly considering innovation, collaboration and Silicon Valley. The latter is in this case separate from the others. The clustering of relevant literature is illustrated in Figure 4.

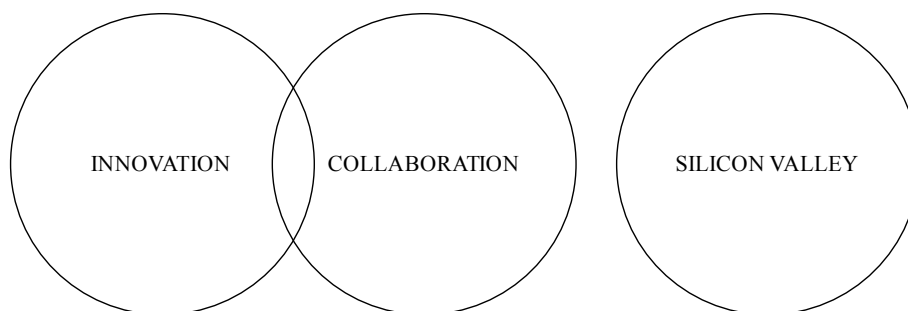


Figure 4. Major themes in the reviewed literature.

Before presenting these areas in the literature, a definition of a business ecosystem is described since it is frequently used throughout this master thesis.

3.1 Defining a business ecosystem

A business ecosystem is an economic community based on the interaction of organizations and individuals (Wikipedia, c). Just as a biological ecosystem, a business ecosystem contains parts that are interacting in their environment (Hwang, 2014). A business ecosystem is involved in the delivery of different products or services and includes suppliers, distributors, customers, competitors and government agencies. It is characterized by both competition and cooperation, where each part of the ecosystem is both affected and affects others. This creates demands on the parts to be flexible and adaptable in order to survive. (Investopedia, 2015). The term was created due to advances in technology and globalization, which created a need to describe a new way of helping businesses to understand how to thrive in the rapidly changing environment (Investopedia, 2015). The word ecosystem should not be confused with words such as cluster or network. The meaning of these words is rather static compared to the ecosystem, which is characterized by a dynamic relationship and interactions between the parts. (Hwang, 2014) Throughout this master thesis, the term ecosystem refers to the above definition of a business ecosystem.

3.2 Collaboration as a prerequisite for innovation

Innovation has over the years been defined in various ways and the authors have defined it as the act of developing a new process or product and introducing it to the market. It is regarded as an act of entrepreneurship and takes place in different types of companies and organizations. Innovation implicates change, whether it is radical or incremental. (Encyclopedia of Management, 2009)

Historically, corporations have focused on keeping their research and development, R&D, internally but the incentives for collaborating regarding these aspects have made corporations to open up their R&D to the outside world (Doepfer, 2012). Alliances focusing on technological learning and new knowledge creation have grown quickly since the mid-80s (Di Guardo and Harrigan, 2011). The increase in the competition on the global market with shortened innovation cycles, limited resources and a global demand for complex innovations has resulted in a need for a more interactive approach to innovation (Doepfer, 2012). This created the co-innovation perspective, where different actors are collaborating to achieve more effective innovation performance (Doepfer, 2012). The strategy literature contains many different alliance-related innovation processes, focusing on co-innovation (Di Guardo and Harrigan, 2011). Co-innovation is regarded as critical to the future growth of a corporation (Bhalla, 2011). Especially for startups, a collaboration is seen as an opportunity to transform ideas into market innovations (Doepfer, 2012).

R&D facilitates innovation and later technological change, and entering different partnerships can leverage the efficiency of R&D (Link, 2006). Partnerships in this context are defined as different cooperative arrangements that let companies, universities and government entities, gather resources in pursuit of shared R&D objectives. (Council on Competitiveness, 1996) In a study about innovation, all interviewed companies considered a traditional closed innovation approach as non-sufficient for them to be competitive (Maurer & Valkenburg, 2014).

A more interdisciplinary research and collaboration among organizations, partners and stakeholders is a needed perspective to create a more effective innovation environment (Cordeiro et al, 2010).

Companies could co-innovate with either end-users or with other professionals and specialist, e.g. scientists and engineers. Questions regarding whom a corporation should collaborate with are frequently raised in the literature. A big challenge when finding a collaboration partner is to convince the counterpart why collaboration would be fruitful for them, and monetary reward is often the ultimate motivator to collaborate. But it would be foolish to think that money is the only motivator. (Bhalla, 2011) There are many discussed motives to collaborate, such as: access to resources, enhanced customer experience, create customer commitment, enable self-service, more competitive products, decreased costs, faster time to market, emergent strategy and building brand awareness (Frow et al, 2015). Regarding access to resources, such as technology, the more access a company offers to its counterpart the less friction of the collaboration. Hence, external partners could more easily contribute to reaching set targets of the collaboration. (Bhalla, 2011) Other goals for a collaboration might be to develop innovative products or services and during the collaboration share both risks and gains. As an example, it might be of high relevance for companies to access valuable information at an early development stage. (Maurer & Valkenburg, 2014)

Co-innovation is generally very focused and contains specific goals of a collaboration. There are mainly three types of overall goals:

- *Generation.* The corporations' goal is to solicit new ideas that could be used when developing products or services.
- *Refinement.* The aim is to refine features of a specific product or service, to raise the overall product performance.
- *Creation.* The collaboration results in prototypes of entirely new products or services, which often need refinement before commercialization.

(Bhalla, 2011)

3.3 Advanced R&D models

In an ongoing study, Ikhlaz Sidhu at UC Berkeley has begun to map different R&D-models for advanced development and corporate research of modern global firms. One of the models concerning incubation has a high level of external focus and openness. It focuses on offering corporate synergy, rather than money and space, as the main benefit toward partners. The reason for this is that companies seeking incubation facilities have realized that money and space are not as valuable as getting access to the core companies of a larger company. (Sidhu, 2013)

3.4 About Silicon Valley

This section presents a background to Silicon Valley and ways to describe the ecosystem. The purpose with presenting this information is to increase the reader's understanding of the upcoming discussion of Silicon Valley.

3.4.1 Introduction

Silicon Valley is an industrial region in the Santa Clara Valley, in western central California, USA, between Palo Alto and San Jose, where many high-technology companies are located (The Columbia Encyclopedia, 2014). Many of the companies in both San Francisco and Oakland consider themselves as a part of the cluster as well, despite being outside the region typically regarded as Silicon Valley (Koepp, 2002). The region is illustrated in Figure 5.



Figure 5. Map of the Silicon Valley region (SJSV Chamber of Commerce, 2012).

The name “Silicon Valley”, origins from the silicon that was used in semiconductors for computers (The Columbia Encyclopedia, 2014), and was first mentioned in an article series published in 1971 by the semiconductor industry journalist Don Hoefler (Koepp, 2002). A deeper discussion regarding the history of Silicon Valley can be found in Appendix A.3.

Silicon Valley became the center of new technologies that people thought would revolutionize, e.g. computers, telecommunications, manufacturing and warfare. It came to symbolize high-risk businesses characterized by rapid success or failure, extensive job mobility and informal behavior (Dictionary of American History, 2003). Silicon Valley is an inspiring location for people with the skills and vision to utilize on its offerings, and entrepreneurs in the region are known to continuously find new ideas and build on new opportunities. The region is also the main cluster of venture capital in the US (Koepp, 2002).

The characteristics of the early Silicon Valley electronics companies match the structure of Silicon Valley's industrial organization of today, with for example:

- A leading role for local venture capital
- Close relationships between local industry and research universities
- A product mix focused on electronic components, production equipment, advanced communications, instrumentation and military electronics
- Unusually high level of interfirm cooperation
- A tolerance for spin-offs

(Kenney, 2000)

Today, thousands of high-technology companies are headquartered in Silicon Valley, such as Apple, EBay, Facebook, Google, HP, Intel, Netflix and Oracle (Wikipedia, d). During an interview, a specific quote was mentioned as a description of the companies in Silicon Valley:

"Today's fastest growing, most profoundly impactful companies are using a completely different operating model. These companies are lean, mean, learning machines. They have an intense bias to action and a tolerance for risk, expressed through frequent experimentation and relentless product iteration. They hack together products and services, test them, and improve them, while their legacy competition edits PowerPoint."

They are obsessed with company culture and top tier talent, with an emphasis on employees that can imagine, build, and test their own ideas. They are maniacally focused on customers. They are hypersensitive to friction – in their daily operations and their user experience. They are open, connected, and build with and for their community of users and co-conspirators. They are comfortable with the unknown – business models and customer value are revealed over time. They are driven by a purpose greater than profit; each has its own aspirational 'dent in the universe'. We may simply refer to them as the first generation of truly responsive organizations." (Dignan, 2013)

3.4.2 Characteristics of the Silicon Valley ecosystem

Many studies have been made to try and figure out what characterizes Silicon Valley and how to copy the concept to other regions all across the world. Moore & Davis discusses the problem of trying to create a common description that describes the Silicon Valley and its success. An example of this kind of description focuses on the combination of *Technology, Entrepreneurs, Capital, Sunshine* and a *University* as the vital parts that have been necessary over the years. Their opinion is that these recipes can be powerful and useful, but that they might be too static and even if it is a good description in current time, it might be terrible when being used to describe how Silicon Valley actually became how it is right now. (Moore & Davis, 2001) A commonly mentioned aspect about the challenges of attempting to create new Silicon Valleys is that Silicon Valley is actually *"the only place on earth not trying to figure out how to become Silicon Valley"* (Koepp, 2002: 24).

Hwang & Horowitz describe the characteristics of the Silicon Valley ecosystem and argues that it is not the neoclassical view of the input, such as labor, land, capital and technology that is determining the output. Instead, it is the combination of those elements that is the difference between failure and success. Dysfunctional ecosystems are creating social barriers resulting in transaction costs such as geographical distance, lack of trust, inefficient social networks and difference in language and culture. Silicon Valley has succeeded avoiding these through a set of social behaviors, focusing on avoiding individual short-term gain in exchange for mutual long-term gains. Hwang & Horowitz are highlighting four “hardware” and five “software” aspects of Silicon Valley’s successful recipe, presented below. (Hwang & Horowitz, 2012)

Hardware

People. The region’s level of education, both how talented the entrepreneurs and managers are, and also how strong knowledge the overall workforce has, is important prerequisites for a successful ecosystem.

Professional. Business service providers, such as bankers, lawyers, landlords, executive recruiters, consultants etcetera, should engage in the ecosystem. Furthermore, the financial support, from venture capitalists and business angels, is important for the ecosystem. Lastly, the academic networks need to support professors, students and researchers so that they can collaborate.

Physical. The infrastructure networks should support efficient flow of knowledge, ideas people and goods.

Policy. The legal system should ensure a free flow of goods and people, and regulations regarding labor and protection of property rights, should have limited effect on businesses. Furthermore, the structure of the financial system and its possibility to support an availability of capital information and credit are mentioned as vital aspects.

(Hwang & Horowitz, 2012).

Software

Diversity. A high extent of diversity of the people in the ecosystem and good possibilities for these diverse people to meet up is regarded as vital. The core of this is diversity of knowledge, rather than the usual diversity that reflects on gender, age, culture and so on. Other vital aspects that affect the ecosystem are to what extent people tend to collaborate and the level of secrecy people in the ecosystem have.

Extra-rational motivations. The ecosystem needs a critical mass of people that are seeking competition, challenge, adventure or opportunities for altruism, rather than normal motivators such as monetary motivation.

Social trust. The level of trust, especially toward strangers, is critical to the ecosystem. This is connected with the amount of occasions that people face unconstructive societal habits such as prisoner’s dilemma.

Rules. There are plenty of rules, or social norms, necessary for an ecosystem. First of all, the system should have a willingness to accept visionary people with ambitious dreams. These dreams should easily be spread to others through an

attitude to always be open and listen to others. Furthermore, experimentation and iteration between different players should be encouraged. This collaboration should not focus on getting advantages over each other, but to seek fairness in the collaboration. Lastly, it is very important that it is socially accepted to try and fail, and that the people in the ecosystem are displaying a willingness to pay-it-forward, i.e. helping others without expecting to be paid back.

Interpretation of the Rules. The ecosystem's ability to punish violators of the rules is an important prerequisite for the ecosystem to work effectively. The network needs to be so closely linked that a violation of the rules will affect reputation, complicating for a person or corporation to further leverage on the ecosystem.

(Hwang & Horowitz, 2012)

4 PHASE ONE: THE SILICON VALLEY ECOSYSTEM

This chapter presents the findings from the empirical research process regarding the Silicon Valley ecosystem and its characteristics. The process is briefly described before the results are presented.

The gray area in Figure 6 below illustrates this chapter's position in the research process.

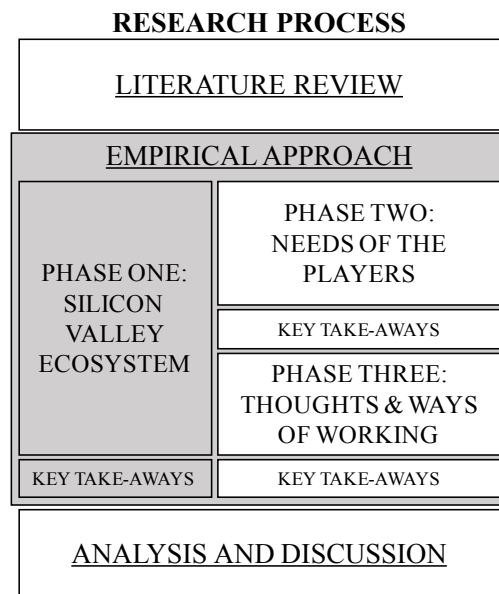


Figure 6. Current position in the research process.

The data in this research phase solely origins from interviews, not supplemented by literature or the authors' opinions. Different people were asked about the most vital characteristics of the Silicon Valley ecosystem. The data was gathered from relevant people in Silicon Valley, supplemented with people that was interviewed during phase two. A full explanation of the selection of interview subjects, interview questions as well as how the empirical data was compiled, can be found in Appendix A.4.

4.1 Empirical data

Silicon Valley has attracted people from all over the world for centuries. Many aspects are contributing to the region's characteristics and it is commonly viewed as hard to actually beat its setup. The region's setup has somehow also created a snowball-effect, which makes it feed itself. The region functions are characterized by creativity and innovation. The ecosystem is a reflection of the history and geography of the region. Silicon Valley has been a mixing bowl of cultures and ideas for years, where the informal, tolerant and wild spirit of the US is embodied. The region is regarded as a community with no walls, where people really endeavor to work

Key Success Factors for Collaborative Innovation in Silicon Valley

together and collaborate, something that is key to the region's success. The culture is genuinely generous with a high level of energy and positivism. In this ecosystem, there is a need for contributing, or you will not get anything back. The given contribution equal what you get back from the ecosystem. This is reflected in a "pay-it-forward" mentality that exists in Silicon Valley. Today, many companies and individuals want to be in San Francisco and are therefore moving there from the southern parts of Silicon Valley.

Risk taking is widespread, and while California is known for being pioneering, Silicon Valley, in particular, drives new industries. If you have an idea and the fortitude to see it through, Silicon Valley is the place to be. People are working in an almost obsessive way to get products to the market as soon as possible and there is a large emphasis on users and data. People in the ecosystem are early adopters, which makes it easier for companies and individuals to test new products and transform industries. Compared to other places, there is always a presence of what the next thing should be.

Silicon Valley has a critical mass with many interacting parts, e.g. in regard to the large amounts of potential connections and activities for networking. Companies really need to have a physical presence in the ecosystem and different technical solutions for long-distance communication is regarded as not enough when building trust and creating business.

After this introduction of Silicon Valley, six characteristically topics that are regarded as central in the gathered data, will be presented: *High presence of capital*, *Vast pool of talent*, *Influential universities*, *Dense industry landscape*, *Entrepreneurial mindset* and *Appealing climate*. These characteristics are illustrated in Figure 7 below.

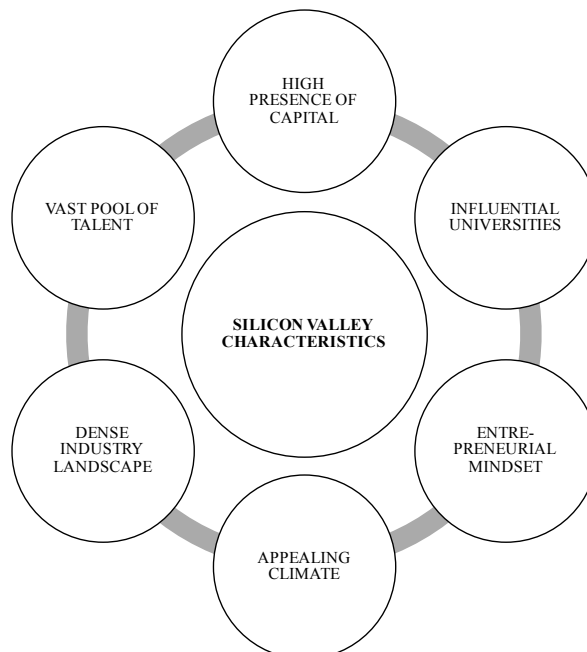


Figure 7. The six vital characteristics of the Silicon Valley ecosystem.

4.1.1 High presence of capital

Access to capital and investors are commonly regarded as a vital characteristic of the Silicon Valley ecosystem. The amount of venture capital, VC, and presence of large VC-companies are unique aspects. The ecosystem is described as “the richest ecosystem of financing”, containing 90 % of the world’s VC-companies. These VC-companies have money combined with courage to do large and high-risk investments. Capital is not only made available by VC-companies but also through, e.g. business angel investors. The investors in the ecosystem have often started and run their own companies, made a lot of money and then helped a large number of companies to grow and develop in their pasts. These aspects give them a whole other type of competence compared to other investors in the world, which is highly valued by companies in the ecosystem.

The investment culture is regarded to encourage entrepreneurs, creating prerequisites for brilliant minds to execute their ideas. The high concentration of venture capital ensures that many companies have a “shoot-for-the-moon”-approach when thinking about their opportunities. As a positive indirect result, this even rubs off on companies that are not backed by venture capital. Furthermore, the large amount of public funding that has been invested into the Silicon Valley ecosystem is regarded as an important aspect concerning capital’s impact on the ecosystem. Therefore, it is regarded as a myth that this aspect has not been a vital point of influence in the success of the Silicon Valley.

4.1.2 Vast pool of talent

Another vital characteristic of the Silicon Valley ecosystem is the availability of talent. The diversity of the workforce is an important aspect and Silicon Valley is a global hub that attracts talent and people with visions from different companies and backgrounds all over the world. People’s skills are diverse, even though their skill sets are concentrated in technology. Even those not in explicit technology positions tend to have a certain amount of technological knowledge and understanding. This facilitates both communication and collaboration in the ecosystem, since everyone gets what you are trying to accomplish quickly and is, therefore, able to play their part well. The technology competence present in the Silicon Valley is unique and the engineering talent is extremely skilled. Therefore, if you want to start a company, Silicon Valley creates the prerequisite of finding the right people. Nevertheless, recruiting is regarded as difficult.

The presence of venture capital, as explained earlier, also attracts the best entrepreneurs, often serial entrepreneurs, that are incredibly competent and really know how to build companies. Furthermore, the ecosystem attracts the best company leaders and CEOs in the world.

All these aspects have created a “snowball”-effect that further attracts talent and ensures that the best available talent thrives in Silicon Valley.

4.1.3 Influential universities

The presence of strong universities in the Silicon Valley ecosystem, especially Stanford and UC Berkeley, is another vital characteristic that plays an important role

in the region's success. These academic institutions have a focus on solving problems anchored in real life, looking more on what is happening outside the academics compared to regular universities. They have also succeeded in providing the ecosystem with raw talent that is naive and thinks that anything is possible, which is yielding new ways of thinking and a risk-taking mindset. Besides creating top research, Stanford has succeeded in fostering an entrepreneurial generation that is getting brainwashed from the beginning to become leaders. They are also continuously exposed to successful alumni, which create a priceless network. People in this generation often start their own companies when they leave the university. Hence, many large Silicon Valley-companies, as well as many of today's startups in the region, descend from universities and especially Stanford. The universities also create value for the ecosystem by contributing to attract high caliber people across all disciplines from all over the world.

4.1.4 Dense industry landscape

Another vital characteristic of the Silicon Valley environment is the density of the industry landscape. It was stated that there are few places in the world where the amount of companies is denser than in Silicon Valley, which yields a high competitiveness. An established opinion is that the technical companies that are not present in Silicon Valley are missing out on enormous business potential. In regard to the density of technical companies it is often stated that "everybody is here, at least everybody that means something". The world's largest technology companies are mixed with smaller corporations, resulting in a proximity to access new partners or customers and a unique dynamic where networking possibilities are almost endless. The Silicon Valley region is commonly viewed as the hub of innovation and the place to be for every technology company with ambitions. The high density of large companies results in a high amount of spin-off and startup companies that thrive in this region. Furthermore, the region is characterized by urgency and a high level of competition, why it is necessary to act fast if you are interested in a company's products and services. Companies that are not alert might miss business opportunities because of the high speed level.

4.1.5 Entrepreneurial mindset

Another vital characteristic of the Silicon Valley ecosystem is the mindset. The energy circling around new ideas and startups is considered as unique in the world. The business environment is more casual and less concerned with hierarchy and bureaucracy and everyone in the region is focused on finding the right solutions as quickly as possible. This has resulted in an experimental mindset.

The level of risk taking is commonly viewed as one of the main drivers behind this entrepreneurial mindset. In Silicon Valley, there is a critical mass of visionary people with charisma and focus, who are less encumbered by history and more open try new things, not afraid to bet on big ideas. These people tend to inspire other people to have the courage to try-and-fail. The "can-do-attitude" results in that if you try something that does not work, you just go on to try something else. Failing is a way to learn new things, and these learnings will lead to that you, hopefully, will never fail in the same area twice. An unsuccessful business might even be seen as something

valuable to your resume. However, an important aspect of this is that it is important to try fast and fail cheap. That is why there is a tendency to test products in an early stage of a product development cycle, instead of wasting time to plan for testing it. A failed idea is not negative for your business unless it is expensive or time-consuming. That is why the expression “try-fast-and-fail-cheap” is deeply rooted in the Silicon Valley mindset. The eagerness to try different ideas is strengthened further since many people often talk about an extreme fear of missing out on opportunities. This leads to that people are more willing to listen to ideas and not close any doors directly from the beginning. Furthermore, in other parts of the world, people are more restrained of sharing ideas, knowledge and experiences, but in Silicon Valley this “pay-it-forward” mentality is a cornerstone of the mindset.

Another characteristic of the Silicon Valley mindset is that your personal network is crucial for your development and possibilities. People view connectivity as their career, and people’s career is longer than their current company’s, why the people in Silicon Valley in general, compared to the rest of the world, change working places more often. The uniqueness of the mobility is resulting in that every time people change workplaces, their knowledge is recombined with others’. This is resulting in an additional way of absorbing new knowledge.

It is your network of people that enables you to get connected with new opportunities. Specific actions that is vital to maintain a prosperous network is for example to quickly respond to emails, always thank for meetings, respect each other’s time and inform a contact if their effort resulted in new opportunities. One way to extend your personal network is to attend meetups for specific subjects or industries. The region is teeming of arranged meeting points, ranging from business pitching events to discussion forums and conferences. Without a doubt, you will be able to find an interesting meetup seven days a week.

Another aspect is the respect of other people. Everybody has a past and origin from somewhere and the Silicon Valley ecosystem teaches not to make too many assumptions about other people. It does not matter where you come from, what race you are or if you dress poorly. The only thing that matters is if you can do the job. People dressed in sandals and t-shirts is common. In other cultures where conformity, pomp and circumstances are highly valued that would be unthinkable. This unique ecosystem is more concerned about your brain, creativity and talent, which result in a more casual work environment where out of the box thinking thrives, and people can pursue things that they are truly passionate about. It is the place where anybody can strike out with an idea or a dream and see it through to fruition.

4.1.6 Appealing climate

A vital characteristic of the Silicon Valley, that may be a bit more unconventional, is the local climate. The weather, characterized by a blue sky, sun and pleasant temperature, attracts people to Silicon Valley and, once they are here, they never want to leave. Since the weather is always good, you do not have to plan everything according to it, making you more flexible which itself is reflected in your work.

4.2 Key Take-Aways

To sum up this chapter, Table 1 presents key take-aways of the most vital aspects regarding the characteristics of the Silicon Valley ecosystem.

Table 1. Key take-aways of the characteristics of the Silicon Valley ecosystem.

| CHARACTERISTIC | EXPLANATION |
|--------------------------|---|
| High presence of capital | <ul style="list-style-type: none"> • High presence of capital from, e.g. venture capitalists and business angels. • People with capital are willing to take high risks. • The investment culture encourages an entrepreneurial spirit. |
| Vast pool of talent | <ul style="list-style-type: none"> • High availability of skilled and diverse workforce. • Extensive technology knowledge in general. • Existing talent attracts further talent, creating a snowball effect. |
| Influential universities | <ul style="list-style-type: none"> • Presence of strong universities, i.e. Stanford and UC Berkeley. • The universities are connected to industries and focus on practical needs. • The universities provide the ecosystem with talent by developing new entrepreneurial generations and attracting people globally. |
| Dense industry landscape | <ul style="list-style-type: none"> • High density in the industry landscape with a high amount of companies and mix between large and small companies. This density facilitates networking and collaboration aspects. • Startup companies thrive in the area. • Urgency and high level of competition, making it necessary to act fast. |
| Entrepreneurial mindset | <ul style="list-style-type: none"> • The business environment is casual, less concerned with hierarchy and bureaucracy and has a futuristic focus. • “Try fast and fail cheap”: High level of risk taking, willingness to test ideas and acceptance of failure. • “Pay it forward”: Helping others without a specific payback. • Vital for people to focus on the personal network to succeed. • Respect of other people and their ideas and dreams, no matter background or position. |
| Appealing climate | <ul style="list-style-type: none"> • The blue sky, sun and pleasant temperature attract and retain people. • The consistent weather facilitates people’s planning and flexibility. |

5 PHASE TWO: THE NEEDS OF THE PLAYERS IN THE SILICON VALLEY ECOSYSTEM

This chapter presents the findings from the empirical research process regarding the needs of the players in Silicon Valley. The process is briefly described before the results are presented.

The gray area in Figure 8 below illustrates this chapter's position in the research process.

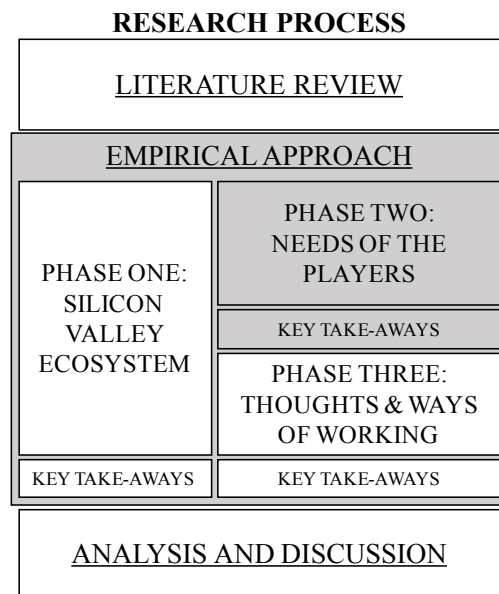


Figure 8. Current position in the research process.

The data in this research phase solely origins from interviews, not supplemented by literature or the authors' opinions. When selecting the interview subjects, focus was on startups and corporations. The companies needed to have a strong presence in Silicon Valley as well as be present within the different industry areas: cloud, IT, media, transportation and utility.

The final list of companies that were interviewed in this research phase is presented in Table 2.

Table 2. Interviewed companies in phase two.

| STARTUPS | | CORPORATIONS | |
|-------------|-----------|-----------------|-----------|
| 4INFO | Plumgrid | Audi of America | Mellanox |
| Chargepoint | Sungevity | Cloudera | Solarcity |
| GetAround | Spotify | HP | Tesla |
| Lyft | Ustream | | |
| Mirantis | | | |

The purpose of the interviews was to capture insights from potential collaboration partners in a broad picture. Therefore, the questions were framed to cover aspects in a collaboration with a large technology corporation both in general and more directed toward R&D and innovation programs. The authors also sought to always find interview subjects with some kind of managerial position on a higher level to ensure that they had good insights into the areas of the questions to increase the quality of the answers.

After compiling all data from the interviews, the answers were compared and clustered into general topics. The empirical data, presents what is important in a collaboration with a technology company in Silicon Valley, with special focus on R&D aspects. To ensure the trustworthiness of the final result, it was discussed thoroughly with both supervisors and people regarded by the authors as experts in the area. A full explanation of the selection of interview subjects, interview questions as well as how the empirical data was compiled, can be found in Appendix A.2.

5.1 Empirical data

Many of the mentioned aspects during the interviews were the same for both corporations and startups, why this section is structured in sub-sections describing general topics. Each sub-section starts by describing the aspects that are in common for both corporations and startups, before highlighting specific features of each player. The common answers from the interviews were not literally the same, but still regarded as similar enough to present them as a common standpoint. Furthermore, the authors think that this is a more efficient way to describe the needs to the reader, rather than reading the same information twice. A risk with this structure is that it could be hard to capture the difference in the players' answers and in what extent the players have emphasized the different aspects. A comprehensive list of the answers from each type of player is found in Appendix A.5.

Another risk is that both players could still have more opinions than those that were highlighted during the interviews. An important aspect worth mentioning is that the questions were focused on a collaboration between companies, without a specific definition of the aim for the collaboration. Many respondents, however, highlighted that their answers were dependent on the nature of the collaboration, why the answers could have been different if put into a more specific context.

The following topics will be presented in this section: *External access*, *Industry and market knowledge*, *Financial incentives*, *Prerequisites*, *Technology development* and *Others*. These topics are illustrated in Figure 9.

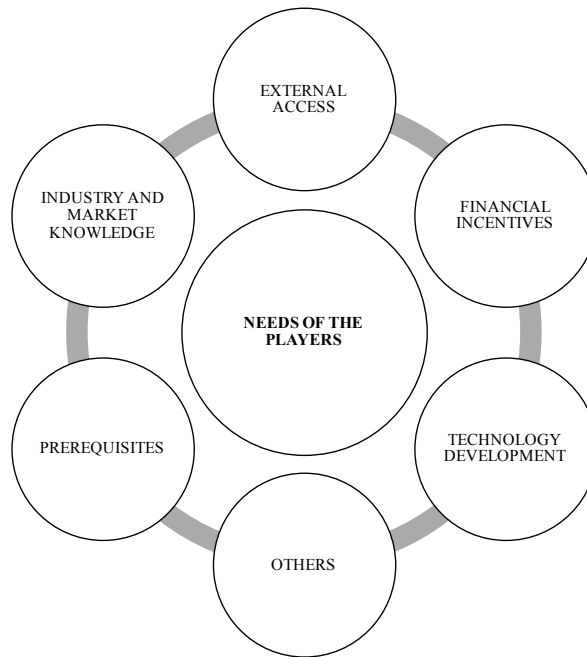


Figure 9. The general topics of the players' needs.

5.1.1 External access

This section is divided into three distinctive parts that concern external access to customers, technology and other connections. The latter was created since to distinguish between connections in general and customers per se. Other connections are therefore defined as parties that were not necessarily mentioned as customers.

Access to customers

Both startups and corporations highlight the aspect of getting access to customers as an important need for entering a collaboration. Using the large multinational technology company's, LMTC's, sales channels are a common ground between the two types of players. Aspects in this topic was generally appearing more frequently from the startups, who said that getting access to customers is important for them to accelerate their own growth and grow business, as well as developing both deeper, and entirely new, customer relationships. Accessing these through the LMTC's large sales force was mentioned as very valuable for the startups. Another input was that the startups are interested in accessing international user bases outside the US, which was regarded as extremely valuable especially if the user base is monetizable.

Access to technology

Needs were mapped regarding that both startups and corporations want access to the LMTC's technology. Both players want the LMTC to be open about its software and/or hardware so that they can test and experiment on it, without having to buy extremely expensive equipment themselves. Accessing this, help the startups to integrate LMTC's technology with their own and accelerate their growth. Openness from the LMTC in this matter is therefore regarded as crucial, offering open APIs toward the startups is one mentioned example that the LMTC could do.

Access to other connections

Getting access to other connections were especially relevant for corporations, meaning that they want to connect with the LMTC's strong partners and high-level connections. A corporation might, for example, need help to find and create a network of high-level connections that holds powerful positions at different boards.

5.1.2 Industry and market knowledge

Both startups and corporations mentioned that a reason for them to collaborate with LMTCs is to get insights about what is happening and going on in their respective industry as well as where it is headed. Since the amount of Fortune 500 companies in Silicon Valley is dense compared to anywhere else, the ability to actually know both where the industry and your competitors are heading is considered as extremely valuable. Corporations further described the aspect of getting the knowledge of what other companies' needs are, as necessary to fit it into their products and make them superior. Finding out what others are working on, e.g. in regard to a new technical design, is also important for corporations to be able to cope with what is happening.

Both startups and corporations highlight the value of increasing market knowledge through collaborating with a LMTC. Corporations mean that it is a big challenge to know all niches in the market, why a collaboration could help out by increasing their market knowledge using the knowledge from external parties. They also seek knowledge about if there is a potential market demand and to create a business use case before going to market. Corporations also stated that they need tight collaborations with partners to create a better ability to listen to the outside. This ability helps them understand its technical needs and, in the end, make their customers satisfied. From a startup perspective, they need help with local market analyses to identify other markets. As they expand into new international markets, startups want in-country knowledge to ensure that their products meet local standards, legal requirements, etc.

5.1.3 Financial incentives

The potential of getting financial incentives in a collaboration with a LMTC is mentioned as important by both startups and corporations, especially in regard to a possible licensing deal and the potential gains following that the LMTC buys their product. Besides this aspect, startups are in a much larger extent than corporations, highlighting financial incentives as an important need in a collaboration. The LMTC might provide both a strong present or future probability for financial incentives, where an investment or funding during the collaboration or a payment afterwards is highlighted as examples. Another financial incentive that would motivate startups to enter a collaboration is if it is clear that the collaboration will make the LMTC dependent on the technology, creating lock-in effects. This effect may lead to an increased willingness from the LMTCs to purchase the technology or the entire startup. The startups are also interested in generating economies of scale from a collaboration that give them a technological or economical advantage against their competitors. As for corporations, they also mentioned that LMTCs often spend enormous amounts of money on R&D and that a financial incentive for collaborating with a LMTC is to get a share of this budget.

5.1.4 Prerequisites

There were many aspects regarding prerequisites that lead to this section becoming the most comprehensive one. Different aspects concern, e.g. the value of clear goals and objectives, efficient communication and the right competence, as well as prerequisites with more practical and technology focus.

Goals and objectives

Defining goals and objectives before entering a collaboration is important for both startups and corporations. By clearly defining the timeline, expectations on the output and the mutual gains of the collaboration, startups are more likely to engage in a collaboration. The startups do not have the possibility to allocate time or resources to figure this out during the collaboration and highlights the aspect of not wanting to waste their time. Although this might seem like an easy thing to do, startups state that the history proves the contrary.

Communication prerequisites

A large corporation's organization is often complex to understand, especially from an outside point of view. With a higher level of complexity, the need of an internal compass increases. Therefore, both startups and corporations have a need of knowing who to speak to during a collaboration. Mainly startups are experiencing that larger corporations have difficulties to communicate with them in a satisfactory way. Relationships are seen as the foundation for good communication. Offering dedicated points of contact is a commonly appreciated method to establish efficient communication and facilitate the collaboration. This also ensures that the partners know where to turn when needed.

Competence prerequisites

Regarding the required competence prerequisites, it differs a lot between the needs of a corporation and that of a startup. The corporations state that they require high-level competencies, strong technology people and effective people to work with. Also, the people within the collaboration need to have an ability to absorb knowledge fast and thereby more easily contribute to the collaboration with their talent. The LMTC's competencies should be centralized and not spread out throughout the organization. If the level of competence is not sufficient, it could result in that the corporation is better off doing all the work themselves.

Startups stated slightly different aspects regarding competence prerequisites. The LMTC needs to have a proven leadership and expertise in the industry as thought leaders. They also need the partnership to be solid and move KPIs for both counterparts. Furthermore, startups appreciate if the collaboration partner provides personnel that assist them. The efforts and input in the collaboration from the LMTC should focus on more than solely R&D and involve many different parts of the organization.

Other prerequisites

A frequent prerequisite of a collaboration is the ability to show a track record of previous collaborations. Startups and corporations want a track record as proof that

the LMTC has been involved in successful collaborations. Both corporations and startups value that the collaboration is connected to the core business and uniqueness of the counterpart.

Another important practical prerequisite, according to startups but also backed up by corporations, would be the mutual respect of the counterpart's time. The LMTC's seriousness about the collaboration is highly valued. Abilities such as acting fast and having a high deal-making speed are therefore considered as valuable in a collaboration. Startups state that deal-making speed from the LMTC is often dependent on having a commitment from executives, who are often more able to resolve issues during the process in a faster way than lower managerial persons. Involvement from these people is therefore appreciated. Other aspects that startups want are dedicated teams with clear priorities and strong product and project management, assumed to save time for both parts.

There are a couple of things that differ corporations from startups. Corporations appreciate the ability to create trust fast with complete openness and transparency, without unnecessary signing of confidentiality agreements. Furthermore, corporations think that it is important that the LMTC's brand is associated with something positive to its customers. One example that was mentioned was that nobody likes Comcast in Silicon Valley, but still people need a broadcaster. People are forced to use their services even if they do not like them, in comparison with Coca-Cola, whose customers buy their product because they are associating the brand with something positive.

Startups value an easy interface to the counterpart's organization, resulting in that they do not lose speed when entering a collaboration. Furthermore, startups think that the legal aspects that protect their technology and the results of the collaboration are important.

Strategic alignment

Both startups and corporations state that a strategic alignment is an important aspect for them to enter a collaboration, focusing on that the LMTC needs to be relevant for them from a strategic standpoint. Startups further develop this by stating that the nature of the technology collaboration needs to be in line with their overall roadmap, so that it is a natural step anyway and that the LMTC just makes it higher priority or happen sooner. Both startups and corporations also mention that it needs to exist a common value proposition to the consumers, e.g. the same product category, for the collaboration to be successful and to enhance the life of the consumers.

Corporations stated that an alignment in product strategies is important so that both parties prioritize the collaboration. Startups highlight that, if it is a long-term collaboration, it is important that the LMTC is aligned around their interests and that there is room for symbiotic growth.

Startups also highlight that a collaboration gives them the ability to understand what KPIs everyone at the LMTC, from senior management to individual contributor, is focusing on. Collaborating makes it possible for startups to be aligned with the LMTC's top priorities and actually help them out with these priorities.

Technology alignment

Both startups and corporations are highlighting technology alignment as important in a potential collaboration with a LMTC. There need to be good intersection points where technology makes sense, and easy means to connect and merge technology and products. Audi, for example, mentions that both sides gain if they start implementing a new idea or product into their cars as a result of a collaboration. Startups express that they want the ability to integrate their products into the LMTC's products to get customers and raise their own sales, since they see it as very expensive to get new customers. Corporations also highlight this aspect further, wanting the ability to integrate their products into the LMTC's for a possibility to create superior products that sell better, generating a win-win situation. Putting their products through the LMTC's sales channels is also important for the corporations, since a company like Coca-Cola might face big challenges in promoting products that are far from their own business.

Furthermore, startups highlighted that the counterpart's technology and software need to be innovative, extensible and even global in scope and scale.

5.1.5 Technology development

A common insight on what is important regarding technology development is the aspect that a collaboration should result in new interesting ideas and products as well as new ways of thinking. This might result in a new or improved product or a service that enhances the customer experience. Improved delivery ways, a better design or new features are aspects that are supposed to gain both parts of the collaboration.

Another aspect of technology development is that both corporations and startups value joint development teams throughout the process, to increase the possibility of creating superior products and more successful product launches. Both players want to ensure that whatever product they are working on is industry leading, in regard to both quality and technology innovation. Extensive joint user testings and quality assurance processes were mentioned especially to ensure this.

For corporations, these aspects are not enough. Developing new products takes time, why sharing resources needed for the research is an incentive to collaborate. Furthermore, the corporations value the ability to steer the development during the collaboration toward their interests. Another incentive to collaborate is that a collaboration is a perfect opportunity to educate their R&D employees about different areas, trends and buzzwords.

Another aspect that corporations value is that the input into a collaboration is tested in advance. The corporations are not interested in developing new products or services dependent on research that has not been thoroughly tested. Furthermore, the input from the counterpart needs to be practical, not theoretical, and must contribute to making the final product superior. Lastly, the counterpart's input to the collaboration must be revolutionary. Incremental development is easy for the corporations to do by themselves, but a collaboration partner could provide them with disruptive ideas.

5.1.6 Others

This section presents aspects regarding needs for a collaboration that were a bit distinctive. These were regarded to not fit into under the chosen topics and hence clustered together in the end. These aspects concern brand and PR as well as facilitation of recruitment.

Brand and PR

Corporations find it valuable for them to collaborate with a strongly branded LMTC, which is commonly viewed as a stamp of approval.

Facilitate recruitment

One startup states that a collaboration could be valuable from a recruitment perspective. In a collaboration, the startup is likely to meet skilled people. Furthermore, a collaboration with a LMTC would increase their possibility to hire people with diverse backgrounds, increasing their workforce's geographical background.

5.2 Key Take-Aways

To sum up this chapter, Table 3 presents key take-aways of the needs of the players in the Silicon Valley ecosystem.

Table 3. Key take-aways of the needs of the players in the Silicon Valley ecosystem.

| NEED | EXPLANATION |
|-------------------------------|---|
| External access | <ul style="list-style-type: none"> • Access customers and markets, e.g. through sales channels. Especially important for startups to facilitate their growth. • Access the LMTC's technology for testing/experimentation, enabling the possibility to integrate technology/products. • Corporations want to connect with the LMTC's partners and high-level connections. |
| Industry and market knowledge | <ul style="list-style-type: none"> • Get insights about: what is going on in industries, where competitors are headed and other players' needs to use in product development. • Get insights to increase market knowledge, especially in market niches, and find potential market demand. |
| Financial incentives | <ul style="list-style-type: none"> • Licensing deals and gains from purchases from the LMTC are most frequent. • Mainly startups highlight this need, interested in both investment/funding as well as future payments such as the previous bullet. • Corporations want access to the LMTC's R&D expenditures. |

Key Success Factors for Collaborative Innovation in Silicon Valley

| | |
|------------------------|---|
| Prerequisites | <p><i>Goals and objectives</i></p> <ul style="list-style-type: none"> • Clear goals and objectives from the beginning to avoid wasting resources. <p><i>Communication prerequisites</i></p> <ul style="list-style-type: none"> • Know where to turn/who to speak with, e.g. through dedicated points of contact. <p><i>Competence prerequisites</i></p> <ul style="list-style-type: none"> • Corporations want: high-level competencies, strong technology skills as well as effective people. Competencies in the collaboration should also be centralized within an organization. • Startups want: the LMTC to be a thought leader and its input should involve more parts than just R&D. <p><i>Other prerequisites</i></p> <ul style="list-style-type: none"> • Available track records of successful collaborations. • Respect from the LMTC for the counterpart's time. • High deal-making speed from the LMTC, e.g. facilitated by involvement from high-level executives. • Corporations want: to create trust fast as well as the LMTC's brand to be positive. • Startups value: easy interfaces of the LMTC to not lose speed as well legal aspects. <p><i>Strategic alignment</i></p> <ul style="list-style-type: none"> • The LMTC needs to be relevant from a strategic standpoint. • Common value proposition to the customers, e.g. same product category. • Corporations value an alignment in product strategies. • Startups want: the LMTC to be aligned around their interests as well as an understanding of, and ability to, be aligned with the LMTC's top priorities. <p><i>Technology alignment</i></p> <ul style="list-style-type: none"> • Good intersection points where technology makes sense and easy means to connect/merge technology and products. • Startups want to integrate technology/products to get customers and raise sales while corporations want to integrate to create superior products. |
| Technology development | <ul style="list-style-type: none"> • A collaboration should result in new ideas/products, i.e. creating better designs or new features that enhance the customer experience. • Joint development teams and user testing are valued to create superior products. • Corporations also want: to share R&D resources, thorough testing of research as well as practical and revolutionary input from the LMTC. |

6 PHASE THREE: THOUGHTS AND WAYS OF WORKING TO FULFILL THE MAPPED NEEDS

This chapter presents the findings from the empirical research process regarding the interviewed companies' thoughts and ways of working with the needs in the previous chapter. The process is briefly described before the results are presented.

The gray area in Figure 10 below illustrates this chapter's position in the research process.

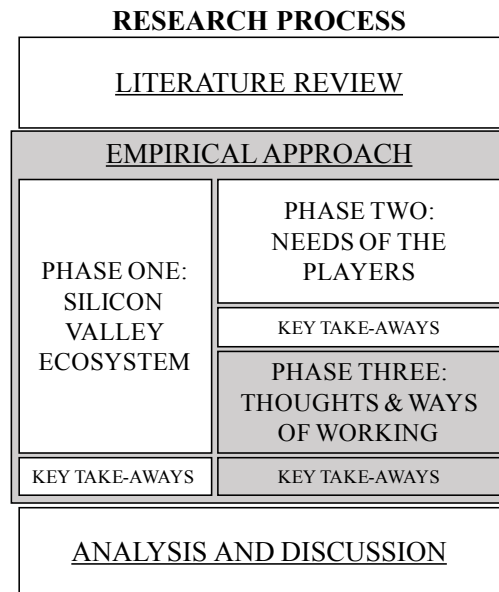


Figure 10. Current position in the research process.

The data in this research phase solely originates from interviews, not supplemented by literature or the authors' opinions. The presented empirical data is the authors' interpretation of the respondents' answers during the interviews. Since the authors did not have the possibility to validate these interpretations, there is a risk that this data is improperly interpreted.

Throughout the research process, a lot of advice came up regarding which companies to study. Regarding selection, criteria were created that a potential interview company, or rather function within a company, had to fulfill. The interviewed companies needed to be a larger corporation, be present in Silicon Valley and be characterized by a technology business. Furthermore, both the company in general and its functionality needed to be "successful on a generally recognized level". Last of all, the interviewed companies also needed to collaborate, within the relevant functionality, with the types of external players of relevance for this master thesis.

Interviewing differentiated companies was assumed to create insights from a larger spectrum of instances and thereby increase the value of the gathered data in the end. The authors also sought to always find interview subjects with some form of

managerial position on a higher level, to ensure that they had good insights into the areas of the questions and increase the quality of the answers.

The final selection of interviewed companies is presented in Figure 11.

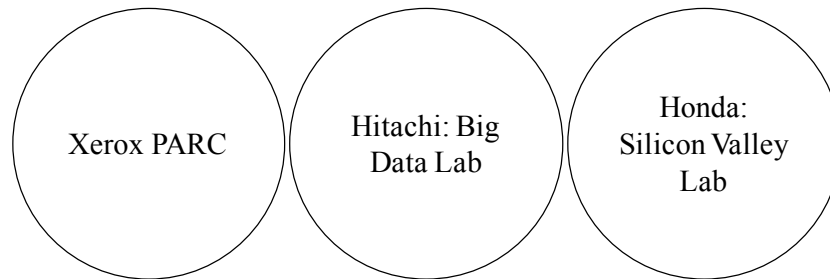


Figure 11. Selected companies.

SAP, RocketSpace and BootstrapLabs were interviewed as additional companies. The nature of these interviews was rather different compared to the three companies above. They did not have to fulfill the above mentioned criteria, with the reason that they were to be included as interviewed companies to generate additional insights from a broader perspective.

From the needs in Chapter 5, interview questions especially relevant to ask a company and its functionality were created. This was based both on the frequency in which they came up during the mapping of the needs as well as what potential the answers could have in regard to practical value. Depending on the specific company, a selection of the interview questions was made to create maximum value of the limited time during the interviews.

To understand the interviewed companies' individual insights, each company is presented separately. The data was structured under each of the subtopics found in the previous research phase, as an attempt to make the reader more able to connect results for each company in this phase to the needs in the previous one.

A full explanation of the selection of interviewed companies, interview questions as well as how the empirical data was compiled, can be found in Appendix A.6.

6.1 Empirical data

The following sections will present findings from the three interviewed companies as well as the main insights from the additional companies.

6.1.1 Xerox PARC

To briefly describe this company, the following quote was gathered from Xerox PARC's website:

"PARC practices an open innovation business model with clients such as Fortune 500 and Global 1000 companies, startups, and government agencies and partners. We provide custom R&D services, technology, know-how, innovation best practices, and intellectual property." (PARC, 2012)

Xerox PARC is a commercial technology developer and incubator, owned by Xerox but not functioning as a lab for them. The company invents technologies, showcases that they work in a lab or through prototypes and then commercialize them together with, e.g. startups or Fortune 500 companies. Specific products toward the end-market are not the main goal, but rather technologies and services that improves situations for the company's clients. The company regards its business model as rather different in this aspect and highlights its partner dependence since it is selling development services in commercialization partnerships. The company collaborate with, e.g. governmental and private companies, corporations and startups, especially those who are quite financed.

External access

Access to customers

The aspect of giving collaborators access to Xerox PARC's sales channels is regarded as rather strange, because of its business model. People often talk in general about that companies are helping external partners with sales channels and that it works, but it does not. Xerox PARC has not seen it function anywhere, stating that sales channels in large corporations do what they are supposed to do, i.e. sell the company's main business. The external player needs its own merits first. For a startup, it is a very slow process to access Xerox PARC's sales channels, mainly since the company is the wrong entity for that. However, if it is a good customer, the company might make some introductions but tries to, at the same time, be clear that it is not what it usually does. Xerox PARC has a network of customers and connections on different technical positions in other companies. However, people are usually not that interested in connecting with startups through Xerox PARC.

Access to technology

In comparison to access to customers, giving external partners access to technology is in fact Xerox PARC's business model. The company sells the technology it develops and therefore believes that this aspect is not a challenge. Xerox PARC has to share its technology on a high detail level and make sure it is done properly so that its partners can leverage maximally on the technology. Therefore, the company sees itself as different compared to other companies that normally share technology on a more overall level. The company states, however, that it is important not to share too quickly in a collaboration, since it is the IPs that result in a profit. Openness is regarded as crucial, but at same time, getting paid is as well.

Industry and market knowledge

The customers that contact Xerox PARC often have better insights into their respective market than Xerox PARC itself. The company's researchers continuously come up with new ideas. It is important not to spend too much time on ideas without checking with the market, so Xerox PARC tries to utilize market data for this.

The company consists of around 200 researchers in almost all industries and has a dependence on external partners to understand market dynamics. Xerox PARC is open to share knowledge and sees itself as generating value toward startups from an information gathering perspective by leveraging its network and brand.

Prerequisites

Goals and objectives

Xerox PARC sets both predetermined goals and works agile by changing objectives during the collaborations. Nevertheless, the company always sets a frame for what the collaboration should include, but sometimes just as a first step. In a practical sense, this could be described from a situation where Xerox PARC sees that a project is technically possible, but that the exact rules of the collaboration is too hard to decide on upfront. Often customers have predetermined needs that Xerox PARC needs to fulfill and the company gets paid in regard to if the goals and objectives are achieved. Normally, questions that are brought up before entering a collaboration are regarding the objectives, the risks and how to manage the project in a satisfactory way for both collaboration partners. In the US, contract negotiations are very extensive.

Communication prerequisites

Communication is extremely important in a collaboration and should be stringent and clear. Communication is probably the biggest reason for relationships that have not developed in a satisfactory way. This could depend on many various aspects such as frequency, content, positioning, and culture etcetera. Communication regarding business aspects is handled by account managers, who are also ultimately responsible for making sure that the communication toward collaboration partners is satisfactory. Xerox PARC always has a project leader that is the dedicated points of contact in a project. The company sets up rules for how often, in what way and to whom, contact should be directed. The project leader is always carefully chosen to be suitable for the specific project. Xerox PARC's culture is very entrepreneurial, which often is contradictory to stringent processes. This kind of communication is, therefore, hard to manage in the company. Xerox PARC will never introduce an extreme way of communication that inhibits its researchers, but change the collaboration's process rather than the company culture. It is regarded as important to have enough flexibility to change the communication.

Competence prerequisites

As mentioned before, the company's partners generally know their market better than Xerox PARC. Therefore, it focuses on selling technology rather than market knowledge. If it, e.g. exists royalties on the usage of a sold technology, Xerox PARC has its own interest in making sure that the customer can make efficient use of the technology and protect it on the market to be able to receive greater profits.

Xerox PARC also states that it offers more than just development in the relationships that have worked out the best. It is in the company's own interest that the things a project delivers are introduced to potential customers that Xerox PARC has in its network. As an example, many external partners want to connect with one of Xerox PARC's partners. The company states that it has credibility and that its partners are often interested in talking to external players that Xerox PARC introduce to them. This could be very valuable, e.g. for a startup.

Toward external players that are not entirely sure what they want to do or achieve, Xerox PARC often sets up a workshop with people from both parties. This is kind of

a formal process that often results in interesting technology no one would have thought about otherwise. Xerox PARC also tries to create additional value by using people with different backgrounds in projects to bring in new input. This is also done continuously in specific discussions or parts of a project. When choosing the right people for a project, availability, interest and competence are stated as vital aspects to evaluate.

Other prerequisites

Xerox PARC regards itself to have a low deal-making speed, but state one way to increase it. One of them is to let the external partner sign a contract where they are not entitled to any material, which lowers the risk for Xerox PARC. Different aspects connected to information and IPs are regarded as the most complex part of a negotiation and includes many steps in the managerial ladder. The company also has committees that decide if different IPs can be released and if the external partner is not a startup they have to do the same. But since Xerox PARC is an independent and smaller company, it is able to take many decisions internally, which make those processes faster.

To get people on a higher level involved in different collaborations is regarded as facilitated by Xerox PARC's flat organizational structure. The CEO reports to the parental company Xerox, and below him there are six lab managers who are very involved in all commercial projects in their respective labs. Hence, the senior support is there by default. Since the company's researchers are highly reputable, credibility is created as a result of that. What further facilitates this aspect is that Xerox PARC has a small team and open door policy.

In regard to track records, Xerox PARC believes its brand to be very reputable and that almost everyone in the industry knows that. The company also talks openly about certain customers and cases to present success-stories of previous collaborations. To make sure that external players can relate to some of the company's previous contributions, Xerox PARC also uses its history since the company has "created almost everything that has to do with computers". Regarding trust and openness, Xerox PARC state that non-disclosure agreements, NDA, are never signed in the startup and VC world, since these parties see it as a waste of time. Large corporations, however, almost always need to do it to be able to share information and in these circumstances they are essential tools. The company does not have any formal processes regarding trust and openness but focuses on being a trusted advisor to all customers. If you get perceived as a too aggressive salesperson, focusing on your own self-interest, you will not achieve this. Xerox PARC also thinks that it takes a long time to build relationships based on trust and openness. It is also important to have senior relationships to be able to be included into valuable prioritized projects. These senior relationships need to be on multiple levels, but if there is not an interest from employees further down in the pyramid nothing will happen anyway. In a collaboration, the people with deep technical knowledge often create good relationships fast since they, due to a similar set of skills, are able communicate in an efficient way. Xerox PARC also highlights that the people the company recruits are extremely competent, which lower the time they need to create credibility for their competence in a project.

Technology Development

The fact that Xerox PARC's operations lies somewhere between pure academic research and product development is highlighted, and that there is always an attempt to deliver things containing both parts. Research sharing is a positive thing according to the company, stating that everyone should do more of it. The company's business model is to share research and get it out through other channels than its parent company. This is regarded as extremely valuable, both in regard to make money on a continuous basis and find blockbusters, as well as motivating the company's researchers and educating them about commercial activities. Compared to a regular corporate research facility, this aspect cannot be overestimated according to Xerox PARC. The gap between research and development in an internal R&D-center is stated as highly relevant to take into consideration. If you, as a researcher, are looking more long term, you often get irrelevant by the product-side of the company.

Xerox PARC does not have any product teams or product owners and its researchers are therefore able to go directly to the market and ask questions without anyone stopping them. This approach is regarded as vital for researchers to actually understand what they are working with and how it is relevant to the market. Xerox PARC argues that it can definitely be better in this area, but at the same time sees itself as doing it better than most other companies. The company also states that you, as a researcher, will probably be better in supporting the product side internally if you are able to actually go out and interact with markets. It is connected to design thinking, continuously interacting with the market and not just generate ideas inside, which is done constantly anyway.

6.1.2 Hitachi Big Data Lab

To briefly describe this company, the following quote was obtained by mail from Hitachi:

"The Big Data Lab (BDL) in Santa Clara, California was established in June 2013 and is part of Hitachi Global Centers for Social Innovation. The mission is to create innovative solutions leveraging big data & advanced analytics technologies, as well as accelerate Hitachi's big data businesses through the creation of key IP, proof of concepts and showcases. Leveraging Hitachi's technologies, the Big Data Laboratory will contribute to the realization of Hitachi's vision of 'Social Innovation' and establish Hitachi as a leader in big data. Analytic projects are currently under way in Mining, Automotive, Power, IT, Manufacturing and Oil and Gas industries." (Gardner, 9 April 2015)

The BDL is trying to work from a strategic perspective that aligns the output from the lab to all parts of the Hitachi corporation. It is not the researchers in the BDL who are setting up or defining business opportunities. Instead, it is the rest of Hitachi funnels the lab with problems to solve, and then use the IPs from the solutions in other areas as well. Also, the BDL takes Hitachi's technology and work with external partners and customers. To achieve this, Hitachi researchers are sometimes placed in other organizations. The employees in the lab are all researchers who are working full time at the lab. Hitachi plans on increasing the lab to not only contain scientists and right now the lab incorporates people from all Hitachi's parts, both according to industries

and geographical places, into different project teams. To facilitate this way of working, the BDL uses virtual teams.

External access

Access to customers

Hitachi would not just provide a customer list for the collaboration partners to use to contact its customers. Instead, Hitachi will approach its customers jointly with the collaboration partner. The company's approach is to have a clear go-to-market strategy together with its partners. Hitachi embraces the partners if they are a part of a solution and if the partner is small, for example without sales representatives, their product might be presented to customers that Hitachi has.

Access to technology

Hitachi does often co-develop and when doing so, intellectual property, IP, sharing is always regarded as tricky. This requires the IP conditions to be defined before entering the collaboration. Hitachi is very flexible regarding the setup of a collaboration structure, still figuring out a perfect model. Nevertheless, Hitachi excludes collaboration with partners that only want IPs. The company also states that it is not only its own input in a collaboration that constitutes the IPs in a collaboration, but rather the combination between both algorithms and data.

Industry and market knowledge

In general, Hitachi is by nature an open and collaborative company, sharing knowledge to partners and trying to be open to them, which often results in openness from the partner as well. If it is not open to its partners, it would limit the leverage on the collaboration. Nevertheless, it is not necessary to be open about exactly everything. A corporation needs to keep its competitive advantage and keep small parts of the collaboration as a company secret.

Financial incentives

Hitachi is not paying its collaboration partners a fee for entering a collaboration. Instead, the partners get access to top-notch talent, resulting in a creation of a product or service. The reason for this is that Hitachi want to invest together with its partners in a go-to-market strategy, rather than just a monetary exchange. It also matters if Hitachi collaborates with a startup or a corporation. When collaborating with a startup, it has to be with an innovation perspective, while a collaboration with a corporation needs to focus on if the partner is going to give Hitachi a multi-million dollar opportunity.

Hitachi's BDL gets pressured to put money into startups, but it does not have a pool of money. The only way it is supporting startups with money is through M&As. The only type of collaboration partners that Hitachi supports with financial incentives is the universities.

The approach of not supporting partners with money origin from that Hitachi wants to build long-term relationships, where monetary fee is not a solution.

Prerequisites

Goals and objectives

Hitachi thinks that it is very important to set clear goals and objectives for a collaboration in the BDL. A corporation does not have the possibility to spend time and resources on a project if the goals and objectives are not aligned. For Hitachi, it is important that the collaboration has a clear use case. Depending on how interesting the problem is, BDL may partner with someone during a longer time period. Historically, research was done for research's sense, but nowadays it is more aligned with Hitachi's goals and objectives, connected to the company's overall strategy.

Communication prerequisites

BDL tries to have a few dedicated points of contact, but does not have a specific group for that. The company knows that a small number of contacts is important. The persons that make most sense in the specific collaboration will be contact persons. Also, this person does not have to be physically present, but could handle the communication in a virtual way. This model is regarded to work for BDL and its virtual teams, but might not work in other companies that are more focused on using dedicated ones. BDL also has coordination meetings since many people are interacting with the same collaboration partners.

Competence prerequisites

BDL is focusing on involving different competencies in every collaboration. Because of Hitachi's involvement in a broad spectrum of industries, different actors can contribute to a collaboration. In the past, collaborations were more focused on pure research, but today the collaboration is more tied to specific goals and Hitachi tries to see a broader picture that is more focused on the business side.

Other prerequisites

The respondents at the BDL could not recall that any collaboration were lost because of a slow deal-making speed. This might origin from that the BDL has one contact person for each collaboration, who forces issues if needed. It might also depend on a high availability of money, which makes the business unit more agile. Furthermore, the Hitachi organization in Silicon Valley does not have that many layers in the organization, which facilitates decision-making.

Hitachi BDL does non-disclosure agreements for most of its collaborations, whenever it does something that involves sensitive information. When collaborating with Hitachi, the partner also gets to see Hitachi's research facilities. The reason for this is that Hitachi BDL feels a need of being open, so that the partner could be open back. Hitachi needs to be open to be able to leverage on what is going on in the industry. The more open and collaborative it is, the further the project goes. A corporation will surely miss out on opportunities if it is not open during collaborations. Furthermore, Hitachi BDL is focusing on having a clear view of how to build a collaboration and what happens with the outcome of it, e.g. IPs, so that the partner does not get the wrong understanding when starting a collaboration.

Technology alignment

BDL gets many invitations regarding collaborations from potential partners. Because of this, the lab has the possibility to be particularly selective when choosing whom to collaborate with. All suggestions are not good suggestions, and a collaboration for Hitachi should be aligned with many different parts of the Hitachi corporation. The collaboration does not necessarily need to be aligned with Hitachi's own technology, but the goals of the collaboration should be aligned with the company's strategic goals. Therefore, it is not a prerequisite that the collaboration partner actually uses Hitachi equipment as long as the area of the collaboration is relevant from Hitachi's standpoint, developing its knowledge in its industry segments.

Technology development

Hitachi BDL does not only create proof of concepts. Instead, it focuses only on those collaboration possibilities that have the potential of becoming a real product or service. Every R&D project needs to have a tieback to a part of the Hitachi organization. All projects need to be vetted from a business point of view regarding why they should be done, resulting in a more difficult way to get sponsored for a project.

Concepts are proved by doing a scientific check with domain experts and focus is after that on implementing the solution.

Collaborations with universities are generally a rather different model. These collaborations, such as sponsoring a professor, are often longer compared to with companies where the collaborations involve shorter periods before implementation.

Hitachi BDL is not that keen on sharing research if trying to build something with a financial goal in it. On the other hand, it is keener on sharing research the longer the collaboration is. Sharing research in a short collaboration would result in just giving away the product or IP, but in a longer collaboration it is believed to be valuable to give away some IPs or products. The Hitachi BDL does not want short-term collaborations, but rather to invest in co-innovation projects where there is a long-term perspective.

Hitachi BDL believes that it learn something every time it is doing projects in data systems, creating a framework that it could use in the next creation of IPs. The team that Hitachi BDL has built is regarded as exceptional and the lab states that everything it works with results in superior products or services. The collaboration partners turn to Hitachi BDL when the market does not have products that satisfy their needs. By co-creating new products, it makes sure that the output is superior to the market alternatives. It is often hard to define if a product is superior to another, but Hitachi BDL has several years of experience and industry knowledge, why it is a matter of extending those approaches to create superior products or services.

Hitachi BDL has recruited a lot of "seed people" that attracts brilliant people. By doing a lot of relationship hiring, the lab creates a good critical mass that further attracts people, who together make Hitachi successful.

6.1.3 Honda Silicon Valley Lab

To briefly describe this company, the following quote was gathered from Honda Silicon Valley Lab's website:

"Honda Silicon Valley Lab (HSV) is an open innovation lab. HSV serves as the catalyst to accelerate Honda's global information technology (IT) research and development (R&D). [...] HSV partners with talented entrepreneurs and technology companies to create cutting edge products and services for a superior customer experience. HSV is located in the heart of Silicon Valley: Mountain View, CA." (Honda R&D Americas, Inc.)

HSV, started in 2003 and employs 50 IT and car engineers. Up until 2011, the lab was functioning as a VC-unit aiming to connect Honda with the startup industry in the region. HSV was searching to find new upcoming technologies to accelerate, aiming to incorporate it into Honda's product portfolio. By financially supporting startups, Honda created collaborations between startups and its internal R&D teams. In 2011, HSV was evaluated which resulted in a change of direction. The previous VC mentality caused too many internal problems, why today's mentality of creating strategic partnership, as described above, was implemented. The lab generally looks for external partners within the automotive industry that can contribute to innovation and make Honda's products superior. HSV is mainly focusing on collaboration with startups, but occasionally also with reputable large corporations. The amount of collaboration with universities is limited, due to the fact that the universities' research is at a too premature stage. Research there is regarded to be done for the sake of research rather than for launching products, therefore considered as not applicable to the development timeline of Honda's product portfolio.

External access

Access to customers

HSV is not really looking for new products but rather for partners that could innovate Honda's current product portfolio through co-creation. The purpose with the lab is to build rather than sell products. Therefore, it has not generally helped partners get access to its customers.

Access to technology

HSV is trying to align external technology with Honda's products without changing too much. The external players' incentives are to achieve products or services that can be combined with Honda's. To facilitate this, HSV is inviting partners to its facilities, aiming to co-create new solutions. An external partner that does not have cars as its primary market, but still could provide a use case for Honda is still highly interesting. In cases like this, Honda either licenses or pays for their products or services.

Industry and market knowledge

The HSV does not have a formal process or format for sharing relevant knowledge, but knowledge is transferred to its collaboration partners, often through discussions.

Financial incentives

HSV L's attitude toward financial incentives for partners is dependent on what its partner requires and its own preferences regarding the specific collaboration. The company is willing to pay for the technology it wants, but at the same time it is not certain that the collaboration partner is asking for financial incentives. When HSV L pays for the collaboration output, either through licensing or by buying the product, the lab does not feel the need to take equity from its partners. In some cases, the partner does not have the possibility to carry through their idea to make it applicable to cars, and in those cases, HSV L supports the partner with financial support. Being a first hand supplier to Honda involves a lot of responsibilities and resources though. Therefore, an additional way in which HSV L assists startups is by inviting Honda's first hand suppliers to look into a startup's technology and somehow license it or incorporate it, then supply it to Honda, creating a three way partnership.

Prerequisites

Communication prerequisites

The HSV L is very transparent in general and as long as there are NDAs, it informs its collaboration partners about strategic plans and goals. HSV L recently changed location to have space for a "collaboration garage", in which HSV L will work together on the car side by side with external partners. This was meant to reduce physical distance and eliminate that kind of barriers, something HSV L previously felt a need for and regard as vital during collaborations.

HSV L has created a development studio aimed toward application developers. For example, partners that are building applications for smartphones might have a use case in the car industry. HSV L tries to help these partners to build applications that could be used in its cars. It invites these partners to test their applications on Honda cars and together discuss improvement points for the application.

The HSV L is a window to the entire Honda corporation, giving partners good possibilities to showcase ideas. If a partner consists of a few people, HSV L could incubate them at its facilities. The lab's scouts, mentioned further under *Technology alignment*, are the ones who first interact with external partners and the ones responsible for the partners' business development as well as being contact persons.

Competence prerequisites

It is often that many different departments are involved in a collaboration. If it is necessary and possible, HSV L gladly makes introductions for partners to other departments within the Honda corporation, sometimes by arranging meetings for them to meet in person.

Other prerequisites

It is regarded as difficult to measure deal-making speed in a collaboration, but Honda has made sure that HSV L has authority to make necessary decisions that affect partners. HSV L does not, in general, have to get confirmation from high-level authorities at the headquarter. At the same time, the lab is supported by many levels of executives who often visit HSV L. This results in that many of the collaboration

Key Success Factors for Collaborative Innovation in Silicon Valley

partners get the possibility to meet executives and showcase their products to them, providing a sense of high-level support from the Honda corporation.

Silicon Valley is a small community where one bad collaboration experience is devastating for someone's reputation. There are no second chances, why HSVL is prioritizing taking care of its partners. The lab also shares the outcome of a collaboration, rather than keeping all the gains to itself. During a collaboration, many sensitive topics are often discussed, why NDA is a requirement for a collaboration.

Technology alignment

The main objective of the HSVL is to align solutions based on new technology with Honda's long-term strategic plans. To create knowledge of the latest technological breakthroughs, the HSVL has scouts responsible for external networking. These experts know Hitachi's needs and what technology that could potentially work with them. When finding relevant external partners, discussions and brainstorming sessions are commonly used ways to find solutions that fit HSVL's needs.

Technology development

Silicon Valley is an IT-mecha, not a car-mecha, which makes it difficult for Honda to contribute only with its normal competitive advantages. Therefore, HSVL has decided that resources and a high-speed process are two vital characteristics that need to be fulfilled for attracting collaboration partners.

Compared to the rest of the Honda R&D, that is more closed innovation and only works with some carefully chosen suppliers, the HSVL is an open innovation lab. It is a big difference between these two different ways of working. The spirit of the lab is to always include external partners for co-creation or co-innovation. The mentality is that the HSVL only borrows ideas and products from external partners to innovate Honda's existing products. The partners are the most important asset and therefore all agreements and everything else is built around them based on this spirit. For example, HSVL craft the joint development agreement upfront for a mutual comfort and to assure that spirit. Usually, HSVL does not demand exclusiveness from its partners, meaning that the partners are free to collaborate with other parties as well. One of the objectives for the HSVL is that if a partner comes with an idea, before going to other parties with the same idea, then Honda should be able to launch that product to the market ahead of its competitors. Therefore, speed is a really important aspect in a collaboration. To ensure this, HSVL sometimes invites a development team from the headquarter in Japan to meet the partner. This is done as early as possible to accelerate the process. Another way to ensure high speeds is that HSVL provides the partners with necessary employees to meet the requirements of a fast launch. If HSVL does not already have the required human capital, it makes sure that the partner could hire suitable competence at the expense of Honda.

HSVL is only creating the foundation of a product or service before it is handed over to the Japanese teams that continue the development process. Therefore, it is difficult for the lab to assure that the final products are superior to the existing ones. However, the Honda corporation understands the importance of Silicon Valley and an internal collaboration between HSVL and the headquarters' product development teams

ensures superior products. The latter understands the priority, that importance of speed, that the value HSVL creates is superior to other companies' products and that it should be introduced as soon as possible. That is the kind of mindset that HSVL has been able to build over the years.

6.1.4 Additional companies

This section presents insights from three additional companies. These interviews differ compared to the previous ones, since they were not conducted with people involved in specific innovation labs and the gathered data therefore has another type of scope and detail level. This section is meant to be a complement to previous sections, contributing to a more expanded view on different players' thoughts and ways of working in regard to the mapped needs. The three additional companies were SAP, RocketSpace and BootstrapLabs. SAP is a large multinational software company, while the latter two are focusing their businesses on facilitating startups' growth. It is only the most applicable findings of this master thesis that are highlighted, while the complete gathered data is found in Appendix A.7.

According to SAP, an important prerequisite is that the collaboration is a win-win situation for both parts. An example is that the costs, although not necessarily monetary, should be shared. For a collaboration to be fruitful, both an executive support and one single dedicated person that drives the collaboration is needed, otherwise there is a risk that no actions will be taken.

An important aspect concerning the facilitation of startups is regarding location and business environment. BootstrapLabs is located in a busy environment with a high flow of activities, which is part of its developed model for facilitating startups' growth. Through its co-working space, startups can be closer to other entrepreneurs and potential investors, but also closer to potential customers. According to BootstrapLabs, a mistake that large corporations tend to do while hosting startups, is to create an inappropriate and isolated environment. Realizing and managing this, as well as knowing what a corporation should offer a startup, is crucial to create a better value proposition toward startups. This leads to that the corporations cannot motivate why startups should collaborate with them instead of with its rivals.

Furthermore, BootstrapLabs discussed a fundamental misinterpretation regarding that it is common for corporations to think that it is possible to compete with money in Silicon Valley. In reality, it is nowadays almost impossible to compete with money because of the high presence of capital in Silicon Valley and it is, therefore, vital to find a unique value proposition. Even VC-firms need to offer more than just financial incentives. For example, RocketSpace is focusing on startups that already have some investors and are growing their businesses. RocketSpace is not taking equity from its companies and states that no startup actually wants to share its equity with external partners. As a result of this, RocketSpace argues that it attracts the best startups from all over the world. Since the company does not take any equity, it also does not really care what goals and objectives its customers have, which yields an unbiased position. RocketSpace is also creating educational, community and network paths for the startups and organizes so that professors or technical experts are coming to talk about their expertise and educate the startups on how to grow their businesses.

6.2 Key Take-Aways

To sum up the main aspects of this chapter, the most vital statements from each of the three interviewed companies are presented in Table 4.

Table 4. Key take-aways regarding thoughts and ways of working.

| TOPIC | KEY TAKE-AWAYS |
|-------------------------------|---|
| External access | <p>Xerox PARC: Offering sales channels is strange since it is not its business model. However, this “never works” in reality. The company sometimes makes necessary introductions within its network. Offering access to, and sharing, technology is, in fact, the company’s business model. However, it is important to not share too quickly in a collaboration.</p> <p>Hitachi BDL: Approaches customers jointly with collaboration partners and might present products to Hitachi customers if it is part of a bigger solution. IP sharing is tricky and conditions should be defined early in the process. Excludes potential partners that just want IPs.</p> <p>Honda SVL: Not really looking for new products but for partners that could innovate Honda’s products through co-creation. Does not focus on offering access to customers since it aims to build more than sell. Trying to align external technology with internal products.</p> |
| Industry and market knowledge | <p>Xerox PARC: Customers often have better knowledge. Important to continuously interact and test ideas against the market.</p> <p>Hitachi BDL: Tries to be open to partners and share knowledge. Not being open limits the possibility to leverage on the collaboration. However, it is not necessary to be open about everything.</p> <p>Honda SVL: Knowledge is transferred mainly through discussions.</p> |
| Financial incentives | <p>Xerox PARC: N/A</p> <p>Hitachi BDL: Wants to build long-term relationships and monetary fees are then not regarded as a suitable. Not just paying for a collaboration since the partners get talent and knowledge. Wants to invest together in a go-to-market strategy, rather than pure monetary exchange. It supports startups mainly with money through M&As.</p> <p>Honda SVL: Own preferences and the partner’s needs matter. Pays for collaboration output through licensing or purchasing technology and does not take equity from, e.g. startups. If it is needed, it supports partners financially to carry through an idea</p> |
| Prerequisites | <p>Xerox PARC</p> <p><i>Goals and objectives:</i> Sets both predetermined goals and works agile.</p> <p><i>Communication prerequisites:</i> Communication is difficult to handle and should be stringent and clear. Project leaders are dedicated points of contact in a project. Sets up rules for how often, how and to who contact should be directed in a project.</p> <p><i>Competence prerequisites:</i> Offers more than just development and tries to involve people with different competencies in projects.</p> <p><i>Other prerequisites:</i> Aspects about information and IPs are complex in negotiations. Involvement of high-level people is facilitated by a flat organizational structure. Track record is mainly made up of certain cases, word of mouth and the company’s history. Trust takes time to create and NDAs are never signed among startups/VCs but always for corporations. Senior relationships are important to be included in valuable projects.</p> <p>Hitachi BDL</p> |

Key Success Factors for Collaborative Innovation in Silicon Valley

| | |
|------------------------|--|
| | <p><i>Goals and objectives:</i> Important to set clear goals and objectives and that the collaboration has a clear use case. The goals need to be aligned with the company's overall strategy.</p> <p><i>Communication prerequisites:</i> Tries to have a few dedicated points of contact, which is regarded as important. The persons that make most sense function as contact persons.</p> <p><i>Competence prerequisites:</i> Different parts are involved in a collaboration.</p> <p><i>Other prerequisites:</i> Tries to have a high deal-making speed through: a few contact persons, high availability of money facilitating agile processes and a flat organizational structure. NDAs are used in most collaborations. Wants to be open to increase the value of, and leverage on, the collaboration. Tries to present a clear view toward partners on what happens with the collaboration outcome. A collaboration should involve many parts of the organization.</p> <p>Honda SVL</p> <p><i>Communication prerequisites:</i> Transparent in general and shares information under NDAs. Created a "collaboration garage" to facilitate physical collaboration and ease communication. The lab is a window to the Honda corporation, giving partners possibilities to showcase ideas. The ones first interacting with the partner is responsible for the business development and acts as contact persons.</p> <p><i>Competence prerequisites:</i> Involves many different parts of the Honda corporation in collaborations.</p> <p><i>Other prerequisites:</i> Has authority to make necessary decisions, which increases the deal-making speed. Executives often visit, which provides a feeling of high-level support to partners. One bad collaboration experience is devastating for the reputation. There are no second chances and it is vital to treat partners well. NDAs are a requirement for a collaboration.</p> <p><i>Technology alignment:</i> A main objective is to align solutions based on new technology with Honda's long-term strategic plans. Scouts are used to find these possibilities.</p> |
| Technology development | <p>Xerox PARC: Research sharing is positive, e.g. since it motivates and educates researchers, and more companies should do it. Researchers can go directly to markets without products team preventing them. This increases their understanding of what they are working on and its market relevance.</p> <p>Hitachi BDL: Focus on projects with potential for real products or services. All projects need to be vetted from a business point of view. Scientific checks with domain experts are vital to prove concepts. Focuses on collaborations with a more long-term perspective. By co-creating new products, it makes sure that the output is superior.</p> <p>Honda SVL: Resources and high-speed process are vital to attract partners. Focuses on open innovation, including partners for co-innovation. Does not demand exclusiveness from partners. Development teams are sometimes invited from the headquarter. Partners might receive necessary human capital. Collaborates tightly with the headquarters' development teams, handing over ideas and prototypes. Vital that the headquarter understands the priority, needed speed and value the lab creates.</p> |

7 ANALYSIS AND DISCUSSION

This chapter presents the authors' analysis and discussion regarding the findings. The chapter is divided in six distinct sections: *General opinions*, *The Silicon Valley characteristics*, *Bringing the three phases together*, *Intersections between the three phases*, *Additional insights* and *Criticism of the research process*.

The gray area in Figure 12 below illustrates this chapter's position in the research process.

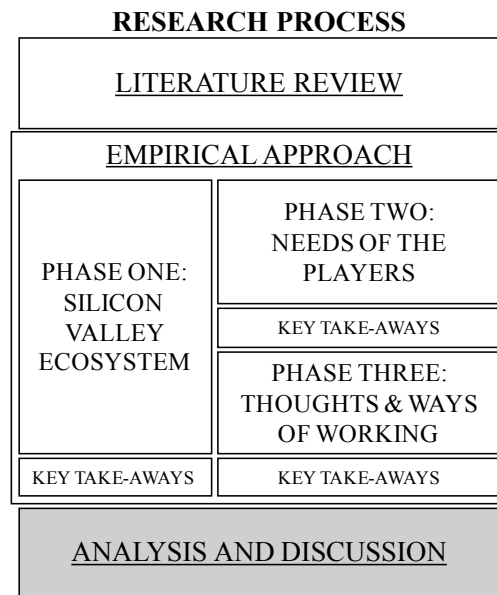


Figure 12. Current position in the research process.

The analysis and discussion were merged in this chapter with the purpose of reducing repetitiveness, making it easier for the reader to understand the information. As mentioned before, the reviewed literature was used mainly to complement the empirical findings and the true emphasis was on the discussions and reflections regarding the gathered empirical data.

7.1 Individual overview of the three phases

This section presents general thoughts about the three phases individually.

7.1.1 Phase one: The Silicon Valley ecosystem

Even though the empirical data was clustered in overall topics without any influence from the reviewed literature, it was clustered similar to the characteristics of the Silicon Valley ecosystem in the reviewed literature. The gathered data from the interviews in this research phase originate from a rather large group of different individuals, but the answers were still homogenous and within the same overall topics.

In general, collaboration is frequently mentioned in both the empirical section and the reviewed literature, including collaboration between all partners in the ecosystem, such as startups, corporations and universities. One prerequisite for a large extent of collaboration in the region, that is commonly occurring, is the critical mass and mix of all types of players that exist.

7.1.2 Phase two: The needs of the players in the Silicon Valley ecosystem

Comparing the mapped needs for both startups and corporations, it is clear to the authors that there are not any major differences between the two players. The authors suspect that the differences are more dependent on specific circumstances connected to a specific case, rather than general differences between the players. The most frequently mentioned aspects for each player are similar. Since the clustering was done in an extensive way by the authors, the fact that only two aspects had to be classified as *Others* could imply that respondents were in some way quite homogenous in their responses. This strengthens the belief that the mapping covered the most vital aspects.

The reviewed literature highlights that partnerships in different forms ease R&D by allowing a pooling of resources to achieve shared objectives, which is also strengthened by corporations. According to the reviewed literature, R&D is facilitating innovation and companies are also assumed to not survive without collaborating with others, something the empirical data backs since companies cannot in fact be the best ones in all areas.

7.1.3 Phase three: Thoughts and ways of working to fulfill the mapped needs

It is regarded by the interviewed companies that co-innovation accelerate processes and save time and money, which both corporations and startups highlight as a vital need. The studied companies have a close connection to Bhalla's description of goals with co-innovation mentioned in the reviewed literature. Honda is focusing its Silicon Valley lab on *generation*, aiming to generate new ideas that could be used to develop existing products, meanwhile Hitachi's lab is focusing more on the *creation* of entirely new products. Xerox PARC is mostly focusing on *refinement* when collaborating with external partners.

7.2 The Silicon Valley characteristics

This section aims to analyze and discuss the Silicon Valley characteristics from phase one, before applying them to the context of the findings from phase two and three.

The mindset in Silicon Valley is one thing the authors truly believe is a vital characteristic of the ecosystem. The way people are working in a spirit that is extensively about helping others out as a primary concern is emphasized in the reviewed literature, but the authors also discovered it during the research process. Handling emails as fast as possible and continuously doing small favors are examples of this mindset. The authors feel that this mindset truly eases the collaboration in the ecosystem and works as a cornerstone in the sharing of ideas and knowledge throughout the ecosystem. Even though it was initially hard to get in touch with relevant interview subjects, the interest, time and help that later was received, are

examples of the “pay-it-forward” mentality. The characteristic of sharing knowledge and contacts without expecting anything in return was mentioned in the reviewed literature as well as in the empirical data. The fact that the “try-fast-and-fail-cheap”-mentality is accepted by the ecosystem creates incentives to experiment and facilitates an entrepreneurial spirit. Instead of developing products in closed labs, players are encouraged to test the products or services toward the market. According to empirical data, these mindsets as well as the importance of listening and not judging other players are characterizing Silicon Valley and a successful ecosystem.

Another aspect where the reviewed literature and empirical data are aligned is regarding the importance of a high presence of capital, which often comes from venture capitalists or business angels. According to both the reviewed literature and the empirical data, the VC-firms engage a lot in the ecosystem and are supporting many startups. The VC-firms are also regarded to be willing to accept high risks in their investments, which further facilitates the entrepreneurial mindset mentioned above. Furthermore, VC-firms are playing an important role by contributing to attract entrepreneurs and well-educated people from all over world.

According to the reviewed literature, having well educated people is a prerequisite for building a successful ecosystem. The presence of this type of resource in the empirical data, describes Silicon Valley’s density of skilled people. Both the reviewed literature and empirical data supports the fact that the talent in Silicon Valley is well educated but also diverse, and that the latter creates possibilities for many different disciplines to encounter. The empirical data embraces that the high density of talent makes it possible for the ecosystem’s corporations and startups to hire high caliber people. By offering lots of possibilities for people to meet up, knowledge is spread through the ecosystem. Furthermore, according to the empirical data, the mindset of changing workplace to a high extent is mentioned as something that further educates the people in the ecosystem.

The universities’ role in the ecosystem is highly valued in both the reviewed literature and the empirical data. It is highlighted that universities provide the ecosystem with raw talent and engage in actual business problems. Especially UC Berkeley and Stanford are contributing to make the Silicon Valley region fulfill these needs.

Finding out that weather actually was a vital characteristic, both highlighted in the reviewed literature as well as the empirical data, was initially regarded as unexpected by the authors. However, it was mentioned by a lot of the respondents and to further strengthen this aspect, the authors can truly relate to the aspects that have been discussed under this topic. Starting almost every day with bright sunlight and a blue sky probably has a large impact on the inhabitants of the ecosystem and should not be underestimated. The climate is argued in the empirical data to attract people and at the same time results in that people do not want to leave the region.

The authors’ opinion is that there is not a particular aspect that is superior to the others in characterizing Silicon Valley’s ecosystem. The authors suspect that there are other ecosystems in the world that are characterized by the same aspects and, therefore, each individual aspect is not unique by itself. Rather, it is the mixture of all characteristics that make up Silicon Valley, just as Hwang & Horowitz argues in the

reviewed literature. Another discussion point worth highlighting, according to the authors, is that the characteristics throughout the mapping of the Silicon Valley ecosystem are all somehow connected to a critical mass. Whether it is about, e.g. capital, talent or universities, it is always about some kind of critical mass or density. Silicon Valley truly is a global hub where many differentiated and necessary parts exist in abundance and get connected. Therefore, the authors believe that these critical masses are further strengthening the unique mix of the characteristics in Silicon Valley's ecosystem. Furthermore, the "snowball-effect" was only mentioned throughout empirical data in regard to the talent aspect, but the authors believe that this reasoning could be extended to involve more aspects, e.g. capital and the industry landscape. Capital might attract further capital and the density in the industry landscape creates willingness for even more companies to be present. Therefore, this effect is believed by the authors to, together with the aspect of critical mass, further enhance the characteristics of Silicon Valley's mix of characteristics.

7.3 Bringing the three phases together

Instead of describing phase two and three individually, the authors have merged these together in this section because of their high dependency of each other. Furthermore, influences from the Silicon Valley characteristics are brought into the context, bringing all three phases together.

A common opinion throughout the gathered data is that collaboration is vital in Silicon Valley. It is hard to determine if that is a unique point of view for Silicon Valley in particular but it is at least widespread in the ecosystem.

Making business is an aspect that is highlighted by both players throughout the empirical mapping as an overall need and ultimate goal in the long run. That all three interviewed companies in phase three are highlighting the importance of collaborating to be able to remain competitive is further strengthening the relevance of this aspect.

From the interviewed companies in phase three, it was frequently mentioned that creating a win-win situation is vital during a collaboration. The authors believe that this is, in some sense, contradictory to the "pay-it-forward" mentality of Silicon Valley. According to the authors, this attitude does not seem to be widespread on a company level. Otherwise, companies should be more interested in collaborating and helping others, having a focus on that at least one of the parties make a "win" out of the collaboration, rather than just their own gains. Another discussion that the authors want to highlight is regarding the mentality of "try-fast-and-fail-cheap" and to have the courage to test new things, frequently brought up in both the reviewed literature and empirical data regarding Silicon Valley. Instead of trying to predict the outcome of everything, corporations should focus on making sure to minimize the costs of failing and at the same time get valuable input when trying, e.g. when launching a new product or an upgraded software. However, during the interviews in research phase three, this mindset was lacking. Therefore, the authors believe that this mentality might not be that widespread in the ecosystem in reality. It is important to highlight that the above mentioned parts of the mindset in Silicon Valley are commonly mentioned on an individual rather than company level. However, the

authors think that if an attitude is truly widespread among individuals, it is realistic that it would affect companies as well.

The interview with Honda and the company's lab in Silicon Valley created a special interest among the authors. HSVL truly seems like it has taken many of the characteristics of Silicon Valley into consideration. The authors consider HSVL to fulfill many of the mapped needs, such as financial aid, capital and human resources, and that many LMTCs could learn from HSVL's ways of working.

Hitachi stated that it is important to have the mindset that you always learn something when collaborating, even though a project is not explicitly around the company's own products. The importance of a LMTC's attitude regarding an innovation lab or similar might be a critical factor to be successful in Silicon Valley. For example, the authors believe that a mindset about continuous learning, together with the understanding that failure might be just as valuable as success, could be crucial for the success of a larger corporation's innovation lab.

In Silicon Valley, the willingness to collaborate and try new things is supposed to be widespread in the mentality among the people in the ecosystem. However, the authors' opinion is that companies are not that prone to collaborate outside of the company's main focus areas, strengthened by both Hitachi and Honda that state the importance of a strategic alignment.

The authors want to emphasize Dignan's quotation, mentioned in the reviewed literature, as a very suitable description of the companies in Silicon Valley, covering many different aspects of the findings.

7.3.1 Needs and ways of working

In this section, the authors' have clustered aspects that could be categorized in the used topics from the mapped needs.

External access

Getting access to customers was an important prerequisite during a collaboration according to the players in the ecosystem. According to the reviewed literature, collaboration is seen by especially startups as an opportunity to turn ideas into market innovations. This aspect is also extensively described in the empirical data where startups, e.g. seek access to customers and sales channels. However, none of the interviewed companies in phase three seemed to actually see it as a prioritized area and did not have a clear way of working to fulfill this need. Furthermore, Xerox PARC stated that it had never seen a situation where this was done properly. During the interviews in phase three, the companies mentioned that they are working toward introducing external partners to a few specific customers, rather than opening up their entire network. Since the external players frequently mentioned access to customers, the authors believe that it should be valuable from a differentiating standpoint to look further into this aspect, trying to find out how to actually fulfill this need toward external partners.

The empirical data revealed that players, and startups in particular, want access to technology and equipment they cannot afford to purchase themselves during product

development. Decreased costs are also mentioned in the reviewed literature as a main motive for collaboration. Furthermore, a highlighted aspect in the reviewed literature is, e.g. to get access to resources, such as technology. The more access given to a counterpart in a collaboration, the less friction when integrating technology, facilitating for both companies to contribute to set targets. This strengthens the mapped needs about access to technology and presents a new angle on its implications.

The authors see a connection between the “pay-it-forward” mentality in Silicon Valley and the willingness to let external partners get access to, e.g. customers or technology. By offering collaboration partners access to these things without immediately demanding something in return, the LMTC increases the gains for the collaboration partner.

Industry and market knowledge

The players both frequently and explicitly stated that increasing their industry and market knowledge is a vital need in a collaboration. However, when it comes to the interviewed companies in phase three, no one had a direct answer on how to actually work with this need. Hitachi stated that it is crucial to be open and share knowledge to create maximum value from collaborations. However, the authors felt that the interviewed companies regarded this more as a byproduct and something that happens automatically, rather than having specific ways of working to handle it. To differentiate a company from the rest, the authors believe that finding out how to do this in a more staked out way could be crucial when external players are selecting a collaboration partner.

The authors believe that the “pay-it-forward” mentality in Silicon Valley is connected to the benefits of learning new knowledge through collaboration. Even if none of the interviewed companies in phase three had explicit answers on how to share industry and market knowledge, it seemed like they are willing to share knowledge with collaboration partners. Another aspect connected to this need is the dense industry landscape in Silicon Valley, which facilitates for companies that want to collaborate. The extensive amount of companies, operating in various industries and markets, that are present in Silicon Valley simplifies for companies to learn about different industries and markets.

Financial incentives

Financial incentives got an extensive focus both in the reviewed literature as well as in all research phases. Startups are extensively highlighting aspects about different forms of financial incentives as primary needs in a collaboration. Both the reviewed literature and empirical data regard money and capital to be widespread and exist everywhere in Silicon Valley. HSVL is interesting in this matter according to the authors. The lab shut down its venture capital functionality to focus more on helping external partners develop their technologies to integrate it into Honda’s products. Instead, it will create, e.g. licensing cash flows toward external partners and generate innovation for Honda. Furthermore, Hitachi states that a long-term perspective is more important than generating profit in the short term. The lab does not focus on

giving financial incentives to its partners, because of its belief that a long-term relationship could not be based solely on monetary incentives.

Furthermore, RocketSpace argues that taking equity from startups affect their willingness to collaborate. The challenge of competing with capital, due to its extensive presence in Silicon Valley, was highlighted by BootstrapLabs. The company even states itself that it is not competing with capital although it is a VC-firm. The authors believe that if a VC-firm cannot compete with capital, it should be regarded as an indication that corporations should focus on finding other key aspects to differentiate their value proposition. Nevertheless, financial incentives can still be included in a value proposition.

The authors want to highlight that the high amount of entities that support the ecosystem with capital facilitates the need for financial incentives. Because of this extensive presence, these entities are almost competing to find the best ideas to support, making it easier for, e.g. startups to get access to money. Another aspect that the authors see as highly relevant to the financial incentives is the industry landscape's urgency and endeavor to find the next big thing. This high level of competitiveness is suspected to strengthen the risk-taking investment culture and further increase the availability of capital.

Prerequisites

External players in the ecosystem, especially startups, regarded clear goals and objectives as an important need when collaborating. The interviewed companies in phase three all stated that this aspect is important but did not have any particular insights about how to actually do this efficiently. Some just highlighted that there is always an attempt to set this up in the initial discussions of a collaboration, but that it is still hard to define it on a solid level early on. Therefore, this aspect would be highly relevant to look further into to understand how to fulfill this need among the external players.

Having an efficient communication toward external partners is another vital need that was highlighted in the mapping. External partners have the need to understand where to turn, and then receive communication in a clear and fast way. It was explicitly highlighted by the interviewed companies in phase three that it is vital to offer an efficient communication and Xerox PARC, in particular, meant that poor communication is often the reason when relationships have not developed in a satisfactory way. However, during the interviews with the companies, the responses about efficient communication were regarded by the authors to be vague. According to the external players, a dedicated contact person is one specific thing that a LMTC should offer. Even though the interviewed companies were aware of this need and tried to offer, for example dedicated points of contact, it did not seem like it was functioning on the same level that the authors regard the external players to be seeking. The authors believe that the most important thing regarding this is to ensure that the external partners know where to turn, which might be different people depending on the specific situation.

During a collaboration, external partners have a need of receiving different competencies from the LMTC that is not only from R&D. Involving different parts of

the organization is also an aspect that the interviewed companies in phase three stated as important for them to be able to create maximum value in a collaboration. Xerox PARC always aims to use diverse teams, Hitachi's BDL gathers people from different parts of its organization in virtual teams and HSVL often brings in knowledge from Honda's headquarter. SAP as well as the authors believes that it is important to have an executive support for an innovation lab. Without support from executives, it will probably be a challenge to let relevant people from other parts of the organization leave their current assignments and prioritize work in the innovation lab. HSVL stated that it is crucial for the lab to have a physical place to facilitate meetings, collaborate in person and reduce communication barriers created by a physical distance. However, as for Hitachi's usage of virtual teams, the authors do not see any specific downsides with that solution in regard to the mapped needs. According to the authors, it is obvious that there are different ways to facilitate communication in a collaboration no matter the organizational structure.

When it comes to other prerequisites in a collaboration, having a high deal-making speed was highlighted multiple times in the initial mapping of the needs. Three main aspects are regarded by the authors as specifically relevant to ensure this: organizational structure, support and money. First of all, many of the interviewed companies in phase three state that they are able to have a higher deal-making speed thanks to their small size and flat organizational structure. Secondly, having a distinct involvement as well as support from executives is regarded as vital by the authors when trying to increase the speed when making decisions, since executives have authority to make more critical decisions. An extensive involvement from higher executives was, in fact, also a specific need that was stated by the external players. Last of all, access to available money is another aspect that the authors believe is important after interviewing the companies. Some of them meant that the access to a dedicated pool of spendable money eases the process when fast economical decisions need to be taken, since no money need to be requested directly from higher decision-makers.

The ability to show a successful track record is another need that the external players highlighted. When trying to map the interviewed companies' ways of working with this, the authors' insight was that the majority rely on old merits and word-of-mouth. During the interview with HSVL, it was stated that one mistake is all it takes from a LMTC in Silicon Valley to get a bad reputation. This is also backed by Hwang & Horowitt in the reviewed literature, who presents *interpretation of the rules* as one of the main cornerstones in a successful ecosystem. Furthermore, the authors believe that it takes time to build up a track record through word-of-mouth. Going back to the mapped needs, the authors' view is that it was much more focused on providing explicit success stories, rather than for example word-of-mouth. Hence, it appears to be a gap between how the external players and the interviewed companies in phase three think about what "providing track records" actually means. Therefore, LMTCS should focus more on presenting successful track records toward external players to fulfill this need in a more satisfactory way.

Another need that the authors want to discuss is about trust and openness in a collaboration. The vital aspect of transparency and a free flow of information, to be

able to leverage on a collaboration, is highlighted both by the interviewed companies in phase three and in the reviewed literature regarding the *physical* aspect mentioned by Hwang & Horowitz in the reviewed literature. However, all interviewed companies are very focused on implementing NDAs in the beginning of all collaborations. Xerox PARC states that discussions involving these agreements are the most demanding aspects in a discussion before a collaboration. It is regarded as an important prerequisite to implement NDAs before opening up and sharing knowledge. At the same time, both Xerox PARC, as well as people involved with startups and venture capital, are in agreement that startups and VC-firms regard NDAs as a waste of time. The authors regard this as an obvious difference between larger corporations and startups, something that a LMTC have to take into consideration when discussing a potential collaboration.

The alignment between the two collaboration partners was frequent throughout the mapping. When interviewing the companies in phase three, the authors got the insight that this was something that is primarily focused on during the selection process of finding new players to collaborate with. It was frequently mentioned in both phase two and three, that it is important for a specific collaboration to have relevance from a strategic standpoint for both companies and that it is important to be able to integrate the partners' technology.

The authors want to highlight the endeavor to have skilled people in collaborations. The authors believe that this is facilitated by the highly competent talent pool available in Silicon Valley. Universities are further facilitating this need by providing talent to the local companies. These two characteristics make it easier for the companies to recruit skilled people, and thereby fulfill the partners' needs of having skilled people involved in collaborations. Another parallel between the Silicon Valley characteristics and phase two and three is regarding the mindset of less respect for hierarchy. This mindset facilitates a higher deal-making speed since people are willing to speak directly with decision-makers, erasing the barriers that hierarchy often creates.

Technology development

Being able to create more competitive and innovative products, resulting in an enhanced customer experience, was frequently mentioned by both players as a vital need regarding technology development. A way of assuring successful technology development, mentioned in both phase two and three, is to have joint developing teams. Aspects concerning that research used in a collaboration is thoroughly tested and quality assured are also frequently mentioned in the gathered data. As an example, Hitachi mentions that it is vital to use different experts to be able to ensure the quality of research. According to Xerox PARC, a lot of the credibility of the research is regarded to originate from the fact that the researchers themselves are credible and well known in their respective fields. From these insights, the authors want to stress the potential difference between how companies actually make explicit actions to make sure that research is credible, compared to just relying on brand, history and reputation. Xerox PARC stated that giving researchers the possibility to interact with different markets, and actually get a better understanding on how their research is connected to practical needs, is vital to increase their motivation and

Key Success Factors for Collaborative Innovation in Silicon Valley

create superior value. The authors believe that this might be a way to reduce the distance between research and development, where researchers often are screened off from core markets. The authors want to emphasize that all approaches to ensure an efficient technology development mentioned above, are highly relevant for a LMTC to consider.

The authors suspect that technology development is facilitated by a low tendency to hide information from collaboration partners, thanks to the Silicon Valley mentality of “pay-it-forward” and openness. Furthermore, the high presence of large companies with vast amounts of resources increases the possibility to share valuable resources in a collaboration. If one company does not want to collaborate, there are many others to turn to.

Others

Another need that the authors want to highlight is about branding and PR, which was actually only stated explicitly by a few corporations, but highlighted as an important aspect in the reviewed literature. The authors find it strange that it did not occur more frequently in the mapping of the needs and believe that it is a more important aspect than the mapping shows. However, many of the interview subjects talked about branding, even though not saying it explicitly.

7.3.2 Intersections between the three phases

Table 5 below sums up and highlights intersections between the Silicon Valley characteristics and the findings in phase two and three. These intersections have been described through chosen examples under the respective topic in Section 7.3.1.

Table 5. Intersections between the Silicon Valley characteristics and the mapped needs and ways of working.

| | | MAPPED NEEDS AND WAYS OF WORKING | | | | |
|--------------------------------|--------------------------|----------------------------------|-------------------------------|----------------------|----------------|------------------------|
| | | External access | Industry and market knowledge | Financial incentives | Pre-requisites | Technology development |
| SILICON VALLEY CHARACTERISTICS | High presence of capital | | | X | | |
| | Vast pool of talent | | | | X | |
| | Influential universities | | | | X | |
| | Dense industry landscape | X | X | | X | X |
| | Entrepreneurial mindset | | X | X | | X |
| | Appealing climate | | | | | |

As illustrated in Table 5, the authors believe that it is mainly the mindset of the Silicon Valley ecosystem that influences the mapped needs and ways of working. This implies that companies who understand the Silicon Valley's mindset thoroughly are more likely to create a suitable value proposition. The industry's density also has a direct impact on three of the mentioned aspects, and thereby constitute a major impact factor. Capital, talent and universities each affect mainly one finding. Even if the weather aspect is not directly influencing any of the mapped needs and ways of working, the authors believe that the weather aspect might have an indirect effect on the people in the ecosystem and thereby affects the mapped aspects. Worth mentioning is also that the prerequisites are influenced by many different characteristics of the Silicon Valley environment, which might depend on the fact that this clustered need is both extensive and detailed. In general, the mapped needs and ways of working are influenced by more than one of the characteristics of Silicon Valley's ecosystem. This implies that it facilitates to understand many different characteristics when trying to fulfill the players' needs.

7.3.3 Additional insights

This section is meant to highlight insights that were not suitable to present under the previous sections in this discussion.

The authors have found an interesting parallel to Sidhu's research that was mentioned in the reviewed literature. Sidhu is arguing that offering space and money is not as important as offering corporate synergy toward external partners in corporate incubation. Looking at the empirical data from this perspective, it is clear that space, compared to money and corporate synergy, is not a present aspect in the mapped needs. Money is, contradictory to Sidhu's research, highlighted during the interviews but with some prerequisites of how money could be a motivator. Pure cash settlements are not mentioned frequently, but financial incentives such as licensing products or creating long-term increased financial flow are still aspects that are regarded as a vital need. The HSVL is especially interesting in this matter according to the authors. The lab has shifted focus from funding startups with venture capital to being an open innovation lab, with the purpose to share core competencies to help others. This is aligned with Sidhu's research. Regarding space, RocketSpace and BootstrapLabs are both working intensely with offering this to startups. Furthermore, the authors want to highlight BootstrapLabs' opinion that LMTCs need to think about what startups truly are after if they are to set up some kind of collaboration and offering space to external players. According to BootstrapLabs, it is crucial that the startups get the right environment. They do not want to get placed in an isolated and strict corporate environment, but in an interesting location with a busy environment, where relevant people are present. The authors believe that Sidhu's research is not describing the entire truth about the needs. Both corporate synergy and some financial incentives are vital needs, but space is not crucial.

7.4 Criticism of the research process

This section evaluates the research process from a critical standpoint. The authors discuss what differs the research process to an ideal one, as well as what would have been done differently if starting again from scratch.

During the second research phase, the authors could not conduct an ideal amount of interviews due to time constraints. This resulted in that the findings in this phase are indications rather than established opinions. Furthermore, the interview questions in phase three were too general and not specific enough, resulting in that ways of working was difficult to map and thoughts got more focus. An ideal research process would have been able to verify all the interview data. The fact that the answers are not validated increases the possibility that the authors present misinterpreted data. Furthermore, some of the gathered data might have been more relevant than other, something that was not taken into consideration. For example, if a survey would have been sent out to the respondents, asking them to rank the mapped needs, it would have been possibly to rank the data by relevance. This would have made the findings crisper for the target audience. Finalizing the research phase about the Silicon Valley characteristics before starting phase two and three, would have created a better possibility to connect the different parts of the research process. By doing so, the interview questions in phase two and three could have been better framed to the Silicon Valley context.

If the authors were given the possibility to redo this master thesis, a couple of things would have been given a greater focus. First of all, the interviews were definitely the most time-consuming part, why a more thorough time planning would facilitate for optimizing the available time. Strategies for how to get in contact with interview subjects more effectively would be discussed. Nevertheless, it would have been difficult to start finding interview subjects at an earlier stage than what was done in this research process. The reason for this is that the authors probably did not have enough knowledge earlier in the research process to make the respondent interested enough to participate. Another aspect that would have been given more focus is the defining of the purpose. Stating a more specific purpose earlier in the research process would have created the possibility to ask more targeted questions during the interviews. The authors realized that a physical meeting is superior to other alternatives, creating better opportunities to ask follow up questions and clarify ambiguities. If doing this master thesis again, all interviews would have been carried through in physical meetings, instead of mixing physical meetings, phone calls and emails.

8 CONCLUSIONS

This chapter connects the findings with the purpose of this master thesis.

The Silicon Valley ecosystem has six main characteristics: *High presence of capital, Vast pool of talent, Influential universities, Dense industry landscape, Entrepreneurial mindset* and *Appealing climate*. The characteristics themselves are not unique but it is instead the critical mass of each individual aspect, and the mixture of them, that characterizes the Silicon Valley ecosystem.

In the creation of a suitable value proposition toward collaboration parties, there are many needs that are essential. The needs that startups and corporations in Silicon Valley have regarding a potential collaboration with a large multinational technology company revolve around: *External access, Industry and market knowledge, Financial incentives, Prerequisites* and *Technology development*. Large multinational technology companies are well aware of the above needs, but some of them are regarded as complex and challenging to cope with in an optimal manner.

There are a lot of intersections between the mapped needs and ways of working and the characteristics of Silicon Valley. The entrepreneurial mindset and dense industry landscape are the main characteristics that have an impact on the mapped needs and ways of working.

Throughout the empirical findings in the master thesis, there were differences between what external players wanted and what the companies offered. Understanding these differences and finding out how to cope with them is highly advised to large multinational technology companies.

Companies in Silicon Valley agree that collaboration with external partners is vital. The mapped needs mainly revolve around offering financial incentives and corporate synergies. Capital, such as cash and equity investments, is not a competitive offering in Silicon Valley. Therefore, large multinational technology companies should focus on offering other financial incentives such as licensing deals or incentives for increased sales, as well as corporate synergy, as a part of their value proposition toward external partners. However, this does not imply that money and investments should be excluded in the value proposition toward external partners, but rather that they are not key in Silicon Valley.

Table 6 is the core of this conclusion, highlighting how large multinational technology companies should cope with external players' needs in Silicon Valley regarding a collaboration. Keeping aspects in this table in mind is vital for these companies when designing their value proposition toward collaboration partners in Silicon Valley.

Key Success Factors for Collaborative Innovation in Silicon Valley

Table 6. Vital aspects for large multinational technology companies to consider.

| TOPIC | CONCLUSIONS |
|-------------------------------|--|
| Overall | <ul style="list-style-type: none"> • Both corporate synergy and some financial incentives are vital needs, but space is not crucial to offer. • A LMTC's attitude regarding an innovation lab is critical to its success. A mindset about continuous learning, together with an understanding that failure might be just as valuable as success, could be crucial to the success of a larger corporation's innovation lab. |
| External access | <ul style="list-style-type: none"> • There is no clear way of working to offer access to customers or sales channels and stated that it was done on a small scale. • The more access given to a counterpart in a collaboration, the less friction when integrating technology or products. This facilitates the possibility for a successful merge. |
| Industry and market knowledge | <ul style="list-style-type: none"> • This need was regarded more as a byproduct and something that happens automatically and there are no specific ways of working to handle it. |
| Financial incentives | <ul style="list-style-type: none"> • "Pure capital" is generally not offered. Instead, focus is on assisting with other resources and creating long-term relationships. If a VC-firm cannot compete with capital, other corporations should focus on finding other key aspects to differentiate their value proposition. |
| Prerequisites | <ul style="list-style-type: none"> • Setting clear goals and objectives before entering a collaboration is an important need when collaborating but is regarded as difficult to achieve. • There is an awareness of the need for efficient communication, e.g. through dedicated points of contact. However, it does not seem like it is functioning on the same level that the external players demand. • To offer different competencies, focus is on involving different parts of the organization in a collaboration to create maximum value in a collaboration. • Both a physical space and virtual teams are used to facilitate for collaboration. • A high deal-making speed was highlighted multiple times in mapped needs. Three main aspects are regarded by the authors as specifically relevant to ensure this: efficient organizational structure, executive support and available money. • It appears to be a gap between how the external players and interviewed companies think about what "providing track records" means. • Implementing NDAs before opening up and sharing knowledge is important to the interviewed companies. At the same time, startups and VC-firms regard NDAs as a waste of time. Hence, there is an obvious difference between the interviewed companies and startups. |
| Technology development | <ul style="list-style-type: none"> • To ensure a satisfactory technology development, LMTCs should focus on thoroughly testing research as well as joint developing and testing. |

9 FURTHER RESEARCH

Based on the findings, this chapter highlights what the authors believe would be suitable as further research.

The authors have mapped the needs and compiled insights on these needs from different companies. Nevertheless, the exact ways of working and best practices are not defined in this master thesis. By researching this further, based on the findings, a company would increase its chances of creating a model for collaboration regarding innovation with a superior value proposition toward its collaboration partners.

One aspect for further research would be to continue this master thesis by including more interview subjects from Silicon Valley into the interviewed population of all research phases. Doing so would both create a more comprehensive mapping of the findings in this master thesis, as well as increase the trustworthiness and generalizability of the results in this context. The authors' belief is, however, that focus should be on research phase two and three since the gathered material in phase one was far more homogeneous compared to the following phases.

This master thesis focused only on Silicon Valley. Therefore, a highly relevant aspect for further research would be to apply the same research questions into different contexts. This would create the possibility to make comparisons between them, resulting in the finding of certain similarities, unique aspects for different contexts as well as to what extent the contextual part actually matters. This continued research might also contribute to make the overall topics of this master thesis, regarding collaborative innovation, generalizable to a larger extent. As a first suitable step, the authors think that this should be done in other ecosystems characterized by a high level of innovation and collaboration. However, conducting the same research on completely different contexts might yield interesting findings of potential similarities and differences that could be highly relevant for further research.

During this master thesis, it became clear that the mindset in Silicon Valley highly impacts the mapped needs and ways of working. A further understanding of how a mindset within an ecosystem affects how companies should alter their ways of working is highly relevant to obtain. Therefore, this is another suggestion on further research that could develop the findings in this master thesis.

10 REFERENCES

- Accenture *Silicon Valley's Lessons for CIOs and Innovators*, [Online],
Available: <http://www.accenture.com/us-en/Pages/insight-silicon-valley-way.aspx>
- Bhalla, G. *Collaboration and co-creation new platforms for marketing and innovation*. New York: Springer Science+Business Media, LLC, 2011. Print.
- Bryman, A., Bell, E., Nilsson, B. *Företagsekonomiska forskningsmetoder*. Malmö: Liber ekonomi, 2005. Print.
- Cordeiro, J., Sarkis, J., Vazquez Brust, D. *Facilitating Sustainable Innovation through Collaboration - A Multi-Stakeholder Perspective*. London/New York: Springer Science+Business Media, 2010. Print.
- Endless frontier, limited resources: U.S.R & D policy for competitiveness*. Washington, DC 1401 H St., NW Suite 650, Washington 20005: Council on Competitiveness, 1996. Print.
- Davis, J. (2014) *How Innovate Companies Collaborate*, [Online],
Available: <http://www.forbes.com/sites/insead/2014/01/08/how-innovative-companies-collaborate/> [22 Mar 2015]
- Di Guardo, M., Harrigan, K. *Mapping research on strategic alliances and innovation: a co-citation analysis*. Springer Science+Business Media, LLC, 2011.
- Dictionary of American History (2013) *Silicon Valley*, [Online],
Available: http://www.encyclopedia.com/topic/Silicon_Valley.aspx#1 [17 Feb 2015]
- Dignan, A. (2013) *The Operating Model That is Eating the World*, [Online],
Available: <https://medium.com/@aarondignan/the-operating-model-that-is-eating-the-world-d9a3b82a5885> [22 Feb 2015]
- Doepfer, B. *Co-innovation competence a strategic approach to entrepreneurship in regional innovation structures*. Berlin: Springer, 2013. Print.
- Encyclopedia of Management (2009) *Innovation*, [Online],
Available: <http://www.encyclopedia.com/doc/1G2-3273100131.html> [9 Apr 2015]
- Ericsson 2013 *AT A GLANCE*, [Online],
Available:
http://www.ericsson.com/thecompany/investors/financial_reports/2013/annual13/en/2013-in-brief/2013-at-a-glance [23 Feb 2015]
- Frow, P., Nenonen, S., Payne, A., Storbacka, K. *Managing Co-creation Design: A Strategic Approach to Innovation*. British Journal of Management, 2015.
- Given, L. *The Sage encyclopedia of qualitative research methods*. Los Angeles, Calif: Sage Publications, 2008. Print.
- Honda R&D Americas, Inc, [Online],
Available: <https://www.hondasvl.com/> 10/4 [14 Apr 2015]

- Hwang, V. (2014) *The Next Big Business Buzzword: Ecosystem?*, [Online], Available: <http://www.forbes.com/sites/victorhwang/2014/04/16/the-next-big-business-buzzword-ecosystem/> [29 May 2015]
- Hwang, V., Horowitz, G. *The rainforest: the secret to building the next Silicon Valley*. Los Altos Hills, Calif: Regenwald, 2012. Print.
- Investopedia (2015), *Business ecosystem*, [Online], Available: <http://www.investopedia.com/terms/b/business-ecosystem.asp> [29 May 2015]
- Kenney, M. *Understanding Silicon Valley: the anatomy of an entrepreneurial region*. Stanford, Calif: Stanford University Press, 2000. Print.
- Koepp, R. *Clusters of creativity enduring lessons on innovation and entrepreneurship from Silicon Valley and Europe's Silicon Fen*. Chichester: Wiley, 2002. Print.
- Lantz, A. *Intervjumetodik: den professionellt genomförda intervjun*. Lund: Studentlitteratur, 1993. Print.
- Link, A. *Public/Private Partnerships - Innovation Strategies and Policy Alternatives*. New York: Springer Science+Business Media, 2006. Print.
- Mason, J. *Qualitative researching*. London Thousand Oaks, Calif: Sage Publications, 2002. Print.
- Maurer, C., Valkenburg, R. *Approaches to networked innovation*. International Journal of Innovation and Technology Management. Vol 11, No.1, 2014
- Moore, G., Davis, K. *Learning the Silicon Valley Way*. Stanford Institute for Economic Policy Research, 2001.
- PARC (2012) *the business of breakthroughs*, [Online], Available: http://www.parc.com/content/attachments/corpbrochure_parc.pdf [10 Apr 2015]
- Sidhu, I. (2013) *New Models for Advanced R&D and Open Incubation for today's Modern Companies*, [Online], Available: <https://ikhlaqsidhu.files.wordpress.com/2013/09/adv-rd-nascomm-v0-shared.pdf> [21 Jan 2015]
- SJSV Chamber of Commerce (2012), [Online], Available: http://www.sjchamber.com/wp-content/uploads/2012/07/12_SJSVChamber_ServiceAreaMap.jpg [7 Apr 2015]
- The Columbia Encyclopedia (2014) *Silicon Valley*, [Online], Available: http://www.encyclopedia.com/topic/Silicon_Valley.aspx#3 [17 Feb 2015]
- University of Western Sydney *Introduction to innovation*, [Online], Available: <http://toolkit.smallbiz.nsw.gov.au/part/14/69/291> [4 May, 2015]
- Von Stamm, B. (2013), *Leadership paradox: why collaboration is key to innovation*, [Online],

Key Success Factors for Collaborative Innovation in Silicon Valley

Available: <http://www.theguardian.com/sustainable-business/leadership-paradox-collaboration-key-to-innovation> [30 May 2015]

Wagner, M. (2014) *AlcaLu's Combes: 'We are now back on track'*, [Online], Available: <http://www.lightreading.com/business-transformation/alcalus-combes-we-are-now-back-on-track/d/d-id/710775> [22 Mar 2015]

Wikipedia, a *Value proposition*, [Online], Available: http://en.wikipedia.org/wiki/value_proposition [30 May 2015]

Wikipedia, b *Exploratory Research*, [Online], Available: http://en.wikipedia.org/wiki/Exploratory_research [15 Apr 2015]

Wikipedia, c *Business ecosystem*, [Online], Available: http://en.wikipedia.org/wiki/Business_ecosystem [29 May 2015]

Wikipedia, d *Silicon Valley*, [Online], Available: http://en.wikipedia.org/wiki/Silicon_Valley [17 Feb 2015]

Örmgård, C. (2014) *Fokus på utveckling av innovationsförmågan hos stora bolag*, [Online], Available: <http://www.chalmers.se/sv/institutioner/tme/nyheter/Sidor/utvecklar-innovationsformagan-hos-stora-foretag.aspx> [30 May 2015]

APPENDIX

This appendix contains six parts, used to complement the main presented information:

A.1 Further information about the literature search

A.2 The research process of phase two

A.3 The history of Silicon Valley

A.4 The research process of phase one

A.5 Mapped needs from phase two

A.6 The research process of phase three

A.7 Additional companies from phase three

A.1 Further information about the literature search

Table A.1 on the next page shows a selection of the authors' searches in Google Scholar and LUBsearch during the literature search. The search words are based on the content as well as the title and key words of this master thesis. It is only one or two of the search words that are found in each result, which gives a first hint that its context is not the same as this master thesis'. Secondly, when reading and studying the articles it becomes clear that these sometimes mention aspects that are related to this master thesis, but that the context of the aspects differs from this master thesis'.

Some of the sources are highlighting aspects that are mentioned in the literature review. Nevertheless, the authors found the references used in the literature review as more suitable due to recommendations from people with extensive knowledge in the context of this master thesis. These people were mainly Adjunct Professor Ikhlal Sidhu at the Center for Entrepreneurship and Technology at UC Berkeley as well as high-level executives, responsible for external collaboration and innovation, within Ericsson. Foremost, the absence of research similar to this master thesis is not that surprising since Adjunct Professor Ikhlal Sidhu confirms that no research has been done with the same context as this master thesis. As a matter of fact, the purpose of this master thesis was created in collaboration with Sidhu, who saw a need for researching this area, since many other studies have neglected the focus on the players' need in the specific Silicon Valley context.

Key Success Factors for Collaborative Innovation in Silicon Valley

Table A.1. Literature searchers.

| Search words | Hits at Google Scholar/ LUBsearch | Example titles (amount of citations) | Extract from literature about what it focuses on |
|---|-----------------------------------|--|--|
| "Corporate collaboration value proposition in Silicon Valley" | 18 700/0 | <p><i>The role of the business model in capturing value from innovation: evidence from Xerox Corporation's technology spin-off companies</i> (2412)</p> <p><i>Information and governance in the Silicon Valley model</i> (102)</p> | <p>"Explores the role of the business model in capturing value from early stage technology"</p> <p>"Understand the unique governance role of the venture capitalists in the Silicon Valley model"</p> |
| "Silicon Valley Partnership innovation" | 35 500/68 | <p><i>Social capital and capital gains in Silicon Valley</i> (338)</p> <p><i>Bringing Silicon Valley inside</i> (343)</p> | <p>"Particular industry defines a region's specialization and industries differ in growth potential"</p> <p>"In Silicon Valley, ideas, capital, and talent circulate freely, gathering into whatever combinations are most likely to generate innovation and wealth"</p> |
| "Silicon Valley collaboration value proposition" | 12 900/0 | <p><i>Information and governance in the Silicon Valley model</i> (102)</p> <p><i>TechVenture: New rules on value and profit from Silicon Valley</i> (14)</p> | <p>"Understand the unique governance role of the venture capitalists in the Silicon Valley model"</p> <p>"How do you survey a landscape that is unpredictable and changes so rapidly"</p> |

Key Success Factors for Collaborative Innovation in Silicon Valley

| | | | |
|--|-----------|--|---|
| "Co-innovation in Silicon Valley" | 236/0 | <p><i>The role of regional innovation systems in a globalising economy (99)</i></p> <p><i>Why culture is key (49)</i></p> | <p>"More attention to regions as designated sites of innovation and competitiveness in the globalizing economy"</p> <p>"Annual study shows that spending more money on R&D won't drive results"</p> |
| "Collaborative innovation in Silicon Valley" | 32 000/12 | <p><i>The Silicon Valley edge: A habitat for innovation and entrepreneurship (261)</i></p> <p><i>The Silicon Valley-Hsinchu connection: technical communities and industrial upgrading (568)</i></p> | <p>"How does Silicon Valley work? Why here and not somewhere else?"</p> <p>"This paper argues that the dynamism of these (author's note: Silicon Valley and Hsinchu-Taipei) regional economies is attributable to their increasing interdependence"</p> |

A.2 The research process of phase two

This section further describes the research process of phase two.

A.2.1 Selection of interviewed companies

To begin this research phase, different segments of players were mapped and cross-referenced in interviews with stakeholders. After interviews with employees at Ericsson and Ikhlaq Sidhu at UC Berkeley, four different types of players were identified as potential collaboration partners for Ericsson in Silicon Valley: *startups*, *corporations*, *universities* and *governmental entities*.

Ericsson employees stated that collaborating with *startups* give Ericsson a possibility to create new value, often through new ways of thinking that is resulting in adjacent or disruptive innovations. A startup is, however, a broad definition. According to different definitions, a startup could range from a company containing one person with one idea, to a very mature startup such as Spotify and Uber. The authors suspected that different needs from a collaboration exist depending on how mature a startup is. One Ericsson employee stated that the needs were not reflected in the startup's maturity, but the authors' suspicion was supported by Ikhlaq Sidhu at UC Berkeley and the majority of the interviewed Ericsson employees.

Therefore, the authors chose three main phases for determining where in the startup-phase a company is: *Validation*, the startup is about to test the product on the market to see if there is an interest in the product. *Revenue*, a minimal viable product exists and the startup already has its first paying customers. *Scale*, the product can be scaled and this process has started, raising the revenue. (Harper, 2014)

A collaboration with a startup that has not yet found its niche and are relatively new to the market is stated as not relevant for Ericsson, since these startups often have an uncertain future and the risk of investing in a relationship with them is too big. Therefore, Ericsson wished this master thesis to only focus on collaboration with more mature startups, which often already are funded and have found their niche. This kind of startups often has products in the market making some revenue. Ericsson employees stated that if a large corporation, such as Ericsson, partner up with a too immature startup, this may result in that the larger corporation sets all the rules of the partnership, risking steering the startup in the wrong direction, wasting the startup's resources. In regard to Ericsson's demands on collaboration with more mature startup, the authors chose to look at startups that fulfilled four criteria: The startup should have more than 50 employees, a funding that exceeds series B, be more than 2 years old and have a revenue exceeding \$10 million. These criteria are influenced from Harpers' (2014) definitions of a startup's phases. Furthermore, to strengthen the definitions a thorough discussion was held with Ikhlaq Sidhu at UC Berkeley. If a startup fulfills these needs, then they are believed to fulfill Ericsson's prerequisites of an enough mature startup. However, these four aspects acted more like benchmarks in the end rather than fixed criteria.

To be able to easily distinguish between a *startup* and a *corporation*, the authors classified companies as the latter depending on if they had made an initial public offering, IPO. Ericsson has similar requirements on the corporations as with startups,

regarding certain stability. The corporations that Ericsson is interested to collaborate with should fulfill the requirements of having a critical mass, meaning that they are more stable and thereby less likely to suddenly disappear from the market. Furthermore, the corporations need to have an influential market share and a willingness to share the risks of investment in the partnership. A commonly misunderstood aspect is that small companies are per definition startups, which is not the case. A corporation could for example have a small turnover, but at the same time be a stable market leader.

Looking at *universities*, Ericsson already has well established, long-term, collaborations, whose needs thereby are assumed to be well mapped. Also, *governmental entities* are considered by Ericsson as low priority to understand and collaborate with, partly since their organizations are assumed to differ very much from startups and corporations. Because of the above, these two players are left out.

This segmentation narrows down the scope of this phase to focus only on mature startups and stable corporations, as according to the definitions. This is assumed to make it possible to get more accurate conclusions in the chosen segments.

To further ease the decision-making of which types of players that are interesting to study, a further criteria was established. The players should exist within industries that are within Ericsson's interest areas, specified as: cloud, IT, media, transportation and utility. Some of these industries are adjacent to Ericsson's current industry and the company wants to focus more on these in a near future, why they were highly relevant. The choice of five different industries is also believed to increase the generalizability of the findings. Furthermore, because of Ericsson's interest in these industries, connections were assumed to be more easily made than if the authors would have chosen completely different industries. Besides the above, the chosen companies also needed to have a strong presence in Silicon Valley.

The authors strived to find respondents in managerial positions that likely had good insights in what would be important in a collaboration, why the answers are to be viewed as highly relevant. 16 interviews were conducted in total from 15 different companies, where some of the companies first had an initial discussion internally. One interview with the corporation Cloudera needed to be supplemented with an additional interview person from the same corporation, to ensure the trustworthiness and relevance of the answers. The final list of companies that were interviewed in this research phase is presented in Table 2.

Criticism of the selection process is that it was highly influenced by Ericsson. Nevertheless, the final list was conducted by the authors, resulting in a more neutral choice of interview objects.

A.2.2 Compiling the interview questions

The interview questions are solely based on the knowledge that the authors got from initial interviews with Ericsson employees during the first weeks of this master thesis. The purpose with the questions was to define the needs in a technology collaboration within a function similar to that of the new Garage functionality in Silicon Valley. Ericsson does not know how the Garage is supposed to be set up yet. Therefore, the

authors' aimed to capture valuable insights from potential collaboration partners in a broad picture and not limit the findings based on Ericsson's internal thoughts about the implementation. The questions were framed to cover aspects in a collaboration with a large multinational technology company, LMTC, both in general and more directed toward R&D and innovation programs. To ensure that the questions were relevant to the purpose, the authors evaluated the answers iteratively and adjusted the questions.

Criticism to this part of the research process is for example that the questions were open, leaving room for the respondents to freely interpret them. The respondents might also have answered what they believed is important rather than the absolute truth. But to ensure the answers' trustworthiness and level of relevance, the authors asked the respondents to segment and exemplify their answers throughout the process.

A.2.3 Interview questions in phase two

- 1. What are the three main aspects that a large multinational technology company needs to offer you during a collaboration? Please segment and specify.*
- 2. What are the three main aspects that a large multinational technology company's R&D-organization need to offer you during a collaboration, e.g. through their innovation lab or similar function? Please segment and specify.*

A.2.4 Compiling the empirical data

The interviews were conducted in three different ways depending on the respondents' requirements: email, telephone interviews and physical interviews. Because of this, and the restricted time limitations of the interviews, the answers varied in quality. The authors tried to follow up answers that were unclear, but in some cases that was not possible. Even if some responses varied in quality, they were still regarded as value-creating by increasing the authors' understanding. Some of the gathered data was impossible to interpret, and hence excluded in the compilation. After compiling all data, the answers were compared and clustered into general topics. The authors strived to interpret and summarize the answers as few times as possible, to avoid losing important information. Answers from corporations and startups were separated to maintain the possibility to later identify differences. Through several iterations, the authors ensured that the clustering was done in a correct way and that the clustering for corporations versus startups were similar, i.e. that the same kind of answers were under the same topic. This was difficult due to the qualitative approach of the questions and, hence, the answers. To improve this clustering, the authors first clustered individually before comparing. The first and second question gave similar answers and the authors identified two main aspects that this could depend on: the quality of the questions or that the true answer on the questions actually does not differ. Since the authors did not feel that the answers varied enough to separate them, the answers for these two questions were merged. The merge between these two questions then summarized what is important in a collaboration with a technology company in Silicon Valley, with some special focus on R&D aspects. Furthermore, the merge is assumed to ease for the reader to understand the information. The result of the interviews was not segmented after which industry the respondents were active

in, since to the low number of respondents in each industry category could not ensure that the results were generalizable to the specific industry.

The available time during this master thesis limited the total number of interviews that was possible to conduct. However, due to the high extent of answers within the same topic, the authors found the presented amount of interviews as enough to establish an insight regarding the most vital needs. But, the results are meant to be seen more as an indication rather than the absolute truth. To ensure the trustworthiness of the results, the authors strived to both be present during the interviews and then individually conclude the answers before comparing. Last of all, the results were discussed thoroughly with both supervisors at Ericsson and two experts of startups' needs to ensure their relevance.

References

Harper, M. (2014) *Getting to \$100M+ revenue: Understanding the 3 phases of a startup*, [Online],
Available: <http://thenextweb.com/entrepreneur/2014/04/15/getting-100m-revenue-understanding-3-phases-startup/> [5 Mar 2015]

A.3 The history of Silicon Valley

This section discusses the history of Silicon Valley from a couple of different standpoints.

A quote briefly describing Silicon Valley's history is:

"Perhaps the strongest thread that runs through the Valley's past and present is the drive to 'play' with novel technology, which, when bolstered by an advanced engineering degree and channeled by astute management, has done much to create the industrial powerhouse we see in the Valley today." (Kenney, 2000: 44)

There are different stories that try to describe and highlight what actually was "the creation of Silicon Valley". One historical event, regarded as the creation of Silicon Valley, was when William Shockley, a co-inventor of the transistor at Bell Laboratories, founded Shockley Transistor Corporation in Palo Alto in 1955 (Kenney, 2000). A couple of years later, in 1957, eight of his engineers left the company to create Fairchild Semiconductor. Their departure started a new type of job mobility pattern in Silicon Valley, where employees favored satisfaction and financial reward in front of company loyalty. Further contribution to this trend was when three employees later left Fairchild Semiconductor in 1968 to establish Intel. In the early 1970s, former Fairchild employees headed as many as 41 companies in Silicon Valley. This job mobility trend continued, with the creation of new companies such as National Semiconductor, Atari and Apple Computer (Dictionary of American History, 2003)

Others push the creation of Silicon Valley a bit backward to when Hewlett-Packard Company and Varian Associates were created within the Stanford University's incubator in Palo Alto, in 1938 and 1948 respectively. Stanford University and the dean of its School of Engineering, Frederick Terman, are believed to have had an important role in the creation of Silicon Valley (Kenney, 2000). The high-technology research in Silicon Valley grew with its closeness to Stanford University. In 1951, Stanford established a "research park" where companies, e.g. could build facilities and cooperate with the university within research. This was the first enterprise of its kind in the US (Dictionary of American History, 2003).

During the 1950s and early 1960s, much of Silicon Valley received and relied on military contracts. This dependence did later decline when the market for computers emerged (Dictionary of American History, 2003).

It is regarded that these historical events should not be seen as sole events that lead to the instant creation of Silicon Valley. The region's history of electronics industry since the experimentation and innovation within radio, television and military electronics should not be forgotten (Kenney, 2000). Moore & Davis (2001) discusses the histories and myths regarding the Silicon Valley phenomena and that you cannot focus on sole events from a specific person, company or organization when describing it. They also state that these may exist because of the fact that they originate both from people thinking that Silicon Valley is duplicable and those who believe in the contrary. However, Moore & Davis (2001) argue that the incremental

process of discovery and learning was the core of the transformation behind the success and structure of Silicon Valley, something others seem to actually ignore.

From the 1960s, the climate of Silicon Valley, a well-educated talent pool from California universities and a largely nonunion workforce, attracted investors and corporations to the region (Dictionary of American History, 2003).

After years of competition in the semiconductor industry, mainly from Japan, a boom occurred in the mid-1990s with the emergence of the Internet and electronic commerce. Stocks of technology companies skyrocketed and new businesses in the industries of software and electronics rose quickly. Silicon Valley continued to be a center of research, development and manufacturing in the electronics industry. When the Internet-based "dot.coms" arose during the mid and late 1990s, the region's role as a frontier of industrial and social organization was reenergized (Dictionary of American History, 2003).

References

- Dictionary of American History (2013) *Silicon Valley*, [Online],
Available: http://www.encyclopedia.com/topic/Silicon_Valley.aspx#1 [17 Feb 2015]
- Kenney, M. *Understanding Silicon Valley: the anatomy of an entrepreneurial region*. Stanford, Calif: Stanford University Press, 2000. Print.
- Moore, G., Davis, K. *Learning the Silicon Valley Way*. Stanford Institute for Economic Policy Research, 2001.

A.4 The research process of phase one

This section further describes the research process of phase one.

A.4.1 Selection of interview subjects

A vital criteria in this research phase was that the interview subjects needed to both be present and work within the Silicon Valley ecosystem. To save time and make the process more efficient, the authors let the interview subjects in Chapter 5 answer a question regarding the characteristics of Silicon Valley. To ensure that the gathered material was both reliable and up to date, the authors also asked the same question to people within Ericsson in Silicon Valley as well as to external people in relevant positions at AT&T Foundry and Nordic Innovation House, during more informal interviews.

A.4.2 Compiling the interview questions

The created question lets the interview subject highlight the three characteristics of Silicon Valley. The purpose of limiting the answers to three characteristics was to force the respondents to choose the most vital aspects of the Silicon Valley ecosystem.

A.4.3 Interview question in phase one

What are the three main characteristics that make Silicon Valley's business environment unique?

A.4.4 Compiling the empirical data

The interviews were conducted in three different ways depending on the respondents' requirements: email, telephone interviews and physical interviews. Because of this, and the restricted time limitations of the interviews, the answers varied in quality. The gathered data originate from a rather large group of different individuals. As the interview process proceeded, it became clear that the respondents' answers were homogenous and within the same overall topics, why a larger interview pool was assumed as unnecessary. The reason for this alignment could be that the responses and gathered data in fact reflects the reality, or that the respondents are colored by the same knowledge and understands. After compiling all data from the interviews, the answers were compared and clustered into general topics.

A.5 Mapped needs from phase two

The raw material of the clustered needs from phase two, corporations and startups separately, is presented below.

A.5.1 Corporations

External access

Access to customers

- Access to their customer base
- Accessing sales channels to receive customers

Access to technology

- Ability to test and QA of products by accessing equipment in labs

Access to other connections

- Accessing LMTC's high-level connections
- Access to their strong partners and relationships to executives
- Help with broadening high-level connections when establishing standards

Industry and market knowledge

- Get knowledge about what is happening by being in the loop
- Get knowledge about what others do and their needs, to create superior products
- Find out what other companies are working on to be able to cope with it
- Getting knowledge about the market and its many niches
- Knowledge about the market and its technical needs
- Knowledge about business use case and potential market demand
- Better ability to listen to the outside market, to make customers happy

Financial incentives

- Financial gains when they license our products
- Access a share of the LMTC's R&D spending

Prerequisites

Communication prerequisites

- Know who to speak with

Competence prerequisites

- Effective people to work with
- Capability to contribute, e.g. with sufficient talent
- Ability to absorb knowledge fast
- High level of competence
- Centered competencies
- Strong technology people

Other prerequisites

- Serious about the collaboration, not wasting our time
- Ability to act fast
- Ability to create trust fast
- Their brand needs to be liked by their customers
- Offer something connected to the uniqueness of the LMTC
- Trust and complete openness, a confidentiality agreement is not creating trust
- Track record of previous collaborations
- Need track record of revolutionary results of collaborations

Strategic alignment

- Relevant for us from a strategic standpoint to make business
- Common value propositions to the consumers to be able to enhance consumer experience
- Alignment with product strategy, need to be a priority for both parties

Technology alignment

- Possibility to merge/integrate products
- Possibility to integrate products into the LMTCs' products to create superior ones that sell better
- Same product category, for the LMTC to integrate our product in their sales channels

Technology development

- Development takes time, incentive to collaborate
- Sharing resources needed for research
- Educate our R&D about different areas, trends and buzzwords
- Ability to steer the development during the collaboration toward our interests
- Input from an R&D organization need to be tested for the research to be relevant
- Significant practical input from the counterpart
- The collaboration output needs to be revolutionary
- New interesting ideas/products
- The collaboration need to create a better customer experience, e.g. regarding product/service

Others

- Brand and PR

Not applicable

- Time from top-tier partners

A.5.2 Startups

External access

Access to customers

- Their customer base
- Access to customers - deeper or new customer relationships
- Access to customers to accelerate our growth
- Grow business by accessing customers
- Get access to international monetizable user base in existing/new markets
- Grow business by accessing customers through a large sales force
- Be closer to where your customers are

Access to technology

- Access to technology to accelerate our growth
- Openness from the LMTC about software/hardware so we can integrate into our platform
- Openness - Accessible hardware/software from LMTC for us to test/experiment on

Industry and market knowledge

- Knowledge on what is going on in the industry and where it is heading
- Market expertise
- Market expertise
- New market knowledge (standards, legal aspects etc.)
- Identify regional aspects - get info on new markets

Financial incentives

- Funding - investment or cash payment during/after the project
- Probability of future financial incentives: Cash for the collaboration
- Probability of future financial incentives: Dependency/lock-in effect on our technology and willingness to purchase it/our company
- Financial incentive through contracts, buying our products
- Financial incentive to acquire us
- Economies of scale from tech/financial advantages compared to competitors

Prerequisites

Goals and objectives

- The LMTC must provide goals of what the collaboration will result in
- Pre-defined and clear scope/objectives of a project to not waste our time
- Setting the right expectations on the collaboration

Communication prerequisites

- Dedicated points of contact/communication channels
- We need to know communication channels and who to talk to

Key Success Factors for Collaborative Innovation in Silicon Valley

- Dedicated team from LMTC to facilitate the collaboration and ease the communication within the LMTC

Competence prerequisites

- Proven leadership and expertise in the industry with thought leaders
- Provide personnel that aid us
- Efforts and input only from R&D is not enough

Other prerequisites

- A respect of our time
- Deal-making speed
- Easy interface to their organization that does not reduce our speed
- The LMTC need to provide a good track record of similar successful collaborations
- You need a solid partnership based on core business in both companies
- Dedicated team with clear prioritizations
- Strong product and project management
- Involvement/commitment from technology executives to resolve issues during the process
- Legal aspects to protect our technology and the results in a collaboration

Strategic alignment

- The collaboration should be consistent with our current roadmap (natural step). LMTC speed up the process
- They need to be aligned around our interests to facilitate symbiotic growth
- Common standpoint from a customer point of view
- Ability to be aligned with the LMTC's top priorities
- Knowing what KPIs everyone, from senior management to individual contributor, is focusing on

Technology alignment

- Tightly integrated technology
- Common ground to connect and merge technology/products
- Good intersections points where technology makes sense.
- Ability to integrate our products in the LMTC's products to get customers and raise sales
- Their technology/software need to be innovative
- Their technology/software need to be extensible
- Their technology/software need to be global in scope and scale

Technology development

- Get new ideas and a new way of thinking
- Creativity: new solutions and creative designs
- Better customer experience - improving delivery, design, features etc.
- Joint testing/QA/UAT team to ensure industry leading product in the process and extensive user testing

Key Success Factors for Collaborative Innovation in Silicon Valley

- Developer collaboration throughout the entire process to ensure successful relationship and product launch

Others

Facilitate recruitment

- Recruiting people that are skilled
- Recruiting people with diverse geographical backgrounds

Not applicable

- Flexibility, Dependability, Money, Resources, Scalability, Value alignment.
- The LMTC need to see the value in our things
- New revenue streams - strategic investment (funding?) or new/additional dollars (long term?)
- Transparency, Additional resources to drive and complete projects

A.6 The research process of phase three

This section further describes the research process of phase three.

A.6.1 Selection of interviewed companies

Throughout the research process, a lot of advices about companies to study came up during casual talks and interviews. Focus was on which companies and respective function for innovation influenced by external collaboration that could be suitable to study in this part of the research. These advices, mostly from people at Ericsson's headquarter in Kista as well as the Silicon Valley office, created a quite comprehensive list of potential companies. Since the people working at the Silicon Valley office were assumed to have better insights into the local ecosystem, the advices from these individuals were given a higher priority. As a complement to the list of advised companies, the authors also created their own list of companies that at an initial glance would be interesting to study. However, these two lists actually functioned more as a foundation of knowledge in the selection process, rather than being the only sources to influence what companies that were to be chosen.

To create a more reliable selection of interviewed companies, the authors first created some criteria that a potential interview company, or rather function within a company, had to fulfill. Even though these were in a broad sense, it helped to create some boundaries in the selection. The criteria were that the interviewed companies needed to be a larger corporation, be present in Silicon Valley and be characterized by a technology business. Furthermore, both the company in general and its functionality needed to be regarded as successful. This might be hard to measure, so the authors used "successful on a generally recognized level" as the measure to be used. Last of all, the interviewed companies also needed to collaborate, within the relevant functionality, with the types of external players of relevance for this master thesis.

As a next step, the authors had informal talks with different people, both within Ericsson as well as independent on the outside, to see what companies they thought were most relevant to study, given the criteria above. This resulted in a list of 24 companies, but some were more frequently mentioned than others and were hence regarded as especially relevant, such as Honda.

To further triangulate the selection of companies, Ikhlaq Sidhu at UC Berkeley was asked as an external expert to comment on the list. Some companies were verified and Xerox PARC came up as a relevant company to interview, due to its history of success and similarity to Ericsson Research, from a research perspective.

Because of the struggle to get in touch with potential interview subjects in previous research phases, the availability of contacts within the authors' network was regarded as a factor to take into consideration. Since the authors had high-level connections within Hitachi in Silicon Valley, together with the fact that they fit the above criteria, this became one interview company. The chosen companies were also represented on the lists that were created in the beginning of the research, which was assumed to strengthen their relevance as companies worth interviewing.

The final selection of interviewed companies is presented in Figure 11.

Depending on the company, different instances were interviewed. This differed a lot between the interviewed companies but was regarded as valuable by the authors. Since this research phase is meant to gather thoughts and ways of working regarding the mapped needs in Chapter 5, using differentiated companies and functionalities within them was assumed to create insights from a larger spectrum of instances and thereby increase the value of the gathered data in the end. The authors also sought to find interview subjects with some higher level managerial position to ensure that the respondents had good insights into the areas of the questions, to improve the quality of the answers.

The authors also got easy access to SAP, RocketSpace and BootstrapLabs. These were included afterwards as additional companies, since they were assumed to generate additional insights compared to the previously mentioned ones.

Looking at this selection process from a critical standpoint, one aspect is that it was influenced by advices from other people. It was also influenced by the potential availability of contact persons, since the authors were heavily dependent on being introduced to through referrals. However, since both people within Ericsson as well as an independent individual and Ikhlaq Sidhu at UC Berkeley, were asked to give input in the selection process, this triangulating methodology was assumed to increase the accuracy of selecting relevant companies. These individuals also had better knowledge in the area than the authors, which were further assumed to enhance the quality of the selection.

A.6.2 Compiling the interview questions

When creating the interview questions for the selected companies, some main aspects were used to ensure that the questions were both relevant as well as formulated in a precise way. The used data sources were the needs of the players in the ecosystem, as presented in Chapter 5, as well as the authors' own knowledge and insights gained throughout the research process.

From the needs in Chapter 5, interview questions were created that were regarded to be especially relevant to ask a company and its functionality. This was based both on the frequency in which they came up during the mapping of the needs as well as what potential the answers could have in regard to practical value. Hence, all the needs in Chapter 5 were not represented in the questions. At first, questions were made for both startups and corporations individually. After that, the two groupings of questions were compared to create a combined list of interview questions. A lot of the questions originated from both startups and corporations, while some originated from just one, and this fact was noted for all the final questions so that the answers could be traced back to the specific segment of players and their needs. Depending on the specific company, a selection of all the interview questions was made by the authors to try and create maximum value of the limited time during the interviews. This selection was done both carefully beforehand by both authors, to ensure the trustworthiness of the selection, as well as during the interviews, depending on the information in the interviewees' answers.

The authors' insights throughout the research were used to create complementary questions, further increasing the authors' understanding and their potential to draw more specific conclusions in the end.

To discuss this compilation from a critical standpoint, one cannot ignore that it was the authors themselves that created what they believed were relevant questions. To increase the credibility of the interview questions, the authors therefore let both people within Ericsson, as well as Ikhlaq Sidhu at UC Berkeley, review the questions before they were used in the interviews.

To ensure that the results obtained in the interviews were relevant, the authors used their gathered insights to select questions depending on the specific characteristic of each interview subject, as well as revised the selection continuously throughout the interviews if needed. However, this probably pivoted the results. To further increase the trustworthiness of the results, the authors asked follow up questions during the interviews to deepen the answers and increase the understanding.

A.6.3 Interview questions in phase three

From the authors' own insights

1. Within your organization, what initiatives/functions do you have that focuses on innovation (preferably that includes external collaboration) and how are they related? In other words, tell us about the initiatives in an overall perspective.
2. Describe the model for the innovation program/function in which you are working?
3. What kinds of external parties are you collaborating with?

From the findings in phase two

The letter after each question illustrates if it originates from a Startup, Corporation or Both.

Access to customers

1. How are you enabling collaborators to access your customers/sale-channels? (B)

Access to technology

2. What are you doing to share your own technology? (S)

Industry and market knowledge

3. What are you doing to share your insights about the industry that you are present in? (B)
4. What are you doing to share your insights about the different markets that you are present in? (B)

Financial incentives

5. How are you working with different financial initiatives/payments toward external collaboration parties? (B)

Goals and objectives

6. How are you creating and presenting clear goals and objectives for a collaboration? (S)

Communication prerequisites

- 7. How are you working toward an efficient communication with the external parties? (B)
- 8. Do you have/assign dedicated contacts/team to facilitate efficient communication? (S)

Competence prerequisites

- 9. How are you making sure that you are offering more than R&D-competencies to the collaboration? (S)

Other prerequisites

- 10. How are you making sure that you have a high deal-making speed? (B)
- 11. How are you making sure that people at a higher level are involved in the collaboration? (S)
- 12. How are you showing previous success-stories/track-records? (B)
- 13. How are working toward trust and openness in a collaboration? (B)
- 14. What are you doing to ensure that the external parties technology/products are aligned with yours - and can be integrated/merged? (B)

Technology development

- 15. How are you making sure that a collaboration results in new ideas/products? (B)
- 16. How are you enabling continuous and joint developing/testing throughout the process? (S)
- 17. What is your standpoint regarding research sharing and how are you working with this? (C)
- 18. How are you working to ensure that the final product is superior? (B)

A.6.4 Compiling the empirical data

The data in this research phase is meant to show thoughts and ways of working from different companies connected to the previously mapped needs. The answers on the same questions varied between the interviewed companies. This fact, together with trying to make it easier for the reader to get a better understanding of the different interviewed companies' input, resulted in that comparisons and cross-mapping of answers on questions were not regarded to be value-creating. This made the process of compiling the empirical data in this research phase a lot more straightforward than in the previous section. The data was structured under each of the subtopics found in the previous research phase, as an attempt to make the reader more able to connect results for each company in this phase to the needs in the previous one. Another aspect that was discussed by the authors was that some of the answers were not entirely within the scope of the specific question and might therefore have made more sense under another subtopic in the presentation. However, the authors wanted the empirical data in this section to reflect exactly what the interviewed companies said in relation to every asked question and the data was therefore not re-structured in this sense.

As criticism to this research phase, the studied companies were generally not that surprised of the mapped needs that were presented for them. But at the same time, they were rarely able to give the authors specific answers. The authors have discussed three different reasons this could depend on. First of all, there is a possibility that the

Key Success Factors for Collaborative Innovation in Silicon Valley

interviewed companies failed to express their thoughts and ways of working clearly. Secondly, the interviewed companies might not focus on the mentioned aspects, and, therefore, have no ways of working regarding the aspects. Thirdly, the aspects that the questions were based on might be too complex to answer clearly and specifically.

A.7 Additional companies from phase three

This section presents deeper information about the additional companies that were interviewed in research phase three.

A.7.1 SAP

To briefly describe this company, the following quote was obtained from the company website:

“The market leader in enterprise application software, SAP helps organizations fight the damaging effects of complexity, generate new opportunities for innovation and growth, and stay ahead of the competition.” (SAP)

At SAP, the authors interviewed a person at a managerial position with good insights into the company’s strategy regarding new businesses, where the emphasis during the interview was on innovation. Since the nature of this interview was quite different compared to the three interviewed companies, it was more suitable to present the gathered data under a higher level of topics compared to before. However, the same frame of interview questions was used to gather the data.

Between 2009-2013 SAP had an intrapreneurship program in Silicon Valley, which was kind of an incubator for internal ideas. In 2013, this program was splitted into smaller parts in different business units. Today SAP is trying to rebuild the program and also has different setups for collaboration with external parties. In 2015, SAP started an Innovation Center in Palo Alto aiming to co-innovate with customers. Another part of SAP is Sapphire Ventures, an independent venture capitalist with a 1 billion dollar budget. Furthermore SAP has a co-innovation lab, COIL, focusing on partner solutions with large entities such as IBM and Cisco. COIL is, e.g. discussing how to go to market as well as how and what to develop. HANA is a platform aiming to facilitate for startups to align their products with SAP’s products.

External access

SAP thinks that the customers are the jewels of the company. Everything SAP is offering to its customers must be thoroughly tested so that the products and services are working correctly. The ways of reaching the market are heavily dependent on if a product exists or not and a collaboration is either focused on co-innovation or go-to-market. Some products are co-innovated with partners where SAP, e.g. helps its collaboration partners to access markets. SAP also teams up with collaboration partners to sell adjacent products and together with the partner create new sales program, helping the partner to access SAP’s customers. A prerequisite for helping partners reaching the market is that it is a win-win situation.

SAP HANA is a startup program and platform that SAP is trying to push to the market. The program does not give the external partners money or a place to sit, but provide expertise. SAP wants external players to develop through the HANA platform, creating possibilities for them to put up ideas and software on a SAP controlled marketplace. If the product is uploaded onto the platform it becomes available to a large customer base. Furthermore, if the product is really good, SAP assists in finding relationships and the right customers.

To create value for the counterpart, SAP has different industry teams, which all are very extensive, and each of these teams do share their knowledge with their collaboration partners.

Financial incentives

In a collaboration, a shared research is regarded as one sort of financial incentive. As an example, SAP could be the ones paying for the development of software, another company for the hardware development and both for taking the product to the market. As mentioned before, taking a product, that is a result of a collaboration, to the market often needs special sales program.

The only part of SAP that is investing money in other corporations is the venture capital division mentioned before. This division is investing in startups that have around 10 million dollars or more in sales and are facing a period of growth. SAP does not invest in smaller startups, but instead provide advice to help them out, e.g. through HANA.

Prerequisites

One important prerequisite for a collaboration according to SAP is that the collaboration is a win-win situation. For example, the costs, although not necessarily monetary, should be shared. For a collaboration to be fruitful you also need an executive support and one single dedicated person that drives the collaboration, otherwise there is a risk that no actions will be taken.

The key to having a high deal-making speed is that there is a mutual interest in the collaboration. If the collaboration is more likely to gain one partner, the process tends to slow down. If the collaboration results in a product or service that is repeatable, making the gains potentially higher, then the deal-making most probably will have a higher speed. The main aspect that prolongs the deal-making speed in a collaboration is investment decisions.

SAP is aiming to create and share online tools that ease the transparency and openness in a collaboration. These tools should be viewable for both parts and share information regarding what the counterpart does, who they are talking to, where they are present etcetera.

When collaborating with a startup, compared to larger corporations, the difference in size is regarded to make SAP more influential. In a collaboration with a startup, SAP does not feel that it needs to offer the same level of transparency, but still requires a very transparent partner.

It is often that SAP's customers do not only want a part of a solution but the entire one. Therefore, it is important for SAP to create relationships with other parties and bundle up in the sale.

Technology development

The aim of a collaboration is often to get a product to the market and in the long run making money for the partners. When it comes to research, SAP is open and aims to share its knowledge. The company seeks to create a win-win situation together with

the collaboration partner. Quality assurance is always carried through together with its partners, which is a part of the mutual investment in the collaboration. Other big investments are related to time, and during a co-development, SAP has a great focus on keeping the time schedule.

A.7.2 RocketSpace

To briefly describe this company, the following quote was obtained from the company website:

“Our downtown SF campus helps tech startups connect to the talent, technology, capital, business development and back office resources they need to scale.”
(RocketSpace, 2015)

To broaden the insights in this part of the research phase, RocketSpace was included as a second additional company to generate further understandings of aspects regarding collaboration and especially from a startup's standpoint. The authors interviewed a person with a managerial position at the company's corporate innovation program RocketX. In comparison with the previous presented companies, this is not structured according to the topics of the mapped needs, since it was regarded as an unsuitable presentation form. However, the same frame of interview questions as before was used to gather the data.

RocketSpace is a company that offers flexible, high-end office space for technology startups. The company hosts 175 startups in San Francisco. The company also offers organizations a possibility to start up their own accelerator or incubator in the RocketSpace office landscape.

RocketSpace is focusing on post-seeds startups that already have some investors and are growing their businesses. RocketSpace is not taking equity from its companies and the company states that no startup actually want the share its equity with external partners. As a result of this, RocketSpace states that it attracts the best startups all over the world. Since the company does not take any equity, it does not really care what goals and objectives its customers have, yielding an unbiased position.

Since it offers startups a high quality service without taking any equity makes RocketSpace attractive. The company has no need to promote its previous success stories and mention that the facility currently is used at 99 % of its capacity. This has been the case for many years, and the company still gets around 30 applications a week. RocketSpace also has brokers, incubators and venture capitalists in its partnership network.

Everything that RocketSpace is doing for the startups, such as creating educational, community and network paths, are elective for the participating companies. The company organizes so that professors or technical experts, once or twice a month, are coming to talk about their expertise and educate the startups on how to grow their businesses. To facilitate networking aspects, RocketSpace also invites venture capitalists, business angels and other investors to communicate with its startups during informal activities.

To facilitate an efficient communication toward its startups, RocketSpace has three persons for communications, each respectively focusing on sales, member's services and facility services. These persons make sure that the startups are satisfied and because of the company's small size, it is considered easy for the startups to know where to turn in different matters.

RocketX is a corporate innovation program as a part of RocketSpace. The program helps corporations to learn about, communicate with, and work like, startups. A startup does not want to work for a corporation, because the perception is that big companies drag down business. Startups need their freedom to be disruptive, why they are not generally interested in collaborating with large corporations. RocketX functions like a scouting and professional matchmaker between startups and corporations, where the latter pay for that service. If a large corporation would sponsor RocketX, it would get the first shot when the startups are willing to collaborate. Startups do not want to collaborate with solely one large corporation, but with many different, and RocketX facilitates that.

A.7.3 BootstrapLabs

To briefly describe this company, the following quote was obtained from the company website:

"BootstrapLabs is a Global Venture Technology Investment Company that taps into the most talented entrepreneurs globally at an early stage of their startups to build global companies from Silicon Valley. We employ a very hands on and entrepreneurial approach to support and advise startup entrepreneurs, help them execute to the best of their ability and tap into the benefits of Silicon Valley." (BootstrapLabs, 2015)

To further broaden the insights in this research phase, BootstrapLabs was included as a third additional company. Through the company's close collaboration with startups it has a good understanding of what is important for startups during a collaboration. The authors interviewed a key person at BootstrapLabs. Similar to RocketSpace, this section is not structured according to the topics of the mapped needs since it was regarded as an unsuitable presentation form. However, the same frame of interview questions as before was used to gather the data.

BootstrapLabs is a venture capital firm that collaborates tightly with startups to facilitate their global businesses from its local office in San Francisco. BootstrapLabs is located in a busy environment with a high flow of activities, which is part of its developed model for facilitating startups' growth. Through its co-working space, startups can be closer to other potential investors and entrepreneurs, but also closer to potential customers. Many large corporations have recently realized this aspect, why many corporations have started programs to facilitate collaboration with its external partners, e.g. startups. According to BootstrapLabs, a mistake that large corporations tend to do while setting up these programs is to locate the startups in an inappropriate, often isolated, environment where no entrepreneurs want to be. Realizing and managing this, as well as what a corporation can offer to a startup, is crucial when creating the value proposition toward startups. Nevertheless, many of these corporations' programs are regarded as failing because of these aspects. Basically,

they cannot motivate why external partners should collaborate with them instead of its rivals. Furthermore, a fundamental misinterpretation that is common for corporations is that they tend to think that it is possible to compete with money. In reality, it is nowadays almost impossible to compete with money because the high presence of capital in Silicon Valley. Even VC-firms need to offer more than just financial incentives. Therefore, it is vital to find a unique value proposition.

References

- BootstrapLabs (2015), [Online],
Available: <http://bootstraplabs.com/#about> [9 Apr 2015]
- RocketSpace (2015), [Online],
Available: <http://rocketspace.com/> [9 Apr 2015]
- SAP *About SAP*, [Online],
Available: <http://go.sap.com/about.html> [10 Apr 2015]