NTNU – Trondheim
Norwegian University of
Science and Technology

Building Dynamic Capabilities in Web Startups

An Empirical Study of Norwegian Web Startups

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Oppstartsdato **14. feb 2014**	Innleveringsfrist **11. jul 2014**
Oppgavens (foreløpige) tittel **Bygging av dynamiske kapabiliteter i internettbaserte oppstartsselskaper** **Et empirisk studie av norske internettbaserte oppstartsselskaper**	
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Sted og dato

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Sted og dato

Høvedveileder

Sigurd Gran-Jansen

Mathias Rygh

Martin Abelson Sahlen

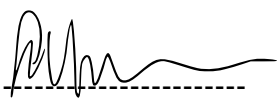
Originalen oppbevares på instituttet.

Preface

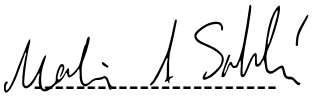
This paper is the result of the master thesis in the course TIØ4945 at the Norwegian University of Science and Technology (NTNU) in the spring of 2014.

We would like to thank and give special credits to our supervisor, Professor Roger Sørheim at NTNU Department of Industrial Economics and Technology Management, for his guidance and valuable feedback during the research and writing process of this thesis. We would like to thank the startups and especially the interview subjects for the invaluable insight into the inner workings of how to run successful web startups.

Lastly we would like to thank all our classmates, as well as the Norwegian startup community (both academics and entrepreneurs) for their guidance, input and not the least their company through the last two years at NTNU School of Entrepreneurship.



Sigurd Gran-Jansen



Martin A. Sahlén

Mathias Rygh

Abstract

Purpose: This thesis explores how web startups operating in a crowded, fast-moving and highly competitive marketplace can gain competitive advantage through building dynamic capabilities and what these capabilities consist of.

Design/methodology/approach: Firstly, insight was obtained through reviewing key themes within classic resource based theory and entrepreneurship theory. Newer empirical research on entrepreneurial success factors, as well as popular science and advice given by expert web entrepreneurs was then reviewed. Combining this, a framework of dynamic capabilities in web startups was synthesized. Qualitative empirical data was collected from interviewing founders and key people in four active Norwegian web startups. From the empirical findings in these interviews, the synthesized framework was iterated to account for important factors that were found to apply specifically for web startups. Lastly, a set of propositions was derived from the combination of the synthesized framework and the empirical findings.

Findings: It was found that many of the contributions both from established contributors, newer contributors and popular science build on the same principles, albeit with a different degree of practical versus theoretical approach. By bridging different literature and approaches, this thesis contributes to clarify many of the "invented" terms found in the literature and operationalize them in practice for what they actually mean for web startups, and much of this is probably applicable for startups in general. From the empirical data it was found that web startups have important differences from other types of companies and startups. This was e.g. planning on very short time spans (most planned on a weekly basis or shorter), the ability of employees to do work outside of their expertise areas and the ability to learn or acquire new skills fast according to continuously changing market needs.

Research limitations/implications: The propositions have both empirical and theoretical backing, but the empirical backing is limited to four cases, all in Norway. It would be useful to test the propositions on larger sample sizes, and preferably also to include cases from other contexts and cultures than Norway.

Practical implications: Entrepreneurs in web startups should focus on building a great team and company culture. Policy makers should consider introducing programming

earlier in educational institutions. Investors in web startups should be more concerned about the team, its culture and composition and its ability to quickly adapt to change rather than the ideas themselves. Academia should adapt a more practical and operational approach to entrepreneurship research and seek to normalize terminology.

Originality/value: The thesis is original in two ways. Firstly, it enters a research area within which very little research has been conducted and increases the understanding and awareness of it. Secondly, it combines a wide span of literature to further develop the understanding of RBT and entrepreneurship and its basic concepts.

Keywords: startups, web startups, dynamic capabilities, lean startup

Paper type: Thesis

Sammendrag

Formål: Denne masteroppgaven utforsker hvordan internettbaserte oppstartsbedrifter som opererer innenfor et svært konkurranseutsatt marked i konstant endring kan sikre seg konkurransefortrinn gjennom å utvikle dynamiske kapabiliteter, og hva disse kapabilitetene består av.

Design/metode/tilnærming: Først ble det opparbeidet innsikt gjennom en gjennomgang av sentrale temaer innen klassisk ressursbasert- og entreprenørskapsteori. Nyere empirisk forskning på suksessfaktorer innen entreprenørskap samt råd gitt i populærvitenskap på området og hentet inn fra entreprenører i nettbaserte oppstarter ble så gjennomgått. Gjennom å kombinere all denne informasjon, utarbeidet man et rammeverk for hvordan dynamiske kapabiliteter innen nettbaserte oppstarter oppnås. Kvalitative empiriske data ble hentet inn gjennom intervjuer med grunnleggere og nøkkelpersoner i fire norske internettbaserte oppstartsbedrifter. Basert på funnene fra disse intervjuene ble det konstruerte rammeverket iterert med hensyn på viktige faktorer man så var spesielt gjeldende for internettbaserte oppstartsbedrifter. Avslutningsvis ble det, med utgangspunkt i kombinasjonen av rammeverket og de empiriske funnene, utledet et sett med proposisjoner som utgangspunkt for videre forskning.

Fun: Det ble funnet at mange av bidragene fra etablerte forskere, nyere og populærvitenskapelige bidrag bygger på de samme prinsippene, selv om de har en forskjellig grad av teoretisk i motsetning til praktisk tilnærming. Gjennom å bygge bro mellom forskjellig litteratur og tilnærminger bidrar denne oppgaven til å klargjøre mange faglige begrep fra litteraturen som er "funnet opp" og å operasjonalisere disse i praksis og vise hva det betyr i praksis for internettbaserte oppstartsbedrifter. Mange av disse funnene er sannsynligvis også anvendbare for andre typer oppstartsbedrifter. Fra den empiriske dataen ble det funnet at internettbaserte oppstartsbedrifter skiller seg fra andre typer selskaper gjennom at de planlegger for veldig korte tidsperioder; de fleste planla en uke frem i tid eller kortere. Videre er det vesentlig at ansatte i disse bedriftene kan utføre arbeid og oppgaver som ligger utenfor deres kjernekompetanse, og også at de har evne til å lære eller tilegne seg nye ferdigheter raskt i takt med endrede behov og utsikter i markedet.

Begrensninger og videre forskning: Proposisjonene har både empirisk og teoretisk dekning, men det empiriske grunnlaget er begrenset til fire norske selskaper. Det ville vært nyttig å teste proposisjonene på et større utvalg av internettbaserte oppstartsbedrifter og fortrinnsvis også inkludere bedrifter fra andre kontekster og kulturer enn Norge.

Praktiske implikasjoner: Entreprenører i internettbaserte oppstartsbedrifter bør fokusere på å bygge et sterkt team og bedriftskultur. Politikere bør vurdere å introdusere programmering tidligere i grunnleggende utdanning. Investorer i nettbaserte oppstartsbedrifter bør være mer opptatt av teamet, dets kultur og sammensetning, samt dets evne til å raskt endre seg, enn ideene i seg selv. Akademia bør innta en mer praktisk og operativ tilnærming til forskning på entreprenørskap samt forsøke å normalisere terminologien.

Originalitet/Verdi: Denne masteroppgaven er original på to måter. For det første tar den for seg et forskningsområde der svært lite forskning er utført og øker forståelsen av og oppmerksomheten rundt internettbaserte oppstartsbedrifter. For det andre kombinerer den et vidt spekter av litteratur for å videreutvikle forståelsen av ressursbasert og entreprenørskapsteori, samt de grunnleggende begrepene innenfor disse forskningsområdene.

Nøkkelord: oppstartsbedrifter, internettbaserte oppstartsbedrifter, dynamiske kapabiliteter, lean startup (kontinuerlig forbedring i oppstartbedrifter)

Type: Masteroppgave

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1 Background and Introduction

1.1 Background

The authors are all students at the NTNU School of Entrepreneurship. Martin Abelson Sahlen and Mathias Rygh are currently both co-founders in a web-based startup targeting the music industry, while Sigurd Gran-Jansen is co-founder of a hardware startup developing autonomous drones. Mathias Rygh has an educational background from innovation management and business development, while the other authors are educated within informatics and computer science at NTNU.

The development in web technology and its virtually unlimited possibilities, as well as the plethora of web-based startups in the recent decade has sparked the authors' interest in this field, both from an academic and empirical perspective as well as from self-interest from being aspiring entrepreneurs.

Both academic literature and recent popular science has tried to grasp the essence of entrepreneurship, but are they are fundamentally different and opposite, or can be considered complementary? Do they have real practical and operational implications? Additionally, web startups and the internet marketplace has some properties that make them different from other types of startups and their market environment - does that require to be viewed and understood differently than other types of startups? These are some of the questions that intrigued the authors, and therefore they wanted to take a closer look at web startups.

1.2 Introduction

Entrepreneurship has for a long time been a driving force in innovation and employment Schumpeter, 1934; Kirzner, 1973; Alvarez and Busenitz, 2001). Prominent researchers within resource based theory (Penrose, 1959; Wernerfelt, 1984; Barney, 1991) as well as entrepreneurship theory (Alvarez and Busenitz, 2001; Sarasvathy, 2001; 2003) has strived for a long time to understand entrepreneurs and the entrepreneurial mindset. Resource

based theory is in its origin best suited to describe how established firms obtain competitive advantage through strategic management of their (internal) resources, adapting a static view of resources (Widding, 2005). Yet, the notion of capabilities as a means to exploit synergies between resources is central (Barney, 1991; Grant, 1991; Teece et al, 1997) and the introduction of dynamic capabilities adds the dimension of time, indicating that one must adapt to changing market environments by acquiring and abandoning resources and capabilities over time (Teece et al, 1997; Eisenhardt and Martin, 2000).

Alvarez and Busenitz (2001) and Sarasvathy (2001; 2003) take this further, and addresses the central problem of resource based theory; the fact that entrepreneurs build successful companies with scarce or no initial resources. Contrary to this, prominent researchers within this field find that expert entrepreneurs indeed have a great set of resources. The entrepreneurial capability to see new opportunities and new markets, as well as seeing the value of resources that other do not see is essentially a resource in its own (Alvarez and Busenitz, 2001). Expert entrepreneurs also consider what they currently possess and ask themselves; "what can I do with what I have" (Sarasvathy, 2001), rather than making strategies that require them to invest heavily before taking action. Further, the ability to take action under high uncertainty and risk, guided by qualified assumptions and "gut feeling" is highly important. As time goes, the quality of the assumptions will also increase as the entrepreneurial knowledge accumulates (Alvarez and Busenitz, 2001).

The development in web technology and its virtually unlimited possibilities has given birth to companies that have grown to dominate the internet industry, although these companies did not exist a few years before, with Google and Facebook being prime examples of this. However, little academic research has been done on web startups, and most literature related to the phenomenon is non-academic and empirical. The competitive landscape implies that speed and time-to-market are essential success factors, as well as the ability to turn around fast if initial assumptions are proven wrong, i.e. to pivot (Ries, 2011). Web startups usually start out with small teams, but they are intrinsically born global companies. With few resources available, making the correct prioritizations and choices

under high uncertainty and limited information is key (Alvarez and Busenitz, 2001). **We define a web startup as a company working to solve a problem with the use of an web based application or web technology, where the solution is not obvious and success is not guaranteed.**

Looking at newer contributions from popular science, such as lean startup (Blank, 2005; Ries, 2011, Blank and Dorf, 2012), we find that principles from resource based theory (Barney, 1991; Eisenhardt and Martin, 2000) and entrepreneurship theory (Alvarez and Busenitz, 2001; Sarasvathy, 2001; 2003) are operationalized in defined processes that are adapted to the speed of the web startup sphere. The main contribution is the importance of utilizing user feedback to aid learning and fast iteration, and the introduction of the "minimum viable product" (MVP) can in this regard be seen as the epitome of entrepreneurship literature. By introducing the MVP, the entrepreneurs can test their assumptions by releasing a product or service with just enough features to be usable, gather feedback and learn from the users to improve the product. By doing this in short time frames, usually in weekly cycles or even more frequently, uncertainty of product/market fit is minimized, as are the resources wasted. Lean startup promotes speed over perfection, because making a wrong decision early and learning from it might be better than stalling in the pursuit of perfection.

Research question

The fast-paced environment of the web is unparalleled in any other industry, calling for new ways of management and skills. How do web startups stand out and stay ahead when competing with hundreds of startups executing on the same idea with access to the same technology and the same global market, as well as competing with established companies? For this thesis, we are looking at the building and development of dynamic capabilities (Teece at al, 1997; Eisenhardt and Martin, 2000; Chang, 2012) as key to achieve competitive advantage and superior performance in web startups. We further specify this by defining two research questions:

- **Q1**: What are the main external factors that affect the development of dynamic capabilities in web startups?
- **Q2**: What are the main internal factors that affect the development of dynamic capabilities in web startups?

In order to answer these questions, the literature reviewed is used to synthesize a framework for dynamic capabilities in web startups. Included in this framework are the ability to acquire technological specialists, their ability to stay up-to-date with the latest technological advancements and the team's ability to utilize these technical resources to develop their product in response to market knowledge, and the internal learning process. There is conducted a case study of four Norwegian startups on which the framework was tested, and the framework is iterated to account for the empirical findings. From this process, a set of propositions answering the research question is outlined. These also serve as a starting point for further research.

2 Research methodology

Even though entrepreneurship and entrepreneurial management has been a popular field of research for some decades now, the field of web startups and research done on these can still be considered to be close to non-existent. Not that surprising, bearing in mind that web startups are all based on technology that is about 20 years old at its oldest. Thus, the main research method chosen for this thesis was exploratory, as exploratory research tends to tackle new problems on which little or no previous research has been done (Stebbins, 2001). A qualitative method, based for the most part on a literature review and case studies based on in-depth interviews with founders of four different Norwegian web startups was chosen in order to conduct a exploratory study that was as valid as possible. The question of whether to undertake quantitative or qualitative research (or a combination of both) to answer our research question was, however, thoroughly thought through.

The nature of the research methodology should in any case be naturally linked to the research question. Some quantitative research has been conducted on the general nature of web startups in regards to team composition, funding and development stages (Marmer et al, 2011). However, considering the more in-depth nature of understanding the development and use of dynamic capabilities in this particular kind of startups, qualitative approach seemed more reasonable, as some questions would not, or could not be asked when conducting quantitative research (Gartner and Birley, 2002; Sørheim, 2003).

Considering how entrepreneurs often are seen as "outliers" of nature, the averaging measures of quantitative research within this field is curious (Gartner and Birley, 2002) in general, and maybe even more so in the cases of these new web entrepreneurs. As we sought to find the "why and how's" of the web startups' quest in developing dynamic capabilities, a qualitative approach was more appropriate according to Yin (1984), and could give a significant contribution to theory development in research fields where key themes are weakly developed (Eisenhardt, 1989). Web startups can be considered to be such an immature research field. The empirical research undertaken in this thesis did

therefore to a large extent follow Eisenhardt's (1989) process for building theory through the use of case studies.

Hoping to confirm that Norwegian web startups follow the approaches for the development of dynamic capabilities found described in the literature, the aspects regarded most important from the literature study were investigated in case studies through interviews with the founders or members of the core team in each startup. Our main focus, however, was to conduct open ended interviews with the goal of making discoveries that could be used to develop new theory. Overall, the study was therefore mainly exploratory-inductive, using a qualitative research method.

2.1 Method for data collection

The data collection for the thesis spanned over several months, and was an intensive and comprehensive process, reviewing two main sources of information; (1) an extensive literature review and (2) interview with founders and people in the core team of four Norwegian web startups. Both the literature review and the interviews were mainly exploratory, where the literature review was used as the foundation for the first iteration of a synthesized framework, whereas the inductive data gathered through the interviews were used to iterate the framework to be more operational and suitable for practical implications.

Data Source	**Short Justification**
Literature review	Doing a exploratory literature study was necessary to get a better overview and understanding of the research that was to be found to relate to the research question. The first iteration of the framework is synthesized from the literature reviewed here.
Interviews with Norwegian web startups	In order to adapt the framework to be suited for use in web startups, interviews with key team members (founders or members of the core team) of four Norwegian web startups were conducted. This to obtain an empirical rather than just theoretical background for the framework.

Table 1: *Justification of data sources*

2.1.1 Methodology for literature review

Even if considered a fairly new research field, the research on Entrepreneurship and Resource Based Theory consists of a variety of approaches that can be divided into two main branches, dependent on the perspective held by the researchers, seeing the world from a managerial or entrepreneurial point of view. Within these perspectives we also find branches, some of them intertwined, focusing on different aspects of entrepreneurship that stem from different sources of information. Research communities publish papers reflecting their theories, experienced entrepreneurs have their opinions, and you can find combinations of the two sold as popular science books on a global scale. Additionally, some university level textbooks do also address the topics. The exploratory effort of trying to shed light on as much of what had already been done by researchers before us meant that the first collection of empirical data was gathered from the entrepreneurship literature.

To answer the research question, we started by reviewing literature that sprung out of the Penrose's (1959) Resource Based View and that was developed and complemented through both established and newer contributions such as the theories of Dynamic Capabilities (Eisenhardt and Martin, 2000; Teece et al, 1997, Chang, 2012), Effectuation vs. Causation (Sarasvathy, 2001; 2003), Learning (Simon, 1991; Cohen and Levinthal) and the Knowledge Based View (Grant, 1996; Ghoshal and Moran, 1996). The contributions were analyzed in relation to both entrepreneurship theory and newer popular science. Hoping to see how established entrepreneurship theories apply to the web startups of today, we needed to understand what had been done before, how the theories and literature has evolved as well as strengths and weaknesses within the respective fields of research in order to do substantial and sophisticated research (Boote & Beile, 2005).

The theories were first summarized and analyzed on an overall level, before narrowing them down, comparing and discussing them in relation to resource identification, attraction and -building as dynamic capabilities within Entrepreneurship. To map out relevant literature, we focused on gathering recommended and well-cited articles from professors and fellow students who work within this field of study, as well as using our

own previous experience and knowledge within the fields. A systematic search on **Scopus** was also conducted to supplement the unstructured gathering with more specialized articles on the relevant topics. The search terms were based on the most important and influential initial pool of literature.

By doing a literature study we hoped to get answers to central questions such as:

- What are the key theories?
- What are the major issues and debates about RBV, KBV and Entrepreneurship?
- What are the main questions and problems that have been addressed?
- How is knowledge on the topic structured and organized?
- What is the relationship between the different theories?
- In which way has the literature influenced popular science or vice versa?

2.1.1.1 Finding Relevant Literature

Theoretical and Scientific Material (Academia)

Unstructured search

We started out with an unstructured gathering of articles provided by professors, fellow students as well as the authors' previous experience within different research field. This gave leads to the most influential contributors and work done within the fields of study. By reviewing the article citations, we could systematically work our way back in time to find older and influential articles. This method is what Streeton et al (2004) is referring to as snowballing, and it gave us access to other highly relevant and useful articles for our literature review. Instead of moving on to a structured search, Elsevier's function to find similar or related articles was used by searching on articles we already had and believed to be of great importance to the research question. This method did not only provide some of the most interesting articles, it also resulted in discoveries of recent and relevant articles that we did not find through the other search methods we used. Another method used to find recent articles, was to look at the authors who had cited older influential articles. This is called reversed snowballing (Streeton et al, 2004) and led to the discovery of many recent and relevant articles. The above-mentioned methods gave relevant articles on some

of the major theories within resource theory, knowledge based theory and entrepreneurship.

Structured search

From the unstructured search we collected a large amount of articles in the different areas of resource based theory, knowledge based theory and entrepreneurship theory. To specialize further and point out more specific articles, we went through a structured search on Scopus. Scopus was used as this is one of the most comprehensive databases for academic literature. This database is known to have articles of a certain academic quality due to peer-review of the journals that they cover and it allows for more complex search structures. This process resulted in 77 relevant articles and was divided into three different parts:

1. First a structured automatic and highly specific search on Scopus was performed to get the most relevant articles.
2. Look at the title of the article and remove those who were irrelevance from the research question.
3. The remaining articles abstract was read thoroughly and if they were found to be relevant, these articles were filtered by reading through them.

We used eleven different search queries to achieve the desired result of articles. Combining multiple search words and filtering the results using criteria such as subject area and citations was used to built up the queries. By adding the citation filter, there was automatically a focus on articles that have done impact within its specialized field. The disadvantage with this method could be that newer and relevant articles could get lost in the search, but this was somewhat mitigated by using reversed snowballing (Streeton et al, 2004) to find newer articles. The tables in Appendix 2 show the search queries and filters, so that the exact same search can be performed.

Experience based and practitioner-oriented Material (Popular Science)

Eric Ries and Steve Blank are two influential authors within the web startup scene, and have written several books on the topic. Steve Blank is a Silicon Valley serial-entrepreneur and consulting associate professor of entrepreneurship at Stanford University. Eric Ries is a

Silicon Valley entrepreneur and author recognized for pioneering the lean startup movement, a new-business strategy that directs startup companies to allocate their resources as efficiently as possible. Their work is much used and quoted by leading technology journalists while also taught at renowned universities throughout the world. We will use their work to see how it corresponds to or complements known academic literature to get an better understanding of a more operational and practical approach to entrepreneurship than that of academic literature.

2.1.2 Methodology for interviews

The literature review, done prior to planning the methodology of the interviews conducted in this thesis, found that entrepreneurship theory, especially regarding dynamic capabilities in web startups, was virtually non-existent. For this reason, interviews were chosen as a primary source of data, as it was considered the only feasible way to build a framework tailored for the assumed needs of web startups. The interviews were conducted to get an understanding of how web startups correspond to the existing literature of tech startups and if they would fit into the synthesized framework based upon this literature. Interviews provided a good way of focusing directly on relevant topics as these provides perceived causal inferences and explanations (Yin, 2009).

2.1.2.1 Selecting Startups - Cases

The selection of cases is a an important aspect of building theory from case studies, and the concept of population is crucial as it defines the set of entities from which the research sample is to be drawn (Eisenhardt, 1989). However, sampling of cases from the chosen population is unusual when building theory from case studies, as such research relies on theoretical sampling (i.e., cases are chosen for theoretical, not statistical, reasons, Glaser & Strauss, 1967) (Eisenhardt, 1989). As this thesis seeks to build or at least contribute to the research within the sphere of web startups, the cases were not chosen randomly, which according to Eisenhardt (1989) is neither necessary, nor preferable. The cases chosen for this empirical research were chosen with the purpose of providing insight into the daily works of Norwegian web startups that all have different funding and that operate within different markets.

Considering that all the case startups to some extent can be considered born globals, the fact of them all being headquartered in Norway was not seen as to be too limiting in regards to the applicability of the findings in other countries and markets. Being headquartered within the same country and culture was also considered to make the startups more comparable as they were working in the same startup community and therefore had access to the same resources and investor networks. Suitable cases were found through using the network of the researchers, two of them doing a web startup on their own.

This startup was included in the study was because of its traction in the rapidly developing market of live music streaming and the potential for access to a unfiltered information of its daily workings. As a startup often can be considered the "baby" of an entrepreneur, to have him or her to tell about their secrets, mistakes, success et cetera takes trust and a good relationship between at least one of the founders and the researchers. Doing this from scratch could potentially have taken a lot of time, and March and April was therefore used to find good cases in which the researchers had a connection to the founders, convincing these founders to agree to be interviewed and finding times for when these could be conducted during the month of May. Fortunately, our own standing in the small sphere of Norwegian web startups allowed us access to startups, not only with different funding and operating within different markets, but also to interview those that were considered to be the most successful, in the form of having most traction and being portrayed as the "ones to watch" both within the community and by the media.

2.1.2.2 Selecting Interview Subjects

In order to get the most possible information about both the practices from the beginning of their startups and from today, in regards to the research question, it was assumed important that the interviewees were either a founder or a member of the core management team. Considering two of the researchers' unique position of being co-founders of a web startup with traction in the music technology industry, a fitting case for the research to be conducted, not to mention the unique insight the researchers have to the daily operations of their startup, this startup was included as one of the cases to be studied.

Weighing the subjectivity of the findings and the potential for considerable bias in the study against the unique access to first hand information on the inner workings of a high paced web startup in its critical face of going from a "bedroom project" to raising a first round of funding, the scales landed on including this case. The insight into what it takes to take an idea from the drawing board and through concept validation was considered too important to leave out. The two researchers working in this startup were therefore included as interview subjects, both because they were two of three founders that had been a part of the company from the very beginning, and because they worked as the CTO and CMO, and therefore brought both a technology and a market perspective.

To give the reader an understanding of the four cases, a short listing of the interviewed startups is presented in the table below (table 2). The cases are all treated as anonymous in this thesis to secure their confidentiality, which in turn allowed for more in-depth studies of the startups as the interviewees allowed themselves to answer questions more freely than what could have been the case if their identities and startups were to be disclosed.

Case	Established	Interviewee	Role
Game development	2012	Gaming Entrepreneur #1 (GE#1)	Co-founder & CEO
Game development	2012	Gaming Entrepreneur #2 (GE#2)	Co-founder & COO
Education Technology	2012	EdTech Entrepreneur #1 (EE#1)	Founder & Inventor
Education Technology	2012	EdTech Entrepreneur #2 (EE#2)	Lead Designer
Live Music Streaming	2013	Music Entrepreneur #1 (ME#1)	Co-founder & CEO
Live Music Streaming	2013	Music Entrepreneur #2 (ME#2)	Co-founder & CTO
Teleconferencing	2013	Teleconference Entrepreneur #1 (TE#1)	Founder & CTO
Teleconferencing	2013	Teleconference Entrepreneur #2 (TE#2)	Product Manager

Table 2: *List of the interviewees*

2.1.2.3 The interview process

During a three week long interview process, a total of eight interviews were conducted with the founders and core members of the management team in four Norwegian web startups. Out of the eight interviewees, seven were male, and one was female. All interviews were semi-structured - having a specific theme for examination during the interviews, and all interviewees were asked the same questions (Sommer & Sommer, 1997). The intention of the interviews was that they would lead to new and important findings, and being less constrained than when doing structured interviews, allowed the interviewees to digress into directions that could lead to such findings.

2.1.2.4 Conduction of Interviews

Where the circumstances allowed for it, the interviews for each startup were conducted on site, in their offices, with the interviews of the two interviewees from the same startup done back to back. This was done for two reasons. It allowed us to actually observe their work space to look for special configurations, tools or work methods that we could ask more about in the interviews to be conducted, and secondly, it hindered the two interviewees from the same company to talk to each other between the first and the second interview, potentially having the answers of the first interviewee color the answers of the next. Each interview lasted between one and two hours. The interviews were conducted face to face where possible, and in the two instances where distance made this impossible, video conferencing was used to perceive the body language and gestures of the interviewees.

In order to obtain as much untainted information from the interviewees as possible, we focused on listening rather than speaking when conducting the interviews. If a need for deeper probing into a specific topic was raised, we sought to ask some additional questions in a very naive manner in order to keep the questions from being colored by our own bias. According to Yin (2009), using these basic interview techniques help reduce the amount of influenced or biased data. Following the "listening instead of talking" guideline we sometimes experienced a need to disregard our preset interview guide by skipping some questions that turned out to not be applicable or that were answered while answering other questions. At the same time we experienced that the longer into the interview, the

deeper into the core topic we got, and the more new and interesting insight was extracted from the interviewee. For this reason the interviews turned out a lot longer and extensive than what the interview guide suggested.

2.1.2.5 Processing of the data

For all but two of the interviews all three researchers were present for the interview; one interviewer asked the questions and conducted the interview, one made sure all questions were answered and helped with follow up questions to secure this. The last interviewer wrote a summary of the interview while it was being conducted. Additionally, all interviews where recorded and these recordings were then used to revise and improve and build upon the "live" summaries immediately after the interviews. Quotes of importance and interest were transcribed in their original wording to secure the accuracy and intended meaning, as these were later used to undermine the findings to discard or support the framework based on the literature review. When interviewing the founders of the last startup, however, there was only one interviewer as two of the researchers of this thesis were the interviewees and were not to be influenced by each other's answers. In this case the unbiased interviewer asked the questions, and wrote and revised the summary immediately following each interview. Each summary is approximately five pages long and can be provided per request as they contain some information that is to be handled confidentially.

2.1.3 Validity of interviews and their findings

2.1.3.1 Internal validity

Ensuring that the research was as internally valid as possible was considered very important, and a lot of effort was therefore put into this throughout the work with this thesis. A potential threat to validity that the we were well aware of, was that of our own bias, i.e. researcher bias. According to Johnson (1997), researcher bias can easily occur when conducting qualitative research, due to its open ended and unstructured nature, where researchers "find what they want to find, and then they write up their results". This selective observation and recording of information, and the researcher bias following it, can be tamed if the researchers actively engage in critical self-reflection about their

potential biases and predispositions, a strategy often referred to as reflexivity (Johnson, 1997). In table 3 below, a short description of each researcher's background and how this potentially could have affected our research, is presented.

Researcher	**Background**	**Potential for bias**
Martin A. Sahlén	Academic background from Computer Science and Entrepreneurship. Currently the CTO of an up-and-coming web startup within the music industry.	His strong academic background and passion for web technology could give a bias towards technology driven factors of success, potentially failing to ask the questions that unveil the importance of market knowledge, brand and marketing. Being the CTO of a web startup, a potential for bias in regards to what are the best development tools and processes could guide the direction of the technical questions. Working in a web startup himself, his knowledge of the inner workings of his own startup could prevent him from asking important questions, as he could take the answers for granted.
Mathias Rygh	Holds a B.Sc. in Innovation Management and Entrepreneurship. Currently the CMO in an up-and-coming web startup within the music industry.	His strong academic background and passion for business development, branding and marketing could give a bias towards asking questions related success factors driven by market knowledge, brand and marketing, potentially failing to ask the questions that unveil the importance of technology. Being the CMO of a web startup, a potential for bias in regards to what are the best marketing tools and uses of social media channels could guide the direction of the questions related to marketing, branding and community building. Working in a web startup himself, his knowledge of the inner workings of his own startup could prevent him from asking important questions, as he could take the answers for granted.

Sigurd Gran-Jansen	Academic background from Computer Science and Entrepreneurship. Currently working in the core team of a hardware startup making self-tracking drones, while making a video/music web application on his spare time.	His strong academic background and passion for web technology could give a bias towards technology driven factors of success, potentially failing to ask the questions that unveil the importance of market knowledge, brand and marketing. Spending a lot of time developing web applications also he could have a bias in regards to what are the best development tools and processes could guide the direction of the technical questions. Working in a tech startup could also guide what he believes to be relevant for working in a startup from his own experience, but that might not be as relevant for startups in the web sphere.

Table 3: *Description of the researchers' potential for bias*

To promote internal validity and secure its defensibility, some of Johnson's (table 1 in Education; Winter 1997) strategies for promoting qualitative research validity on the descriptive, interpretive and theoretical level were used. These are presented in table 4 below with descriptions of their applicability to this thesis. Following this argumentation, we argue that the research to hold a high degree of internal validity, even considering the limitations presented in section 2.3.

Strategy	**Applicability to thesis**
Single Method Data Triangulation	By interviewing several interviewees, multiple sources of data were acquired using a single method. Using data triangulation enabled us to confirm that the findings from one interviewee matched those of the others. "Cross-checking" the information and the conclusion using the different data source several supporting findings were found, increasing the validity of the data collected.
Research Triangulation	the research question was answered using data sources gathered from different research methods, i.e. literature review and interview
Investigator Triangulation	All three authors of this thesis had the role of researchers, taking part in both the collection and the interpretation of the data gathered when working with this thesis, allowing for cross-checking of our observations, making sure we had corroboration (i.e. agreement) on what was observed and said during the interviews.

Theory Triangulation	Multiple theories and perspectives from the literature are used and reviewed when interpreting and explaining the data from the interviews.
Participant feedback	Where possible, the summaries of the interviews were sent to interviewees for them to confirm that our interpretations of their viewpoints were correct, clearing up areas of miscommunication. It should be noted that no major revisions where found necessary in this process.
Low inference descriptors	Use of direct quotes in the interview summaries was done also done to leave less room for misinterpretations made on our behalf, by letting the reader interpret the statements of the interviewees.

Table 4: *Strategies for promoting qualitative research validity*

2.1.3.2 External validity

Considering external validity, some argue that qualitative research can hardly become externally valid. One reason for this is that as qualitative researchers, we are more interested in the findings that are particularistic than the universalistic ones (Johnson, 1997). Another reason concerns an issue we addressed above, i.e. the fact that the people and settings in qualitative research seldom are randomly selected, and thus, the research conducted and results obtained are not easily generalizable (Yin, 2009). Further, there may also be significant cultural differences between the different entrepreneurial ecosystems in Norway, where all case companies are situated, and well-known ecosystems such as the Greater Boston Area and Silicon Valley in the United States. Assumable, there may be differences in areas such as risk aversion within investors / entrepreneurs and availability of equity funding and governmental support structures for entrepreneurs. As these factors may affect how the entrepreneurs proceed and build their companies, findings may very well be restricted to only be locally valid.

2.3 Limitations

2.3.1 Limitations of the Literature Review

2.3.1.1 Sources

Even though we certainly have made the search as wide as the scope of this thesis would allow when searching for relevant articles for the literature review, we have taken note of the fact that most of the articles included stem from North American scientists and authors

and that close to all seem to originate from research societies in "western" nations or nations with western-oriented culture. Considering this, we cannot claim that the conclusions reached are directly transferable other cultures not similar to the western ones, which limits the external validity of our research (Yin, 2009).

Our investigation of the field may also have been limited by the fact that we were familiar with the search terms used before conducting the search. However, considering the extensive use of snowballing, consulting with our supervising professor and other entrepreneurs at our university, as well as reading all the articles came across, we feel confident that we have covered many relevant sources of literature. If there were edge cases of interesting findings that could not be implicitly or explicitly understood in terms of the literature review, and / or could possibly benefit from other theoretical viewpoints not reviewed, these findings were included as topics for further research in order to not dilute the focus set by the research question.

2.3.1.2 Size of the field

The research field of entrepreneurship research, including all the papers and books that are related to the field even if originating from other disciplines, would be too extensive to cover in this thesis. The effort of trying to narrow it down to what was relevant in terms of the research question may have led us to exclude what some experts or other researchers might consider important - but this was considered a justifiable tradeoff.

2.3.1.3 Low Maturity of research field

A limitation that is outside the query and is more oriented towards the aims of this research thesis, was to find theory on web startups. Since this is a relatively new and premature field of study and within a market that is changing at a fast pace, there was little influential theory. As mentioned, reversed snowballing was used with some degree to obtain newer and more relevant literature. On the other hand, there is relevant popular science that is written by Silicon Valley entrepreneurs and academicians, for example Ries (2011) and Blank (2005), which have first hand experience on the subject. This literature is therefore used in this thesis to cover the web startup aspect of this thesis and especially to pinpoint where they differentiate from other types of startups.

2.3.2 Limitations of the Interviews

2.3.2.1 The Interview Session

A research method based on interviews comes with some limitations; Poor wording of questions on behalf of the researchers could lead to biased findings, answers could get affected of the interviewee's perception of what is the "right" answer or what the interviewer wants to hear, or the questions could be interpreted by the interviewee in a way not intended by the interviewer (Yin, 2009). To minimize the effects of these limitations, we made sure to prepare each interview thoroughly, as well as following up with additional questions whenever statements from the interviewee were unclear or could be interpreted in different ways. In order to secure that the summaries of all the interviews were as accurate as possible, all the interviews were also recorded on tape, and this was used as a basis for making thorough summaries.

2.3.2.2 The Selection of Startups - Cases

Even though we chose a qualitative research method focusing on the quality of the cases with in-depth interviews, we do realize that the fact all the cases are Norwegian startups may limit its generalization of our findings. Considering that one of the startups included in the research is partially run by the authors of this thesis themselves, this may also cause bias in the study as the researchers may consider their practices as the "right" ones. There are also just four startups in question, and the findings are therefore to be seen as indicative, yet interesting. There is arguably a need to conduct larger and longitudinal studies of web startups to further concretize and confirm our findings.

2.3.3 General Limitations

As presented in the validity chapter (2.1.3), our background as entrepreneurs might have given us a bias even before starting our work on this thesis. However, even though all the authors are currently working in new startups (two of us even doing a web startup), and therefore might have more insight into the field than a researcher with no practical experience, it is important to note that we in now way would consider ourselves to be experts in the field of entrepreneurship studies. We have great respect for the work that

has been done in the field so far, and we might be limited by our fairly narrow horizon as we concentrate on the new era of high paced, technology - and brand-driven web startups of this day and age.

3 Literature review

As stated in the introduction, the literature review will go through central theory of importance for our research question. In this introduction we will briefly state the main building blocks and concepts of the literature review (depicted in table 5 below) and the motivation for including them.

Resource based view • Different types of resources • Capabilities • Dynamic capabilities	**Knowledge based view** • Knowledge as competitive advantage • External learning • Internal learning
Entrepreneurship theory • Categorizing resources • The entrepreneurial mindset • Effectuation versus causation	**Popular science** • Lean startup • Minimum viable product • Fast and iterative development

Table 5: *The main building blocks and concepts of literature review*

1. **Resource based view**: Resource based theory is prerequisite for understanding what resources are and what their properties are. We will give a brief presentation of the field along with the central concepts such as resource imitability, competitive advantage and dynamic capabilities.
2. **Knowledge based view**: Knowledge based view considers knowledge as the most important resource, seeing other resources (although expensive) as commodities that can be bought or easily imitated.
3. **Entrepreneurship theory:** Entrepreneurship theory conceptualizes central theories about how entrepreneurs think and act differently than managers and ordinary people. Research within the field emphasizes the shortcomings of resource based theory in explaining the entrepreneurial feat.
4. **Popular science**: Popular science written by expert entrepreneurs arguably gives fresh, new and more practically oriented perspectives on entrepreneurship and also explains where and why web startups can be considered different to other types of startups. By being practical and empirically oriented, it gives subtle insight that academic theory does not provide.

3.1 Resource based theory

Resource based theory (RBT) originates from Penrose (1959). Penrose (1959) originally looked at resources as a way to stimulate and maximize firm growth, and it has later been discussed what Penrose's (1959) intended contribution to the field of the resource based view of strategic management really was (Rugman and Verbeke, 2002; Kor and Mahoney, 2004). However, RBT is now considered to emphasize how a firm can sustain its competitive advantage through awareness and strategic management of its resources (Wernerfelt, 1984; Barney, 1991; Barney et al 2001; Barney et al, 2011). Different areas in classic resource based theory provides the conceptual means to understand how a new venture may isolate itself from competition (West and Noel, 2009), and strategies for attaining competitive advantages emphasize developing and configuring existing resource strengths into a valuable and unique resource base (Teece et al, 1997; Eisenhardt and Martin, 2000).

Wernerfelt (1984) introduced the concept of the resource based view, while Barney (1991) further categorized resources as tangible (physical, financial) and intangible (knowledge, experience, brand, patents, organizational structure, network et cetera), and argued that the resources, to give competitive advantage, need to be hard to imitate and non-substitutable. Barney (1991) claims that intangible resources are more important (yet complex and somehow hard to grasp and describe) from a strategist's perspective because they more often provide the basis to sustain a competitive advantage as they are rare and difficult to imitate by competitors (Barney, 1991).

3.1.1 Resource heterogeneity

A heterogeneous resource is a resource one company has that their competitors don't. Alvarez and Busenitz (2001) argue that a resource needs to be heterogeneous, for it to give competitive advantage. Penrose (1959) also emphasized this and claimed that it is the heterogeneous resources that make the firm unique because it differentiates the firm from its competitors. Ever since Barney (1991) argued that resource heterogeneity is the most basic condition of resource-based theory, strategy researchers have been more aware of the importance of having heterogeneous assets to sustain competitive advantage (Alvarez

and Busenitz, 2001). Resource based theory suggests that heterogeneity is necessary but not sufficient for a sustainable competitive advantage. If a firm, for instance, has heterogeneous assets but not the other conditions suggested by Barney (1991), it will only have short-term advantage until these are imitated (Barney, 1991; Eisenhardt and Martin, 2000). On the other side, there has been little research on how these heterogeneous resources are discovered, how they are turned from homogeneous inputs to heterogeneous outputs and exploited to extract great profits (Alvarez and Busenitz, 2001).

3.1.2 Causal ambiguity

Causal ambiguity is a property of a company's *imperfectly imitable* (Barney, 1991) resource(s), which gives the company a competitive advantage because it is a hidden synergy of resources. Causal ambiguity is something that matures over time within a firm, and since it is gradually evolving, it is difficult to put your finger on what it is you do that makes you so much better than your competitors. This is also the good thing about causal ambiguity, because if the host firm does not know what makes it that good, it is very challenging for competing firms to know what makes their competitor better. Uncertainty of how to imitate makes the causal ambiguity of the firm a heterogeneous resource that gives the firm its competitive advantage (Alvarez and Busenitz, 2001). But, as Widding (2007) states, if the firm itself enjoys the benefit of having inimitable resources, this can be a problem if the firm itself does not know how to manage these resources on a longer term.

3.1.3 Capabilities

According to Teece et al. (1997), companies can accumulate a large stock of valuable resources while at the same time not having many useful *capabilities* to maximize exploitation of these resources. While resources are the building blocks of a company, a capability is a gathering of the resources working together to create competitive advantage (Grant, 1991). Sustainable competitive advantage comes from *capabilities* that are created from the company's intangible resources (Barney, 1991). Widding (2005) also states that one cannot talk about resources without mentioning the capability to exploit them, and presents a model developed by Rangone (1999) that consists of (1) innovation capability, (2) production capability and (3) market capability.

A capability can be seen as a way of improving the productivity of the company's resources, by adopting synergy between them, and to integrate this closely with the company's strategies. Grant (1991) argued that it is important for the company to identify their resources and capabilities to create a strategy for exploiting these in the best possible way. Resources are thus the basic unit of analysis for the firm; capabilities are the capacity of bundled resources to perform an organizational task or activity. Capabilities are company specific, complicated and very difficult for competitors to copy because they are developed over time and therefore woven into the business (Amit & Shoemaker, 1993; Prahalad & Hamel, 1990). Because a capability is based on a number of the company's resources and is linked so closely with the business (causal ambiguity (Barney, 1991)), it is also vulnerable to major internal changes in the company such as hiring new people and letting them go due to it social complexity (Barney, 1991).

3.1.4 Dynamic capabilities

Having currently valuable and rare resources and capabilities may be a prerequisite for competitive advantage, but it may not be enough to actually *sustain* the advantage over time (Eisenhardt and Martin, 2000). Dynamic capabilities can be defined as the company's ability and capacity to continuously renew their competences and capabilities in order to achieve an optimal fit with the ever-changing business environment that the company operates in. A company must constantly acquire, update and / or abandon its resources in order to stay in the race (Teece et al, 1997). Barney (1991) explained sustainable competitive advantage on the assumption that they are indeed sustainable. This assumption is, however, not valid in high-velocity markets. Eisenhardt & Martin's (2000) primary critique against resource based theory is that it reaches a boundary condition in high-velocity markets. As stated by Eisenhardt & Martin (2000):

"RBV thinking overemphasizes the strategic logic of leverage. While certainly some resource configurations do lead to long-term competitive advantage and some situations such as those with significant scale economies or network effects favor the emergence of such advantages, long-term competitive advantage is infrequently achieved in dynamic

markets. Rather, the reality is that competitive advantage is often short term. In these situations, it makes sense for managers to compete by creating a series of temporary advantages."

The temporary advantages the Eisenhardt and Martin (2000) are referring to are obtained through the dynamic capabilities' ability to continually acquire, create, integrate, recombine and release the firms' resources. Eisenhardt and Martin (2000) also point out a very important managerial ability - in high-velocity markets, managers need to be able to make decisions fast, guided by what the authors coin *simple routines*:

"Effective dynamic capabilities in high velocity markets are simple, not complicated as they are in moderately dynamic markets. Simple routines keep managers focused on broadly important issues without locking them into specific behaviors or the use of past experience that may be inappropriate given the actions required in a particular situation. Often these routines consist of a few rules that specify boundary conditions on the actions of managers or indicate priorities, important in fast-moving markets where attention is in short supply."

3.2 Knowledge based view

As argued by authors such as Prahalad and Hamel (1990) and Teece and Pisano (1994), competition is increasingly knowledge based as firms strive to learn and develop capabilities faster than their rivals. According to Widding (2005), knowledge is the most important resource for *new technology based firms*, of which the focal area of this thesis, web startups, can be considered a subset. As argued by most contributors in both classical knowledge based view as well as newer entrepreneurial approaches, knowledge is a key factor to develop resource asymmetries and capabilities. According to West and Noel (2009), a new venture's strategy is based upon the knowledge the firm has about its market, the opportunity and the strategy to pursue the opportunity. Knowledge is a source of competitive advantage and the potential for sustainability (Barney, 1991). The growing focus on intangible resources has led to the emerging knowledge based view that emphasizes the importance of the knowledge and learning within the company to sustain its competitive advantage (Alvarez and Busenitz, 2001).

Knowledge based view focuses upon knowledge as the most strategically important of the firm's resources and it is an outgrowth of the resource based view (Grant, 1996). In fact, knowledge is also addressed as *intellectual capital*, which shows that there is a strong link between resource based theory and knowledge as a resource (Widding, 2007). According to the knowledge based view, the 'organizational advantage' (Ghoshal and Moran, 1996) of firms over markets arises from their superior capability in creating and transferring knowledge. Knowledge creation and innovation result from new combinations of knowledge and other resources (Cohen and Levinthal, 1990; Kogut and Zander, 1992). In young technology ventures it is crucial to hold knowledge about market needs as it increases an entrepreneur's ability to effectively exploit an opportunity, attract initial customers, and generate outcomes associated with economic value (Burgers et al., 2008; Wiklund and Shepherd, 2003).

3.2.1 What is knowledge?

Let us start by defining what comprises knowledge. A pedagogical definition (Widding, 2007) starts by acknowledging that knowledge is constructed of *data* and *information*, where *data* is explicitly given, such as statistics or a social security number. Data turns into information the moment it gives a decision-maker better grounds to make a decision; information is therefore a means to reduce uncertainty by equipping the decision-maker with knowledge. Widding (2006) also emphasizes that knowledge has some very interesting characteristics that sets it apart from other types of resources: (1) knowledge grows as you use it, (2) The holder of the knowledge will keep the knowledge after passing it on to a third party and (3) knowledge can persist through space and time. These properties of knowledge as a resource can give many possibilities if the entrepreneur is aware of them.

Further, Widding (2006) adopts Nonaka & Konno's (1998) division of knowledge into tacit and explicit knowledge. Explicit knowledge can be codified as words, specifications and manuals that can easily be transferred between individuals without regard to time and contextual factors. Tacit knowledge is a more complicated concept, because it consists of

subjective insight, feelings and intuition (Widding, 2006). Looking at resource based theory, tacit knowledge is imperfectly imitable (Barney, 1991) and causally ambiguous. This is a good thing about causal ambiguity, because if the host firm doesn't know what makes them so good, it is very challenging for a competing firm to know what makes their competitors better. Uncertainty of how to imitate makes the causal ambiguity of the firm a heterogeneous resource that gives the firm its competitive advantage (Alvarez and Busenitz, 2001). However, as Widding (2006) rightfully points out, causal ambiguity gives both opportunities and limitations in achieving competitive advantages - how do you transfer and manage knowledge and related capabilities of which the origin is unknown?

3.2.2 Learning

The accumulation of knowledge through learning in the firm constitutes a driving force in the development and growth of young firms (Penrose, 1959; Spender and Grant, 1996), because knowledge acquisition opens new "productive opportunities" (Penrose, 1959) and enhances the firm's ability to exploit these opportunities. Knowledge includes both easily communicated, articulable knowledge and tacit knowledge that is difficult to define due to its interconnections with other aspects of the firm (Barney, 1991; Lane and Lubatkin, 1998). As argued by Simon (1990), Learning is therefore not limited to the acquiring of new skills and knowledge through internal learning, but also by obtaining new knowledge resources such as new team members with specialized knowledge.

3.2.2.1 External learning

Considering how entrepreneurs essentially are in the search of a functioning business model and the resources (i.e. knowledge, cash and people) needed to fulfill it, they are naturally forced to look outside themselves and their startup when building a resource base for their venture. Widding (2005) argues that entrepreneurial knowledge can be stored within joint ventures, partnerships or other types of collaboration with other firms where the company itself does not possess all the necessary knowledge itself. It also includes knowledge obtained from customers and suppliers, as well as external advisors or consultants. Interestingly, it may also include knowledge obtained from competitors. Widding (2005) references this process as building external knowledge reservoirs - the motivation is that building external knowledge reservoirs is a cost-effective way to get

access to knowledge that otherwise would be expensive or impossible to acquire alone, due to lack of different forms of capital.

The acquisition and exploration of both market and technology knowledge is often a result of a social process (Kogut and Zander, 1992; Yli-Renko et al., 2001, Ulhøi, 2005) where the entrepreneur may acquire knowledge and scarce resources through interactions with its network (Kaish and Gilad, 1991; Ostgaard and Birley, 1994) or through alliances with other complementary companies. According to Low and Abrahamson (1997), pioneers of new forms of organizations have unique personal network as well as strong ties to two or more non overlapping networks.

Individuals' access to external knowledge through the social networks in which they participate, is fundamental for developing the capability to recognize new business opportunities (Ramos-Rodriguez et al, 2010). The external knowledge is then combined with existing knowledge to create capabilities that will generate competitive advantage (Yli-Renko et. al. 2001) through new technology and strategies. Such strategies can result in innovative business models (Burgers et al., 2008) and economic cost-related advantages (Dixon and Duffy, 1990). This will create value that other companies cannot efficiently replicate (Hitt, Ireland, and Hoskisson, 1999). It is therefore important for the company to value the ability to identify, assimilate, and utilize a partner's knowledge (Lane and Lubatkin, 1998). Those networks are, according to Dubini and Aldrich (1991), resources the entrepreneur use to ask for labor and raise money for a venture with an uncertain future.

Sullivan and Marvell (2011) found that entrepreneurs who had high level of technology knowledge acquisition and who relied more on networks for the knowledge acquisition were better equipped to generate innovative offerings. They further suggests that entrepreneurs who seek to generate innovative products/services should acquire technology knowledge early, this is emphasized by Cohen and Levinthal (1990) who argues that lack of investments in an area of expertise early on may foreclose the future development of a technical capability since they will not be able to forecast and appreciate

new opportunities. The ability to exploit external knowledge is thus a critical component of innovative capabilities. In young firms, social capital is therefore developed as a strategy to aid in acquiring new knowledge to gain competitive advantage (Yli-Renko et. al. 2001).

3.2.2.1.1 Social capital and networking as a strategy for external learning

Yli-Renko et. al. (2001) argues that the more social capital a young technology-based firm develops, the more likely it is to acquire new knowledge and exploit it as a basis for competitive advantage. This logic maps closely onto Dyer and Singh's (1998) model of relational rents which proposes that the potential a firm has to create competitive advantage depends not just on its own resources, but also on its relationships with other key firms, as does Sarasvathy's (2001) findings that partnerships are a vital part of the entrepreneurial strategies. Widding (2007) also states partnerships as important and cost-effective ways of acquiring knowledge the company does not possess and does not have the resources to develop itself. This finding is also supported by (Van De Ven, 2005) who states that *"entrepreneurs seldom have the resources, power, or legitimacy to produce change alone. As a result, "running in packs" is often more successful than "going it alone" to develop and commercialize knowledge-intensive technologies".*

Ostgaard and Birley (1994) states that the personal network of the owner is the most important resource upon which he or she can draw in the early days of the firm's development, and following this line Lin et al (2006) argues that successful entrepreneurs are those who can adjust their entrepreneurial strategies according to their social capital and capabilities. As found by Brush et al (2003) , it can be argued that in the early phase of the startup, the social capital (i.e. the network) of the entrepreneur(s) is the starting point for obtaining the necessary human capital to build a credible team that can realize the product and also obtain other forms of capital in later stages,

Summarizing much of the existing literature on social capital and entrepreneurship, Cope, Jack and Rose (2007) argue that the emerging perspective within social capital and entrepreneurship is that since economic activity is embedded in society, innovative entrepreneurs develop social capital through building networks that provide them with

external sources of information, support, finance and expertise, and allows for mutual learning and boundary crossing. They also found that the network of the entrepreneur is likely to start out highly personal (friends and family), but is likely to expand to include a wide range of contacts. However, networks are still likely to be based on experience, which not only determines the range of the network, but also may actually influence the perception of opportunities and the courses of action for the contacts within (Cope, Jack and Rose, 2007).

Anderson and Miller (2002) also argue that the presence (or absence) of social capital is likely to influence the nature of the entrepreneurial venture. Seeing how social capital involves social interaction, residing in and between connections to others, the same researchers argue that it could even be regarded as "networking capital", as it essentially is a relational phenomenon referring to the social connections entrepreneurs use to obtain resources they otherwise would have to spend human or financial capital to acquire (Anderson and Miller, 2002; Cope, Jack and Rose, 2007). This logic is also adopted by Widding (2005). That being said, gaining access to social networks, may not necessarily be an easy feat, as they tend to be based on mutual trust and shared understanding, therefore often being exclusive rather than inclusive (e.g. chambers of commerce and universities) (Cope, Jack and Rose, 2007).

Breaching with the highly individualistic nature of economic theory, economics of entrepreneurship sees activity as socially embedded, even while resting on the role of individual opportunity (Shane, 2003). Building a network is a dynamic rather than static process, and that the form and capabilities of networks therefore depend on both on the stage of the entrepreneurial process as well as the reputation of the entrepreneur. It is also pointed to the fact that as trust may be broken as well as developed, through e.g. opportunistic behavior, cheating or free riding on goodwill, social capital can arguably be destroyed as well as built (Cope, Jack and Rose, 2007).

3.2.2.2 Internal learning and coordination

Internal knowledge is knowledge within the company and its employees, regarded as the

internal knowledge reservoir by Widding (2005). The internal knowledge reservoir consists of the employees of the company, and according to Widding (2005), this knowledge is the most important resource for NTBFs. Building on Barney's (1991) definitions, this is where the tacit and inimitable resources are generated, and thus the primary grounds for competitive advantage. Widding (2005) also emphasizes the importance and impact of a company's internal organization of activity, routines and communication for the innovative capability.

While Burgers et al. (2008), Wiklund and Shepherd (2003), Yli-Renko et al (2001) and Cope, Jack and Rose (2007) looks at the entrepreneurs social capital in regards of acquiring knowledge from external sources, Grant (1996) looks on how the already existing knowledge of the firms members best can be applied and utilized within the firm. He argues that knowledge creation is an individual activity and the firm's main task is to get access to individuals' knowledge and being able to utilize this it. This is supported by Simon's (1991) observation: *"All learning takes place inside individual human heads; an organization learns in only two ways: (a) by the learning of its members, or (b) by ingesting new members who have knowledge the organization didn't previously have."*

Simon (1991) also argues that the human brain has limited capacity to acquire and store knowledge, which mean that individual's needs to specialize within specific areas to acquire expert knowledge, while jacks-of-all-trades are masters-of-none. This is emphasized by Ellis (1965), Estes and Kolan (1970), Bower and Hilgard (1981), who conclude that an individual's learning is greatest when the new knowledge to be assimilated is related to the individual's existing knowledge structure. Cohen and Levinthal (1990) have extended these insights from the individual level to the organizational level and coined the term "*absorptive capacity"* which defines the organization's ability to value, assimilate and commercialize new external knowledge.

Zahra and George (2002) later propose a reconceptualization of absorptive capacity as a dynamic capability pertaining to knowledge creation and utilization that enhances a firm's ability to gain and sustain a competitive advantage. Since the premise of the notation of

absorptive capacity is that the organization needs prior related knowledge to assimilate and use new knowledge, Cohen and Levinthal (1990) argue that the organization's absorptive capacity builds upon earlier investments in its individual knowledge and absorptive capacity. The sort of knowledge that individuals should possess to enhance organizational absorptive capacity is also important. Critical knowledge does not simply include substantive, technical knowledge; it also includes awareness of where useful complementary expertise resides within and outside the organization. This sort of knowledge can be knowledge of who knows what, who can help with what problem, or who can exploit new information. Clark and Fujimoto (1991) emphasize this by pointing out that the speed of product development is strongly influenced by the know-how of where in the organization complementary knowledge is located.

Grant (1996) argues that transferring knowledge between members of an organization is an ineffective way of integrating knowledge into an organization, and rather emphasizes the importance of cooperation between specialists that holds different areas of expertise to conduct a task. *"If Grant and Spender wish to write a joint paper together, efficiency is maximized not by Grant learning everything that Spender knows (and vice versa), but by establishing a mode of interaction such that Grant' s knowledge of economics is integrated with Spender's knowledge of philosophy, psychology and technology, while minimizing the time spent transferring knowledge between them"*.

Instead of one specialist learning another to perform everything on his own, the specialists interact with each other to create knowledge which is unique to the organization, a capability that is hard for a competitor to replicate, even if it was to acquire one of the team members. Grant exemplifies this with the composition of a football team: *"If the members of the Manchester United soccer team have complementary skills, then they need to be tied together by long-term relationships in order to achieve the investment in team-based skills required to maximize team performance"*. This supports March' (1991) view on how the firm should store *"knowledge in their procedures, norms, rules, and forms. They accumulate such knowledge over time learning from their members"*. Such capabilities are also described by Barney (1991) as socially complex and causally ambiguous.

3.3 Entrepreneurship

Entrepreneurship theory focuses on the way resources and information asymmetries are valued, utilized, obtained and exploited by the entrepreneur to create competitive advantage (Schumpeter, 1934; Kirzner, 1973; Alvarez and Busenitz, 2001), whereas resource based theory focuses on the availability and configuration of different resources on the basis of a company's assumed existence (Sarasvathy, 2001).

According to a comprehensive literature review by Landström and Lohrke (2012), entrepreneurship is a rather changeable field of research where few scholars appear to maintain their influence over a longer period of time. Landström and Lohrke (2012) also found that entrepreneurship theory had a strong anchoring within management and economics scholars. Thus, most writers would come from a management and economics background (and perspective) and write a few articles before "returning" to their respective fields - explaining Landström and Lohrke's (2012) findings. Further, Landström and Lohrke (2012) suggested that the research field of entrepreneurship as a whole should be tied and integrated closer to the research field of innovation as opposed to strategic management.

The focus of resource based theory has mainly been on finding strategies that managers can utilize to maximize the potential found in a company's base of resources. In other words, classic resource based theory is mainly focused on how an existing company can best execute its business model. The resource based framework as defined by Barney (1991) thus had some shortcomings when it came to explaining how entrepreneurs with limited resources, and no organization to speak of could build competitive advantages. Grant (1991) introduced a model for the rent generating potential based on Barney's (1991) resource based view. While this model worked excellently for mature firms that had all or most of the inputs that go into this model, it failed to explain how entrepreneurs generated rent. The entrepreneur possesses almost none of the resources that Grant's (1991) model used to evaluate the potential rent generation. However, despite not conforming to Grant's (1991) framework, entrepreneurs managed to generate

considerable rents and build competitive advantages by simply using their creativity, opportunity recognition, and a completely different view and way of combining their current resources.

3.3.1 Entrepreneurship versus resource based theory

Contributors to the entrepreneurial view on resource based theory (Alvarez and Busenitz, 2001; Sarasvathy, 2001; 2003; Brush et al, 2003, Widding, 2005) picks up on the fact that the managerial view of finding the best possible way to execute a business model is difficult in a situations where the business models are not yet found, where the challenge rather lies in the search for a business model that works and identifying the resources needed to execute it successfully. As stated by Widding (2005): *"In RBT, a company's resource base has traditionally been regarded as internal. The treatment of resources has been too restricted and static; resources have been perceived as something that the business already has, and the main challenge has been the management of this resource base. This is why RBT has failed to grasp the challenges of entrepreneurship"*

Apparently, the entrepreneur starts out with two empty hands - but somehow he manages to build a viable company. Thus, resource based theory fails to acknowledge the value of recognition of new opportunities, creativity and the entrepreneurial act (Barney, 2001). Resource based theory uses only the available resources as a base, not the way these are used, valued and especially obtained by the entrepreneur (Alvarez and Busenitz, 2001). Before there is a company, there is an entrepreneur with an idea. Either the idea will solve a social problem, pursue a market opportunity or be a better way of doing things; it will rely on a different combination of resources (Venkataraman and Davidsson, 2000).

In the initial phase, the resources within a venture are the entrepreneur's own resource base that consist of human and social capital such as education, experience, reputation and network as well as knowledge of the industry and market. Further resources will be added through new team members, and consist of technology know-how, contracts and expanded industrial knowledge (Brush et al, 2001). The entrepreneurs exploit their resources to gain access to, and acquire, financial and physical resources, as well human expertise. Through

growth and organizational maturing, the individual team members will be more integrated and their individual resources will transform into unique and valuable organizational resources that will turn to capabilities through organizational learning (Brush et al, 2001). However, since there are limited resources in a venture to attract new resources, the team members' knowledge outside their field of expertise, such as business development and marketing, are highly important resources, as are their networks. These resources are especially important in technology startups where the founder himself often is a technology wizard and there is absence of business experts (Roberts, 1991).

Alvarez and Busenitz (2001) point out the importance of linking resource based theory and entrepreneurship, which is also reflected by Ireland et al (2003) where the authors focus on the managerial implications and the importance of viewing the world and managing a company's resources from an entrepreneurial perspective in order to generate resources that give grounds for competitive advantage.

3.3.2 Categorizing resources from an entrepreneurial perspective

Many scholars have strived to find a proper categorization of the company's resources with the proper "boxes and tags" for the different resource types, such as Barney (1991), Brush et al (2001) and Ireland et al (2003). Resource based theory does evidently provide useful insights for entrepreneurs as well as managers, and the most obvious distinction is evidently tangible and intangible resources from Barney`s (1991) definition. Barney also (1991) introduces the concept of capital when analyzing resources, and this is, according to Widding (2005) an interesting contribution because it emphasizes the fact that resources have a given economic value and a price. Barney (1991) identifies resources as human, organizational and physical capital.

However, Ireland et al (2003) categorizes resources as capital in a way that acknowledges the importance and the nuances of the intangible assets of the firm, especially because the categorization in itself allows for a view that is not that tightly bound to the firm's assumed existence as in Barney's (1991) definition. Ireland et al (2003) considers resources as *capital* that can take the shape of *human*, *social* and *financial capital*. Human capital is

knowledge, skills and capabilities that are linked to people in the company, while social capital is the value of the network and connections that the company possesses. Finally, financial capital is cash and other highly liquid assets. This categorization is especially true for web startups, as their tangible resources are virtually non-existent - all future resources and capabilities are generated from the pool of initial human and social capital (Brush et al, 2001).

Further, Stringfellow and Shaw (2009) found that current literature on entrepreneurial capital shows the difficulty in isolating capital in its various forms due to the convertibility and overlapping nature of different types of capital. In the beginning, there is no company and belonging resources to talk about, only the discrete set of entrepreneur(s) and the different forms of capital they bring to the table (Brush et al, 2001; Sarasvathy, 2001). For the company, the social capital of each employee is linked to that employee, and it can arguably be viewed as human capital from the company's perspective.

3.3.3 The entrepreneurial mindset

The entrepreneur is a person that turns *homogeneous inputs* into *heterogeneous outputs*, creating resources that are grounds for competitive advantage in the perspective of "traditional" resource based theory (Barney, 1991). Therefore, Alvarez and Busenitz (2001) logically argue that this entrepreneurial ability must be viewed as a resource on its own. Looking back, the entrepreneurial mindset has arguably (although not explicitly as a resource) been described by both Schumpeter (1934), Kirzner (1973), Penrose (1959) and Sarasvathy (2001). Schumpeter (1934), did for instance define the entrepreneur as a person that combines a set of resources into something that has perceived newness in the market.

Entrepreneurs' belief and assumptions about the value of resource is definitely´ different than how other people think. Therefore, Alvarez and Busenitz (2001) introduce the *entrepreneurial mindset* as a resource in itself. Even though the entrepreneurs often have limited experience and insight in the market, they have to make complex strategic choices on which resources to acquire and when to do it, based on their vision of where the

company should be in the future (Venkataraman, 1997). To acquire the right resource on the right time can make or break the venture, but acquiring the wrong resource (for example the hiring the wrong person) could potentially destroy the venture. Sarasvathy (2001) delves deeper into this issue, finding that rather than actively acquiring resources, entrepreneurs set out with what they have.

3.3.3.1 Heuristics

The entrepreneurial decision-making processes follow the entrepreneurs' judgments about which resources are more or less important, and are based on their expectations about the future of the firm (Glade, 1967). The entrepreneur has to manage this complex reality by making qualified assumptions and simplifications, *heuristics* (Alvarez and Busenitz, 2001), which usually will approximate the "real or optimal" solutions very well. This makes the entrepreneur able to act fast instead of losing time trying to find the "optimal" solution, if one really exists. Fast time-to-market is seen as a source of competitive advantage, and the entrepreneur will provide the company with the skills to achieve this (Stalk & Hout, 1990). According to Krueger et al (2000), Entrepreneurship is a way of thinking that emphasizes opportunities over threats.

The *entrepreneurial mindset* (Alvarez and Busenitz, 2001) includes, but is not limited to, creativity, knowledge, past experience and especially the ability to understand the possible future value of resources that others do not see or choose not to pursue (one man's garbage is another man's treasure). The entrepreneur's knowledge gives him or her the capability to take conceptual and abstract information, gather undervalued resources, combine these and make profit in a market where he or she has recognized that new laws, products or changes in the environment have occurred (Alvarez and Busenitz, 2001).

The choice of an entrepreneur to prioritize one resource over another is usually a cost-time trade off. Frequently, the personal cost is sweat equity, and the opportunity cost of the time investment means another resource is not developed or pursued. This *heuristic* process, where the entrepreneur must make a qualified assumption based on "guts" and previous experience, is one of their greatest challenges because time-to-market is essential (Brush et

al, 2001).

3.3.3.2 Effectuation versus causation

Sarasvathy (2001) argues that the uncertainty that entrepreneurs face, often knowing little more than a general idea about a business, in a market that may not even exist, calls for a decision model for how to make decisions in the absence of preexisting goals - the theory of effectuation. Contrary to the predictive logic that serves as the foundation for the causal models, i.e. "to the extent that we can *predict the future*, we can *control it*", effectuation builds upon a quite different logic of decision-making, i.e. "to the extent we can *control the future*, we *do not need to predict it"* (Sarasvathy, 2003).

Sarasvathy's (2001) theory of causation and effectuation is argued to radicalize and rethink the way we understand entrepreneurship, in regards to understanding how the "constructed artifacts" of economics and management theories actually come to existence, such as firms, organizations and markets (Steyaert, 2007). Interviewing 27 entrepreneurs with excellent track-records, Sarasvathy (2001) found that these actually acted almost opposite to what was thought to be true in other strategy and management literature taught in business schools. Based on her finding she developed the theory of effectuation processes that build on five principles for how expert entrepreneurs think (effectuation.org[1], 2014), decide and act, "the entrepreneur heuristics". This also confirms Alvarez and Busenitz' (2001) theories about the entrepreneurial mindset and heuristics.

Firstly, the "Bird-in-Hand" or "means" principle of effectuation (effectuation.org, 2014),

[1] Effectuation.org is the official web site of The Society for Effectual Action (SEA) - Co-founded by Professor Saras Sarasvathy and Darden alumni Chip Ransler and Ian Ayers, with support from the Batten Institute, SEA enables researchers and instructors to disseminate and discuss contributed papers, articles, teaching materials and techniques. Serving as a central hub for effectuation research, SEA invites the community to extend the principles presented in Sarasvathy's book, Effectuation: Elements of Entrepreneurial Expertise (2008), to new areas and practical applications.

1

challenges the traditional many-to-one view of causation processes, that "take a particular effect for given and focus on selecting between means to create that effect", as the effectuation processes have a one-to-many approach, and "take a set of means as given and focus on selecting between possible effects that can be created with that set of means" (Sarasvathy, 2001).

Considering that an effect is ultimately the "operationalization of an abstract human aspiration", what distinguishes the causation from effectuation is the set of choices available. In causation the entrepreneur chooses between means to create an effect (e.g. a chef selecting the right ingredients to a set menu), whereas in effectuation one uses a particular set of means to choose between many possible effects (e.g. a chef preparing a meal only using ingredients he can find in the kitchen). In her research, she found that when expert entrepreneurs set out to build a new venture, they start with their means, i.e. who I am, what I know, and whom I know, before imagining possibilities that originate from those means (effectuation.org, 2014; Sarasvathy, 2001). Sarasvathy (2003), however, stresses "effectuation is not only the process of choosing among different alternatives, but of generating the alternatives themselves, and simultaneously discovering and assessing desirable and undesirable qualities of several possible ends".

The next principle of effectuation is its focus on *affordable loss* rather than expected returns. Where causation models "focus on the maximization of the potential returns of a decision by selecting optimal strategies", effectuation predetermines a level of loss and "focuses on experimenting with as many strategies as possible with the given limited means", preferring options that create more future options over those that maximize returns (Sarasvathy, 2001). Understanding what they can afford to lose at each step, instead of seeking large all-or- nothing opportunities, and choosing goals and actions where there is upside even if the downside ends up happening, expert entrepreneurs limit their risk (effectuation.org, 2014).

The *partnership principle* of effectuation focuses on strategic alliances rather than competitive analysis. Where causation models, e.g. Porter's (1980) model of generic

strategies builds on detailed competitive analysis, effectuation seeks to reduce and/or eliminate uncertainty and build entry barriers, emphasizing strategic alliances and pre-commitments from stakeholders (Sarasvathy, 2001). One could say that by obtaining these pre-commitments from key partners early on in the venture, expert entrepreneurs build partnerships with self-selecting stakeholders, which reduces their uncertainty as they co-create the new market with interested and motivated participants. Rather than solving the puzzles of "how to beat competitors" or "how to best position oneself in the market", effectuating entrepreneurs co-create with stakeholders they trust, and that thrust them enough to pre-commit themselves to the idea, ultimately developing what may be referred to as a "crazy quilt" (effectuation.org, 2014). This finding is also supported by (Van De Ven, 2005) who states: *"entrepreneurs seldom have the resources, power, or legitimacy to produce change alone. As a result, "running in packs" is often more successful than "going it alone" to develop and commercialize knowledge-intensive technologies".*

The saying "If life gives you lemons, make lemonade" could well be used to describe the principle of effectuation that centers around leveraging contingencies, and it is therefore often referred to the *Lemonade principle*. Inviting the surprise factor, effectuating entrepreneurs do not deal with "what-if" scenarios, but rather look for potential clues to create new markets in the "bad" news and surprises they are faced with (effectuation.org, 2014), exploiting the contingencies that arise unexpectedly (Sarasvathy, 2001). In situations, however, where the source of competitive advantage is based on preexisting knowledge (e.g. expertise in a new technology), Sarasvathy (2001) agrees that causation models might be preferable.

The final principle of effectuation relates to the aspect of control versus prediction mentioned earlier. Focusing on the controllable aspects of an unpredictable future rather than the predictable aspects of an uncertain one, effectuation is particularly useful where human action is the predominant factor shaping the future (Sarasvathy, 2001). Where causal reasoning accepts that established market forces will determine how the future will unfold, effectuates act more like airplane pilots, focusing on activities within their control, knowing that their actions will result in desired outcomes. This principle of a worldview

rooted in the belief that the future is made, rather than being found or predicted, is therefore often called the "pilot-in-the-plane" principle (effectuation.org, 2014).

Effectuation can often be seen as the exact opposite, or the inverse if you may, of causation. That being said, as both causation and effectuation are integral parts of human reasoning, they may occur simultaneously, as well as overlap and intertwine over different contexts of decisions and actions (Sarasvathy, 2001). In many cases, an entrepreneur may effectuate in the early beginnings of building a company or developing a new market, but as the complexity grows with scaling, as does the number of stakeholders involved and their expectations and demands, he or she might find themselves sliding more and more into using causal processes.

3.3.4 Entrepreneurship in popular science

There is an increasing amount of popular science within entrepreneurship, such as Gianforte and Gibson (2007), Ries (2011), Blank (2005) and Blank and Dorf (2012). Popular science has started to complement the academic literature and frameworks by offering entrepreneurial advice, taken from the authors' own experience, targeted at the broader masses and taking the subject out of the academic world. More specifically, they are specifically suitable for and aimed at the web startup sphere, because many of the principles they advocate are especially suitable for software development, such as *lean startup* and *bootstrapping*. When there is no tangible product, it would seem logical that a lot can be achieved with "sweat equity" and a small team. This would minimize the need of capital beyond the initial human and social capital of the team. Bootstrapping is arguably a mature research field, however, it has gotten a revival in the web startup field and popular literature. Gianforte and Gibson (2007) emphasize that the increasing connectivity in the world today enable entrepreneurs to be situated anywhere, taking advantage of low costs in rural places while still offering the same services as companies in big cities situated closer to the client.

3.3.4.1 Lean startup and minimum viable product (MVP)

Encouraged by a student in one of his entrepreneurship classes (Eric Ries), Steve Blank published what was essentially a polished version of his class notes under the name "*The*

four steps to the epiphany - successful strategies for products that win" back in 2005 (Greathouse, 2012), launching what has later been called the "*lean startup revolution*". Including the work of Eric Ries (2011), the lean startup methodology presents a new way of thinking in the early phase of starting a company and launching a product, how to speed up these processes and more importantly, how to make them more in line with actual customer needs found in the marketplace.

Before the age of Internet, it was only natural that the customer should pay for a product or service. However, the easy access to services online, and the crowded web market are forcing new business models, and web startups are forced to offering their products and services for free. In return the startups get information and data about the users and their behavior. In other words, there is often no clear answer to whether web startups should focus on growth or profits. Granted that both growth and profit are of great importance, the growth is worthless as long as one does not learn from the users acquired, and use this learning process to iterate towards a sustainable, scalable business model (Anthony, 2008). Also, there are no guarantees that users will suddenly accept having to pay for what initially used to be a free service - indicating that here is a fine line between growth and profit.

Blank (2005), Ries (2011) and Blank and Dorf (2012) argue that the answer to this problem is the lean startup approach, focusing on bringing what they call a minimum viable product (MVP) to the market (i.e. a version of a product that has just enough features and functionality to be released). They argue that startups can eliminate long development times along with the need for large amounts of funding using this approach. The thought is that by launching an MVP and learn from customer feedback early on, the startup can quickly decide whether to continue to build the product, to tweak the product or to pivot (i.e. to change the direction of the company). Using this "build, measure, learn" feedback-loop, startups limit their risk through validated learning, scientific experiments and iterative product releases (Blank, 2005; Ries, 2011). This is an attempt to codify the entrepreneurial learning process, and especially to avoid big, costly mistakes developing finished products that has no demand in the market. This is supported by Marmer et al's

(2011) extensive empirical study, finding that "*Learning is a fundamental unit of progress for startups, and more learning should therefore increase chances of success.".*

In contrast, a "*shoot first, aim later*"-approach, taking actions without sufficient knowledge about an opportunity, often results in misdirection and a waste of resources. Many of the web startups of the late 1990s and early 2000s suffered this fate (West and Noel, 2009). To mitigate this, the new movement of web startups and their founders advocate lean startup principles (or "aim first, shoot later"); maximize customer commitment early on and minimize expenses before having knowledge of what the customer wants (Gianforte and Gibson, 2007; Ries, 2011; Blank, 2005; Blank and Dorf, 2012).

3.3.4.2 Validity of entrepreneurial popular science

Books and papers from popular science are more arguably more populist and easily read than what the academic articles from the renowned journals are. Another important factor is that the authors are successful entrepreneurs themselves that use their own knowledge and experience in their writing, rather than arguing on the basis of known theory developed by other academics or doing more structured qualitative or quantitative studies. This may indicate that it is extremely difficult to codify and theorize success factors in a proper academic fashion, because they are either contingent, context-dependent (what is true in Silicon Valley may not be true elsewhere). closely related to the entrepreneur, or all of these. As stated by Low and Abrahamson (1997):

"Efforts to identify factors that consistently lead to entrepreneurial success have failed. This is because what works in one context will not necessarily work in another. Even worse, factors that lead to success in one context may lead to failure in another."

Marmer et al (2011) also argue that despite the fact that theories and models in scientific management are getting more effective in applying their principles in a startup-context, as we are learning more and more about how startups work, startups have been able to absorb little more than the basic patterns of how to build a startup. The reason for this being that most founders do not know what to focus on when being bombarded with

(contradictory) advice, and thus dilute their focus, run in the "wrong direction" or just become paralyzed. For instance, a successful entrepreneur might give a lot of reasons for his success that he advises aspiring entrepreneurs to follow, when the reality was that he had a good network of investors that believed in him, and not what the entrepreneur thought was important. Hindsight bias (Kahneman, 2011) and causal ambiguity seems to be a issue, as also found by Sørheim (2003); people will often have a need to rationalize their own behavior in hindsight, making empirical findings less valid.

3.5 Developing an understanding of dynamic capabilities in web startups

Seeing how resource based theory is considered to emphasize how a firm can sustain its competitive advantage through the awareness and strategic management of its (internal) resources (Wernerfelt, 1984; Barney, 1991; Barney et al 2001; Barney et al, 2011; Widding, 2005), the use of this theory in practice could surely be argued to be a causational process. Just like the many-to-one view of causation processes, resource based theory argues for the company to manage the many resources its got available hoping to generate one desired effect, a pre-existing goal, i.e. a sustainable competitive advantage (Sarasvathy, 2001; 2003). As resource based theory adapts a static view of resources and capabilities, entrepreneurship theory, knowledge based view and lean startup are seemingly more process-oriented and dynamic.

The focus on developing dynamic capabilities that was introduced by Eisenhardt & Martin (2000) seems to be more of an effectual process (Sarasvathy, 2001), as it focuses on continually acquiring, creating, integrating, recombining and releasing the firms' resources to obtain temporary advantages (Eisenhardt & Martin, 2000). In high velocity markets, rapid changes makes it hard to focus on pre-existing goals as these may change from day to day, calling for a decision model for how to make decisions in the absence of pre-existing goals (Sarasvathy, 2001). As temporary competitive advantage through the development of dynamic capabilities (Eisenhardt and Martin, 2000) can be seen as a way for companies to try to "control" an ever changing future through adaption, it limits their need to predict it, essentially following the "pilot-in-the-plane"-principle (Sarasvathy, 2003).

Alvarez and Busenitz (2001) argue the entrepreneurial mindset is a resource, but we consider that this is rather a capability than a resource because it is very dynamic by nature. The term "resources" seem to be more of a hindsight phenomenon; looking back in time, you can say that a certain set of resources were valuable at a certain point in time, but they are rather a "snapshot" of the company's (dynamic) capabilities at that time. It would therefore seem that the boundaries between capabilities and resources are somewhat blurred. Alvarez and Busenitz (2001) also argue that heuristics and intuition gets better over time, as the nascent entrepreneur gains more knowledge and experience on which to make decisions. Therefore, the essence seems to be that the successful entrepreneurs and entrepreneurial companies excel at gaining and utilizing knowledge far better than established firms and less successful entrepreneurs, as also found by Kirzner (1973) and Brush et al (2003) in that entrepreneurs find possibilities and new market opportunities were other people do not.

We emphasize the importance of a startup's ability to value, absorb and commercialize new external knowledge, as in Cohen and Levinthal's (1990) definition. This connection to knowledge as an important resource and capability is also emphasized by Widding (2005), who states that "*Knowledge as the main resource in new technology-based companies is a very dynamic resource, requiring a different kind of management than that of traditional industrial businesses"*. Our basic premise is therefore that knowledge is highly valuable for a startup, given the fact that it lacks many any other resources of significance. Even though the startup has cash, knowledge is still considered more important for the startup to survive and thrive - cash and tangible resources are easily imitated and gives no real advantage other than buying time, and they are overemphasized in RBT (Eisenhardt and Martin, 2000). For instance, Gianforte and Gibson (2007) argue that startups with cash are like castles in the sky, with no real business and no real customers, further underlining our argumentation. This also indicates that the notion of capabilities and resources are somewhat different from an entrepreneurial versus managerial point of view; entrepreneurial dynamic capabilities are not developed to manage a given set of resources, but rather, dynamic capabilities are prerequisite for continually developing new

capabilities and resources.

Widding (2007) further introduces a concept related to knowledge called “knowing”, that is an activity-based, dynamic, social process that is under continuous building, testing and reconstruction, referencing Polanyi (1974), Sveiby (1997) and Choo (1998). Widding (2007) further argues that the term is strongly related to capabilities, or dynamic capabilities, that is described as the ability to identify opportunities and the organization’s ability to transform knowledge into competitive advantages. According to Widding (2005), knowledge is the main resource in new technology based firms and it is a very dynamic resource that requires a different kind of management than that of traditional industrial businesses. This management of knowledge can arguably be considered a dynamic capability.

3.5.1 Why are web startups different than other types of startups?

Going forward, we argue that there is some key differences between web startups and what entrepreneurship and resource based theory consider *new technology based firms*. Web startups are in a market where information is widely available and there is high transparency, so there will arguably be many competitors. This results in the possibility for potential competitors to create a competing product before the web startup is able to hit the market, or just after it has published its product. Also, once the web startup has published its product, it is very easy to copy the product or parts of it. Considering that intellectual property rights and / or patents are generally difficult to obtain in software as well financially unfeasible to pursue when you are not a big company, there must be other factors that decide who will come out on top.

One important factor that can be implicitly derived from the above argument, is the speed with which web startups must operate. This relates to Widding’s (2005) concept of continuous environmental scanning and the startups’ interaction with its environment - and the fact that environmental scanning allows the company to respond more rapidly to changes in the environment. Yli-Renko et. al. (2001), who argue that knowledge is particularly important within the high technology sector to sustain long-term success, also

argue that it is critical that the knowledge is continually replenished (Lane and Lubatkin, 1998). This also aligns well with the principles of lean startup (Blank, 2005) and its emphasis on continuous iteration. As things are moving fast in the web industry, looking out for possible new competitors, new markets and disruptive technologies seems to be a key capability, as well as turning around fast; i.e. to pivot (Blank, 2005).

Lean startup (Blank, 2005; Ries, 2011; Blank and Dorf, 2012) emphasizes fast iteration and rapid improvement of the product. This is highly adoptable for web startups, because their products are in their most elementary form just bits and bytes that are pushed out through the world wide web to their users and customers. Thus, developing the products in an iterative fashion, in short cycles based on user feedback, will ensure that web startups always stay aligned with customer needs. This is not possible for companies dealing with physical products, as it is not financially feasible to launch 50 versions of the products in a 6-month timeframe as web startups have the luxury of doing. Once changes to the product have been made, web startups can push a button and the products are updated with the latest changes to their users. It should be mentioned that hardware resources also has gotten cheaper in the latter years, but developing, manufacturing, marketing, distributing and selling physical products arguable require physical infrastructure, warranty arrangements and other types of expensive overhead.

Lastly, looking at the lean startup methodology in the light of earlier entrepreneurial and resource based research from the literature review, the question of whether the "lean startup revolution" really is that "revolutionary" is naturally raised. One could argue that the many iterations of the lean startup can be seen as merely a operationalization of the "one-to-many"-view of effectuation, where every iteration is one of many possible effects. Likewise, the focus on introducing *minimum viable product* (Blank, 2005), closely relates to the principle of affordable loss (Sarasvathy, 2001) by introducing a model of fast learning at the lowest possible cost and effort. The lean startup (Blank, 2005; Ries, 2011; Blank and Dorf, 2012) can therefore be seen as a practical operationalization of this, adapted for the speed and need for responsiveness is necessary in a web startup. Thus, we argue that the essence of heuristics (Alvarez and Busenitz, 2001), effectuation (Sarasvathy, 2001; 2003)

and lean startup aligns with Widding's (2007) definition of the acquired knowledge as a mediator for uncertainty regarding product/market fit in the case of web startups.

3.5.2 Dynamic capabilities in web startups

Due to the nature of the Internet and the vast amounts of data available, web startups are gathering more feedback, both qualitative and quantitative than ever before, but their ability to interpret the data and utilize it in making better business decisions is sorely lacking (Marmer et al, 2011). This indicates that web startups must have good processes for filtering the streams of data; keeping the "good" parts while discarding the bad or useless ones. This is also emphasized by Widding (2007) who claims that not all knowledge necessary is good knowledge. Too much, or "wrong" knowledge can be damaging because it reduces the company's capacity and misleads its focus, which is important to remember when searching, categorizing and structuring knowledge. The opportunity cost of the time invested in developing a resource means another resource is not developed or pursued (Brush et al, 2001), and the choice of an entrepreneur to prioritize one resource over another is usually a cost-time trade off.

We therefore argue that the capability to absorb knowledge (Cohen and Levinthal, 1990; Zahra and George, 2002; Chang, 2012), and the quality of this process, both at an individual and organizational level is an important dynamic capability for a web startup. We further argue that using earlier knowledge that has been absorbed into the organization and its individuals as ground for generating new knowledge is an important aspect of this capability, supported by Chang (2012), Cohen and Levinthal (1990) and Zahra and George (2002). This is essentially what Sarasvathy (2001) describes in effectuation, it is what we see in the heuristics defined by Alvarez and Busenitz (2001) as well as the lean startup methodology (Blank , 2005; Ries, 2011, Blank and Dorf, 2012) in reusing current resources and knowledge taking the next step forward.

The capability to absorb knowledge will also improve over time, as the web startup gains and generates more knowledge that will be fed back into the iterative loop in the web startup. It also aligns well with Eisenhardt and Martin's (2000) notion of dynamic

capabilities as continually acquiring and reconfiguring (knowledge) resources, as well as Alvarez and Busenitz' (2001) argumentation that these capabilities improve over time. Being affected by the company's internal organization of activity, routines and communication (Widding, 2005), this capability may also be causally ambiguous; it is a product of the web startup's organizational and interpersonal routines and processes that are developed over time, and may as such be socially complex (Barney, 1991).

3.5.3 Sources of different types of knowledge for web startups

Widding (2005) identified some important knowledge actors, especially for web startups being the users: "the customer is one of the most important knowledge contributors to the firm [...] The NTBFs "choice" of customers, and how this knowledge process is managed of strategic and significant interest". Widding's (2005) reasoning for this is that customers act as judges in the struggle for competitive advantage - their actions speak louder than words. Further, as Widding (2005), Van De Ven (2005) and Sarasvathy (2001) point out, knowledge can also be "stored" within partnerships with key firms that can complement the startup with knowledge they do not have in-house and cannot develop or pursue due to time or financial constraints.

According to Widding (2005), there are many types of knowledge, such as **market knowledge** and **technical knowledge**. These two seem to be the most essential for a web startup, as they guide the development of the product in an iterative way - the market knowledge that is collected and possessed by the market experts in the team is adopted and implemented into the product by the team's technical experts, and both types of knowledge is therefore highly important. Sullivan and Marvell (2011) suggest that entrepreneurs who seek to generate innovative products or services should acquire technical knowledge early. This is emphasized by Cohen and Levinthal (1990) who argue that entrepreneurs' lack of investments in an area of expertise early on may foreclose the future development of a technical capability since they will not be able to forecast and appreciate new opportunities.

Somewhat opposing this, Marmer et al's (2011) empirical data collection led to the identification of three major types of web startups, segmented on how they perform customer development and acquisition, varying in factors in regards to time, skill and money. It was found that if the firm type is matched with the right team composition for this firm type, they will perform better, attract more investors and financial (and thus other forms of) capital. Essentially, they found that for some kinds of web startups, having a "business heavy" team has proven more successful than having a "tech heavy" team. It is therefore difficult to give an exact answer to what is correct, however, the point must arguably be that the web startup must be conscious and aware about what types of knowledge is needed in the web startup - as well as being able to know where those resources can be acquired, as also argued by Cohen and Levinthal (1990).

3.5.4 Synthesizing a framework of external and internal capabilities

Simon (1991) argues that there are two types of learning, internally in and between members of an organization, or by ingesting external members. We argue that this last type can to some extent be regarded as an external capability, as it involves using the network and social capital to bring in new knowledge from external sources, rather than from the processes internally in an organization and from its members. All activities related to external knowledge holders (Widding, 2005) and environmental scanning can also be regarded as external, as there is they are related interaction with the web startup's external environment.

On the other hand, as we have argued, there are definitely internal processes that are vitally important, that may be affected by internal routines and processes. Considering Alvarez and Busenitz' (2001) wording of entrepreneurship as producing heterogeneous outputs from homogeneous inputs, there is definitely a notion of an interplay between external inputs and internally generated output. We argue that it makes sense to maintain this grouping going forward, even though one could also argue that the interplay between internal and external capabilities is a capability in itself, making any kind of separation more of an academic exercise than having practical utility. Table 6 summarizes the discussion in a synthesized framework for dynamic capabilities in web startups. The

synthesized framework assembles the most important and prominent concepts found in this literature review and will function as a guide for the empirical data reviews.

Capability	Theoretical source	Assumed influential factors
Partnerships: "entrepreneurs seldom have the resources, power, or legitimacy to produce change alone" (Van de Ven, 2005)	• Widding (2005) • Sarasvathy (2001) • Van de Ven (2005)	Adjusting strategies according to social capital (Lin et al, 2009) - as generalized in effectuation (Sarasvathy, 2001) Networking and communication ability (Chang, 2012) Choice of customer segment: "The NTBFs "choice" of customers, and how this knowledge process is managed of strategic and significant interest" Widding (2005) Knowledge of where to obtain complementary knowledge (Cohen and Levinthal, 1990; Clark and Fujimoto, 1987) Continuous knowledge replenishment (Lane and Lubatkin, 1998) Continuous environmental scanning (Widding, 2005)
Acquiring users: "a firm's purpose is not to create products, but to obtain customers" (Drucker, 1973)	• Widding (2005) • Drucker (1973) • Blank (2005) • Ries (2011) • Blank and Dorf (2012)	
Gather knowledge from users: "The customer is one of the most important knowledge contributors to the firm" (Widding, 2005)	• Widding (2005)	
Employee acquisition: "An organization learns in only two ways: (a) by the learning of its members, or (b) by ingesting new members who have knowledge the organization didn't previously have" (Simon, 1991)	• Simon (1991)	
Continuous product iteration	• Blank (2005) • Ries (2011) • Blank and Dorf (2012) • Lane and Lubatkin (1998) • Widding (2005)	Absorptive capacity (Cohen and Levinthal, 1990; Zahra et al, 2002; Chang, 2012) Internal procedures, norms and forms (March, 1991) Limitations of the storage capacity in the human brain (Simon, 1991) Interaction of specialists with complimentary skills (Grant, 1991) Team composition (Marmer et al, 2011) Heuristics (Alvarez and Busenitz, 2001)
Interpret and utilize external data	• Marmer et al (2011)	

Table 6 *A synthesized framework for dynamic capabilities in web startups*

There are definitely processes and interpersonal factors within the web startup that we assume to be a part of or affect the dynamic capabilities of a web startup and its performance, as supported by Widding (2005). Exactly how this plays out in real life is not covered by the literature or theory reviewed, but in small teams, these factors may be very important. Following Simon's (1991) argumentation on the human brain's limited capacity to store information and the fact that an individual's learning is greatest when the new knowledge to be assimilated is related to the individual's existing knowledge structure (Ellis, 1965; Estes, 1970; Bower and Hilgard, 1981), having a small team of with specific knowledge in different domains implies is that there may be significant vulnerability issues related to the team in web startups.

As stated by Widding (2005): "...the knowledge of newly established companies is often the knowledge of the individual employee (tacit knowledge), and consequently the companies will have a relatively limited ownership of the resource base. One of the interesting findings from this study is that it confirms the phrase that 'the employees are the firm's most important resource'". If a team member quits, dynamic capabilities can be lost and not easily rebuilt because the knowledge resources on which they relied are not present anymore. Further, as pointed out by Widding (2007), the fact that dynamic capabilities may be causally ambiguous might even mean that the company itself does not how to replace it, making the ambiguity a two-edged sword as the knowledge and capabilities causally ambiguous and woven into the company (Barney, 1991; Amit & Shoemaker, 1993; Prahalad & Hamel, 1990).

4 Empirical data review

4.1 Iteration of the framework - from general theory to empirical findings

Gathering qualitative empirical data through conducting interviews with founders and core team members of four Norwegian web startups, we sought to find whether the framework we synthesized from the findings of the literature review (iteration 1) would fit with the our findings from the real life web startups. The interviews revealed that the more general dynamic capabilities found through the literature study and that were presented in table 6, needed to some adaption to fit the real life workings of a web startup. An iteration of the framework was therefore needed to include modifications made to the general capabilities from the theory to fit the findings of from the web startups (iteration 2). The updated framework based on the minor changes of this iteration is presented in Table 7 (below). The findings regarding each of these capabilities are presented in Table 8 - 15 in the following chapter. Accompanying these findings are also quotes from each startup dealing with each of the dynamic capabilities, highlighting their meaning and importance in each startup. In addition to the finding regarding the dynamic capabilities, it was also found that the culture within each startup was considered to be extremely important as it affected the development of all of the mentioned capabilities. The findings regarding culture are therefore included in the presentation of the finding below, even if it is not to be considered a dynamic capability

	Iteration 1: Theoretical	**Iteration 2: Empirical**
External	Partnerships	Technology awareness
	Acquiring users	Community building
	Gather knowledge from users	Gather user feedback
	Employee acquisition	Employee acquisition
Internal	Continuous iteration by interpretation and utilization of external data	Work processes, Team Composition and extraprofessional knowledge and capabilities[2]

Table 7: *Updated framework based on findings from the literature review and the interviews*

[2] Defined as the abilities to perform tasks that lay outside ordinary limits of professional interest or duties (Dictionary.com)

4.2 Findings

4.2.1 Findings on external factors

4.2.1.1 Technology awareness: The era of Open Source and API's

Quotes from the interviews			
Game Development	**Live Music Streaming**	**Teleconferencing**	**Education Technology**
"Access to cool technology was important for us when deciding what kind of apps to make. We had made everything from camera-based mirrors to alcometer-apps before, and we didn't just pursue mobile games because we liked gaming, we also found the Corona SDK awesome, and really wanted to see what we could do with it!" GE#2	*"We use others API's and services all the time. Why reinvent the wheel when there are good solutions out there? It's not necessarily which technologies you use that matters, it how you put them all together, and that's where we spend our time." ME#2*	*"Our product is actually a byproduct of having our summer interns play around with a new web technology to see how it could be used to solve different problems and needs we had experienced ourselves, one of them being teleconferencing technology used in meetings." TE#1*	*"Before, we were making complicated apps using Bluetooth and required different approaches and installation procedures on different devices. The technology was not ready. Now, with HTML5 in the browser on all devices it is possible to do what we want." EE#1*
Findings			
1. The startups are dependent on API's[3] and other existing libraries to minimize development time. 2. Awareness and in depth knowledge of what technology is accessible and what will influence the future has been key drivers for developing the product. 3. The ability to use and experiment with new technology has been an important motivational factor for the developers. 4. What founders, who are developers, initially make is a result from tinkering with new technology.			

Table 8: *Technology awareness: The era of open source and APIs'*

[3] an API (Application Programming Interface) is a set of tools that enables easy integration of third party services into another product or service.

4.2.1.2 Community building: Obtaining self-reinforcing growth

Quotes from the interviews			
Game Development	**Live Music Streaming**	**Teleconferencing**	**Education Technology**
"Some of the success we had with Fun Run was in no doubt due to the "word-of-mouth" effect of the users, trying to find people to play with. That gave us a lot of users without having to spend anything on advertising. (...) our lack of Facebook integration meant players had to create their own community outside the game, using social media in order to recruit new players/friends to compete with and we started using the hash tag #funrun on Twitter to fuel this fire." GE#2	*"When looking back at our launching strategy, we could be more focused on our community. We maybe believed that as soon as it was picked up by someone, the "word-of-mouth" would take it further, but we realized there is much more hard work behind creating something that is going to go viral. You really need to work hard on 'being' out there and creating a community." ME#1*	*"We have succeeded in getting a community with a positive tone, and established a brand where we want to be - between business and consumers. We are really a consumer brand, but our product is clean enough to be used in a business setting." TE#2*	*"In the beginning, I thought as a typical programmer that the implementation part was the most important. I have been surprised by the importance of other aspects such as building community. It has been great to have people on the team who realize that, and that are great at doing it. We would never ever have taken off like we have without good work on the community building because it is how tools like ours are spread. We have not done any advertising, our users are our promoters." EE#1*
Findings			
1. The "word-of-mouth"-effect is powerful, but much effort is required to create that effect, it usually does not just come by coincidence. 2. Building a community with a positive vibe is essential to spread the product or service and get good feedback. 3. Having a good community gives a high percentage of user retention to the product or service and users will act as ambassadors on your behalf. 4. It is important to acquire knowledge and to create a strategy early on how to build the community. 5. Community building is important also because of network effects and that the value of the product grows with the number of users.			

Table 9: *Community building: Obtaining self-reinforcing growth*

4.2.1.3 Gather user feedback: Understand what your market wants

Quotes from the interviews			
Game Development	**Live Music Streaming**	**Teleconferencing**	**Education Technology**
"One can always continue to brush, but it's better to just launch and then get valuable feedback from users. The feedback you get will give you valuable information on how to make a better product, faster...you should be a little embarrassed of what you release, or you will never get it out." GE#1	*"Another benefit of being a web-startup is all the analytic tools you can exploit to get user behavior data and feedback without the user doing anything except using the web app in an ordinary way. The analytic tools therefore help us iterate quickly and without the users notice it." ME#2*	*"We decide which new functions to be implemented on our weekly Monday meetings, and the decision is based on what's important now, how big/small the task is and feedback from users. We then make a temporary solution that works for now. We do not really know if what we are making actually works the way we think, it's really bad if they do not and we have invested a lot of time and effort in it." TE#2*	*"When users request features, we definitely aim to fulfill them but not too literally, we try to analyze "why" they ask for it. For instance, if some users ask for this, and some users ask for that, find out if there are any deeper similarities and implement the main needs." EE#2*
Findings			
1. User feedback and high level of iteration are closely correlated 2. User feedback is the factor that has the greatest influence on what will be next feature 3. Analytic tools are heavily used and gives important feedback the user do not manually report back, which in return gives the startup the ability to iterate fast in the beginning			

Table 10: *Gather user feedback: Understand what the market wants*

4.2.1.4 Employee Acquisition: It happens through the network

Quotes from the interviews			
Game Development	**Live Music Streaming**	**Teleconferencing**	**Education Technology**
"The first to be acquired was a classmate and childhood friend of mine who I knew was a skilled developer. We had played a lot of games when we were younger, so he would be a natural person to acquire." GE#1	*"If I could mention one thing I think we have done right it must be that we have used our network to search for and acquire new developers." ME#2*	*"People who work in this startup have been acquired through the network of those who already are members of the team." TE#1*	*"We have recruited developers through our own network. We all mainly recruited people we know from before and whom we know that we can trust. It is also important to get people onboard that share our philosophy." EE#2*
Findings			
1. Developers are acquired from the technological members existing personal network. 2. The first developer to be acquired should have a relative large network of developers. 3. It is preferred to acquire a developer from the initial team members' network since they will know about the other person's skill level, complementary skills, their work structure and how well they can work together. 4. New member joins the team mainly because of four factors: the technology, the culture, the product and the trust in the person who recruited him.			

Table 11: *Employee Acquisition: It happens through the specialist network*

4.2.2 Findings on external factors

4.2.2.1 Work process: Plan for short time spans, be flexible and move fast

Quotes from the interviews			
Game Development	**Live Music Streaming**	**Teleconferencing**	**Education Technology**
"We have never made a business plan. We have never had a need for it and it would take our focus away from what's important; development and the ability to adapt to a rapid changing market." GE#2	*"We operate in an industry which is in constant change. Our intuition is therefore extremely important to be able to move quickly and execute. Many people have the same ideas and time-to-market is short, one must therefore be able to take rapid decisions. Our 'extremely-long-term' strategy is 1 year ahead, but we operate with a 2 months plan. Our vision is our guidance." ME#2*	*"Everything is moving so fast within this technology sector, and to have competitive advantage we need to be able to change focus to what's important, fast." TE#1*	*"We run to be extremely agile, with weekly Monday meetings where we plan our weekly sprints. You can't plan for longer sessions at a time since our competitors move fast and we must do the same." EE#2*
Findings			
1. The interviewees do not "waste time" on building a business plan, instead the focus is on rapid development and networking. 2. Planning with short time spans and agile strategies are shown to be key success factors. 3. Short sprints are used, with the ability to pivot that sprints focus to respond to sudden changes within the market or technologies. 4. Vision is used, as opposed to long-term strategy, as a guidance when making strategic decisions. 5. Intuition and previous experience is used rather than following a plan. This makes them more agile.			

Table 12: *Work process: Plan for short time spans, be flexible and move fast*

4.2.2.2 Team composition: The importance of complementary skill sets

Quotes from the interviews			
Game Development	**Live Music Streaming**	**Teleconferencing**	**Education Technology**
"I think developers might have been the most important resources in the beginning, but it wasn't until we acquired some business developers that we began to gain traction." EE#1	*"The balance between different human skills within our team was one of things that has made us come so long on so short time. On the basis in our team composition we have managed to build up a solid reputation, which makes the people we meet trust us, believe in us, our product and what we can do." ME#2*	*"We were mainly three developers in the beginning, and me who organized the development process. We acquired a member responsible for the product relative early. I knew this was an important role from earlier startups." TE#1*	*"We have always been a team with different competences that include concept development, research, user oriented design, programming, business development, management et cetera. This has definitely been crucial in making something that is not purely a product made by engineers." EE#1*
Findings			
1. Having a developer with technical skills was important in the beginning to assemble an MVP. 2. After launching the initial product, the startups realized the importance of skills within sales and business development. 3. Especially, first time founders didn't see the business and sales experience as a resource before after a product was made. 4. The founders who had done a startup earlier acquired the business and sales knowledge earlier in the process because they knew the importance of sales early in the company's lifecycle.			

Table 13: *Team composition: The importance of complementary skill sets*

4.2.2.3 Extraprofessional knowledge and capabilities: Team members' abilities outside of core competences

Quotes from the interviews			
Game Development	**Live Music Streaming**	**Teleconferencing**	**Education Technology**
"Back then we thought that we could just filter out the business inquiries and just focus on the game, but as we decided to build a company, we realized that we had to reinforce the business side of the company and I had to use the little I knew of business development to handle the inquiries." GE#2	*"The members knowledge outside their core competence is particularly important in a startup since there is always a lot of work that needs to be done such as financials, marketing and applying for soft funding. The developers have a strong role in laying new strategy, and one of them is handling the finance." ME#2*	*"Additional knowledge has been very important. We used it a lot to perform user testing. In previous startups, I've done everything from organizing the board, accounting and programming. So I'm used to this way of working." TE#1*	*"I believe that we all do things that are outside our core competences. Our team has people with knowledge that reach beyond their core competences. It makes it easier to communicate and pull in the same direction." EE#1*
Findings			
1. Members are partially acquired based on their knowledge base outside their core competence. 2. Founders don't realize the amount of additional work that had to be done. It is only after the startup was founded that extraprofessional abilities within potential new members were highly valued. 3. Team member's knowledge outside their core competence is shown to be critical. 4. Important additional knowledge is identified as experience with soft funding, previous startups, networking and marketing. 5. Good, but not necessarily very important additional knowledge are identified as financials, brand and graphic design.			

Table 14: *Extraprofessional knowledge and capabilities: Team members' abilities outside of core competences*

4.2.2.4 Culture: A prerequisite for a motivated and synchronized team

Quotes from the interviews			
Game Development	**Live Music Streaming**	**Teleconferencing**	**Education Technology**
"Teambuilding activities increased the personal relationships between members, which in return made them more open and honest. This resulted in the members becoming less afraid of sharing their ideas and give constructive feedback." GE#2	*"When we began focusing on building culture, the amount of new ideas and the rate at which they were developed increased." ME#1*	*"Very strong developer and engineering driven culture with very skilled engineers. Passion and personal motivation to build something big has also been a factor in assembling the team - all developers are also very product focused. We want people with that gene and not just system developers. Culture is extremely important, we would not have been where we are today without it." TE#2*	*"We have had internal conflicts, but we are able to confront each other and communicate if such situations arise. We have a flat structure, and nobody trumps their opinion through. Now we all know each other well and it works great, we now where everybody stand. This could become an issue when we scale the organization beyond the few people we are now." EE#1*
Findings			
1. A culture of openness and honesty counteracts bad decisions and misdirection caused by people that do not want to step on each other's toes and be straightforward. 2. Culture can be considered tacit knowledge and an important asset for the company. 3. Culture is also related to the personal motivations and goals of the team members. The more they are aligned, the more they all pull in the same direction and motivate each other.			

Table 15: *Culture: A prerequisite for a motivated and synchronized team*

5 Discussion

In this chapter the research question is discussed in light of the theories presented in the literature review and the findings from the interviews with the four web startups. Answering sub-questions Q1 and Q2, that deal with the external and internal factors for developing dynamic capabilities in web startups, we present seven propositions that bring us closer to a more practitioner-oriented answer than provided in the reviewed literature.

5.1 External factors

Q1: *What are the most important external factors for developing dynamic capabilities in a web startup?*

5.1.1 Technology Awareness

None of the interviewed mentioned partnerships with external technology actors. It was found that the startups were more attracted to open source solutions and libraries that are easily accessible, cheap or free and with no strings attached. As stated by TE#2: "*In two weeks, our interns make a functional prototype using webRTC. That is a statement of how easy it is to get started with things that was very difficult before. Skype has used ten years to build similar functionality*".

For the case startups, some were dependent on paid services provided by third party companies, such as the music streaming startup. However, this can not be described as a partnership in Van De Ven's (2005) and Widding's (2005) sense, there is little inter-company knowledge being shared. Rather, there is a service being delivered and paid for in a transactional fashion. The services of the specific provider were simply chosen through searching for who can deliver the best product at a good price point. There is a great availability of providers, and also transparency, enabling the web startups to make qualified choices. This certainly indicates that technology partnerships are less relevant, and technology is either developed in-house, acquired from open source repositories or bought as a commodity. The importance seems to be on really figuring out what to build yourself and what to outsource, and this is possibly a great challenge in its own.

However, there seems to be some truth in that partnerships could be important. Sarasvathy (2001) claims that partnerships are a vital part of the entrepreneurial strategies and we find this to be somewhat true with web startups. Even though startups will have the necessary technology resources at hand to create their solution, the partnerships are more focused towards "user generation and retention"-synergies, where the startup "piggybacks" on a large actor's user mass and that larger actor remains innovative and attractive with the use of the startup's services. This was the case of the music streaming startup, which made a modified solution of their product that a larger actor could use to test on its large user base. The music streaming startup spent time modifying its solution expecting that it would generate more users to their web application: *"When looking back at the decision to modify our solution to fit with the larger actor, we see that the value was too little relative to the amount of time used on developing the solution. We should have focused on further development of our core solution."* (ME#2). This form of partnerships is common and fits well with Dyer and Singh's (1998) model of relational rents, which proposes that the potential a firm has to create a competitive advantage depends not just on its own resources, but also on its relationships with other key firms. However, the music streaming startup may have been too early in partnering up with the external actor, or it may simply have been the wrong kind of partnership or partner.

We find that founders with developer background are less concerned with partnering up with technology actors, as they have a greater understanding of the technology landscape and knows that the required technology is accessible through other channels. But as Widding (2005) states, building entrepreneurial knowledge reservoirs is a cost effective strategy for startups and by connecting with partners and other industry actors the startups can gain access to vital knowledge they do not have in-house. This has proven to be right, but instead of partnering with actors who can provide the startup with "secret" technology advantages, web startups may use partnerships as a way to acquire and retain users, i.e. for marketing purposes.

From this discussion we derive the following proposition:

Proposition 1A: Partnerships with technology actors are not as important for web startups as other types of startups and companies because web technology resources are increasingly commoditized and open sourced.

Proposition 1B: Partnerships in web startups are geared towards B2C companies and used to acquire and retain users rather than towards technology companies and technology cooperation.

5.1.2 Community Building

Impact was the key driver of motivation with all four cases for doing the startup, and they were very clear that if they were to achieve this, a large user mass had to be generated. Even though this finding emphasizes Drucker's (1973) statement that *"a firm's purpose is not to create products, but to obtain customers"*, a more correct statement for a web startup would be *"(...) is not to create perfect products, (...)"*. The latter reformulation would emphasize both the massive focus on user acquisition and retention, *and* the web startup's iterative work method for quickly gaining traction and obtaining users. GE#1 emphasizes this by stating that *"if you are not a little embarrassed about the first version you release, you will never get something out"*, and consequently not obtain any users.

From an outsider's perspective it often seems that one can just make a new, innovative and useful web application and the users will come. From the findings it is clear that the reality is very different. Gaining the small initial user base was shown to be unproblematic, as it was acquired from friends, family and close network. The challenge was reach out to users beyond the founders personal network, who would use the product or service for other reasons than being an acquaintance of the founders. Interviewing the startups, it was found that the acquisition of the first "outside" users was typically done through creative marketing on social media, news sites and user generated content sites such as reddit.com. This strategy was used by both the teleconferencing and the game development startup, and relies on getting the word of the product out on channels with millions of users, and hope it gets picked up. An important note is that even though they both had worked hard on acquiring users, and had been doing this for a long time before suddenly taking off, they couldn't explain *exactly* what the determining factor was for "hitting the jackpot".

It proved very difficult to pinpoint exactly what the triggering factors were, but it seemed to be factors that outsiders might argue to be coincidental, such as being picked up by a news channel, popular technology news sites or other channels with a massive reach that the web startup did not possess itself. However, being picked up by such media is seldom a coincidence, it is more likely a result of hard work. As few people know exactly what it takes to trigger such reaction, there is a lot of trial and error that goes into getting it right. As ME#1 points out; *"They say luck favors the prepared. What they forget to mention is that being prepared is extremely hard work"*. To be fully "prepared" in a market that can change totally from one week to the next is of course impossible, but one can see how being as prepared as possible demands a lot from a startup, staying agile while handling a fast growing user base.

As the user base starts growing it may catch the attention of regular media, and the community may also start to growing itself as users recruit their friends and colleagues to use the same service. This was the case with the game development company's "twitter explosion", where a twitter post suddenly got traction, as well as for the education technology startup, where its addicted users acted as ambassadors for their product, spreading the word on social media. As described by EE#1: "*We would never ever have taken off like we have without good work on the community building because it is how tools like ours are spread. We have not done any advertising, our users are our promoters."*

It was found that much focus and time was spent on acquiring users and it was not before they managed to grow a significant user base, that retention of the users was moved upward the list of priorities. This is the subsequent challenge of acquiring users. The method for making users come back after the first initial use, is to create some set of features such as a monthly subscription or a large user mass that eventually will "lock them in". The education technology startup showed great efforts to build a community around its service. According to Marmer et. al. (2011), network effects are present when the value to a user increases when other users join. If the product has network effects it should have little to no value if there is only one person using it, and the value should continue to increase

exponentially at least until there are thousands of users, if not indefinitely. By building a community around your service, one can trigger such network effects that provide great value in having more users that generate more content and interaction.

These network effects will again increase user retention considering how the value of the products grows exponentially with the number of users. This was emphasized by EE#1: "*The entire product is important, and a part of that is community. It gets more and more important for tools in Web 2.0, and it is just as important as the product itself. We have many users that spend a lot of time on creating great content. Users are making tutorials and posting them on blogs, helping each other out and spending a lot of time doing it. This is free advertising for us, and they simply do it because they love the product."* There are many reasons for why user acquisition and retention are to be considered important metrics for performance, however these reasons may change over time. Of course the ultimate goal is to find a business model that can convert these users into actual revenues, but as there are usually many competitors and alternatives, charging for the product in the initial phase is often considered unrealistic, as exemplified by TE#1: *"It does not make sense to start charging for our product today because we do not know if the product has the right shape; we know that is does not. If you start putting requirements of generating revenues within a year you will kill the product. It will never fly."* Initially, however, user acquisition can be used to get the attention and recognition of the not only the media, but also that of investors and potential partners.

Even though some business angels and other early phase investors might be intrigued enough to invest just by seeing a high user acquisition rate, most investors want to see user retention or at least a plan for how this will be done before investing, as this this is a stronger "proof of concept". As web startups either need investment or enough users to sustain a profitable business model, we argue that user acquisition and retention are a key performance metrics for web startups.

From this discussion we derive the following proposition:

Proposition 2: User acquisition and retention are a key performance metrics for web startups

5.1.3 Gather user feedback

Communication with users seems to be an intrinsic part of building a thriving community as a means to gather information. User community and feedback have shown to give the startup competitive advantages; the knowledge of what features are the most wanted and critical to implement or alter, and the ability to iterate at a faster speed. For instance, the education technology startup actually uses a forum-based system where users can suggest features and the community can then vote on the features they want: *"In the spring of 2013 we allowed increasingly more users on to the platform, and the feedback was less concerned with close follow-up on every single user, but we still made sure to continuously gather feedback. We added 'suggest a feature' so that users can add requests and vote on them so that we can see what our community wants the most"* (EE#1).

Feedback from users seems to play a crucial role in the development of the product, and the startup is dependent on rapidly getting good and constructive feedback, which is *not* equivalent to positive feedback. As stated by TE#2, when they decided to withdraw a feature from the product, they faced some seriously harsh emails from angry users. Nonetheless, having such engaged users means the users indeed care about the product and find it useful. Generally, it was found that feedback is best served from a crowd that is engaged in your product. It is therefore important to build a community from the beginning that understands that web startups are in a early and exploratory stage, and will be engaged to give valuable feedback. This correlates with Widding's (2005) findings, which identifies the customer to be one of the most important contributors of knowledge to the firm, and therefore the choice of customer has important strategic implications for how the company acquires knowledge.

Further, the interviews revealed that there are large amounts of feedback, both quantitatively and qualitatively to handle for web startups. The question is whether all user requests should be fulfilled - this is not possible and would lead to a incoherent and bad product. EE#2 stated that they always tried to consider all user feedback in a bigger picture; e.g. if one user wants feature X, and another user wants feature Y, what really would solve the underlying problem for both would be to implement feature Z. Also, as

pointed out be EE#1; *"We added 'suggest a feature' so that users can add requests and vote on them so that we can see what our community wants the most. However, we make sure to weigh it against the cost of implementation and also if it aligns with our product strategy [...] It is vital to make something our users want. Sometimes we think that we have things they do not necessarily know that they want, but are good anyway. We also have other things in store that we want to surprise our users with, but it is certainly many things that are useful that many of our users want"*. This smart "filtering" of user input was also demonstrated by TE#1 who describes how they distinguished between user-centric and product-centric development by having a greater vision guiding the product strategy with one of the inputs being user feedback.

It was found that web startups were actively involving users in the development of the product. From their experience, users and customers who have been involved with the development will feel ownership of the product and will act as recruiters of new users because they will have pride of their contribution and feel they have a "stake" in it. This has shown to be an efficient approach in both the education technology startup and the game development startup where the community feedback has had a great influence on the shaping of the product.

From this discussion we derive the following proposition:

Proposition 3: Communicating and interacting with the user community is important to get first hand knowledge that is directly applicable and relevant for web startups.

5.1.4 Employee Acquisition

Simon (1991) states; "an organization learns in only two ways: (a) by the learning of its members, or (b) by ingesting new members who have knowledge the organization didn't previously have". Team members are by far the most valuable resources, and to acquire the right member at the right time is critical to sustain progress, but to acquire the wrong member can destroy the venture (Venkataraman, 1997). The acquisition of new members is a complicated process that in larger firms usually involves several interviews and a thorough background check of the candidates. Since a startup neither has the resources nor time to conduct such an analytical approach, the entrepreneur has to use his heuristics

(Alvarez and Busenitz, 2001), i.e. his ability to make a qualified assumption based on "guts" and previous experience, when acquiring new members. To minimize the uncertainty and risk from taking such important decisions based on heuristics, it was found from the interviews that the founders in most cases acquired new members from their close networks. Considering that the acquisition and exploration of both market and technology knowledge are often a result of a social process (Kogut and Zander, 1992; Yli-Renko et al., 2001, Ulhøi, 2005) where the entrepreneur may acquire knowledge through interactions with his or her network (Kaish and Gilad, 1991; Ostgaard and Birley, 1994), this seems to be aligned with findings in previous research.

This finding also fits well with Eisenhardt's (1989) agency theory and the hope of minimizing the risk of issues related to *adverse selection*, as more is known about the actual abilities of the person being hired. As stated by EE#1: *"We have recruited developers through our own network. We all mainly recruited people we know from before and whom we know that we can trust. It is also important to get people onboard that share our philosophy"*. An additional reason to hire through their network was the fact that the startups often hired people that worked in the same way as them, had the same passions and motivation and were likely to easily adapt to the culture of the startup. These new hires were thus pre-approved because they had worked with current team members on previous occasions, and for this reason there was always somebody on the team who could "vouch for them" and mitigate the risk associated with getting new members onboard. This seems very much in line with the notion of trust and goodwill as an integral part of social capital described by Cope, Jack and Rose (2007).

It was found that developers played a critical role in getting up a minimum viable version of the product or service that could be used as a tool for getting early feedback. This led to shorter time-to-market, proving the concept and technology, and maybe even securing some funding. This fits well with Sullivan and Marvell's (2011) suggestion that entrepreneurs who seek to generate innovative products or services should acquire technical knowledge early. This is further emphasized by Cohen and Levinthal (1990) who argue that a lack of investments in an area of expertise early on may foreclose the future

development of a technical capability since they will not be able to forecast and appreciate new opportunities. This is also pointed out by Ramos-Rodriguez et al (2010), who argue that individuals' access to external knowledge through the social networks in which they participate, is fundamental for developing the capacity to recognize new business opportunities. The external knowledge is then combined with existing knowledge to create capabilities that will generate competitive advantage (Yli-Renko et. al. 2001) through new technology and strategies.

Technical knowledge was found to be of great importance in the early phase of the startup. However, it was found that when the workload got too big, as the startup gained traction and responsibilities, outsiders needed to be acquired. Each team member plays an important role for the success of the startup, not only in the basis of their expertise but also through the synergies that are created between the members that will develop team-based skills over time. Grant (1996) argues that these synergies are required to maximize team performance and is therefore to be considered a long-term investment in the relationship between the members. Considering the tacit knowledge developed between the team members working closely together over a longer period of time, the additions of new team members become more challenging as it means new extensive investment in the relationship to the new team member. Looking at how the four cases used their network to hire new people and reduce the possible risk associated with these challenges, it seems very much like an effectual process (Sarasvathy, 2001; 2003). Lin et al's (2006) argumentation that entrepreneurs must adjust their strategies according to their social capital also seems to align with our findings.

From this discussion we derive the following propositions:

Proposition 4A: Constant awareness and utilization of web startup's network to find people with the right skills to complement the team is important to sustain progress.

Proposition 4B: Expert technology knowledge, i.e. developers are crucial to acquire at an early stage, and these should be prioritized over other types if there is a lack of developers versus other types of skills.

5.2 Internal factors

Q2: *What are the most important internal factors for developing dynamic capabilities in a web startup?*

5.2.1 Work processes

Web startups are operating in an environment where new technology is introduced rapidly and market changes happen fast. The entrepreneurial mindset, introduced by Alvarez and Busenitz (2001), is explained by having the ability to understand the possible future value of resources that others do not see or choose not to pursue. In web startups the entrepreneur has shown to combine this ability with his heuristics (Alvarez and Busenitz, 2001) to see what future technology, market threats or opportunities will challenge or complement their solution, and responding to these to sustain progress and stay competitive. This finding is partially based on the fact that none of the cases had ever made a business plan, and GE#2 stated that they never had a need for one and that making one would just have taken their focus away from what was important, which was initial product development. The same answers were given from the other cases and can be explained by most of the members in the founding teams were developers and it is in their nature to create rather than to analyze. Another explanation could be that the founders knew the importance of speed and time-to-market and used their heuristics to cut activities they believed to be of less importance or too time consuming.

Even though a thorough market analysis was not prioritized, they knew what was moving in the market as this information was picked up continuously. EE#2 stated that *"We run to be extremely agile, with weekly Monday meetings where we plan our weekly sprints. You can't plan for longer sessions at a time since our competitors move fast and we must do the same."* The strategy to operate without a business plan and instead planning on a weekly basis with a two months long-term strategy, made them more agile to sudden changes in the market or in the technology available. This entrepreneurial reasoning is also emphasized and supported by Stalk and Hout (1990) who argue that fast time-to-market is seen as a source of competitive advantage. Further, it was found that the ability to stay competitive, to iterate and execute, was a direct result from the founders ability to make qualified assumptions and to act fast instead of losing time trying to find the "optimal" solution.

Widding (2005) argues that building entrepreneurial knowledge *reservoirs* is a cost effective strategy for startups; connecting with users, partners and other industry actors, startups can gain access to vital knowledge they do not have in-house. This is an interesting metaphor in a web startup context, as the value of knowledge reservoirs can vanish overnight due to the speed and the shifting nature of the web marketplace. For instance, if a web startup pivots away from a market segment due to bad customer feedback, the current user mass is worthless regarding user feedback as they are no longer in the target group. Switching technology might also render current partnerships unusable, as well as in-house technological knowledge. One could therefore continue Widding's (2005) metaphor to consider knowledge in web startups to be "physical" reservoirs that are continually draining, as the value of old knowledge quickly deteriorates because of the speed of the web marketplace. The most important task must then be to continually replenish the reservoirs with fresh knowledge to keep them "topped up". Considering Widding's (2005) focus on continuous environmental scanning and Lane and Lubatkin's (1998) focus on continuous knowledge replenishment, this finding seems very aligned with theory.

Taking into account that the knowledge reservoirs of a web startup are inherently small, this means that they will drain much quicker than in established companies with larger reservoirs. Thus, the turnover rate of old versus new knowledge becomes significantly higher. The challenge of obtaining new knowledge at a higher pace is therefore essentially what allows the web startups to compete with the established actors, as the newest knowledge is more easily accessible to the fast moving startups, and the switching cost associated with the discarding "old" knowledge is significantly lower. This also means that the real value lies more in how the knowledge is continuously being managed, rather than in the knowledge itself. As Alvarez and Busenitz (2001) and Sarasvathy (2003) consider the entrepreneurial mindset and the processes a resource, as well as Widding's (2005) view of knowledge as dynamic in itself, it becomes clear that the demarcation line of resources and capabilities are blurred. Knowledge in itself might lose its value, the real value is in how the knowledge is used.

Reckoning that there is only a certain volume of knowledge relevant at every moment in time, there is arguably a need to distribute this information effectively between the team members to keep them synchronized. In order to secure learning across the whole team it was revealed that the startups found it important to share information considered to be of a general nature with the entire team. Initially, all team members could fairly easily get all the same information with simple measures such as sharing their incoming emails, storing information digitally in a place everyone had access to, and also simply through working and interacting in the same small office. This has shown to be the opposite of Grant's (1996) argumentation on how transferring knowledge between the organizational members is an ineffective way of integrating knowledge within the organization. An interesting finding was that the knowledge sharing was especially important in teams with members whose own task is to work with the market. Here the available market information made the developers interact more with the market people and understand the market and user which in turn increased the developers workflow, they became more creative and developed smarter solutions.

However, the routines changed as startups got more traction and the amount of feedback grew, or when new team members were acquired, it arose a need to more actively manage these knowledge sharing processes. To keep in sync, measures such daily "stand up" meetings were implemented, where the most important new insight from the different parts of the startup were shared with the whole team, and plans for the coming week's execution was typically discussed: *"In the beginning, everybody had to know everything, but we have understood that it is not necessary, it is counterproductive. It is highly characterized by trust that we have built up through working close together. Initially this trust is not present, and that is why you want to know what everybody else is doing, but after a while you realize that is not necessary, it is more important that I use my time on my tasks. We try to share information in other ways, we have daily standup meetings with the entire team where we share important matters. We are not process religious, and have found that teams need to find what works best for themselves."* (TE#2). Grant's (1996) statement could therefore be seen as not definitive for small teams, but becomes true as the team grows. Another argument could be that this kind of knowledge sharing is not about every team member

learning everything, the information is just made available for every team member. So instead of one specialist learning another to perform everything on his own, the specialists use the common available information to interact with each other to create new knowledge which is unique to the organization. This is a capability that is hard for a competitor to duplicate (Grant, 1996), even if the competitor was to acquire one of the team members.

The four cases interviewed pointed out that their measures to keep their teams in sync would not be scalable as the startup grew bigger, relating well to the issue of having an entrepreneurial versus an managerial approach to management as the startup matures. This is also pointed out by Brush et al (2001), as well as Sarasvathy (2001), emphasizing that as the company grows, there is an inevitability in that processes and knowledge are gradually becoming more explicit. As the number of stakeholders as well as employees and hierarchy grows, it will be difficult to depend on effectual (Sarasvathy, 2001) and implicit processes. This was exemplified well by EE#1: *"If important information is to be shared, we are supposed to use BaseCamp, but it can go in fits and starts. Sometimes there's an email, sometimes there's a message on HipChat. It can be difficult, because you don't know where knowledge is shared. It works ok most of the time now that we are small team, but I do not believe that it will work with a lot more people involved, it is a little too messy."*

A more subtle factor that was emphasized by quite a few of the web startups, and concretized by the game development startup, was that the culture played also a very important role of the internal processes in the company. For instance, in the beginning when having internal discussions, the team members were reluctant to give honest feedback if it was negative, even though they knew it was constructive and appropriate. After a while, this resulted in the making of products that were incoherent and inconsistent because everybody wanted to promote their ideas and features into it. As a result of this, they realized that they needed to establish a more open culture because their products were suffering. Having a culture of openness and honesty therefore proved to be very important and now their culture is highly prioritized and they have many small rituals and team building activities outside of the office to make the team tighter knit on the personal level. It was also interesting to see that culture in some cases also seems to depend highly

upon the shared values, motivation and vision of the team and that this created a strong culture in itself. In the educational technology startup, both interviewees stated that all team members in some manner had past mixed experiences with traditional "blackboard" learning methods, which really united them in a passion and vision of making an impact with new and fun ways of learning.

From this discussion we derive the following propositions:

Proposition 5A: Internal routines and culture for knowledge sharing and interaction between team members are crucial to get a coordinated team where the best ideas are presented and executed.

Proposition 5B: As the market and opportunities change rapidly, web startups should constantly monitor their environment, acquire new knowledge and respond quickly if necessary.

5.2.2 Team composition

"Our business development and design capabilities are in the founding team. I think this is one of our strengths, in our founding team we have a Professor, a designer, front and back-end developers, as well as business development and product strategy expertise." EE#2

Successful startups must be able to address all aspects of being a company, and this requires different sets of skills. If you do not have an understanding of the product there is nothing to market, and if you do not have an understanding of market, its is impossible to build a good product. If you have both, you still have to coordinate these efforts as effectiveness in execution is key in becoming a successful web startup. The education technology startup had spent years on perfecting its technology and there were many student developers in and out of the project, working on master thesis on different technical topics to enhance the solution. But as EE#1 clearly points out, *"it wasn't before we got dedicated marketing and design people we began to gain traction"*. This reflection from the founder explains that even though developers are the most critical members in the beginning, there will come a phase where the team will need other types of knowledge such as business development and marketing. As found in all of the web startups, this was predominantly done through network interactions.

The importance of the employees is also emphasized by Widding (2005), finding that it is the employees that are responsible for all the primary and core activities of a company and possess the knowledge to execute these tasks successfully. As stated by EE#2, one will need *"a hacker, a hipster and a hustler"* in order to launch a successful web startup. The "Hacker, Hipster, Hustler" terminology is arguably highly non-academical, but it describes the basic skill sets needed to build a web startup. The "hacker" builds the technical nuts and bolts of the product, the "hipster" polishes and shapes it nicely, and the "hustler" markets and sells the product. Considering Marmer et al's (2011) findings on the importance of team composition and awareness of how it affects the performance of the company, it seems logical that the startups interviewed indeed had a very conscious approach to this. TE#2 stated it this way: *"We have a very strong developer driven culture with highly skilled technical people. There might have been too few product and design-oriented people, so we have had a focus on this when hiring people in the last year".*

These findings confirms to Grant's (1996) argumentation that transferring knowledge between members of an organization is an ineffective way of integrating knowledge into an organization, and rather emphasize the importance of cooperation and interaction between specialists that holds different areas of expertise to conduct a task. Considering how the team, including its composition, culture, work processes and underlying motivation to pursue the idea is key, the importance of getting the team right was found to be paramount.

From this discussion we derive the following proposition:

Proposition 6: In order to be able to continually improve their product in response to market needs, the team composition must be balanced to secure a complementary skill set fit to handle all aspects of the product and market development and coordination.

5.2.3 Extraprofessional knowledge and capabilities

In a startup it is not all black and white, where all the members have exclusive field of expertise. t was found that the founders typically are specialists that compliment each other in the initial phase, and as the startup gets traction they become more generalized in order to help out where help is needed. Then comes the point where the workload becomes too excessive to handle and the startups start acquiring new members. This is where they

typically recruit specialists. These people are more likely to be found within the existing members network than through a formal recruitment channel as stated by EE#2: *"I should probably also say that as we grow our design and development teams, we will be recruiting through other channels (not just our network), but to date we haven't needed to."*

Seeing how the need of manpower for each part of the startup, i.e. product development, business development, marketing, community building etc. may vary from day to day; startup team members need to be what Simon (1991) argues is not possible, which is to be jacks of all trades. This involves helping out where needed, while still being specialists in their respective fields. Our findings do however indicate that the members indeed need to master different skills, because the team is so small that they cannot have specialized knowledge for all possible tasks. TE#2 emphasize this; *"It has been a great learning effect from the beginning for everybody, it sometimes seems that we do not know what we are doing"* as well as EE#2; *"We're all doing some aspects of the business which we don't have experience in, but that's what running a startup is; a continuous educational experience, always learning new things!"*. As they grow and gain traction and funding, they can allow themselves the luxury of expanding the team with more specialized resources: "*We are hiring an experienced community manager as this is also expertise we don't have in-house.*" (EE#2). This clearly indicates that web startups not only must possess extraprofessional knowledge and capabilities, but they must also have the ability to learn, or develop these capabilities if necessary since they do not have the necessary resources to acquire experts. This finding, although somewhat contradicting Simon's (1991) and Grant's (1996) argumentation, seems to align more with Roberts' (1991) argumentation that due to the limited resources in a venture to attract new resources, the team members' knowledge outside their field of expertise is highly important.

From this discussion we derive the following proposition:

Proposition 7: Because a web startup will face tasks and challenges that lie outside the scope of its team members' current expert skill sets, extraprofessional knowledge and capabilities as well as ability to learn new skills are highly important.

6 Conclusion

This thesis set out to answer the research question: How do web startups stand out and stay ahead when competing with hundreds of startups executing on the same idea with access to the same technology and the same global market, as well as competing with established companies? The sub-questions were

- **Q1:** What are the most important external factors for developing dynamic capabilities in a web startup?
- **Q2:** What are the most important external factors for developing dynamic capabilities in a web startup?

The simplistic conclusion is that a web startup that has team with a complementary skill set, a great culture and strong adaptability to change will have the necessary prerequisites for developing competitive dynamic capabilities. The backing for this conclusion is outlined in table 9 below, giving a set of propositions derived from the academic and empirical data collected in this thesis.

Sub-research questions	Proposition number	Proposition
Q1: External factors	1	**A:** Partnerships with technology actors are not as important for web startups as other types of startups and companies because web technology resources are increasingly commoditized and open sourced. **B:** Partnerships in web startups are geared towards B2C companies and used to acquire and retain users rather than towards technology companies and technology cooperation.
	2	User acquisition and retention is a key performance metric for web startups.
	3	Communicating and interacting with the user community is important to get first hand knowledge that is directly applicable and relevant for web startups.
	4	**A:** Constant awareness and utilization of web startup's network to find people with the right skills to complement the team is important to sustain progress. **B:** Expert technology knowledge, i.e. developers is crucial to acquire at an early stage, and these should be prioritized over other types if there is a lack of developers versus other types of skills.
Q2: Internal factors	5	**A:** Internal routines and culture for knowledge sharing and interaction between team members are crucial to get a coordinated team where the best ideas are presented and executed. **B:** As market and opportunities change rapidly, web startups should constantly monitor their environment, acquire new knowledge and respond quickly if necessary.
	6	In order to be able to continually improve their product in response to market needs, the team composition must be balanced to secure a complementary skill set fit to handle all aspects of the product and market development and coordination.
	7	Because a web startup will rapidly face tasks and challenges that lie outside the scope of team members' current expert skill sets, extraprofessional knowledge and capabilities as well as ability to learn new skills are highly important.

Table 16: *Propositions*

7 Implications of the Research Results

7.1 Implications for the academic field of entrepreneurship

This thesis has contributed to the field of entrepreneurship in three ways. (1) The literature study has helped to sort out where different existing approaches contradict each other and where they agree, pointing out that many of the contributions both from established contributors, newer contributors and popular science build on the same principles, albeit with a different degrees of practical versus theoretical approaches. (2) The existing research has been refined and customized to suit an entrepreneur's situation and circumstances. By bridging different literature and approaches we have contributed to clarify many of the "invented" terms found in the literature and to operationalize them in practice for what they actually mean for web startups, and much of this is probably applicable for startups in general. (3) A "fresh" way of presenting information on what is the most important aspect to consider when doing a web startup has been given through "*The 101 to lay the basis for a golden web startup*" (Appendix 1), where the focus is to customize advice especially for early stage web startups.

7.2 Implications for entrepreneurs

This thesis has shown that the traditional entrepreneurship theories found in academic literature show approaches to entrepreneurship too theoretical to be operationalized in a web startup. Considering how the more recent contributions of popular science, even though based on much of the same theories and principles as the research based academic literature, is more concerned with the "how" rather than the "what" of entrepreneurship, these contributions are more likely to be of value to an entrepreneur in his everyday operations. This is surely the case for most startups, however, we believe it to be particularly true in the case of web startups due to the uncertainty of change in the industry. It will certainly change, the questions are in what way and when. As neither academic literature nor popular science relates directly to the unique environment of the web startups, its advice can be difficult to operationalize and in the worst case be misleading for those who pursue entrepreneurial opportunity within this field. Following

the advice given in "*The 101 to lay the basis for a golden web startup"* (Appendix 1), we believe that early phase web startups will be better equipped to meet the challenges that they are likely to face with their venture. Emphasizing the importance of learning from the best in the business, we realize that getting access to these startups might be challenging and time consuming. Understanding the importance of time to market, we offer a shortcut to some of the important lessons to be learned from other web startups for aspiring entrepreneurs.

7.3 Implications for investors and decision makers within funding

As web startups are different from other kinds of startups, they should be assessed differently from an investor's perspective. Patents and intellectual property have less value, because it is difficult to pursue them given that the product is bits and bytes and is thus easily copied. We point out that key performance metrics in web startups are user acquisition and rate, as well as user retention and similar user-related analytics - the users' actions speak louder than words, and give clear indications to a possible investor whether the product actually is delivering the value claimed.

Further, the concept and idea may change in unpredictable ways, and investors should be aware of this from the very beginning. This means that potential investors must consider not only if the idea is good in itself, but also if the team has (1) the necessary knowledge and capabilities, (2) the necessary extraprofessional knowledge and learning capabilities and lastly (3) a solid network where necessary resources can be acquired. A final note is that large business plans are a thing of the past, they are outdated the moment they are finished - investors should rather ask for a pitch deck.

7.4 Implications for policy makers

Considering that entrepreneurship for a long time has been a driving force in innovation and employment Schumpeter, 1934; Kirzner, 1973; Alvarez and Busenitz, 2001), entrepreneurship will arguably continue to be an important factor as we are moving into the age of web startups. As pointed out by Widding (2005), competition is increasingly knowledge-based and this was further emphasized in the findings from the empirical data

collected in this thesis. Specifically, having technology knowledge in-house was pointed out to be a key success factor in the early days of a web startup. Therefore, it should be a priority for policy makers within education and academia to incentivize aspiring students to study informatics and computer science. Also, as technology generally becomes more immersive and a part of daily life, it can be argued that programming and development (at least a basic understanding of core concepts) should be considered a science in the same fashion as mathematics, physics, chemistry and biology, being taught from an elementary level as a part of the curriculum.

Agreeing with Marmer et al (2011), we also find that governmental grants should be given less restrictively. Rather than giving large amounts to a few startups, smaller amounts can be granted to many web startups and this can bring them a long way because of the low initial financial need. Then, when it becomes clearer what cases might be successful, larger grants can be given to further nurture these cases.

8 Limitations and further research

8.1 Limitations

8.1.1 Scope of research

The scope of this thesis has been early stage web startups with small teams. The processes as well as the internal coordination between the members are arguably easy to maintain within small teams. That being said, a startup will not remain a startup forever, but go through different stages in its development until it either fails or becomes a mature corporation (Marmer et al, 2011; Vohora, 2004; Low and Abrahamson, 1997). Issues arise when a web startup gets traction, secures an investment and is ready to scale and grow the organization with new employees. As the web startup adds extra levels of management, the close interaction with the users may be significantly reduced. In fact, all the startups interviewed pointed out that it would be difficult to maintain the processes currently at work as they scaled.

This is important because the entrepreneurs may effectuate and use heuristic processes in the early beginnings of building a company or developing a new market, but as the complexity grows with scaling, so does the number of stakeholders involved and their expectations and demands, and the entrepreneurs might find themselves sliding more and more into using causal processes (Sarasvathy, 2001). Brush et al (2001) also found that as a firm matures, managerial processes will come to play. Arguably, when the firm is mature, it possesses a larger resource base; therefore it is natural that strategic management of these resources such as buildings, equipment and cash will be an important task. This thesis has not considered the issues of scaling the organization and coping with the increasing bureaucracy while still maintaining and improving the dynamic capabilities and competitiveness.

In order to do such research, the researchers would need to have access to the top management of many former web startups that have grown into large IT-companies

(where the founders also are a part of the top management) and interview founders that stayed with their companies through these transformations, such as Facebook's Mark Zuckerberg or Google's Sergey Brin and Larry Page. However, considering their enormous success they may be difficult to get hold of, and even if one got to interview them, their answers could potentially be very biased, considering that any attempt to anonymize their identities would be impossible, not to mention the possible impact a "wrong" answer could have on their company's stock. One could also a set of web startups from their early days until maturity. Such a task would require longitudinal studies of web startups, and would also be a daunting one considering that only a few percent of web startups actually makes it to a viable company.

8.2 Further research

8.2.1 Outsourcing

Some of the startups interviewed decided to let certain tasks be performed by experts outside of the company, such as graphical design and illustration. More interestingly, one of these startups also did the same with some technical development tasks, even though they certainly had the knowledge in-house. This indicates that outsourcing might be a viable option if the web startup has the technical knowledge required to specify tasks, costs and realistic time frames for a third party to perform it. Further, Marmer et al (2011) found that some types of web startups would perform better with a team that has more business competence than technical competence. This is because the newness is not always on the technical side, and thus the product can be specified and implemented fast and with software that is open source or off-the-shelf. It would therefore be interesting to look at to what degree a web startup will benefit from outsourcing development tasks rather than doing it in-house.

8.2.2 Culture

One of the most interesting findings of our research was how web startups from a very early stage focused on company culture. Even though the explanation for why they focus on culture makes perfect sense in hindsight, many people would probably relate company

culture as an issue of bigger concerns for corporations that operate globally, and that build a corporate culture to compensate for the cultural differences between the countries in which they operate. The startups' use of culture to build strong, dynamic teams that are able to adapt and respond to their rapidly developing surroundings is definitely an interesting topic for further research.

8.2.3 Team composition and psychology literature

Seeing how the team proved to be the most important factor for developing dynamic capabilities, and the fact that our literature study did not cover research done team composition and psychological phenomena that occur within teams is unfortunate. There has been done a lot of research on teams, team building, management teams, and team psychology, and for further research we definitely recommend researching how theories within these fields of study apply to the "extreme" environments of the web startups, considering the speed and agility needed for teams within this field.

Relating to the research of team composition and psychology, it could also be interesting to study how the personal motivation of the team members affects the dynamics and the culture of the team. In our research, team members were most commonly driven by impact and the desire to have people use their products to improve their daily lives. But is impact the only valid motivation to start a web startup? Considering how web startups that make apps to kill time and being social, that being by playing games or sending pictures that are gone once they are opened, are being bought by market leaders such as Facebook and Google for billions of dollars, it is easy to imagine founders being motivated by money when starting their web startup. But does this mean they are doomed to fail?

There have been many attempts on describing the characteristics of the "entrepreneur" in general, but is there really just one perfect entrepreneur for all types of startups? Considering how different it is to run a web startup, from a hardware startup, to a lifestyle business, we believe this not to be the case, and that it would be interesting to study what makes an entrepreneur suitable for starting a web startup.

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9 Appendix

A1: The 101 to lay the basis for a golden web startup

Category	Golden rule	Description
Business planning	**Make a pitch deck, not a business plan**	In the world of web, a business plan gets outdated the minute it is finished. The time consuming process to develop a business plan should be switched by making a pitch deck which gives you the insight you need to understand the market, nice to have when applying for soft funding and is easy to sustain.
Work process	**Plan less, be flexible**	You can't base decision on a long-term strategy to stay flexible, be able to iterate at a faster pace and quickly change focus when needed. You must have a primary goal, operate with weekly sprints and take decisions based on your intuition to reach that goal.
Knowledge sharing	**Information should be available to everyone**	All market relevant information and knowledge should be accessible by all members of the team. Developers who understand the market and user will have increased workflow, be more creative and develop smarter solutions. But the members should decide individually if they want to read it, so this information should not be intrusive. For sharing the most important pieces of information, have short daily “standup” meetings where the most important things are shared with the team.
Developers	**Invite the developer strategic meetings and events**	As for the same reasons in the recommendation over, developers who are included in market meetings and events will obtain a greater understanding of the market and the users and be more motivated to develop a superior solution to meet market needs.
Developers	**Let the developers decide the technology**	This means that they are well known with the technology and have the ability to get a MVP up and running in a short time while deliver rapid iterations to enhance the solution. The second advantage is that they are likely part of a community of developers who are interested in same technology. This community/network will be used to get help and it increases the chance to acquire new developers and integrate them in the start-up.
Team culture	**Build a magnificent culture**	In the early startup phase, culture building activities gets lost in everything else that needs to be done. Culture will

		be the foundation of the team's ability to be effective, iterate at a fast pace and execute to deliver good products. To build a culture where members will thrive in should therefore be given attention from the very beginning.
Team culture	**Be direct and honest**	This has proven to be effective to eliminate the "courtesy" problem. A problem where members don't know each other well enough that they dare to give constructive feedback. This often results in a bloated product with too many features, since the members play along with every idea at the table.
Team culture	**Get hammered**	This sounds cheesy, but the best way to get to know each other is to take an all-nighter where you wake up in another person's house and there is a Zebra in the shred. You basically have to get out of the office, hang out and to cool stuff together. This creates a culture where everyone knows each other on a personal level, and is able to have open and honest conversations with each other.
Team culture	**Groom the team**	Have feedback sessions every two weeks where direct and constructive feedback is given from each one of the members to the other members. This feedback should consist of pros and cons each member has with the other member and focus should be on how they affect you.
Team composition and skillset	**The hacker and the hustler**	Hackers (developers) tend to not see the value of the hustler (business and marketing people), and the hustler is often to slow to acquire the hacker. If you are either one, acquire the other as soon as you find him, since you will need a diverse team to succeed. Founders who have done a startup earlier acquired the business and sales knowledge earlier in the process because they knew the importance of sales early in the company's lifecycle.
Team composition and skillset	**Additional knowledge gives you the uppercut**	Founders don't realize the amount of additional work that has to be done, but there is always a task to be done outside the member's field of expertise that the startup has no resources to acquire specialist to perform. Team member's ability to do tasks that is outside their core competence is therefore critical. As a founder you should have focus on gathering a team with diverse additional knowledge outside their field of expertise. The most important additional knowledge is found to be: experience with soft funding, previous startups, networking and marketing.

A2: Scopus Structured Search, Query Table

Search term	Scopus search string	Raw results	Filter by min X cit.	Filter by title	Filter by abstract	Filter by read
(Resource Based Theory OR Resource Based View OR Dynamic Capabilities) AND (Information Technology)	(TITLE-ABS-KEY(resource based view) OR TITLE-ABS-KEY(resource based theory) OR TITLE-ABS-KEY(dynamic capabilities)) AND (TITLE-ABS-KEY(information technology)) AND (LIMIT-TO(SUBJAREA, "BUSI") OR LIMIT-TO(SUBJAREA,"ECON") OR LIMIT-TO(SUBJAREA, "BUSI") OR LIMIT-TO(SUBJAREA, "SOCI") OR LIMIT-TO(SUBJAREA, "ECON"))	1107	191 (20)	31	7	1
(Resource Based Theory OR Resource Based View OR Dynamic Capabilities) AND (Information Technology) AND (New Venture OR Start up OR Entrepreneurship)	(TITLE-ABS-KEY(resource based view) OR TITLE-ABS-KEY(resource based theory) OR TITLE-ABS-KEY(dynamic capabilities)) AND (TITLE-ABS-KEY(information technology)) AND (TITLE-ABS-KEY(new venture) OR TITLE-ABS-KEY(start up)OR TITLE-ABS-KEY(entrepreneurship)) AND (LIMIT-TO(SUBJAREA, "BUSI") OR LIMIT-TO(SUBJAREA, "ECON") OR LIMIT-TO(SUBJAREA, "BUSI") OR LIMIT-TO(SUBJAREA, "SOCI") OR LIMIT-TO(SUBJAREA, "ECON"))	28	28 (0)	10	7	6
(Resource Based	(TITLE-ABS-KEY(resource based view) OR TITLE-ABS-	449	100 (20)	32	19	12

Theory OR Resource Based View OR Dynamic Capabilities) AND (New Venture OR Start Up OR Entrepreneurship)	KEY(resource based theory) OR TITLE-ABS-KEY(dynamic capabilities)) AND (TITLE-ABS-KEY(new venture) OR TITLE-ABS-KEY(start up) OR TITLE-ABS-KEY(entrepreneurship)) AND(LIMIT-TO(SUBJAREA, "BUSI") OR LIMIT-TO(SUBJAREA, "ECON") OR LIMIT-TO(SUBJAREA, "BUSI") OR LIMIT-TO(SUBJAREA, "SOCI") OR LIMIT-TO(SUBJAREA, "ECON"))					
(Resource Based Theory OR Resource Based View OR Dynamic Capabilities) AND (New Venture OR Start Up OR Entrepreneurship) year from 2010 to 2014	(TITLE-ABS-KEY(resource based view) OR TITLE-ABS-KEY(resource based theory) OR TITLE-ABS-KEY(dynamic capabilities)) AND (TITLE-ABS-KEY(new venture) OR TITLE-ABS-KEY(start up) OR TITLE-ABS-KEY(entrepreneurship)) AND (LIMIT-TO(SUBJAREA, "BUSI") OR LIMIT-TO(SUBJAREA, "ECON") OR LIMIT-TO(SUBJAREA, "BUSI") OR LIMIT-TO(SUBJAREA, "SOCI") OR LIMIT-TO(SUBJAREA, "ECON")) AND (LIMIT-TO(PUBYEAR, 2014) OR LIMIT-TO(PUBYEAR, 2013) OR LIMIT-TO(PUBYEAR, 2012) OR LIMIT-TO(PUBYEAR, 2011) OR LIMIT-TO(PUBYEAR, 2010))	233	79 (2)	8	6	4
Social Capital AND Information	TITLE-ABS-KEY-AUTH(social capital AND information technology)	487	487 (0)	11	5	4

Technology	AND (LIMIT-TO(SUBJAREA, "SOCI") OR LIMIT-TO(SUBJAREA, "BUSI") OR LIMIT-TO(SUBJAREA, "ECON"))					
Social Capital AND Entrepreneurship	TITLE-ABS-KEY(social capital AND entrepreneurship) AND (LIMIT-TO(SUBJAREA, "BUSI") OR LIMIT-TO(SUBJAREA, "SOCI") OR LIMIT-TO(SUBJAREA, "ECON"))	552	211 (5)	91	40	19
Effectuation and Causation	TITLE-ABS-KEY-AUTH(effectuation AND causation)	17	17(0)	7	6	6
Knowledge based view	TITLE-ABS-KEY(knowledge based view) AND (LIMIT-TO(SUBJAREA, "SOCI") OR LIMIT-TO(SUBJAREA, "BUSI") OR LIMIT-TO(SUBJAREA, "ECON")	5029	45 (206)	23	14	7
Knowledge based theory	TITLE-ABS-KEY(knowledge based theory) AND (LIMIT-TO(SUBJAREA, "SOCI") OR LIMIT-TO(SUBJAREA, "BUSI") OR LIMIT-TO(SUBJAREA, "ECON"))	9195	95 (201)	41	19	5
Learning and Entrepreneurship	TITLE-ABS-KEY(learning) AND TITLE-ABS-KEY(entrepreneurship) AND (LIMIT-TO(SUBJAREA, "SOCI") OR LIMIT-TO(SUBJAREA, "BUSI") OR LIMIT-TO(SUBJAREA, "ECON")	912	66 (40)	42	24	9
Absorptive Capacity	TITLE-ABS-KEY(absorptive capacity) AND (LIMIT-TO(SUBJAREA, "BUSI") OR LIMIT-TO(SUBJAREA, "ECON") OR LIMIT-TO(SUBJAREA, "SOCI"))	1271	55 (100)	19	11	4

A3: Interview guide

Background info
Send us BP, Pitch Deck, Executive Summary?
Why? (Motivation)
How? (Process)
What? (Product)
Start
How did it start?
Who had/got the idea?
Was it planned? (was it just an intern that made something fun, or was it based on analysis/market research)
Was it based on an own "need" for the product?
If done, where was the knowledge about this being a need for others as well found?
What was the motivation behind pursuing the idea?
Seen with your own eyes, what has your company/startup done right?
Seen with your own eyes, what has your company/startup done wrong?
Daily Operations
Is MVP, lean, bmc, etc. used?
How long did it take you to develop your first testable product?
Was perfection sought after in making the first product?
Was initial testing done on a limited/restricted user group or was it open to the general public?
Learning
Are learning processes formalized in some sort of routines in the startup (e.g. lean development)?
Do you use "user testing"/"User groups"?
Do you use A/B testing?
Do you use any system or software to systemize user feedback?
Do you use user feedback to prioritize development goals?
Do you use social media to communicate with users / launch new features etc?
Do you have any examples on learning routines and abilities that you have that set you apart from other companies?
Do you have any examples on learning routines and abilities that are different but better than other companies?
Is there anything you think that you should have done better with regards to learning? Do you think there are any reasons why you haven't done it?
Is there anything you are doing now that you wish you had done from day one?
Knowledge
In what way is output from the learning processes formalized?
Do you use wikis, github, gdocs, etc. or is it all just tacit knowledge?

Is this done consciously? (Or is it all just done "on the fly" from time to time?)
Any examples of routines you guys use that might be different from other startups, but that have proven to work well for you guys?
Any examples on situations/issues where you wish you had been better in regards to what you get out of learning? What could this have been? Why wasn't it done? (Lack of resources, time, priority?)
Any routines that you use today that you wish you had implemented from day one, and would that even have been possible to do? (If not, why?)
Resources
What were the most important resources the founding team possessed back when you started the company? (Previous experience? Used "industry experience" to find a problem to solve, put together an "A-team" for solving this problem, and set out to solve it? OR maybe it was your network, technical capabilities, market insight, or access to key people with valuable resource (if so which?) ?