NTNU – Trondheim
Norwegian University of
Science and Technology

How and Why do Companies Perform Open Innovation?

-a comparative study of Norwegian SMEs and large companies

Synne Flakstad
Lisa Marie Ovea Gjertsen
Dagny Prytz

NTNU School of Entrepreneurship
Submission date: June 2013
Supervisor: Elsebeth Holmen, IØT

Norwegian University of Science and Technology
Department of Industrial Economics and Technology Management

NTNU
Det skapende universitet

MASTERKONTRAKT
- uttak av masteroppgave

1. Studentens personalia

Etternavn, fornavn **Flakstad, Synne**	Fødselsdato **15. jun 1986**
E-post **synnef@stud.ntnu.no**	Telefon **97106774**

2. Studieopplysninger

Fakultet **Fakultet for Samfunnsvitenskap og teknologiledelse**
Institutt **Institutt for industriell økonomi og teknologiledelse**
Studieprogram **NTNUs Entreprenørskole**

3. Masteroppgave

Oppstartsdato **15. jan 2013**	Innleveringsfrist **11. jun 2013**
Oppgavens (foreløpige) tittel **Open Innovation in Norwegian Companies**	
Oppgavetekst/Problembeskrivelse Open innovation has through the last decade recieved a lot of attention within research and development. However, the emphasis has been on large companies' abilities to gain from Open Innovation strategies. The predominance of Norwegian companies are SMEs. This report aims to investigate how Norwegian companies implement Open Innovation and to what extent the companies gain through these processes. The master thesis will present the following main points: 1) A theoretical presentation of Open Innovation 2) Empirical description of how a selection of Norwegian companies execute Open Innovation, and the advantages the companies gain from it 3) Analysis and discussion of empirical findings 4) Conclusion and proposition of how Norwegian companies may implement Open Innovation	
Hovedveileder ved institutt **Førsteamanuensis Elsebeth Holmen**	Medveileder(e) ved institutt
Merknader **1 uke ekstra p.g.a påske.**	

4. Underskrift

Student: Jeg erklærer herved at jeg har satt meg inn i gjeldende bestemmelser for mastergradsstudiet og at jeg oppfyller kravene for adgang til å påbegynne oppgaven, herunder eventuelle praksiskrav.

Partene er gjort kjent med avtalens vilkår, samt kapitlene i studiehåndboken om generelle regler og aktuell studieplan for masterstudiet.

Trondheim, 15.01.2013
Sted og dato

Synne Flakstad
Student

Hovedveileder

Originalen lagres i NTNUs elektroniske arkiv. Kopi av avtalen sendes til instituttet og studenten.

NTNU
Det skapende universitet

MASTERKONTRAKT
- uttak av masteroppgave

1. Studentens personalia

Etternavn, fornavn	Fødselsdato
Gjertsen, Lisa Marie Ovea	**09. jan 1989**
E-post	Telefon
lisamag@stud.ntnu.no	**41416707**

2. Studieopplysninger

Fakultet
Fakultet for Samfunnsvitenskap og teknologiledelse
Institutt
Institutt for industriell økonomi og teknologiledelse
Studieprogram
NTNUs Entreprenørskole

3. Masteroppgave

Oppstartsdato	Innleveringsfrist
15. jan 2013	**11. jun 2013**
Oppgavens (foreløpige) tittel	
Open Innovation in Norwegian Companies	
Oppgavetekst/Problembeskrivelse Open innovation has through the last decade received a lot of attention within research and development. However, the emphasis has been on large companies' abilities to gain from Open Innovation strategies. The predominance of Norwegian companies are SMEs. This report aims to investigate how Norwegian companies implement Open Innovation and to what extent the companies gain through these processes. The master thesis will present the following main points: 1) A theoretical presentation of Open Innovation 2) Empirical description of how a selection of Norwegian companies execute Open Innovation, and the advantages the companies gain from it 3) Analysis and discussion of empirical findings 4) Conclusion and proposition of how Norwegian companies may implement Open Innovation	
Hovedveileder ved institutt	Medveileder(e) ved institutt
Førsteamanuensis Elsebeth Holmen	
Merknader	
1 uke ekstra p.g.a påske.	

4. Underskrift

Student: Jeg erklærer herved at jeg har satt meg inn i gjeldende bestemmelser for mastergradsstudiet og at jeg oppfyller kravene for adgang til å påbegynne oppgaven, herunder eventuelle praksiskrav.

Partene er gjort kjent med avtalens vilkår, samt kapitlene i studiehåndboken om generelle regler og aktuell studieplan for masterstudiet.

Trondheim 15.01.2013
Sted og dato

Lisa Marie Ouca Gjetsen
Student

Hovedveileder

Originalen lagres i NTNUs elektroniske arkiv. Kopi av avtalen sendes til instituttet og studenten.

NTNU
Det skapende universitet

MASTERKONTRAKT
- uttak av masteroppgave

1. Studentens personalia

Etternavn, fornavn **Prytz, Dagny**	Fødselsdato **04. apr 1988**
E-post **dagnyp@stud.ntnu.no**	Telefon **99405110**

2. Studieopplysninger

Fakultet **Fakultet for Samfunnsvitenskap og teknologiledelse**
Institutt **Institutt for industriell økonomi og teknologiledelse**
Studieprogram **NTNUs Entreprenørskole**

3. Masteroppgave

Oppstartsdato **15. jan 2013**	Innleveringsfrist **11. jun 2013**
Oppgavens (foreløpige) tittel **Open Innovation in Norwegian Companies**	
Oppgavetekst/Problembeskrivelse Open innovation has through the last decade recieved a lot of attention within research and development. However, the emphasis has been on large companies' abilities to gain from Open Innovation strategies. The predominance of Norwegian companies are SMEs. This report aims to investigate how Norwegian companies implement Open Innovation and to what extent the companies gain through these processes. The master thesis will present the following main points: 1) A theoretical presentation of Open Innovation 2) Empirical description of how a selection of Norwegian companies execute Open Innovation, and the advantages the companies gain from it 3) Analysis and discussion of empirical findings 4) Conclusion and proposition of how Norwegian companies may implement Open Innovation	
Hovedveileder ved institutt **Førsteamanuensis Elsebeth Holmen**	Medveileder(e) ved institutt
Merknader **1 uke ekstra p.g.a påske.**	

4. Underskrift

Student: Jeg erklærer herved at jeg har satt meg inn i gjeldende bestemmelser for mastergradsstudiet og at jeg oppfyller kravene for adgang til å påbegynne oppgaven, herunder eventuelle praksiskrav.

Partene er gjort kjent med avtalens vilkår, samt kapitlene i studiehåndboken om generelle regler og aktuell studieplan for masterstudiet.

Trondheim, 15.01.13
Sted og dato

Student

Hovedveileder

Originalen lagres i NTNUs elektroniske arkiv. Kopi av avtalen sendes til instituttet og studenten.

Preface

This master thesis aims to give a deeper understanding of how and why small and medium sized Norwegian enterprises perform Open Innovation compared to large Norwegian companies. The emphasis is on how the companies manage their innovation processes and the advantages firms can gain through this kind of innovation management.

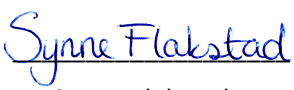
This master thesis is the final paper in Innovation and Entrepreneurship, course code TIØ4945, which is offered at the Industrial Economics and Technology Management department at the Norwegian University of Science and Technology.

The paper presents both a theoretical study of Open Innovation and an empirical study of four Norwegian companies that apply Open Innovation strategies. This paper intends to contribute to the investigation of how small and medium sized Norwegian companies gain advantages through these processes in comparison to large Norwegian firms.

We wish to thank our supervisor Elsebeth Holmen for exceptional guidance and support throughout the whole semester. Your thorough feedback is deeply appreciated and we could not have asked for a better supervisor for our master thesis.

We would also like to thank the four companies that allowed us to investigate their innovation strategies. Thanks to all ten employees for taking time off from their busy schedules for our interviews and for their willingness to contribute to our master thesis. Thanks to Jens Hauglum, Mattias Jennehed and Ådne Skjelstad in FINN.no AS, Ole Gunnar Dokka, Morten Husby and Øystein Engen in Statoil ASA, Magne Østby and Roy Storli in Vom og Hundemat AS and Halvor Gregusson and Dyre Hult in Rocketfarm AS.

Trondheim, June 05, 2013



Synne Flakstad

Lisa Marie Ovea Gjertsen

Dagny Prytz

Abstract

The purpose of this master thesis is to investigate how and why Norwegian small and medium sized enterprises (SMEs), compared to large Norwegian companies, implement Open Innovation strategies. The emphasis is on the companies' approach to Open Innovation, the Open Innovation processes they carry out and the advantages they can obtain trough Open Innovation.

Few researchers have focused on Open Innovation in a SMEs context and even fewer have addressed similarities and differences between SMEs and large firms that implement the strategy. In addition there is almost no research conducted about how and why Norwegian companies implement Open Innovation. As 99% of the companies in Norway are SMEs, it is interesting to investigate how and why these companies adapt the strategy and what they gain from the Open Innovation processes.

Organizations need to handle an accelerating pace of change, turbulent economic times and greater competition. The Internet makes it easier to share knowledge and ideas hence opportunities are increasing. However, the new knowledge landscape also represents new challenges for companies. To achieve competitive advantage companies must revolutionize their innovation business models in order to stay ahead of competitors.

Henry Chesbrough introduced the term *Open Innovation* in 2003, focusing on how companies should open up their business models to cope with the changing business environment. He emphasized how firms can *and* should use external ideas as well as internal ideas and paths to market when developing their technologies. Open Innovation is divided into three main processes; *outside-in*, *inside-out* and *coupled processes*, the latter being a combination of outside-in and inside-out. The processes represent different flows of information and knowledge across the firm´s boundaries.

The literature presents several advantages that companies may gain through Open Innovation processes. The advantages are presented through nine different processes; *employee involvement*, *customer and user involvement*, *external networking*, *external participation*, *outsourcing R&D*, *venturing*, *inward IP-licensing* and *coupled processes*. The literature shows that most advantages are gained through outside-in processes and focus most on customer and user involvement, in addition to employee involvement.

To investigate the theoretical findings in a Norwegian context in order to answer the research questions, four Norwegian companies were selected for a multiple case study. Two large Norwegian firms; Statoil ASA and FINN.no AS and two Norwegian SMEs; Rocketfarm AS and Vom og Hundemat AS, represent the four case firms. Empirical evidence has been collected and analyzed in order to

investigate both differences and similarities in how Norwegian SMEs and large firms implement Open Innovation processes and which advantages they can gain from these processes.

The main empirical findings of *how* Norwegian SMEs perform Open Innovation compared to large Norwegian companies are connected to the companies´ need for innovation departments and tools, and the companies´ strategic orientations. SMEs do not need innovation departments or tools to manage Open Innovation processes. However, the large companies need this because of their hierarchical structure. The study also shows that the SMEs and large companies have different strategic orientation. SMEs have a *defender* orientation, while the large companies have an *analyzer* orientation. The similarities are that both SMEs and large companies perform Open Innovation most frequently through outside-in processes and both need to have an Open Innovation approach including an open culture to succeed.

The main empirical findings connected to *why* Norwegian SMEs perform Open Innovation compared to large companies show that SMEs and large companies gain some different advantages. Large companies gain nine advantages that SMEs do not gain. This is because of the firms large bases of internal resources, which able the firms to interact in several collaborations with various partners in the industry. SMEs gain three advantages that the large companies do not gain. This is because of the companies' closeness to the market, in addition to their less complex processes internally compared to larger companies. However, 26 advantages are gained by both the SMEs and the large companies investigated. The study shows that most advantages are gained through the outside-in processes; *employee involvement, customer and user involvement*, and *external participation*.

The study implies that both Norwegian SMEs and large companies should use Open Innovation strategies in order to obtain and maintain competitive advantages, and continues growth. As the investigation is limited to four case companies, the results from this study are not generalizable for other than the case firms investigated. However, the study might indicate how other SMEs and large companies perform Open Innovation, and should be further researched.

Abstract in Norwegian

Formålet med denne masteroppgaven er å undersøke hvordan og hvorfor norske små og mellomstore bedrifter (SMBer) implementerer Åpen Innovasjon sammenlignet med store norske bedrifter. Oppgaven fokuserer på bedriftenes innstilling til Åpen Innovasjon, deres prosesser og hvilke fordeler de kan oppnå gjennom strategien.

Få forskere har fokusert på SMBer i en Åpen Innovasjonskontekst, og enda færre har sett på forskjeller og likheter mellom SMBer og store selskaper som implementerer strategien. I tillegg til dette er det gjennomført lite forskning på hvordan og hvorfor norske selskaper benytter seg av Åpen Innovasjon. Siden 99% av bedriftene i Norge er SMBer, er det interessant å forstå hvordan disse selskapene anvender strategien, og hva de kan oppnå gjennom den.

Organisasjoner må i dag håndtere en økende endringshastighet, turbulente økonomiske tider og økt konkurranse. Internett gjør det lettere å dele kunnskap og ideer, noe som igjen fører til økt konkurranse. Det nye kunnskapslandskapet representerer imidlertid nye utfordringer for selskaper. For å oppnå konkurransefortrinn må bedrifter revolusjonere deres forretningsmodeller for å kunne ligge i forkant av deres konkurrenter.

Henry Chesbrough introduserte begrepet *Åpen Innovasjon* i 2003, med fokus på hvordan bedrifter bør åpne opp sine forretningsmodeller for å håndtere det vekslende forretningslandskapet. Han fokuserte på hvordan bedrifter bør benytte interne, så vel som eksterne ideer og veier til markedet i utviklingen av deres teknologier. Åpen Innovasjon er delt inn i tre prosesser; *outside-in, inside-out* og *coupled,* som alle representerer ulike måter å la informasjon og kunnskap flyte inn og ut av bedriftens.

Litteraturen presenterer flere fordeler bedrifter kan oppnå gjennom Åpne Innovasjonsprosesser. Fordelene blir presentert gjennom ni ulike prosesser: involvering av ansatte, kunde- og brukerinvolvering, ekstern nettverksbygging, ekstern deltakelse, outsourcing av forsknings- og utviklingsarbeid, venturing, IP-lisensiering og *coupled process*. Litteraturen viser at de fleste av fordelene blir oppnådd gjennom *outside-in* prosesser ved å involvere kunder, brukere og ansatte.

For å undersøke de teoretiske funnene i en norsk kontekst og dermed å svare på forskningsspørsmålene, ble fire norske bedrifter valgt ut til et casestudie. Bedriftene er to store norske bedrifter; Statoil ASA og FINN.no AS, og to SMBer; Vom og Hundemat AS og Rocketfarm AS. Det empiriske bevismaterialet har blitt analysert for å undersøke både forskjeller og likheter om hvordan norske SMBer og store bedrifter implementerer Åpne Innovasjonsprosesser og hvilke fordeler de oppnår gjennom prosessene.

Hovedfunnene som er knyttet til hvordan norske SMBer utfører Åpen Innovasjon sammenlignet med store norske bedrifter er knyttet til bedriftenes behov for innovasjonsavdelinger og verktøy og bedriftenes strategiske orientering. SMBer har ikke behov for innovasjonsavdelinger eller verktøy for å styre Åpen Innovasjon. De store bedriftene trenger imidlertid dette, da de har en hierarkisk struktur. Studien viser også at SMBer og store bedrifter har forskjellige strategiske orienteringer. SMBene har en *defender* orientering, mens de store bedrifter har en *analyzer* orientering. Likhetene er at både SMBer og store bedrifter utfører det meste av sin Åpen Innovasjon gjennom *outside-in* prosesser. Både store bedrifter og SMBer må fokusere på en åpen *approach* som legger til rette for Åpen Innovasjon for å lykkes med strategien.

Funnene knyttet til hvorfor norske SMBer utfører Åpen Innovasjon sammenlignet med store bedrifter viser at SMBer og store bedrifter oppnår noen ulike fordeler. Store bedrifter oppnår ni fordeler som SMBer ikke oppnår. Dette ser ut til å være på grunn av de store bedriftenes mange interne ressurser som tillater bedriftene å samhandle med forskjellige partnere i industrien gjennom ulike samarbeid. SMBer oppnår tre fordeler som de store bedriftene ikke oppnår. Dette kan skyldes de små bedriftenes nærhet til markedet, i tillegg til deres mindre komplekse interne prosesser enn det større bedrifter har. Likevel oppnås 26 av fordelene av både SMBer og store bedrifter. Denne studien viser at de fleste fordelene oppnås gjennom *outside-in* prosessene; involvering av ansatte, kunde- og brukerinvolvering og ekstern deltakelse.

Denne studien tilsier at både norske SMBer og norske store bedrifter bør bruke Åpne Innovasjonsstrategier for å oppnå og opprettholde konkurransefortrinn og for å fortsette vekst. Fordi undersøkelsen er begrenset til fire case-bedrifter er ikke resultatene fra denne studien generaliserbare for andre enn bedriftene som er inkludert. Likevel kan våre resultater være gyldig for andre bedrifter. For å kunne få resultater som er generaliserbare for alle norske bedrifter må videre forskning gjennomføres på et større utvalg av både SMBer og store bedrifter.

Table of contents

Preface I

Abstract III

Abstract in Norwegian V

Table of contents VII

List of Tables XI

List of Figures XI

PART 1: introduction and Methodology

1. Introduction 2

1.1 Background 2

1.1.1 Defining SMEs 3

1.1.2 Why SMEs? 4

1.2 Problem Definition 5

1.2.1 Research Questions 5

1.2.2 What is Open Innovation? 5

1.2.3 Advantages of Open Innovation 5

1.2.4 Open Innovation in Norwegian Companies 6

1.2.5 Advantages of Open Innovation in Norwegian Companies 6

2. Methodology and Research Approach 7

2.1 Literature Review 7

2.2 Case Study Research 8

2.2.1 Case Study Design 8

2.2.2 Collecting Information 10

2.2.3 Analyzing Case Study Evidence 12

2.3 Reflections on Methodology 12

2.3.1 Reflections on Validity 13

PART 2: Literature review

3. Theoretical Study of Open Innovation 16

3.1 Approach towards Open Innovation 16

3.1.1 Defining Open Innovation 16

3.1.2 Engagement in Open Innovation 21

3.1.3 Open Innovation Culture 23

3.1.4 Strategic Orientation 24

3.1.5 Summary of Approach towards Open Innovation 25

3.2 Open Innovation Processes 25

3.2.1 Outside-In Processes 26

3.2.2 Inside-Out Processes 30

3.2.3 Coupled Processes 32

3.2.4 Discussion of Open Innovation Processes 32

3.3 Advantages of Open Innovation 34

3.3.1 Advantages gained from Outside-In Processes 34

3.3.2 Advantages gained from Inside-Out Processes 38

3.3.3 Discussion of Advantages 38

3.4 Theoretical Framework 41

3.5 SMEs vs. Large Companies 44

3.6 Summary of Theoretical Study 46

PART 3: Empirical findings

4. Empirical Study 48

4.1 FINN.no AS 48

4.1.1 Strategy of FINN.no 49

4.1.2 Advantages 54

4.2 Statoil ASA 55

4.2.1 Strategy of Statoil 56

4.2.2 Advantages 61
4.3 Vom og Hundemat AS 62
4.3.1 Strategy of Vom og Hundemat 62
4.3.2 Advantages 65
4.4 Rocketfarm AS 66
4.4.1 Strategy of Rocketfarm 66
4.4.2 Advantages 69
4.5 Summary of Empirical Study 69
PART 4: Analysis and Discussion
5. Within Case Analysis 72
5.1 Analysis and Discussion of FINN.no 72
5.1.1 Approach towards Open Innovation 72
5.1.2 Open Innovation Processes in FINN.no 75
5.1.3 Advantages 79
5.1.4 Open Innovation Design in FINN.no 86
5.2 Analysis and Discussion of Statoil ASA 87
5.2.1 Approach towards Open Innovation 87
5.2.2 Open Innovation Processes in Statoil 89
5.2.3 Advantages 94
5.2.4 Open Innovation Design in Statoil 100
5.3 Analysis and Discussion of Vom og Hundemat 101
5.3.1 Approach towards Open Innovation 101
5.3.2 Open Innovation Processes in Vom og Hundemat 103
5.3.3 Advantages 105
5.3.4 Open Innovation Design in Vom og Hundemat 109
5.4 Analysis and Discussion of Rocketfarm 110
5.4.1 Approach towards Open Innovation 110
5.4.2 Open Innovation Processes in Rocketfarm 112

5.4.3 Advantages 114
5.4.4 Open Innovation Design in Rocketfarm 118
6. Cross Case Analysis 120
6.1 Approach towards Open Innovation 120
6.1.1 Definition of Open Innovation 120
6.1.2 Engagement in Open Innovation 121
6.1.3 Open Innovation Culture 122
6.1.4 Strategic Orientation 123
6.2 Open Innovation Processes 124
6.2.1 Outside-In Processes 124
6.2.2 Inside-Out Processes 128
6.2.3 Coupled Processes 129
6.3 Advantages 130
6.4 Open Innovation Design in Norwegian companies 136
PART 5: Conclusion and Implications
7. Conclusion and Implications 142
7.1 Conclusion 142
7.2 Implications 145
7.2.1 Managerial Implications 145
7.2.2 Implications for Further Research 147
PART 6: List of References and Appendix
List of References 152
Interview guides 158
Interview Guide for Managers/Head of Innovation 158
Interview Guide for Employees 159

List of Tables

Table 1: The EU definition of SMEs 3

Table 2: Overview of the informants of the case companies 11

Table 3: Closed Innovation versus Open Innovation 20

Table 4: List of advantages found in the literature 39

Table 5: Advantages FINN.no gains from Open Innovation 81

Table 6: Advantages Statoil gains from Open Innovation 96

Table 7: Advantages Vom og Hundemat gains from Open Innovation 106

Table 8: Advantages Rocketfarm gains from Open Innovation 115

Table 9: SME-specific, large company-specific and general advantages 132

List of Figures

Figure 1: Illustration of Closed Innovation 18

Figure 2: Illustration of Open Innovation: The flow of ideas and internal and external paths to market 19

Figure 3: The Open Innovation Strategies: Outside-In, Inside-Out and the Coupled strategy. 33

Figure 4: Theoretical framework of Open Innovation 42

Figure 5: Theoretical framework 71

Figure 6: Theoretical framework 86

Figure 7: Theoretical framework 100

Figure 8: Theoretical framework 109

Figure 9: Theoretical framework 118

Part 1: Introduction and Methodology

Part one of this master thesis describes the background for Open Innovation. The problem definition is described through four research questions and the study's methodology is presented.

1. Introduction

Companies need to innovate in order to stay alive, however innovation processes can be difficult to manage. The area of Open Innovation has been suggested as a new paradigm to manage innovation. The premise is that to achieve competitive advantage, companies must revolutionize their innovation business models (Rodrigues et al., 2010). Organizations need to handle the accelerating pace of change, turbulent economic times and greater competition, and their ability to innovate and stay ahead of the competitors is becoming more critical (Reid, 2009). In this chapter the background for this master thesis is described, as well as why further investigation is warranted of the topic of Open Innovation in small and medium enterprises (SMEs) in comparison to large companies.

1.1 Background

Rodrigues et al. (2010) argue that the way many companies are doing business is becoming less efficient and companies stand before a more complex business environment. The Internet makes it easier to share knowledge and ideas between parties; hence opportunities in the market are increasing. With increasing globalization, competitors come from all corners of the world. At the same time, the new knowledge landscape represents challenges for companies in order to stay ahead of their competitors.

Most researchers agree that the field of innovation is important and that companies must focus on their innovation strategies in order to survive in the competitive market. A survey conducted by the Boston Consulting Group, involving 468 senior executives in 58 different countries with all major industries represented, shows an increasing focus on innovation in companies (Andrew et al. 2007 cited by Reid, 2009). The survey points out that innovation is a strategic priority and that the companies show interest in improving their innovation strategies.

In 2003 Henry Chesbrough introduced Open Innovation as a new paradigm in the field of Innovation. He defines Open Innovation as: *"… a paradigm that assumes that firms can and should use external ideas as well as internal ideas, and internal and external paths to market, as firms look to advance their technology"* (Chesbrough, 2003 p. XXIV). According to Enkel et al. (2009), the era of Open Innovation has just begun, and more and more researchers are looking into the new paradigm. According to Lindegaard (2011), in the future the term *Open Innovation* will disappear, as we will only refer to it as "*innovation"* with a much higher external input than we see today. This indicates the importance of the new innovation paradigm and why it is interesting for companies of every size to learn more about the processes of Open Innovation and what they can gain from it. One way of improving innovation strategies is suggested to be by adopting an Open Innovation strategy. This is why we want to investigate Open Innovation.

Most of the Open Innovation literature focuses on large firms. Nevertheless, Enkel et al. (2009) state that more SMEs are opening up their innovation model and that SMEs can *overcome* their liability of smallness by opening up their innovation process (Keupp and Gassmann, 2007; van de Vrande et al., 2010 cited in Enkel et al., 2009). As showed in the study by Flakstad and Prytz (2012) little research has focused on SMEs and Open Innovation, and even fewer studies have addressed similarities and differences between SMEs and large firms. As a consequence, we aim in this study to address similarities and differences between SMEs and large firms through an empirical study. Because the Open Innovation literature has little focus on Norwegian firms and their engagement in Open Innovation, we have chosen to do a study of Norwegian SMEs and large firms. In addition 99% of the Norwegian companies are defined as SMEs (Ministry of Trade and Industry, 2013), which renders it especially interesting to investigate how Norwegian SMEs conduct Open Innovation compared to large Norwegian companies. Since the distinction between SMEs and large firms is crucial for our study, we define SMEs in the next section.

1.1.1 Defining SMEs

Several definitions of SMEs have been proposed and different countries adopt various criteria, such as employment, sales or investment, for defining SMEs (Ayyagari et al., 2007). A study of SMEs across the globe by Ayyagari et al. (2007) shows the variety of definitions stating that in some countries an SME is defined as an enterprise with less than 500 employees, while another country may define the cut-off to be 250 employees.

The definition adopted by the European Union (EU), which is presented in table 1, combines both number of employees and either turnover or balance sheet total (European Commission, 2013).

Table 1: The EU definition of SMEs

Company category	***Employees***	***Turnover***	*Or*	***Balance sheet total***
Medium-sized	*< 250*	*≤ € 50 m*		*≤ € 43 m*
Small	*< 50*	*≤ € 10 m*		*≤ € 10 m*
Micro	*< 10*	*≤ € 2 m*		*≤ € 2 m*

According to this definition, small firms have less than 50 employees and medium sized firms have from 51 to 250 employees, and the turnover or the balance sheet total are a part of the criteria as well. In Canada and the US, an SME is defined as a company with 500 or fewer employees (Cavusgil et al., 2008). And according to Inauen and Schenker-Wicki (2011), large firms have more than 500 full

time employees. The Norwegian definition of small and medium sized enterprises is the same as the one adapted by Switzerland and includes companies with up to 100 employees (Finansdepartementet, 1995). According to the study by Ayyagari et al. (2007) Hong Kong in China, Iceland, Indonesia, Netherlands, Singapore and South Africa share the same definition as Norway.

Although the definitions of SMEs vary, one may think that the differences between SMEs and larger firms are based on SMEs' more limited resources in terms of knowledge and financial strength. However, it is important to acknowledge that the literature about SMEs may apply different definitions, because this may impact our study. The literature review is based on literature that originates from different places in the world, which is why the literature may have used different definitions of SMEs. The case firms chosen for this study follow the Norwegian definition of SMEs and large firms.

1.1.2 Why SMEs?

As mentioned earlier we have chosen to investigate SMEs due to the fact that little research so far has been conducted on SMEs in an Open Innovation setting. But why are SMEs so interesting? Changing market conditions, such as globalization and the current economic crisis, force smaller firms to adapt or reinvent their business through new technologies or unique value propositions (Vanhaverbeke et al., 2012). Another reason is that SMEs are considered as an essential source for entrepreneurial spirit and innovation (Puhakainen and Malinen, 2008). However, according to Lindegaard (2011) SMEs are unlikely to have an R&D department or someone who is in charge of innovation, as larger firms have. This makes it interesting to investigate how their innovation processes are accomplished and if and how they incorporate Open Innovation strategies. Secondly, SMEs are important because they represent 99% of all enterprises in the EU (EU, 2004 cited in Puhakainen and Malinen, 2008). These companies contribute to both employment and economic growth. The SMEs play an important role in the European economics as they provide 65 million jobs. As presented earlier 99% of the companies in Norway have 100 employees or less, hence are defined as SMEs, and these companies make up the majority of Norwegian industry and commerce (Ministry of Trade and Industry, 2013).

Due to the important role SMEs have in the Norwegian economy it is of interest to gain a better understanding of how these companies conduct Open Innovation strategies, and what they gain from it. In the next section, the problem definition and research questions of this master thesis are further outlined.

1.2 Problem Definition

Through a literature review and an empirical study we aim to investigate how and why Norwegian SMEs compared to large Norwegian companies implement Open Innovation strategies.

1.2.1 Research Questions

The problem definition is divided into four research questions. The first and second research questions are theory based and discuss Open Innovation strategy in general, in addition to emphasize advantages obtained through Open Innovation. The third research question is both theoretically and empirically based and focuses on how Norwegian SMEs and large companies perform Open Innovation. The fourth research question is empirically based and addresses advantages the companies gain when performing Open Innovation. To sum up, the research questions are:

1) What is Open Innovation?
2) Which advantages can companies obtain through Open Innovation?
3) How do Norwegian SMEs perform Open Innovation compared to large companies?
4) Why do Norwegian SMEs implement and perform Open Innovation strategies compared to large companies?

In the following sections the different research questions this thesis intends to answer are further addressed.

1.2.2 What is Open Innovation?

The first research question is: *What is Open Innovation?* The question aims to give an understanding of the Open Innovation paradigm in general with its strategies and processes. This research question gives us insight in how the paradigm emerged and how companies in general conduct Open Innovation. This is important in order to be able to investigate Open Innovation in Norwegian companies. This research question is answered through a literature review.

1.2.3 Advantages of Open Innovation

The second research question is: *Which advantages can companies obtain through Open Innovation?* This question aims to give an overview of which advantages companies may obtain through Open Innovation processes. This is important in order to understand why companies engage in Open Innovation. The research question is answered by a literature review, which results in theory based findings that later are related to empirical findings.

1.2.4 Open Innovation in Norwegian Companies

The third research question; *How do Norwegian SMEs perform Open Innovation compared to large companies?* aims to address the differences and similarities of how Norwegian SMEs and large companies perform Open Innovation. This is important in order to do a comparison of Norwegian SMEs and large companies' engagement in Open Innovation. This research question is answered through a literature review and an empirical study. The empirical study of two Norwegian SMEs and two large Norwegian companies gives us an understanding of how the respective companies carry out Open Innovation, and the empirical findings are going to be related the theoretical findings.

1.2.5 Advantages of Open Innovation in Norwegian Companies

The fourth and last research question: *Why do Norwegian SMEs implement and perform Open Innovation strategies compared to large companies?* aims to investigate why Norwegian companies carry out Open Innovation. This is important in order to do a comparison of advantages Norwegian SMEs and large companies gain through Open Innovation. This research question is answered through an empirical study. The empirical study of two Norwegian SMEs and two large Norwegian companies gives us an understanding of why the respective companies perform Open Innovation. The empirical findings are going to be related to the theoretical findings.

In this section the problem definition and the research questions of the master thesis have been presented. The research questions are answered through a literature review and empirical case studies. How the study is conducted will be described through the methodology and research approach in the next section.

2. Methodology and Research Approach

This master thesis consists of a case study of four Norwegian companies. The study is a continuation of a literature review conducted by Flakstad and Prytz (2012). The master thesis rests mainly on a deductive logic, meaning that the empirical findings are meant to investigate the theoretical findings. In this chapter the research methodology, a description of how the literature review and case study has been conducted, are presented.

2.1 Literature Review

This master thesis is a continuation of a literature review conducted by Dagny Prytz and Synne Flakstad in 2012, which aimed to investigate which advantages SMEs can gain through Open Innovation. In this study a selection of articles found by a systematical literature search were presented and discussed. The literature review investigates the advantages companies may obtain through Open Innovation.

In order to answer our problem definition a search towards both large and small Norwegian companies doing Open Innovation was made. However, although the amount of literature is increasing as more researchers are looking at the new paradigm, studies of Norwegian companies are few. Since few researchers have focused on Norwegian companies' engagement in Open Innovation a search including "Norwegian companies" gave little results. The lack of literature about Norwegian companies' engagement in Open Innovation is one of the reasons why we wanted to conduct a multiple case study of Norwegian companies.

Due to the fact that the definition of SMEs in the literature varies, many of the advantages presented as advantages for SMEs in the literature encompass firms categorized as large firms in Norway (companies with more than 100 employees). Because of this the literature review conducted by Flakstad and Prytz (2012) does not emphasize Norwegian SMEs, the findings about advantages SMEs gain through Open Innovation Strategies may apply for both small and large Norwegian companies. In addition, some of the articles discussing SMEs do not exclude the possibility that the mentioned advantages are valid for larger firms, meaning that they might apply for both.

Through a systematical search on ProQuest and Google Scholar several articles were found. The most relevant articles were selected by reading abstracts and introductions of each article. The most suitable articles were picked out and added to the literature list in order to create an enhanced theoretical framework better suited to answer the problem definition. How the empirical case study was conducted is presented the next section.

2.2 Case Study Research

Based on the theoretical study an empirical research has been conducted to better understand how Norwegian companies, both large and SMEs, execute Open Innovations strategies, and what they gain from it. In this section the methodology of this multiple-case study is further introduced.

There are several reasons why a case study is suitable for this study. The first reason is that case studies make it possible to test and develop complex relationships between variables (Yin, 2008). This makes it possible to investigate and retain holistic characteristics of real-time events, such as organizational and managerial processes (Yin, 2008). As a consequence of this, case studies are extensively used in situations where the studies aim to contribute to our knowledge of individual, group, organizational, social, political and related phenomena (Yin, 2008). This makes case study suitable for this study.

The second reason is that case studies are suited for *how* and *why* questions. According to Yin (2008) case studies are suited to answer exploratory questions because they are related to operational links that need to be traced over time. Our research questions, as described in section 1.2.1, represent *how* and *why* questions, in order to answer how and why different companies engage in Open Innovation. Because we aim to answer *how* and *why* questions in our study, case studies are a suitable choice.

The third reason is that case studies are suited when the boundaries between the phenomenon and the context are not clearly evident (Yin, 2008). There are many factors that influence the Open Innovation strategies within each company that need to be investigated, and this makes case study is suitable for this study.

2.2.1 Case Study Design

The research design is an important part of the case study and might be seen as the "blueprint" for the research. The design includes what questions to study, what data are relevant, what data to collect and how to analyze the results (Philliber et al., 1980 cited in Yin, 2008). In this section the case firms and the unit of analysis are presented.

The theoretical study emphasizes advantages that both SMEs and larger companies encounter through an Open Innovation strategy. In order to investigate how Norwegian SMEs and larger firms execute and experience this new paradigm, four companies were selected for the empirical study; two large companies and two SMEs. Since we are going to compare SMEs and large companies to find differences and similarities, we had to have at least one firm of each size. The reason for having two SMEs and two large companies is to get a wider perspective of how companies engage in Open

Innovation. It also makes it possible to analyze across the SMEs and across the large firms to investigate if there are similarities or differences between the firms of the same size. Because the sample of firms is small, the results from this study cannot be generalized for all Norwegian companies. However, it gives insight to how a selection of Norwegian companies engage in Open Innovation.

The two large firms are FINN.no and Statoil. FINN.no has Norway's largest classified advertisement website. Statoil is Norway's largest energy company with approximately 21000 employees worldwide. However, we have focused on Statoil´s corporate innovation unit that is located in Norway. This implies that we have investigated a part of the Open Innovation processes that take place in the large corporation Statoil. The two SMEs are Vom og Hundemat and Rocketfarm. Vom and Hundemat is a Norwegian company producing wet mash dog food of high quality, and is a company with rapid growth. Rocketfarm is a company consisting of eight people working within information technology (IT), making computer programs and applications.

How the case firms were selected

As preparation to the literature review conducted fall 2012 an interview with FINN.no was arranged. The company is well known for its commitment to Open Innovation. At a meeting with Head of Innovation Jens Hauglum and Director of New Markets Eyvind Larre, one of the entrepreneurs of FINN.no, we got an introduction to the company's Open Innovation approach. As the company is a large Norwegian company with a clear Open Innovation strategy, the collaboration continued and they agreed to be a part of this study.

Fall 2012 Lisa Marie Ovea Gjertsen wrote a literature review on knowledge transfer between projects and had initiated collaboration with Statoil through this study. We chose to continue the collaboration with Statoil as the company is known for its many innovative projects and Open Innovation commitment.

In order to find two SME that focus on Open Innovation contact was made with several people in our professional network. We got in touch with Sjur Dagestad, part time professor in innovation at NTNU, who gave us both inspiration and suggestions for where to find suited companies. Through Jan Helge Maurtvedt in our network, we were introduced to Vom og Hundemat as he found this company to be suited for our study.

Rocketfarm is the second SME to be investigated in this study. This company claims to have an Open Innovation strategy and made contact with us through our alumni network on Facebook. Both Vom og Hundemat and Rocketfarm are within the Norwegian definition of a SMEs and suited for the study.

Unit of analysis

Within the four case firms we are studying their Open Innovation strategies. As the research questions mentioned in section 1.2.1 state, our investigation focus on how the companies are organized and how they perform their Open Innovation processes. In addition, the investigation emphasize the advantages each company encounter through these processes and strategies.

The unit of analysis is an especially important factor in a case study (Patton, 2002 cited in Grünbaum, 2007, Yin, 2008). When deciding the unit of analysis the key issue is to decide what it is you want to be able to say something about at the end of the study (Patton, 2002 cited in Grünbaum, 2007). According to this definition, our unit of analysis is Open Innovation within our case firms FINN.no, Statoil, Rocketfarm and Vom og Hundemat. We are investigating the Open Innovation phenomenon in both SMEs and large companies in Norway in this empirical study.

2.2.2 Collecting Information

When the four companies were selected and had agreed to be a part of the study, the information collection was planned and organized. When doing a multiple case study it is essential to have a case study protocol (Yin, 2008). The case study protocol works as a guide for the investigators in order to carry out the different interviews in the same matter to increase the study's reliability. We established a shared folder containing the literature for the study, information about each firm and case study questions. In addition we created a template about how to address the informants before the interviews and an outline of the case study report allowing us to note thoughts and reflections throughout the entire process.

The data for the study was primarily collected through a combination of in-depth interviews and focused interviews. In-depth interviews allows investigators to ask key respondents about facts and their opinions about events (Yin, 2008). Focused interviews are when persons are interviewed for a short period of time, approximately an hour, by following a certain set of questions while keeping a conversational manner (Merton et al., 1990 cited in Yin, 2008).

In total, 10 interviews were conducted. Table 2 illustrates an overview of the interviews. Two interviews were conducted in each of the SMEs and three in each of the large firms. The interviews ranged from 45 to 70 minutes, with an average of about fifty minutes.

Table 2: Overview of the informants of the case companies

Informants	Date	Company	Description of position	Number of minutes
Jens Hauglum	14.03.2013	Finn.no AS	Head of Innovation	40
Mattias Jennehed	21.03.2013	Finn.no AS	Manager of Car Sales	50
Ådne Skjelstad	21.03.2013	Finn.no AS	Manager of Real Estate	50
Morten Husby	07.03.2013	Statoil ASA	Manager Idea Management	70
Ole Gunnar Dokka	22.03.2013	Statoil ASA	Manager Innovation Engagement	50
Øystein Engen	21.03.2013	Statoil ASA	Leading Consultant Strategy, Innovation	40
Roy Storli	19.03.2013	Vom og Hundemat AS	General Manager	45
Magne Østby	19.03.2013	Vom og Hundemat AS	Entrepreneur and Chairman of the Board	45
Dyre Hult	12.03.2013	Rocketfarm AS	Part time Software Developer	40
Halvor Gregusson	01.03.2013 and 13.03.2013	Rocketfarm AS	General Manager	45

The interviews with FINN.no were made through physical meetings at their office in Oslo. The informants of Statoil are travelling a lot. Because of this it was difficult to arrange physical meetings, so the interviews were made through Skype. The interviews with Vom og Hundemat took place at the company´s office in Trøgstad, while the interviews with Rocketfarm took place in Trondheim and through Skype. The interviews were semi-structured, allowing the informant to talk without being interrupted by new questions. The interview guides worked more like guidelines ensuring that all the important topics were discussed during the interview. Most of the interviews were held by two investigators, one with the role as the interviewer and the other as a facilitator making notes and making sure nothing was left out. This increases the study's reliability as the probability for misunderstanding is reduced.

There were two different interview guides, one for the person in charge of the innovation strategies in each company, and one for employees in other departments or positions that are involved in Open Innovation processes. The respondents held different positions in the case firms giving a diversity of perspectives on the topic. The interview guides were developed based on the theoretical framework, emphasizing the topics described in the problem definition. Each interview was recorded and transcribed. The information from the interviews were then written into the questionnaire sheet and sent back to the respondents for feedback to avoid mistakes and misinterpretation.

The information gained through the interviews were supplemented by secondary data such as documents describing the story of the firms, information from companies' websites and additional information through emails when we faced questions regarding the firms.

As the interviews were planned in advance, each informant received either a phone call or an email two days before the interview informing them about what we were going to discuss during the interview. In addition the informants were told to think about an innovation process they had been a part of to make it easier to come up with examples during the interview.

2.2.3 Analyzing Case Study Evidence

Information from the interviews and additional sources as mentioned above, were gathered for analysis. The information was structured according to the topics that were discussed as well as according to the size of the firm. The multiple sources of information gave us a broad perspective.

Although this is a multiple case study, the analysis starts with within case analysis of all four firms. In the within case analysis, the company´s engagement in Open Innovation, processes and advantages are analyzed against the theoretical framework and the findings are discussed. This results in a holistic view of the company and gives us a pattern that can be used to compare the four companies in a cross case analysis. The cross case analysis firstly compares the large firms to find differences and similarities in the companies engagement in Open Innovation, processes and advantages. Secondly the small firms are compared to each other. In the end, the large firms are compared to the SMEs in order to answer research question number three and four.

2.3 Reflections on Methodology

In this part the chosen methodology including its limitations is discussed. As mentioned earlier, this master thesis is a continuation of a literature review focusing on advantages SMEs gain through Open Innovation. Since we use the Norwegian definition of SMEs it might not correspond with the definition used in the literature review. As the definition of SMEs varies in different countries, we have no guarantee that the research conducted on SMEs in the literature review is valid for companies within the Norwegian definition of SMEs. However, we expect the differences between SMEs and large companies to be the same, although the literature uses a different definition of SMEs and large companies. The American definition of SMEs is companies with 500 or fewer employees (Cavusgil et al., 2008). According to this definition FINN.no is a SME, but according to the Norwegian definition, FINN.no is a large company. But if we include FINN.no to be a part of Schibsted ASA, FINN.no is a large company according to the American definition as well. However, the company operates independently concerning the Open Innovation strategies and is therefore seen as a separate company in this study. Although the literature defines SMEs and large companies in different ways, there will be a variance in the companies' resources and complexity, meaning that the differences will be present when comparing large companies towards SMEs despite the definitions. This is the reason why we do not expect the various definitions to affect the results of this study to a large extent.

There is a low amount of literature about Norwegian companies conducting Open Innovation strategies. This makes it interesting to look further into this topic. However, this implies that we had

little information about how Norwegian companies that implement Open Innovation when designing the study.

Selecting SMEs to be a part of this study was a challenge, as few SMEs seemed to implement a clear Open Innovation strategy. This was not a problem for the large companies. The case firms included in this study have all contributed to our knowledge about their Open Innovation strategies. However, the variation in terms of industry and organizational structure may have affected the results. The differences were considered when making the interview guides, trying to separate the innovation strategies from the industrial context. This was done by asking questions that were generalized and not industry dependent. As mentioned earlier, some of the interviews such as Statoil and Rocketfarm were made through Skype. This could have affected the results, as it may be easier to have a physical conversation face to face.

Due to the differences between the firms and a small selection of case firms, the study cannot be generalized for all Norwegian firms, and should be further investigated. By studying two SMEs and two large companies, we have the opportunity to do analysis across SMEs and large firms. This make the study more interesting as we can see if there are similarities and differences within the SMEs we have chosen to study, which also apply to the large firms.

The manager of Vom og Hundemat was not aware of the term Open Innovation in contrast to the managers of the other three case firms. The reason why this company is included in the study is due to the fact that it is a typical Norwegian SME and that Jan Helge Maurtvedt, who knew the entrepreneur, indicated that the company was doing Open Innovation processes without labeling it Open Innovation.

By interviewing the Head of Innovation in the large companies and the General Manager in the SMEs, in addition to one or two employees, a wide perspective of each firm was formed. However the selection of respondents could have been even broader, including employees holding even more different positions. In FINN.no for instance, it could have been interesting to talk to one of the employees within sales to add a wider perspective to the case.

Both the theoretical and the empirical study are executed in a systematic and organized matter. In the next section reflections on validity of the empirical findings are presented.

2.3.1 Reflections on Validity

Employees with different positions within the selected case firms were interviewed. This had given us different point of views, which make the total impression more holistic, than the impression would have been if we had talked to employees within the same positions or fewer employees.

During the interviews, we used the interview guide. This implies that the conditions were facilitated to provide a good basis to investigate the same topics within Open Innovation in all companies. We were conscious not to ask the informants leading questions, as this would steer their answers and give us a wrong impression of the reality. However, some of the informants did not answer some of our questions. As a consequence of this, we had to lead the informant through the conversation in a greater extent, which may have influenced the answers. Every interview was recorded to be able to transcribe them after the interviews were finished. To avoid misunderstandings, the interviews were sent to and read by the informants for validation. Incorrect information was then corrected. This procedure makes our findings more valid. Since we have interviewed few employees we recognize that the findings could be different if we had included more employees in the study.

Part 2: Literature Review

This second part addresses research question number one and two. The first research question is "*What is Open Innovation?"* and the second research question is ***"****Which advantages can companies obtain through Open Innovation? "* The theoretical study is presenting the Open Innovation paradigm and the different strategies that Open Innovation comprises. In addition the different advantages firms may gain through implementing and driving Open Innovation strategies are presented.

3. Theoretical Study of Open Innovation

In this chapter Open Innovation is described. The first section presents Open Innovation in general, focusing on how the strategy emerged and by whom it was introduced. The section will address innovation culture and firm's strategic orientation.

The second section goes deeper into the Open Innovation strategies, describing the outside-in, inside-out and the coupled process with the main emphasis put on the first two. This part is also focusing on the differences between SMEs and larger firms in an Open Innovation context.

Advantages connected to the Open Innovation strategy is presented in the third part of this chapter. Advantages presented in the literature, which both SMEs and larger firms may gain through Open Innovation, are present in order to lay the foundation for our research questions.

3.1 Approach towards Open Innovation

This section addresses research question number one: *What is Open Innovation*? To answer this question, literature on how Open Innovation emerged and why Open Innovation is viewed as a new paradigm is presented. Open Innovation culture and strategic orientation is also addressed in this section as these aspects may affect the innovation strategies of the firm.

3.1.1 Defining Open Innovation

In this section Open Innovation as a new paradigm and its´ beginning is presented. In order to better understand the new paradigm the Closed Innovation paradigm is presented as well as the factors that made the new paradigm arise.

The beginning of Open Innovation

Open Innovation is an innovation strategy that has gained increased attention the last few years, and is currently one of the most debated topics in management literature (Chiaroni et al., 2011). Companies experience that they have trouble surviving on their own and that they should find external sources of innovation, thus abandoning the philosophy of doing everything within the company. Typical external sources of innovation comprise purchasing and licensing technology and opening up research and development (R&D) to other organizations. This requires mutual trust of the potential benefits to the businesses, and tenable agreements to define the rights and obligations of the parties.

Henry Chesbrough was the first to introduce the term *Open Innovation*. According to Chesbrough (Chesbrough, 2003 p. XXIV) is *"Open Innovation a paradigm that assumes that firms can and should*

use external ideas as well as internal ideas, and internal and external paths to market, as firms look to advance their technology". Chesbrough's areas of expertise are technology management and innovation and his research has been published in many different academic journals and books.

Open Innovation as a new paradigm

Chesbrough (2003) describes a fundamental change in the way companies innovate and bring products to market. He describes this as a paradigm shift where the old paradigm is called *Closed Innovation* and the new *Open Innovation*. To understand the shift from closed to Open Innovation a short presentation of the Closed Innovation strategy is given, before describing the new paradigm, Open Innovation, in greater detail.

Closed Innovation

Closed Innovation is the opposite of Open Innovation. In Closed Innovation companies had to take their new discoveries to market themselves (Chesbrough, 2006). It represents a paradigm where successful innovations were developed within the firm's boundaries from internal idea generation until they were launched as a new product or business by the company (Chesbrough et al., 2008).

The internal focus that Closed Innovation represents implies that "if you want to do something right, you've got to do it yourself" (Chesbrough, 2003;XX). The Closed Innovation paradigm emphasizes that you should do everything inside the company by yourself, thus avoiding the uncertainty connected to relying on external partners.

Through Closed Innovation, companies invested in internal R&D that led to many breakthrough discoveries enabling them to make money that again was spent on reinventing more internal R&D (Chesbrough, 2003). Because of the IP rights, the discoveries were closely guarded and could not be exploited outside the companies' boundaries (Filippetti, 2011). This gave the firm competitive advantage.

The Closed Innovation process is described in figure 1, as seen below. Projects and ideas enter at the top and go through the processes of research and development until they are shipped out to the company's market.

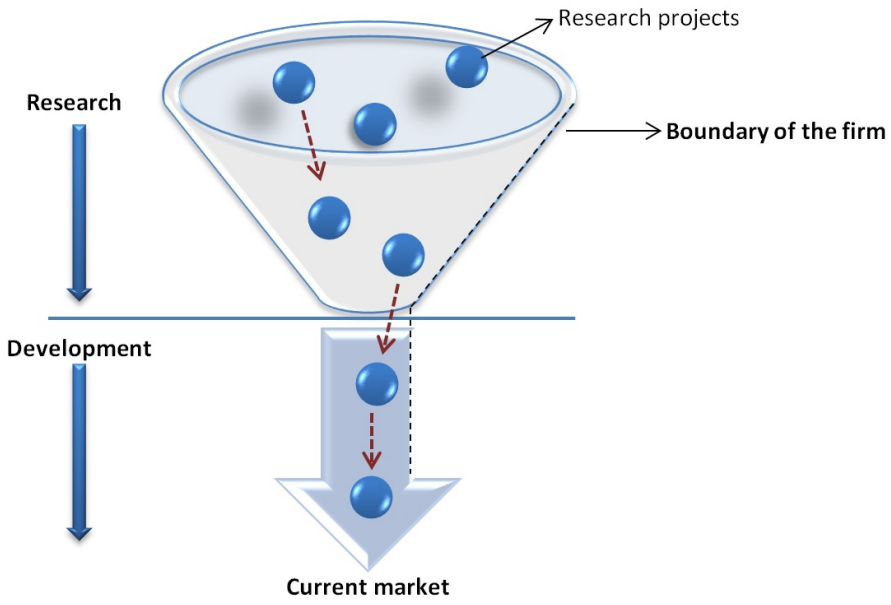


Figure 1: Illustration of Closed Innovation

As figure 1 show, the traditional, closed innovation model is built upon the idea that the company's own organization possesses all the necessary knowledge and know-how (Inkinen and Kaivo-oja, 2009), in a strong vertical integration. In the next section the Open Innovation paradigm is further explained.

Opening up for external ideas and external paths to market

In contrast with the Closed Innovation paradigm described above, the Open Innovation paradigm open up for external ideas and paths to market. Chesbrough (2003) claim that Open Innovation is a new paradigm for organizing innovation by using internal *and* external ideas and paths to market. As the world is becoming more globalized, the markets expand and time to market decreases - Open Innovation strategy is a way to benefit from the new market opportunities.

Open Innovation explains the importance of flows of information and knowledge within the innovation process. By the use of purposive inflows and outflows of knowledge across company boundaries, the Open Innovation strategy allows the firm to exploit external collaboration to find the knowledge and resources they need (Chesbrough, 2006). The different strategies and flows of information are illustrated in figure 2 below.

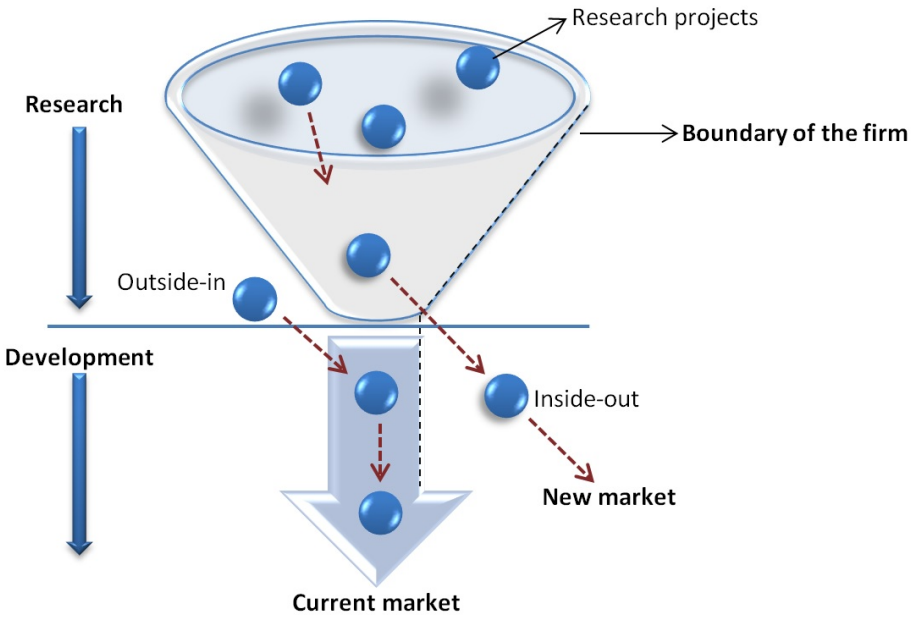


Figure 2: Illustration of Open Innovation: The flow of ideas and internal and external paths to market

As illustrated in figure 2, information flows across the company's boundaries both inwards and outwards. The different Open Innovation processes are further described in section 3.2. Through the flow of information companies have the ability to benefit from internal knowledge in outside collaborations within new business models, and get new offerings based on the ingoing flow (Chesbrough, 2003).

At root, the logic of Open Innovation is based on a landscape of abundant knowledge, which must be used readily if it is to provide value to the company that created it (Chesbrough, 2003). This contrasts with the Closed Innovation strategy where the philosophy was to possess all knowledge and technology inside the firm. The Open Innovation paradigm allows the company to explore more opportunities through the inward and outward flows of information.

The ability to absorb external knowledge has become a major driver for competition (Spithoven et al., 2011). Previous studies have revealed that successful innovations require both technological competences to create new products and marketing competences to commercialize these products (Duetta et al., 1999; Daneels, 2002, 2004 cited in Inauen and Schenker-Wicki, 2011). And according to the Open Innovation strategy, the company can find this competence and knowledge both inside *and* outside the boundaries of the firm.

Comparing Closed and Open Innovation

We have now introduced the new paradigm Open Innovation as a change from the Closed Innovation paradigm. To summarize the differences between the two strategies, table 3 (Flakstad and Prytz, 2012) below illustrate how Open Innovation separates from Closed Innovation.

Table 3: Closed Innovation versus Open Innovation

Contrasting Principles of Closed and Open Innovation	
Closed Innovation Principles	**Open Innovation Principles**
The smart people in the field work for us.	Not all the smart people work for us. We need to work with smart people inside *and* outside our company.
To profit from R&D, we must discover it, develop it, and ship it ourselves.	External R&D can create significant value; internal R&D is needed to claim some portion of that value.
If we discover it ourselves, we will get it to market first.	We do not have to originate the research to profit from it.
The company that gets the innovation to market first will win.	Building a better business model is better than getting first to market.
If we create the most and the best ideas in the industry, we will win.	If we make the best use of internal and external ideas, we will win.
We should control our IP, so that our competitors do not profit from our ideas.	We should profit from others' use of our IP, and should buy others' IP whenever it advances our own business model.

Newness of Open Innovation

Although Chesbrough introduced the term Open Innovation as a new paradigm in 2003, there is not consensus that the phenomenon is new. Already in the 1980ies many authors commented on how innovation changed from a closed to a more open approach where companies searched for external technologies and acquisitions in order to complement their portfolios (von Hippel, 1988; Lichtenthaler, 2008b; Pisano, 1990; Laine and Lubatkin, 1998 cited in Spithoven et al., 2011). In addition it was argued that production of knowledge was changing from a clearly delineated mode to a new dynamic, interactive and multi-faceted system (Gibbson et al., 1994 cited in Spithoven et al., 2011). As an example, the development of the electric lighting was the product of collaboration between engineers, financiers, and market people outside the laboratory combining previous ideas

(Hargadon, 2003 cited in Dahlander and Gann, 2010). Duarte and Sarkar (2011) state that although the Open Innovation concept has received lots of attention in recent years, collaboration in the case of joint ventures, firm-university collaboration and spin-offs are not new phenomena.

Even though Open Innovation´s newness has been criticized, the need for Open Innovation is increasing as the markets are globalized and product cycles are decreased. This implies a need to increase the understanding of the Open Innovation paradigm including the processes and what advantages companies obtain when implementing the strategy. This is the reason why many regard research within Open Innovation as important. To better understand how the new paradigm emerged the next chapter is describing why companies incorporated the new strategy.

3.1.2 Engagement in Open Innovation

Many companies had done well using Closed Innovation in the early twentieth century (Chesbrough, 2003), but the internal focus which the Closed Innovation represents is no longer as beneficial as before. But why should the Open Innovation paradigm be better than the Closed Innovation paradigm? And why did the Open Innovation paradigm emerge? By the end of the twentieth century several factors made Closed Innovation less attractive and laid the foundation for the Open Innovation paradigm to arise. In this section the changes that made Open Innovation more suitable for companies are shed light on.

Emerging factors of Open Innovation

The *increased mobility of highly experienced and skilled workers* in the postwar period was one of the erosion factors of Closed Innovation (Chesbrough, 2003, Inkinen and Kaivo-oja, 2009). These people could bring their knowledge from one company to another. In addition the *globalization* had made it easier to employ foreign, highly talented people.

More *private venture capital* emerged in US after 1980. This led to more available financing for start-ups who managed to become competitors to larger firms (Chesbrough, 2003). In addition, the Open Innovation strategy allows small start-ups to get access to innovations outside the firm, as described earlier. In the closed Innovation paradigm, internal R&D was seen as an competitive advantage and smaller firms had to establish their own labs in order to compete (Chesbrough, 2003). The value of patent protection was considered to be very strong at the start of the twentieth century, but during the next eighty years the strength of patent protection has become weaker (Chesbrough, 2006). The possibilities to further develop ideas and technologies outside the organization are growing, and that other organizations in the supply chain play an increasingly important role in the innovation process (Inkinen and Kaivo-oja, 2009). Hence, as companies started to *innovate based on research done by*

others, they could commercialize products without conducting internal R&D. This indicated the reduced importance for internal R&D that emerged.

Companies with internal R&D realized that some of their internal research was not appropriate for their business model and therefore of no use internally. This unused research was seen as *sunk cost* in a Closed Innovation perspective. But in the Open Innovation Model, technology without a clear path to market internally can make use of an external path to market through licensing, new ventures or spin-offs, creating more value to the company (Chesbrough, 2006).

Companies embrace the open strategy

Companies find the need for new ways to do innovation as the way companies are doing business is becoming less efficient; hence they search for new innovation models, and as Lindegaard (2011;5) states: *"Open Innovation is a tool, not a goal!"*. This section presents why companies embrace the new strategy.

The companies experience a pressure to increase probability and see development as a cost instead of an investment (Chesbrough, 2007 cited in Rodrigues et al., 2010). Chesbrough also focuses on the inefficient management of innovation processes that increase costs and the fact that the product, technology and market life cycle is shortening. All these aspects in addition to the erosion factors mentioned above are reasons why Open Innovation was a preferable way to do innovations.

Global companies embrace Open Innovation as they reach outside their organizations to partner with suppliers, customers, academics, competitors, and entrepreneurs in search for great new ideas that will keep their business on the cutting edge (Lindegaard, 2011).

Although Open Innovation is applicable to companies in most industries, not all companies operate in the Open Innovation regime (Chesbrough, 2003, West and Gallagher, 2006, van de Vrande et al., 2009). This is because they have not been impacted by the erosion factors presented earlier and still are able to operate in a Closed Innovation regime. In addition the literature discusses the degree of openness companies should have. *"Too much openness can negatively impact the companies' long-term innovation success, because it could lead to loss of control and core competences"* (Enkel et al., 2009;312). However, empirical studies of Open Innovation by Dahlander and Gann (2010) shows that little has changed fundamentally in how firms undertake innovative activities. They state that the Open Innovation model is the same as earlier strategic collaboration strategies, meaning that a company does not need to be either open or closed.

The companies that engage in Open innovation have started to share more *knowledge* and opened up their eyes for new ways to bring their products to market in order to commercialize their research faster, as a result of the new open paradigm. In general, advantages developed through Open

Innovation are mainly about sharing knowledge and resources. Collaboration between different parties, independent of what kind of Open Innovation processes, focuses on different kinds of knowledge sharing (Flakstad and Prytz, 2012).

When sharing knowledge through various kinds of collaborations, the company may utilize internal *tacit knowledge*. *Tacit knowledge* is knowledge strongly related to the persons' experiences and behavior (Polyani 1964 cited in Gjertsen and Kjøbli, 2012;13). *Tacit knowledge* is hard to transfer from one person to another, and becomes according to Trott (2012) first valuable for the company when it is put in its preferred industrial context where it can be transformed into actions. Sharing knowledge is easier when the company has an open culture, which will be described in the next section.

3.1.3 Open Innovation Culture

In this section a presentation of culture and innovation culture is made. The importance of innovation culture in order to develop new ideas and products is described and linked to the Open Innovation strategy.

What is culture?

Organizational culture is defined as a model of fundamental assumptions and philosophy that the members in the organization hold (Schein, 1990 cited in Gjertsen and Kjøbli, 2012). A culture exists of values, norms and rules, and resource has found that organizational learning is affected of the culture in the organization (Lopez et al., 2004). The culture affects how knowledge should be administrated and prioritized and how new knowledge should be created and adjusted in the organization (David et al., 2000). According to Lopez et al. (2004) a culture that facilitates collaboration and dialogue is built on trust and respect and with a leadership that is open for changes and willing to face risks, will enhance learning. According to Renzl (2008) it is important for individuals to have trust in the leadership in the organization in order to manage sharing of knowledge. Adler (2001) states that if the employees have trust in the leaders of the organization, there will be a better environment for knowledge sharing. This indicates the importance of establishing a good relationship between leaders and employees in an organization, and why it is worth investing time and resources in. According to Schindler and Eppler (2003), trust is also important to make use of available knowledge.

As described, trust is an important part of the culture and leads to easier knowledge sharing. As knowledge is an important part of Open Innovation this is important. In the next section Innovation Culture will be further described.

Innovation culture

"Innovation is the process of introducing new ideas to the firm which result in increased firm performance" (Rogers, 1998;2). According to Cerne et al. (2012) innovativeness is the implementation of creative ideas and the process of turning opportunities and suggestions into practical use are comprised of the two elements innovations and innovative culture (Tidd et al., 1997 cited in Cerne et al., 2012). The latter is further explained in this section.

Innovative culture is a culture where all its members are engaged in creating new products, services or processes (Sarros et al., 2008 cited in Cerne et al., 2012), and plays a large role in facilitation of the innovativeness process. Innovativeness describes an organizational characteristic and includes both innovations as a process or an outcome and is connected to the innovative culture that enables innovations (Hurley and Hult, 1998; Škerlavaj et al., 2010 cited in Cerne et al., 2012). Organizational culture often plays an important role in achieving innovative behavior of employees (Cerne et al., 2012). Coordination and cooperation between different business functions within the firm (such as for instance HR and Finance), may serve as a driving force for innovativeness because teamwork and increased communication is likely to generate new ideas and technology exploration (Woodside, 2005 cited in Cerne et al., 2012).

As mentioned earlier, companies open up their innovation processes through Open Innovation in order to enhance their innovations and competitive advantages. But if companies have difficulties making innovation happen internally, they may have difficulties making Open Innovation work with external partners as well (Lindegaard, 2011). This explains the importance for a company to have a good innovation culture and strategy to succeed with Open Innovation through collaboration with external partners. This indicates that it is important for a company to have a good *Open Innovation culture* to succeed with the open strategy.

This section has focused on culture and the importance of trust in order to share knowledge. This has again been connected to Innovation culture in order to understand the importance of an Open Innovation culture to succeed with Open Innovation. In addition to culture, the firm's strategic orientation in collaborations is interesting to look closer at because different firms could take different strategic orientations when engaging in Open Innovation. The next section looks into the topic of strategic orientation.

3.1.4 Strategic Orientation

It is interesting to understand how the companies react towards the environment they operate in and how this affects their Open Innovation processes. In this chapter strategic orientation is described.

Strategic orientation is the pattern of responses that a company makes to its operation environment in order to enhance performance and gain competitive advantage (Hambrick, 1983 cited in Kumar et al., 2012). According to Miles and Snow (1978 cited in Kumar et al., 2012) the strategic orientation is dynamic, as the company has to adjust it to environmental changes and uncertainty. Likewise is it important to take tradeoff between external and internal factors into consideration when companies develop their strategic orientation (McKee et al. 1989 cited in Kumar et al., 2012). According to Miles and Snow (1978 cited in Kumar et al., 2012) strategic orientations could be classified into *prospector, defender, analyzer and reactor*. The first orientation, *prospector,* focuses on product and market innovation, where new opportunities are taken and groundbreaking innovations are developed. The second orientation, *defender,* focuses on making existing operations more efficient and conduct little new product development. The third orientation, *analyzer,* is a mix between prospector and defender orientation. In stable product segments, efficiency is used, and in dynamic product markets, innovation is used. The fourth orientation, *reactor,* does only respond effectively to the environment the company is forces to do it (Miles and Snow, 1978 cited in Kumar et al., 2012).

As the *reactor* orientation does not focus on innovations and only respond to changes in the environment when forced to do so, we believe this is an orientation that is less suited for Open Innovation. To implement Open Innovation is a choice and if companies choose this strategy, they would probably wish to be more flexible and adaptable for changes as well as making use of opportunities to be more innovative. It seems that the *prospector*, *defender* and *analyzer* orientation are possible to combine with an Open Innovation strategy.

3.1.5 Summary of Approach towards Open Innovation

In this section we have looked further into the Open Innovation paradigm and some aspects connected to the strategy. The emerging of Open Innovation as well as factors that are claimed to have made the new paradigm suitable has been presented. Closed Innovation has been described in order to better understand the change to a more open perspective in the new paradigm of Open Innovation. In addition to the culture needed to do Open Innovation has been presented focusing on trust and knowledge sharing. In the following section a variety of Open Innovation strategies are presented explaining how companies can execute Open Innovation in different ways.

3.2 Open Innovation Processes

There is no single method for Open Innovation (Lindegaard, 2011). Open Innovation can be performed in different ways, depending of the firm´s needs, resources and market situation. Enkel et al. (2009) describe three different Open Innovation processes where information flows across the company boundaries. The first is the outside-in process that covers all activities that bring external

knowledge inside the firm and enriches the company´s resources base. The second is the *inside-Out* process where firm´s ideas are brought outside of the company´s boundaries and introduced to the market through external actors. The third is the coupled process that combines both outside-in and inside-out processes.

In this section the Open Innovation processes are presented in more detail. However, the focus will be primarily on the outside-In and inside-out processes, as these processes have been paid more attention to in the literature. As two parties needs to be part of Open Innovation processes, it is important to mention that one company's outside-in process is the other party's inside-out process, and vice versa. The outside-in and inside-out processes are divided into subgroups inspired by van de Vrande et al. (2009), as we find these categories suitable for our theoretical study. The Outside-In processes are divided into the subgroups such as *employee involvement*, *external networking*, *external participation, outsourcing R&D* and *inward IP-licensing,* while the inside-out processes are divided into *venturing* and *outward IP-licensing*. In the next section the Outside-In processes of Open Innovation are introduced.

3.2.1 Outside-In Processes

Among the processes, outside-in processes has received most attention within the literature (Flakstad and Prytz, 2012). Outside-in processes is about using external knowledge and resources to build a company through collaborations with different partners and contributors (Chesbrough, 2012), which could be universities, research organizations, competitors, suppliers and customers (De Backer et al., 2008). Networks are important to access new knowledge, both nationally and internationally (Inauen and Schenker-Wicki, 2011). Bogers (2011) emphasizes the importance of having different kinds of partners to achieve a certain goal because of the complexity of knowledge. The outside-in process is also referred to as *inbound* process (Davis, 2006 cited in Lind et al., 2012). The process is according to Gassmann and Enkel (2004 cited in De Backer et al., 2009) suggested as more important in low technology industries, where internal knowledge is a competitive advantage for the firm.

An important part of the outside-In processes is the firms' *absorptive capacity*: "*The ability of firms to recognize the value of new, external information, assimilate it, and apply it to commercial ends and its innovative capabilities"* (Cohen and Levinthal, 1990;128 cited in Clausen, 2013;58). It is also important that firms have capabilities to facilitate Open Innovation processes to integrate external knowledge into the firm´s internal knowledge base (Dahlander and Gann, 2010). According to Clausen (2013) indicators of *absorptive capacity* are that *firms that conduct internal R&D has a workforce with higher human capital level and focuses on training of the workforce.* His innovation

study of about 6.000 enterprises in Norway and Sweden showed that enterprises that have above-mentioned indicators reported a significantly higher intensity of innovation cooperation.

In this section, different aspects of Outside-In processes have been presented to describe this inbound Open Innovation strategy. We start to introduce the subgroup of *employee involvement*, and continue with the groups of *customer involvement, external networking, external participation, outsourcing R&D,* before we finish with *inward IP-licensing*.

Employee involvement

Employee involvement is concerned with inviting and involving employees who are not originally involved in R&D to contribute with their knowledge and initiatives. It involves listening to their suggestions, creating autonomous teams to realize the innovations, et cetera (van de Vrande et al., 2009). As the employees are well known of the company, one of the advantages of employee involvement is that the employees in other functions may know where the best innovation opportunities lie (Lindegaard, 2011). In addition to their ideas and suggestions from outside the original innovation team, employees may have a realistic view of what is possible to implement, as well as the profit-impact of the implementation (Lindegaard, 2011).

Customer and user involvement

Customer involvement is about involving the firm´s customers in the company´s innovation processes, and use customer insight and knowledge to develop and commercialize products or services (van de Vrande et al., 2009). This could for example be done through feedback on existing products or listening to what kind of product they want or carrying out active market research to investigate their needs. Parida et al. (2011) propose that it is the end customers and lead users who drive the development in technology-based industries, due to the fact that customers tend to be more aware and informed about their current and future requirements.

The Internet may be seen as a tool that can help companies gain information and involvement from customers, which is important as customers' opinions can generate a lot of new ideas and influence the product development (Lindegaard, 2011). Interactions with customers are especially beneficial for product innovation according to Fitjar and Rodríguez-Pose (2012). Because customers' may not know how the business work, it is important to focus on particular pain points or opportunities through *smart sourcing* (Lindegaard, 2011). *Smart sourcing* is defined as "*when a company make use of outsiders' resources in order to achieve the objectives of cost savings and service improvements*" (Chan, 1993;1), and is used by companies to avoid ideas from customers that are unrealistic to implement (Lindegaard, 2011). *Smart sourcing* may also contribute to maintenance of the company's

relationship with their customers, as it prevent the customer feel that they do not get credit for their involvement and suggestions of ideas.

Customer involvement can be compared to *employee involvement* as both parties will contribute with new ideas and influence the product development. However, as the employees may have greater knowledge of the company's values and functions, the customers may contribute with ideas from another point of view, which may lead to completely different innovations than if they were not involved in the process.

External networking

External networking concerns collaboration with external network partners to receive contribution to the innovation process, such as external knowledge and human capital (van de Vrande et al., 2009). Networking is a way to acquire new knowledge without using too much time and money to obtain new knowledge, and external networking could be both formal and informal interactions (van de Vrande et al., 2009). Fitjar and Rodríguez-Pose (2012) have investigated how different external networking processes influence innovation capabilities. The findings are listed in bullet points below:

- Interactions with suppliers promote a greater level of product and process innovation, both radical and incremental innovations.
- Interactions with competitors have a negative effect on innovation capabilities.
- Interactions with firms within the same conglomerate promote incremental innovations.
- Interactions with universities, research institutes and consultancy firms promote innovation.

Interaction with stakeholders

Stakeholders are defined by Freeman (1984;46 cited in Mitchell et al., 1997;856) as *"any group of individual who can affect or is affected by the achievement of the organization's objectives"*. Ayuso et al. (2011) showed that knowledge sourced from engagement with internal, e.g. employees, and external stakeholders contributes to innovation if the firm manages the knowledge internally. It is important to have a good relationship with the stakeholder to access creative and practical knowledge (Ayuso et al., 2011), which implies that firms should connect with stakeholders and develop mechanisms to access knowledge and convert it into new ideas. Collaboration with stakeholders may also be relevant in other processes of Open Innovation, such as employee involvement, and customer and user involvement.

Hiring skilled employees

An efficient way to do technology or knowledge transfer, is to hire people with the necessary skills and knowledge. This could be people from other companies, it might even be competitors, or from

for instance university research departments (Trott, 2012). As described in section 3.1.2, one of the factors for why Open Innovation emerged was the increased mobility of highly skilled workers in the post war period. This shows how this could be valuable for companies in an Open Innovation perspective.

External networking comprises many different interactions, which have different impacts on innovation capabilities. It is important to now the differences due to what kind of innovations the companies wish to obtain through Open Innovation. In the next section the process of external participation will be described.

External participation

External participation is concerned with equity investments in new or established enterprises to gain access to their knowledge, to obtain other synergies, et cetera (van de Vrande et al., 2009). Investments in other enterprises is a way to be involved in potential opportunities (Chesbrough, 2006; Keil, 2002 cited in van de Vrande et al., 2009), and it opens up for the opportunity to increase the collaboration if the technology is valuable (van de Vrande et al., 2006 cited in van de Vrande et al., 2009).

External participation can be compared to *external networking*, where the differences are that *external participation* contains investments in the other party, and that the interaction to the other party is more formal than for *external networking*, as there are more formal agreements and larger contracts of collaboration over a limited amount of time.

Outsourcing Research and Development (R&D)

Outsourcing R&D is about buying R&D services from other organizations, such as universities, commercial engineers, suppliers, et cetera (van de Vrande et al., 2009). Openness towards public research institutions permits consequential improvements in the production process, especially openness towards universities has a positive impact on product innovation and the resulting sales (Belderbos et al., 2004; Lööf and Broström, 2008 cited in Inauen and Schenker-Wicki, 2011). R&D collaborations facilitate the search for external opportunities, and gives access to external technology. Companies that carry out basic research financed by the company strengthen their ability to use external knowledge (Rosenberg, 1994 cited in Chesbrough et al., 2008). Rosenberg and Steinmuller (1988 cited in Chesbrough et al., 2008) indicated that firms that do not care about external R&D can experience competitive disadvantages.

Outsourcing R&D is different to *external participation*, as the company that is outsourcing buy services of the other party, and does not conduct equity investment in the other company.

In addition to hiring skilled employees as discussed under the category of *external networking*, consultants might also possess specialized knowledge within areas that is important to the firm. In the same way as hiring skilled people, hiring a consultant is all about getting access to knowledge the company needs. Consultants may be able to offer help, advice and useful contacts that is important to the company's projects (Trott, 2012), and they are often being paid to do specific tasks. This can be seen as a way to outsource R&D as well.

Inward IP-licensing

Inward IP-licensing is when a firm is buying or using intellectual property of other organizations to benefit from external knowledge (van de Vrande et al., 2009). Such intellectual property could be patents, copyrights or trademarks. For high-tech companies, inward technology licensing is an efficient way to achieve innovation (Tsai and Wang, 2007). The benefits from licensing external technology are associated with shortening of development time, avoiding development risk and expansion of technological knowledge through learning (Henderson and Cockburn, 1996 cited in Tsai and Wang, 2007). Tsai and Wang (2007)'s study showed that companies should see inward technology licensing as a mean of complementing and leveraging their internal development capability, and not use it as a substitute for their internal R&D investment.

In addition to the outside-in processes presented in this chapter, we find it important to take a closer look at the inside-out processes to gain a whole and broad perspective of Open Innovation strategies. The next section is therefore presenting different inside-out processes, such as *venturing* and *outward IP-licensing.*

3.2.2 Inside-Out Processes

Less research has been conducted about the inside-out perspective than the Outside-In perspective (Flakstad and Prytz, 2012). In addition to advantages from external information, companies can benefit from their internal knowledge to a larger extent through Open Innovation. Inside-out strategies is about letting unused ideas developed within the company be shared with others companies through *venturing* and *outward IP licensing* (Chesbrough, 2012). This process is often referred to as an outbound perspective (Davis, 2006 cited in Lind et al., 2012), and is according to Gassmann and Enkel (2004 cited in De Backer et al., 2009) suggested to be applied mostly in research-driven companies and industries.

Inside-out strategy is a way to gain revenue from in-house development that has not been commercialized yet (De Backer et al., 2008). This strategy may lead to new opportunities for internal research with currently little value within the companies' business models (Flakstad and Prytz, 2012)

We start to present *venturing* as an inside-out process, before continuing with describing the process of *outward IP licensing*. Both represent a way to benefit from internal knowledge outside the company's boundaries through inside-out processes.

Venturing

Venturing is when a company starts new organizations based on their internal knowledge, finance, human capital etc. from their own enterprise (van de Vrande et al., 2009). A firm that conducts research generate *spillovers* as a result of projects that the company judged to lack promise, but later turned out to be valuable (Chesbrough, 2003).

Spillovers are defined as *"a situation in which a given action, related to a specific goal, creates a situation in which the original goal can be assured only by taking further actions, which in turn create a further condition and a need for more action and so forth"* (Rasamond, 2000;60 cited in Liebert, 2002;14), and is also called false positives. In other words, *spillovers* are actions that have been created during a process, but which is of no use in the original process. The *spillovers* do not have value in the company´s business model, but by opening up new paths to market through venturing it could generate great value (Chesbrough, 2003). A different way to reduce the firm's spillovers is to license their IP to other companies, as described in the next section.

Outward IP-licensing

Intellectual property is an exclusive right of assets (Filippetti, 2011), which is protection that restricts others from making a profit of the company's inventions. IP assets could be patents, copyrights or trademarks (van de Vrande et al., 2009)**.** In Open Innovation, IP rights also have another value than just offering protection of assets. As mentioned earlier, companies may conduct research they cannot benefit from in their own business model. By licensing their IP to other businesses, they can profit from their unrealized results, hence reducing their spillovers. This is called outward IP-licensing. The way to manage IP has changed from the purpose of excluding others from using the company's IP to the goal of managing the IP to *profit* from others' use of it (Chesbrough, 2003).

As Open Innovation has emerged, Hunt (2008) argues that brands has become more important than patents in the knowledge based assets that have created value for businesses. It is now easier to trade IP, and as mentioned earlier, it might increase the company's profits and reduce its spillovers.

Both venturing and outward IP-licensing represent a way for the company to benefit from unused R&D or ideas that does not fit the original business model of the firm. Both processes are inside-out processes to be considered for companies implementing Open Innovation. In the next section the coupled process are described further, combining both inbound and outbound processes.

3.2.3 Coupled Processes

The coupled *strategy* is the third strategy in Open Innovation. This strategy is captured through connecting outside-in and inside-out processes. Because the coupled strategy is a combination of these two processes, give and take is crucial for the companies involved (Lind et al., 2012). In coupled strategy ideas are crossing the company boundaries more than once. This strategy is less studied than the outside-in and inside-out strategies (Flakstad and Prytz, 2012).

The *coupled process* can be further divided into two different processes, called *boomerang* and *passing-on*, dependent of whether the idea originate inside or outside the firm's boundaries.

Boomerang

According to Chesbrough et al. (2008) *boomerang* is the process when an idea crosses the company boundary more than once. This process starts as a technology or idea inside the firm and flows out (inside-out) to another company. After the idea is modified it returns and flows back in to the company, like an Outside-In process.

Passing-On

The other coupled process*, passing-on*, was introduced by Holmen et al. (2010 cited in Lind et al., 2012). As the Boomerang process, the *passing-on* is a process where an idea crosses the boundaries of the company several times, but starts as an outside-in process. This allows external ideas to flow into a company where it could be further developed. The ideas are then sent out of the company´s boundary again (inside-out) to another firm, or back to the originating firm (Lind et al., 2012).

R&D projects performed with external partners is an example of a coupled process (Enkel et al., 2009 cited in Lind et al., 2012), and could both be a *boomerang* or a *passing-on* process.

3.2.4 Discussion of Open Innovation Processes

Throughout these sections the three strategies of Open Innovation have been described: outside-in*,* inside-out and coupled. The different strategies involve different flows of knowledge and ideas across company´s boundaries. An innovation funnel could illustrate the different strategies (Chesbrough et al., 2008 cited in Lind et al., 2012), as showed in figure 3 below.

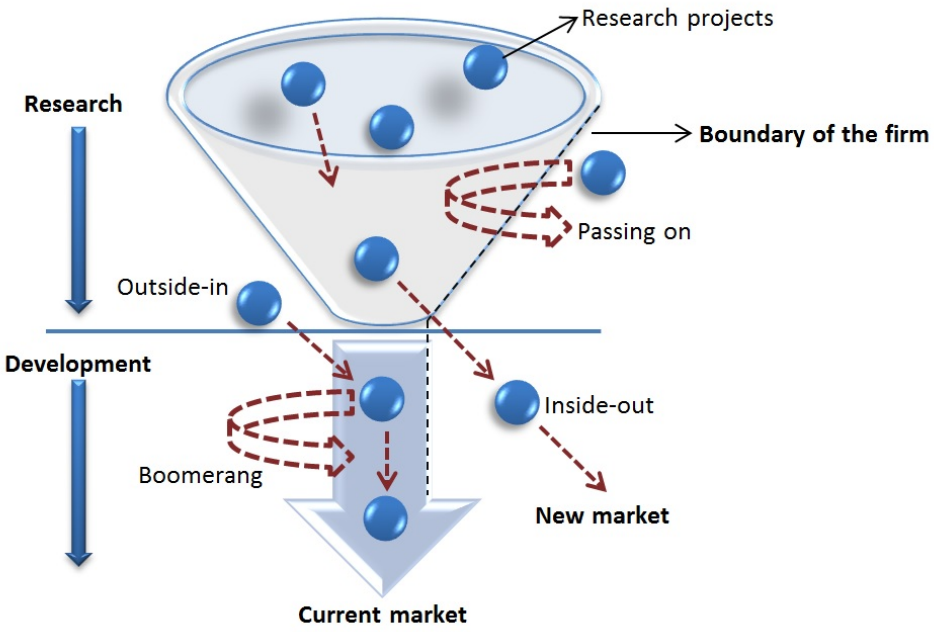


Figure 3: The Open Innovation Strategies: Outside-In, Inside-Out and the Coupled strategy.

The outside-in processes show how external ideas and resources are brought into the company. The importance of involving both employees and customers in the Open Innovation strategy has been described. External networking is important to gain contact to people outside the company's boundaries, which may influence the firm's strategy to the better. In addition, external participation, outsourcing of R&D and inward IP-licensing, may all be factors that may improve the firm's processes and take the products to the next level. The close interaction with other parties that are specialized may also reduce the firm's time to market, due to faster development of the company's products.

The inside-out processes are described as the company's ability to reduce its spillovers and instead benefit from these false negatives. Companies can benefit from inside-out processes through both venturing and outward IP-licensing that have been described in this chapter.

Coupled process is divided into boomerang and passing-on as illustrated in figure 3. These processes are a combination of both inbound and outbound processes, meaning that the idea or resources cross the boundary of the firm more than once. The process could start within the company, continue to external parties and come back to the original firm called *boomerang*, or the other way around where the process starts outside the company, called *passing-on*.

As explained in this section there is several processes within the Open Innovation strategies. What strategy to implement depends on the company´s needs, resources, size, and their desire of which advantages to gain. In order to understand why firms implement Open Innovation strategies the next

section presents the advantages companies may gain through the processes presented in this chapter.

3.3 Advantages of Open Innovation

This section addresses research question number two: *Which advantages can companies obtain through Open Innovation?* When companies drive Open Innovation processes, they usually have a reason to invest in these new strategies. Advantages firms gain from driving Open Innovation may be seen as the motives for the firm to adopt Open Innovation processes. These reasons are presented in this chapter.

The different advantages are presented in groups corresponding Open Innovation processes, which are presented in chapter 3.2. The groups are inspired by the article of van de Vrande et al. (2009), and are presented below as advantages from either outside-in processes or inside-out processes. The advantages of the coupled process are not included in this presentation, which is due to less research from literature. However, we assume the advantages of outside-in and inside-out processes correspond to the advantages of the coupled processes. This is due to the fact that coupled process of Open Innovation is a combination of the inbound and outbound processes of Open Innovation.

This theoretical chapter concerning advantages is based on literature from the project assignment of Flakstad and Prytz (2012), which has its focus on which advantages SMEs gain through implementing Open Innovation strategies. However, as the advantages presented in the literature review of Flakstad and Prytz (2012) is not exclusively for SMEs and is based on literature including various definitions of SMEs, the theory has been supplemented with more literature about large firms and general advantages.

3.3.1 Advantages gained from Outside-In Processes

To start advantages gained through the outside-in processes is presented. First the sub-groups of *outside-in* processes similarly to chapter 3.2 (Processes of Open Innovation), in the following order: *Employee involvement; Customer and user involvement; External networking; External participating; Outsourcing R&D, and last but not least; Inward IP-licensing*.

Employee involvement

Employee involvement is when a firm is leveraging the *knowledge and initiatives* of employees who are not involved in the company's research and development (R&D) processes (van de Vrande et al., 2009), and *bring their expertise* into the R&D team for *improvement*. When including employees in the innovation process, the company may experience *efficiency* and *increased control* over activities regarding the Open Innovation process (Flakstad and Prytz, 2012). *Cost can better be controlled* and

risk can be limited within the firm, which follows from the company's *better and easier organization of the complex Open Innovation processes* they perform (van de Vrande et al., 2009).

As additional employees are included in the company's Open Innovation processes, the firm is *utilizing* their resources as they are *using their internally talents* optimal (van de Vrande et al., 2009, Flakstad and Prytz, 2012). The employees *specialized competences*, their *qualities a*nd *initiatives* are brought into the R&D process. As the company is involving employees not originally being a part of the R&D process, the employees learns from each other, hence *compresses the firm's learning curve.*

When involving employees in the R&D process they can contribute with their experience and knowledge. This means that the employee's *tacit knowledge* becomes accessible and become valuable for the company, as described in section 3.1.2 (Engagement in Open Innovation).

When the firm has an Open Innovation culture and the employees feel that they are a part of the firm's s Open Innovation strategies, their *motivation and commitment* to the company increases (van de Vrande et al., 2009). As the employees feel committed, the company may experience an increased *rate of innovation* and their ability to convert new knowledge into value-creating resources grows, hence their *absorptive capacity increases* (Flakstad and Prytz, 2012).

Since a larger share of the company's employees are now collaborating, due to employee involvement, the firm may experience that the *organization principles are spread to a larger extent* (van de Vrande et al., 2009), due to their improved innovation culture. These mentioned advantages might convince the management that involvement of employees is desirable.

Customer involvement

Customer involvement is when a company directly involves customers in its innovation processes (van de Vrande et al., 2009). The advantages of customer involvement in the company's innovation processes is comparable to the advantages firms may gain from involving their employees, such as *increased control, especially of costs*, *increased absorptive capacity* and *input of* external *knowledge* (van de Vrande et al., 2009, Flakstad and Prytz, 2012). However, customer involvement may help the company to *develop competitive products* and *commercializing new products* (Flakstad and Prytz, 2012), hence *compress the firm's learning curve* due to the customers knowledge of their present and future wants and needs. Further, customer involvement in the company's Open Innovation process may also influence the firm to *capture the market in early stage of innovation* and *meet current and future requirements in the market*, which may *limit the company's risk* and result in *increased profitability for the firm* over time.

As van de Vrande et al. (2009 p. 432) states*: "…The most important motives are market-related ones… Using new innovation methods is regarded as a way to keep up with market developments and*

to meet customer demand, which eventually should result in increased growth, better financial results, or increased market share". In other words, knowledge of the market gained by involvement of customers' keeps the company up with current market developments and may increase its *efficiency* and *growth and/or market share*.

External networking

External networking is when a firm draws on or collaborates with external network partners to support the firms innovation processes (van de Vrande et al., 2009). Networking gives the firm increased *knowledge*, which may *compress the firm's learning curve,* give the company *access to complementary assets and resources,* hence *obtain the other party's synergies,* and give the company *access to external research*, due to several external resources of knowledge (Flakstad and Prytz, 2012). A solid position in a broad network may benefit the company such as *attracting skilled workers*, as an increasing amount of people will hear about and be familiar to the firm.

A broad network may be seen as a gatekeeper to new collaborations for the company, as the firm may meet potential customers to involve in its processes, gain knowledge of parties where *external participation* can be an opportunity, gain knowledge to other companies IP or firm's which may need and license the company's internal R&D, etcetera. Advantages which may follow indirect from having a broad network could be that the firm is *commercializing new products, develop competitive products,* increase its *ability to follow rapid changes in the market* and *reduce its time to market,* as they now with a broad network can use the external knowledge and paths to reach the desirable market.

External participation

External participation is when a company makes equity investments in new or established enterprises in order to gain *access to their knowledge or to obtain others synergies* (van de Vrande et al., 2009). External participation is an expansion of several of the advantages presented above in the group of external networking, as external participation may be seen as external networking with set agreements to collaboration. In addition, the firm who makes equity investments in another company may gain advantages of the other company's employees, as mentioned in the group of *employee involvement*, as the company might from this investment get access to the other party's employees.

When companies invest in external firms, they may *improve their innovation process* from *improvement of product development* and *integration of new technologies*, which may follow from access to *knowledge and resources unavailable internally* (van de Vrande et al., 2009, Flakstad and Prytz, 2012). The other party may be used as an *extension of the firm*, and the firms may experience

a *more efficient commercialization process*, as both their internal knowledge and resources are supplemented with their network and the *external knowledge, research* and *resources* available in it.

Especially SMEs may gain from accessing the collaboration partner's *economies of scale* when innovating with larger firms (Flakstad and Prytz, 2012). Both parties, regardless of their size, may gain from the collaboration by *sharing their risk* and *gain mass in the market; hence expanding their application areas for their technologies* as they now might have *external paths to market* as well.

Outsourcing R&D

Outsourcing R&D is when a firm buys R&D services from other organizations (van de Vrande et al., 2009), such as universities, specialized firms as consultant companies, etcetera. It could be to pay another company to conduct research which is needed for further development of the product, pay another company to develop either part of the product, the whole product or services relating the product, etcetera. Outsourcing of R&D gives the firm advantages of *knowledge*; as such collaboration may *bring expertise to the firm* and *access to their complementary assets* (Flakstad and Prytz, 2012, van de Vrande et al., 2009). Outsourcing of R&D may also *increase the firm's capacity*, as the firm outsourcing R&D gets room in their process to other activities they will do themselves (van de Vrande et al., 2009).

When a firm is outsourcing parts of, or its whole, R&D process, which the company has little or no competence to do itself, the company might *reduce its risks* (Flakstad and Prytz, 2012), as the company are leaving this part to other party that are specialized in that specific area.

Inward IP-licensing

Inward intellectual property licensing is when a company is buying or using IP of other organizations to benefit from external knowledge (van de Vrande et al., 2009). IP, as mentioned earlier, played an important role for companies driving Closed Innovation strategies, as the company was protecting its IP from competitors. This gave the firm competitive advantage, and inward IP-licensing was expensive and not as common as it is in Open Innovation strategies. However, company's driving Open Innovation strategies may get access to other party's external R&D, in ways of *licensing other company's protected technology* and *leverage their IP* (Flakstad and Prytz, 2012).

When a company is licensing IP from another party, it will gain access to intellectual property that might be decisive for further development. This may make further research and development unnecessary; hence *increase the firm's capacity* and *reduce the company's intended costs.* The company will probably pay for getting access to this IP, maybe through exclusive and formal contracts, which may give the firm the ability to develop *competitive products*, hence give the firm competitive advantage compared to the company's competitors.

To include all advantages of Open Innovation, it is important to take a closer look at the advantages firms may gain from driving inside-out processes, which are presented in the next section.

3.3.2 Advantages gained from Inside-Out Processes

Advantages gained through the inside-out processes including venturing and outward IP-licensing is presented in this section

Venturing

Venturing is when a company is starting up new organizations drawing on internal knowledge from the firm (van de Vrande et al., 2009). Venturing may benefit the firm as the spin-off often is *specialized* or do processes not included in the firm's original process, which gives the firm familiar suppliers, customers, research partners and etcetera. This may again benefit the company, as it now may *commercializing several new and improved products* and process themselves (Flakstad and Prytz, 2012), due to the spin-offs specialization and core competences (van de Vrande et al., 2009). The firm may also gain advantages of *cost*, such as increased *profitability and efficiency*, in addition to venturing may make the *organizations complex processes better and easier*.

Outward IP-licensing

Outward intellectual property licensing is when a firm is selling or offering licenses or royalty agreements to other organizations to better profit from their internally developed IP (van de Vrande et al., 2009).

Outward IP-licensing may be associated to inward IP-licensing, as outward is when the company makes others use their internal IP, and inward IP is when the company buys or license other companies' IP. Firms may benefit from *licensing their technology* to other companies as they now might be paid for the licenses, hence *benefit from unused intellectual property (Flakstad and Prytz, 2012).* If this property is used in the company's process already, they may benefit from this property as well as they get paid for the licenses, and the firm may protect its IP with lower and shared costs.

3.3.3 Discussion of Advantages

As seen from table 4 below, the different advantages mentioned in the literature presentation above is linked to each of the groups of Open Innovation processes: Outside-in or inside-out. As the coupled process is a combination of both *outside-in* and *inside-out* processes, the advantages obtained through this process are similar to the advantages obtained through outside-in and inside-out process the coupled includes. This is why we have not included advantages the coupled process may bring company's in the table.

Table 4: List of advantages found in the literature

		Outside-in						*Inside-out*	
Advantages	***Groups of processes***	Employee involvement	Customer and user involvement	External networking	External participation	Outsourcing R&D	Inward IP-licensing	Venturing	Outward IP-licensing
Access external resources*				X	X				
Access other firm's economies of scale					SMEs				
Access complementary assets*				X		X			
Access external knowledge		X	X	X	X	X	X		
Access external research				X	X		X		
Access the firm's "external" qualities & initiatives		X							
Access specialized competences		X							
Access external tacit knowledge		X							
Attracting skilled workers				X					
Benefitting from internal unused R&D property									X
Better and easier organization of complex processes		X						X	
Better financial results			X						
Bring expertise into R&D team/company		X				X			
Capture market in early stage of innovation			X						
Commercializing new products			X		X			X	
Compression of firm's learning curve		X	X	X					
Control cost		X	X						
Develop competitive products			X				X		
Expand application areas					X				
Extension of firm					X				
External paths to market					X				
Improved development		X			X				
Increased absorptive capacity		X	X						
Increased capability		X	X			X	X		
Increased control		X	X						
Increased efficiency		X	X		X		X	X	
Increased growth			X						
Increased market share			X		X				
Increased motivation and commitment to company		X							
Increased profitability			X					X	
Increased rate of innovation		X			X				
Integration of new technologies					X				
Limitation of risk		X	X						
Meet current and future market requirements			X						
Obtain others synergies				X	X				
Protect own IP									X
Reduced costs							X	X	X
Share risk					X	X	X		
Spread organizational principles to larger extent		X							
Using internally talents		X							
Utilizing own resources		X							

As we see from table 4 above, the literature presents more advantages linked to outside-in processes than from inside-out processes of Open Innovation. The reason for this may be that the outside-in process contains *employee involvement, customer and user involvement* and *external participation,* which from literature are stated as the processes bringing the most advantages to firms performing Open Innovation. These three processes bring advantages that can be closed linked to each other, which imply that if the company gains one advantage, more advantages might be obtained additionally. For example, external participation could be from collaboration with employees, customers and users. In addition, employees can occasionally be customers and/or users of a product, which might make it difficult to distinguish which process that brings which advantages to the company.

Further, we see that *external networking* is not linked to as many advantages as the earlier discussed processes might do. This could be due to the vague definition of the process. As external networking is a process with less set agreements between the collaborating partners, it can be hard to link advantages directly to this process. In addition, the process of external networking can be seen as a gatekeeper to other processes of Open Innovation. For example, external networking may bring the company information about potential collaboration partners, which might for instance be future customers, partners the firm can outsource its R&D to, or knowledge of IP that the firm may license in the future.

When looking at the processes of both *inward and outward IP-licensing* in the table above, we can see that the table links few advantages to these processes. The advantages we see are strongly linked to IP, such as *protect IP* or *access external research.* This is probably due to the fact that less resource has been conducted on these processes in an Open Innovation perspective.

The processes of *venturing and outsourcing R&D* are also linked to fewer advantages than the first processes presented. This could be due to the type of process, where product stands in focus and where development of the product is outsourced to another party. The advantages that follow from these processes may therefore not be linked directed to the advantages the company gains in an organizational context.

Some of the advantages, such as *access to external knowledge, increased capability and efficiency,* differ from the others advantages listed in table 4, as they are listed most frequently. *Access to external knowledge* is listed in all outside-in processes, while the other two advantages are obtained in the majority of the inbound processes. The advantage *access to external knowledge* implies this should be obtained through all of the outside-in processes because these processes concern access to and use of external knowledge. The high rates of their presence are not surprising, due to their

possible connection to other advantages. In addition, some of the advantages mentioned may overlap each other, such as *access external resources* and *access complementary assets*, both marked with a star (*). This difference is due to different phrasing in literature. As the advantage *access other firm's economies of scale* have been found only applicable for SMEs, it has been listed into the table marked as *SMEs* instead of "*X*". The rest of the advantages listed in table 4 are general advantages, which both SMEs *and* large companies may gain through performing Open Innovation processes.

3.4 Theoretical Framework

The literature review presented presents what Open Innovation is, hence gives answers to our first research question: *What is Open Innovation.* It also emphasizes how companies implement and perform their Open Innovation strategies through different processes. In addition, reasons why companies implement Open Innovation is presented in terms of which advantages firms may gain through performing different processes. Literature about advantages gives answers to our second research question: *Which advantages can companies obtain through Open Innovation?* To summarize the literature presented in part 2, we have made a theoretical framework, which is presented as figure 4 below:

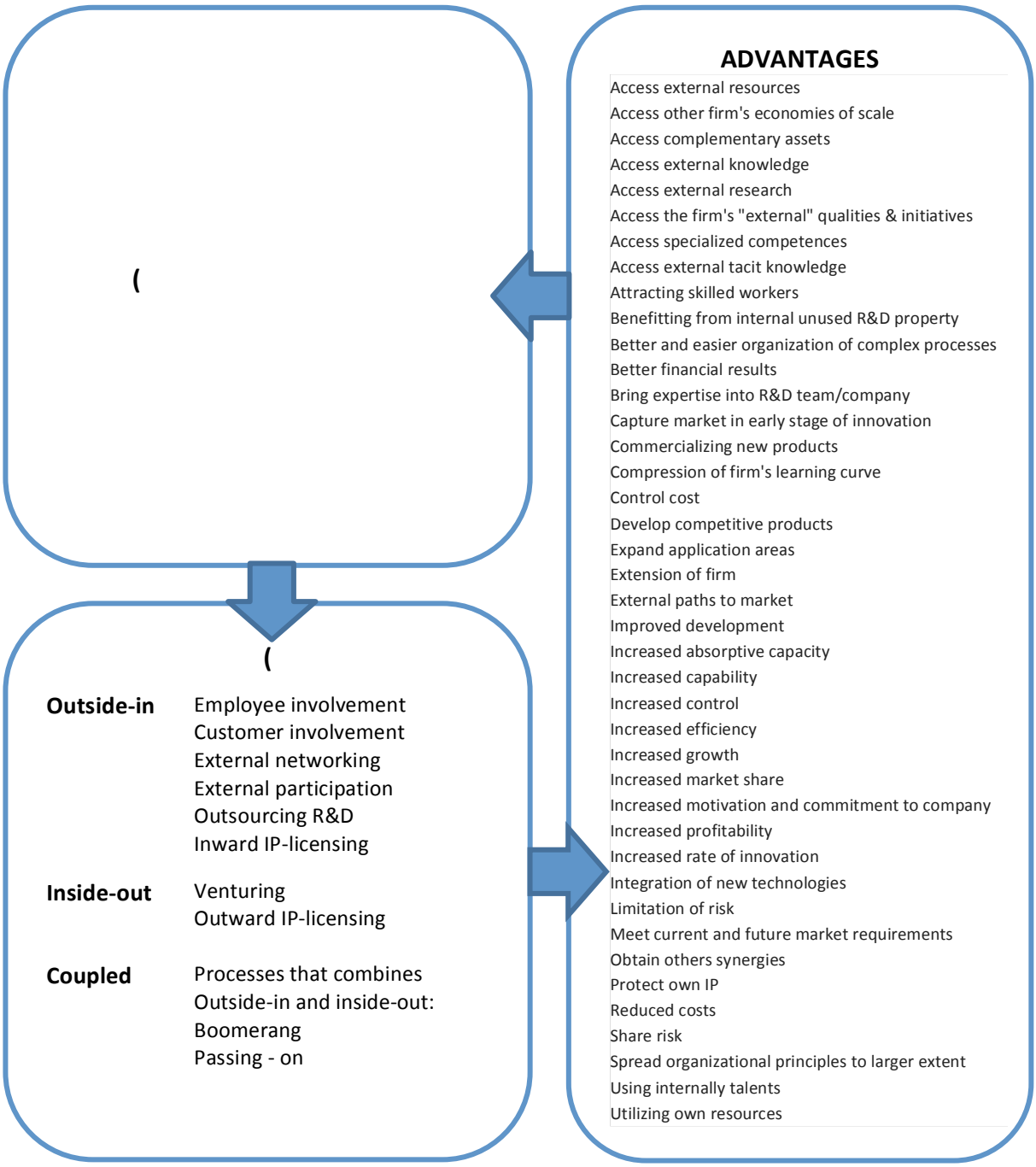


Figure 4: Theoretical framework of Open Innovation

The theoretical framework, as shown in figure 4 above, presents three main boxes; approach, processes and advantages. These are the three divisions we highlight during our empirical study, which is presented in the next chapter.

The divisions on the left side of our framework are representing *how* companies drive Open Innovation strategies. The company's approach towards the strategy is represented with how the firm defines Open Innovation, its engagement in the strategy and the company's Open Innovation culture. In addition, the different processes of Open Innovation strategies are listed: outside-in,

inside-out and coupled process. Both the companies approach towards Open Innovation and the different processes will lead us to our third research question: *How do Norwegian SMEs perform Open Innovation compared to large companies?*

The right side of the framework represents *why* companies implement Open Innovation. The advantages presented may be reasons for firms implementing and driving Open Innovation processes. The advantages will lead us to our fourth research question: *Why do Norwegian SMEs implement and perform Open Innovation strategies compared to large companies?*

The arrows in the framework represent the cause and effect within Open Innovation strategies presented in the literature. The arrow between the approach and processes (nr.1) illustrate that the internal engagement affects the innovation processes. This indicates that firms' culture and engagement in Open Innovation are crucial in order to start collaboration with external parties through Open Innovation processes.

The arrow between processes and advantages (nr.2), represents that companies gain advantages through their Open Innovation processes. The arrow indicates what the companies can expect when implementing the different Open Innovation processes.

The arrow from advantages to approach (nr.3) shows how the literature present that advantages may influence the company's approach to Open Innovation. Motivation and engagement is important in the approach, and can therefore be advantages that have a positive effect on the company's approach, hence leading back to the approach.

As seen from the theoretical framework, the differences between SMEs and large companies are not included. This is due to the fact that our literature review is focusing on advantages both SMEs and large companies may gain through Open Innovation. In addition, as discussed in section 1.1 (Defining SMEs) and chapter 2 (Methodology), the definition of SMEs is different across literature. In the empirical study, which is presented in the next two parts, we are investigating approaches, processes and advantages Norwegian firms gain through Open Innovation. Hence, find differences and similarities between large firms and SMEs from the Norwegian definition of the company size.

Until now we have presented our framework for the empirical studies. The empirical studies concern our third and fourth research questions, *how do Norwegian SMEs perform Open Innovation compared to large companies* and *why do Norwegian SMEs implement and perform Open Innovation strategies compared to large companies?* We are therefore in the next section presenting literature that addresses these questions.

3.5 SMEs vs. Large Companies

This section addresses the third research question, "How do Norwegian SMEs perform Open Innovation compared to large companies?" The differences between SMEs and large companies result in different ways to implement and utilize Open Innovation. SMEs engage in Open Innovation as a consequence of their search for major changes in their business model to seize new business opportunities and boost profitability (Vanhaverbeke et al., 2012;10). As Gans and Sern (2006 cited in van de Vrande et al., 2009) argue: Open Innovation is a way to overcome the problem of commercialization of ideas. SMEs do not always have the opportunity to push products to the market, in addition to their lack of resources to develop and commercialize new products in-house. As a result to this, SMEs are often more inclined or forced to collaborate with other organizations (van de Vrande et al., 2009).

To compare SMEs and large companies driving Open Innovation strategies, we are presenting the differences presented in literature below.

Risk and importance

According to Lindegaard (2011), innovation is less risky for small business than for large companies. This is because small companies can experiment and implement new ideas easier, due to their less bureaucratic organization. According to Vanhaverbeke et al. (2012), Open Innovation is more important for SMEs than larger companies, due to their lack of resources. SMEs need to collaborate with external partners to access resources required for innovation.

Search for innovation

The results from the fourth community innovation survey (CIS 4) (Ebersberger et al., 2010) showed that Norwegian SMEs and large companies have different approaches to using specific partners in search for innovation. The results are based on answers from 1.508 companies where 10% were large companies and 90% were SMEs. The survey showed that 45% of the SMEs utilized clients and customers, 18% suppliers, 14% competitors, 7% R&D labs and 8% R&D labs, while 42% of the large companies utilized clients and customers, 20% suppliers, 9% competitors, 5% R&D labs and 4% universities. Both SMEs and large enterprises have clients, customers and suppliers as the most used partners in the search for innovation.

Strategic orientation and innovation patterns

As described in section 3.1.4, Strategic orientation describes how companies respond differently to the environment. However, in this section the different strategic orientations are linked to firm size describing what strategic orientation is expected from both SMEs and large firms.

SMEs and large companies operating in the same market have to respond to the environment changes. However, SMEs and large firms respond differently (Garcia-Pont and Nohria, 2002 cited in Kumar et al., 2012). A study of 62 Italian companies conducted by Kumar et al. (2012) showed that SMEs and large companies have different strategic orientations and innovation patterns. The result showed that large companies had a *prospector* orientation, due to their large market. Kumar et al.'s study results also indicates that SMEs had a *defender* orientation, due to their small and close target market. In addition, their smaller base of resources may be an reason for the SMEs orientation, as smaller companies often do not get the decisive voice in collaboration with larger companies (Lindegaard, 2011).

As the orientation determines responses to market changes, it also affects the company´s innovation processes (Kumar et al., 2012). As Kumar et al. shows in their study: A defender orientation often results in lower novelty of product innovation. Ebersberger et al. (2010) show in their study that Kumar et al.'s statements also applies to Norwegian companies, where large companies have a larger share of new processes (42%) or product development (28%) with external parties than SMEs (38%/25%).

Focus at Open Innovation effort

Large companies focus mainly on R&D in Open Innovation, while SMEs are focusing on commercialization (Narula, 2004 cited in Lee et al., 2010), which is due to the SMEs lack of recourses such as marketing channels, network and manufacturing facilities. Through collaborations with larger firms, SMEs can gain access to assets they need for successful innovation. As SMEs have restricted resources and capabilities, larger firms attract SMEs to collaborate with them (Barney and Clarck, 2007 cited in Lee et al., 2010).

Specialization and closeness to market

SMEs have greater capability to specialize than larger firms and offer customized service to customers, due to their small number of employees and often fewer products to focus on (Vanhaverbeke et al., 2012). Therefore, small companies may offer completely new experiences for customers. As Vanhaverbeke et al. (2012;34) states: These radically new ways of offering value for customers takes time to develop, and there are too many unknowns at the outset to guarantee a market big enough to attract big companies.

SMEs are often closer to the markets they serve than larger firms are to their market, due to often having fewer geographically divisions spread and closer contact with local enterprises (Lindegaard, 2011). In addition, new technologies and radical innovations often find their first application at the edge of markets or niche markets, not amidst mainstream markets (Vanhaverbeke et al., 2012).

Some innovations often start small and therefore offer opportunities for SMEs to pursue embryonic markets that are too small to attract large companies.

Agility

Innovation require agility, something many large corporations lack and many SMEs have in abundance (Lindegaard, 2011, Vanhaverbeke et al., 2012). If speed to market plays a role, SMEs can outcompete large companies, in addition to the SMEs ability to take risks that large companies may not afford to take (Lindegaard, 2011).

Summary of SMEs vs. Large companies

We have now seen that when operating with Open Innovation, SMEs and large enterprises may have different approaches to the strategy. Larger firms take often control with a *prospector* orientation of the collaboration, whereas SMEs often have a more *defender* orientation, due to their lack of resources. SMEs enter most often Open Innovation collaborations to commercialize their products, in different to larger firms who collaborate with external to improve their R&D. However, both larger firms and SMEs collaborate most often with customers and suppliers. Additionally, in Norway the large firms have the larger share of innovation developed externally compared to SMEs.

The main differences discussed above between SMEs and larger firms are reviewed in bullet points below:

- SMEs are forced to collaborate with other organizations due to their lack of recourses
- SMEs have a higher capacity to specialize and make customized products than larger firms
- SMEs have the ability to meet niche markets greater than larger firms, due to their closeness to market and customers
- SMEs have a higher level of agility than larger firms, due to their small size, hence ability to faster change their processes

3.6 Summary of Theoretical Study

Throughout this chapter a literature review of Open Innovation approaches and processes, as well as advantages that are obtained through engagement in Open Innovation has been conducted. This has resulted in a framework, which is the fundament for our investigations of the case companies. The framework is used to develop the interview guide and to compare theory with the empirical findings in the analysis and discussion presented in part 4. In addition a literature review of how SMEs engage in Open Innovation compared to large companies has been conducted. In the next part the empirical findings from the two Norwegian SMEs and two large firms are presented.

Part 3: Empirical Findings

Part three is presenting the empirical findings of the case studies of FINN.no AS, Statoil ASA, Vom og Hundemat AS and Rocketfarm AS. The empirical findings concern general information about the companies, their Open Innovation strategies and processes, and the advantages gained through Open Innovation.

4. Empirical Study

In this chapter the empirical findings based on the interviews with the Norwegian companies FINN.no AS, Statoil ASA, Vom og Hundemat AS and Rocketfarm AS are presented in the order listed. The large companies are presented first, followed by the SMEs.

For each of the firms, the following overall structure is applied: The first section is a general presentation of the company with information about its year of foundation, business area, number of employees and location.

The second section addresses the company´s *strategy.* This includes a presentation of the following subjects: The company´s engagement in Open Innovation, the company´s definition of Open Innovation, the internal culture and incentives to share knowledge and why the company is practicing Open Innovation and the company´s Open Innovation processes.

The third section is a summary of the advantages linked to the company´s engagement of Open Innovation. The main advantage is presented first followed by a list of all the advantages obtained through Open Innovation processes.

4.1 FINN.no AS

In this part of the chapter the empirical findings related to FINN.no are presented. This is the first of the four case companies we present from our empirical study. FINN.no is one of the two large companies that are studied. Three employees of FINN.no were interviewed; Jens Hauglum (Head of Innovation) and Mattias Jennehed (Manager of Car Sales) and Ådne Skjeldstad (Manager of Real Estate). All the informants have much experience with innovation strategy.

FINN.no is a Norwegian company founded in 2000 and has the country's largest classified advertisement website within marketplace categories like jobs, housing, cars, for sale, travel and services. The website has over 800 million page views per month. The company has 350 employees and is owned by Schibsted Media Group, one of Norway's largest media companies.

The company has recently reorganized its organizational structure. Before the reorganization each marketplace department had its` own product, technological and sales division. Today are these three divisions gathered into three larger divisions supporting all marketplaces. The intention is to enhance the company's *power of innovation*.

4.1.1 Strategy of FINN.no

Engagement in Open Innovation

FINN.no is strongly engaged in innovation strategies as the company has the goal to become the most innovative company in the world. FINN.no´s Open Innovation strategies are divided in two: the external Open Innovation strategies and the internal Open Innovation strategies. The innovation department of the company develops the strategies, but each marketplace can choose to what degree they wish to be open in order to solve their problems and be innovative. The product managers have the responsibility for their department to run perfectly, but at the same time to realize new innovations. They have the responsibility to prioritize ideas and keep both customers and users satisfied.

Defining Open Innovation

FINN.no divides openness in two dimensions: an external and an internal part. The internal part is related to the culture in the company, which is further discussed below. The external part of Open Innovation is related to close contact with customers and users. According to FINN.no, the strategy is all about including customers in both problem definition and ideation as shown through the company´s close relationship with the industry in the development of the different marketplaces.

In addition it is an important part of the strategy to realize that not all the best within the field works for FINN.no. The company says it is important to be open for external knowledge and competence.

FINN.no has focused on Open Innovation from day one, however the company did not call it Open Innovation from the beginning. As the company looks back in time it sees that it had the same approach as today, but the definition of Open Innovation was not defined. Today, however, the company has a clear definition of what Open Innovation is and that it has implemented this strategy.

Culture and incentives

FINN.no believes that innovation is about people and emphasizes on building a culture where innovation can thrive. The values in FINN.no are precision, drive, spirit and tolerance, which are all linked to innovation behavior according to the company. The values are about learning and improving (precision), execution (drive), creativity and fun (spirit) and about accepting mistakes and giving feedback (tolerance).

The culture of FINN.no shows that intrapreneurship is appreciated. Intrapreneurship is the ability to act like an entrepreneur within a large firm. The different tools such as *Sandbox* and *FINNopp* (these are explained later in the process section) offered to the employees in FINN.no show the company's effort to enhance intrapreneurship. The company arranges *FINNovation day* (explained later in

process section) and annually award the person with the best innovative idea to motivate and encourage employees to share ideas and knowledge.

Due to the size of FINN.no, the management finds a need for hierarchy, yet focusing on keeping a flat structure. This allows all employees to be heard and enables employees to collaborate and communicate across the different business departments of the firm. A flat organization structure enables quick response to new ideas, which is a motivation for employees´ work on development of ideas. There is room for experimenting with new solutions without having to clarify with the top leaders and new initiatives are encouraged. The employees appreciate the openness from the leaders and the fact that they are willing to take risk and allow testing of new concepts. Employees are also encouraged to share successful inventions and processes as well as failures. This is meant to encourage new attempts and to share experience and knowledge across the firm, and this is an important part of the culture FINN.no wish to obtain.

As each marketplace department is given the freedom to solve its challenges and problems internally, it has the opportunity to find customized solutions taking its needs into account. New processes and solutions are shared across the company, leaving the other marketplaces with the choice to adapt to the same solution if suitable.

Why Open Innovation?

The company has had an open approach since day one, with close collaborations with important actors in the industry, such as real estate firms, car sellers and others related to the different marketplaces. These close collaborations are according to FINN.no important in order to develop services and products with high user value. It is important to realize the power of the consumer in today's market. This is why FINN.no gets guidance from users and customers throughout the development phase. FINN.no has both customers, for instance real estate firms, and users, like a person finding a house at the marketplace, to satisfy. By involving them in the process the company knows that it is on the right track, solving the problems that need to be solved, and making sure it has not gotten lost along the way.

The Open Innovation strategy makes the company able to follow rapid changes in the market. It is easy to enter the industry with todays` technology and information and distribution on the Internet. As soon as you have an idea, you can realize it without having to invest a lot of money, meaning that competitors can enter the market rapidly and unexpectedly. This is a threat for the company and a reason why FINN.no focuses on trying to see the next step at all times, ready to follow the occurring changes. In addition, the company wishes to develop one new marketplace per year until 2015, and

this is why the company is going to continue an Open Innovation strategy. However, some parts will be closed.

Processes

Collaboration with strategic partners

FINN.no focuses on close collaborations with strategic partners in banking, car sales and real estate. Through these close collaborations ideas are shared between the actors and this has resulted in several innovations. An example is the collaboration with DNB ASA, the largest financial group in Norway, and Dine Penger AS, the largest Norwegian economy and consumer magazine, where the collaboration resulted in the service Penger.no. DNB had the idea, and Dine Penger and FINN.no collaborated to develop the service. Penger.no is a service where users can apply for housing loan to several banks at the same time. FINN.no finds collaborations with strategic partners important, but realize that it is time consuming to involve big customers in innovation processes.

Early stage feedback from users

When developing new products, advertisement posters or changing already existing services it is important to get feedback from users. An example of this has been when employees have been out on the bus or subway to get people´s opinion on the project they are working on. This is a way of working that is efficient to gets quick answers and direct feedback on projects, which gives insight from users. Although this method gives fast response, it takes a lot of energy to go out of the office and talk to strangers and is not a method all employees are comfortable performing. To describe the project during quick conversations on the bus requires it to be a low complexity project.

Collecting ideas

FINN.no collects ideas from external partners, through sales department, through the call center, as well as from its own employees. FINN.no uses both an online Idea Management tool called *FINNopp* (Meaning “invent” in Norwegian) and *FINNovation day* to collect ideas internally. *FINNopp* is made for employees to share their thoughts and ideas and to vote for the ideas they want the managers to prioritize. *FINNopp* is an example of an open process internally in FINN.no and the company has gathered a lot of ideas through this idea management tool. Of all employees 65% have submitted an idea and 90% have given feedback on ideas. By getting employees to contribute and share their ideas FINN.no hopes to strengthen the innovation culture in the company.

As FINN.no receives a huge amount of ideas the company has realized that the problem is not a lack of ideas, but how to manage and prioritize the right ideas. Not all ideas are relevant and many

employees get disappointed as they never get feedback or see their ideas implemented. To solve this problem the company says that ideas need a direction. A suggestion from one of the product managers is to make a list of problems each department face. In this way the ideas that do not solve the actual problem, or follow the criteria, are not to be prioritized. FINN.no sees that feedback is necessary in order to keep the employees motivated and to make them continue to contribute with ideas.

Communicating with users

To strengthen communication with users, FINN.no established an online portal called *FINNlabs*. Through this portal FINN.no communicates and collaborates with users. The company posts statistics and information about themselves, as well as ideas about future products and the users get the opportunity to be beta test users. A beta test user is an external person who does a pilot test of the product before commercialization to spot possible improvements.

FINN.no gets valuable feedback from users at *FINNlabs* that improve the product development and gives the company new ideas. This kind of customer-insight is important to FINN.no and through this portal the company gets the feedback for free, if you do not consider the prize for operating the site.

Lean Startup

Through lean startup, employees have started to engage customers at an earlier stage than before. Lean startup is an approach for launching products that is iterative where customers' opinion and feedback are important. Employees have learned that by taking simple sketches and prototypes they get valuable response that influences the direction of the development.

According to the employees the open process makes it easier to figure out the main functions and main needs of the customer and user. The lean process makes it easier to eliminate wasteful practices and increase value-producing practices during development phase, ending up with the right solutions. Through lean startup FINN.no has tested hypothesis about the needs of different products, which has resulted in rejected hypothesis, but given the company leads to new ideas. This has been both timesaving and cost-effective, and the time saved could be spent on developing more radical innovations.

The lean process allows employees holding different positions to engage in innovation processes at an early stage. An example from FINN Real Estate shows how employees got together in order to test hypothesis about a new product. People who usually work on technical development had the chance to go out and speak to users. The involvement made the employees develop a feeling of ownership to the idea, feeling that they were a part of the process from the beginning.

Sharing knowledge

FINN.no is well known for its innovation focus and strategies. In order to preserve the good reputation the company contributes with its competence on arenas outside the firm. Employees from FINN.no have participated as both mentors and participants at *Startup Weekend*. FINN.no has also participated in *Social Innovation Camp* and the company is engaged in *Kidsa Koder*, teaching and awaking kids' interest for programming. FINN.no has also newly initiated collaboration with the Norwegian University of Science and Technology (NTNU). These processes are examples of how the company shares knowledge and competence outside FINN.no.

As the company participates in different projects the company improves its network and connections to the innovation environment in Norway. With an increased network it is easier to follow changes and discover new inventions that occur.

FINN.no has considered to license out its platform, but because of its complexity this is difficult. The most valuable knowledge FINN.no possess is what the company calls *big data*. This is information and statistics about the user-behavior at the different market places. FINN.no knows what the users click on, when the users spend most time on finn.no and what the users avoid. This is information the company uses to develop new and better products. Due to the competitive advantage this information gives, the company does not share all of it. However, FINN.no shares some statistics, about for instance frequently searched words, on *FINNlabs*.

Intrapreneurship and innovation Culture

FINN.no works continuously towards to keep the intrapreneurial spirit. For FINN.no to be a leader within innovation it is important that the employees have an intrapreneurial mindset and that the company has a strong innovation culture as mentioned earlier.

Sandbox is a concept allowing employees to develop their own products based on certain datasets from FINN.no. Today they are allowed to use datasets from *FINNTorget*, but FINN.no is discussing the opportunity to share more datasets. Employees have to use their spare time to develop these products and where the shares of the projects are divided into 70-30. The majority of the shares are given to the team that develops the product and FINN.no owns the remaining part.

Through *Sandbox* the employees can have fun and explore their entrepreneurial side and the company benefits of intrapreneurship, strengthen innovation culture and new innovations. *Sandbox* is a tool that might create competition to FINN.no, but the company allows this kind of competition as FINN.no hopes the upside is bigger. FINN.no sees that employees might have too little time to

develop ideas as most of them work full time and wish to have some spare time to family and friends.

Another example of how FINN.no engages the employees in innovation processes to enhance intrapreneurship is the *FINNovation day,* which is held twice a year. This is a day where employees work in teams to develop an idea or a concept during one day. The outputs from this day are ideas and concepts that could be further developed by FINN.no. However, the main focus is to offer training in intrapreneurship and let the employees be creative and have fun.

Shared ownership

As mentioned earlier, FINN.no has close collaborations with different actors in the industry. FINN Real Estate (FINN Eiendom) is a separate company (LTD) and the real estate industry has shares in FINN Real Estate. This shows how FINN.no is willing to give away part of the company in order to maintain the close collaboration.

4.1.2 Advantages

The main advantage of having an Open Innovation approach in FINN.no is the ability to get feedback from users during the development of its products. Lean development is an essential part of the development path in the company. The advantages that have been found are summarized into bullet points presented below:

- Get customer and users opinions in both problem definitions and ideation
- Get access to external knowledge and competence
- Through the innovation management tools FINN.no gets access to new ideas from employees and enhance the intrapreneurial spirit in the business
- Access to external ideas from the sales department, from external partners and the call center
- The flat structure and openness in the company allows employees to experiment with new solutions and ideas and increase their motivation
- Through the sharing of both successes and failures, the open culture encourages employees to continue to contribute with new ideas
- Through *FINNovation day* and *Sandbox*, the employees are encouraged to contribute and have the freedom to use their entrepreneurial spirit that again increases their motivation
- Through close collaboration with external partners in the industry FINN.no is able to develop services and products with high user value

- As FINN.no includes both customers and users at an early stage, the company makes sure it is on track and not wasting money. FINN.no saves both time and money through these lean-processes
- Save programming time that can be spent on more radical innovations
- When including customers and users at an early stage the company gets quick response and direct answers
- FINN.no is able to follow rapid changes in the market through the company´s Open Innovation processes
- The company gets access to new ideas through collaboration with external partners
- Employee involvement and engagement is seen through the responses in *FINNopp* that again builds the innovation culture
- FINN.no states that it has strengthened its communication with its users through *FINNlabs*. This feedback gives the company inputs on product development and new ideas
- Through lean processes the company gets more directed product development and hints to new ideas
- Through lean processes FINN.no includes employees across different departments, which increase their ownership to the projects
- Through knowledge sharing in the external environment the company builds its reputation and expand its network. The expanded network makes it easier to follow changes and discover new inventions that occur
- The internal innovation processes are fun and increase the employees' motivation

4.2 Statoil ASA

In this section the empirical findings related to Statoil are presented. This is the second of the four case companies that are presented, and is as Finn.no defined as a large company. Three employees in the corporate innovation unit of Statoil were interviewed: Ole Gunnar Dokka (Manager Innovation Engagement), Morten Husby (Head of Idea Management) and Øystein Engen (Leading Consultant Strategy). All these informants have long experience with Open Innovation strategy.

Statoil is a Norwegian energy company that is primary engaged in oil and gas exploration and production activities (Statoil, 2013). The company is the largest oil production operator on the Norwegian continental shelf, one of the largest net sellers of crude oil and condensate worldwide, and the second-largest supplier of natural gas to Europe. The industry Statoil operates in is

characterized by intense competition for customers, production licenses, operatorships, capital and experienced human resources.

The company was established in 1972 by the Norwegian government (Statoil, 2013) and was converted to a public company with listings on the Oslo and New York stock exchange in 2001. Today Statoil has business operations in 35 countries with 23,000 employees worldwide and the company has ambitions for further international growth in the future. Statoil's corporate structure is hierarchical with seven different business area departments. The main office is located in Stavanger, Norway.

Fortune Magazine (CNN Money, 2011) ranked Statoil as number seven among the most innovative Fortune-500 company in the world, and number one in their industry in 2011. This ranking was based on a survey where 4100 analysts and leaders from the largest companies in the world participated.

4.2.1 Strategy of Statoil

Engagement in Open Innovation

Statoil is strongly engaged in Open Innovation as the company has been working closely with suppliers, academia and partners for several years. These collaborations have been important for Statoil´s industry position today. Statoil admits that the company has not used the term Open Innovation for these collaborations in all years.

Statoil is very conscious about how important it is to be open in its innovation processes. A result of this can be seen through the establishment of the corporate innovation unit and the creation of the Open Innovation channel *Innovate*, which is presented later, to access new ideas and technology. The background of the establishment of the corporate innovation unit was strategically driven to ensure both innovation capability and capacity. This is important to adjust the company to an industry in change. Because Statoil is a large company, it is difficult to focus on making innovation happen at the same time as manage the company like clockwork. This is what Dokka calls *"the need for process versus the need to progress"*. By having a corporate innovation unit Statoil ensures to handle this. This unit has the responsibility to develop innovation strategies, facilitate and speed up Open Innovation processes and develop and operate channels for Open Innovation. It is also encouraging the different business areas to connect and involve each other in a more extended degree to solve business needs and challenges. The unit was established August 2012, and consists of a team that has experience with innovation and has been working within different business areas in Statoil earlier.

Statoil focuses on internal need driven innovations by formulating business needs and challenges the company has within its business areas and then use innovations to solve these. This makes it important that different business units actually understand what their needs and challenges are, and formulate them. This is something the corporate innovation unit facilitates by helping to map out challenges and pinpoint the different business units' needs. Some of the challenges are posted on *Innovate*. The corporate innovation unit is going to develop guidelines for systematic ways to work to facilitate innovative thinking.

Another goal is to increase Statoil employees' knowledge and understanding of innovation because they are important sources of new ideas and knowledge due to their participation in external forums. Innovation has to be a word employees can see and understand, and associate with value creation and positive measurable results. This is important in order to make employees conscious about their importance of bringing in new ideas to the company.

Statoil has an *open image* to the external environment and wants to collaborate with different actors in the industry. Through different programs the company supports product development, academia and external research institutes. As Dokka mentioned, *"Statoil knows that you have to give to get",* and Statoil demonstrates this by supporting different types of projects.

Defining Open Innovation

Statoil defines Open Innovation as a way to involve people that normally do not take part in the process or activity to participate and share their knowledge. This could be people inside of the corporation, but also people from the outside. Through Open Innovation the scope of possibilities is opened up, and it is about creating a platform for new knowledge and learning.

Culture and incentives

The corporate values of Statoil are courageous, open, hands-on and caring. The values are about being imaginative and stimulate new ideas (courageous), work together and share knowledge (open), deliver on promises (hands-on) and help others to succeed and demonstrate social responsibility (caring).

Statoil has an open culture where people can share their ideas, and where these ideas are taken seriously. As Husby said, *"Compared to other companies, Statoil has a good culture for sharing. Statoil is not perfect, but from what I have heard from people who have been employed in other companies, it is no doubt that we are good at sharing".* He also describes Statoil as an informal company in many ways, where it is possible to have discussions internally and externally without having a rigid juristic regime as many American companies have. The mangers encourage employees

to share knowledge and ideas with each other, and they are working hard to stop potential critical comments. It is not acceptable to criticize ideas at an early stage, because this could lead people to keep their ideas to themselves. Statoil does also involve employees in some of the processes of choosing which ideas that are going to be developed further.

One of the incentives for sharing ideas is recognition among colleagues in Statoil. Another incentive is that the contributor of an idea, in most cases, could be a part of the development team if the idea is recognized as an idea Statoil would like to develop further. There is also a reward system where people, who had a role in developing a technology or a system that are patented, get a reward.

Why Open Innovation?

Statoil has a long tradition for being open, and as Husby, called attention to *"Statoil had never become a leading company if it never had had the approach to work together and have close collaboration with our suppliers. The Norwegian subsea technology is in world class and this is a result of the Norwegian clusters where companies have collaborative projects to solve problems and challenges"*. The oil and gas industry is a high technology industry with a worldwide market and competition. Because of its need for expertise, need for environment that fosters new ideas and change, and the high R&D costs, Open Innovation is required to obtain and maintain sustainable competitive advantage. The openness has been essential for Statoil's position in the industry today and is important for long-term growth.

Processes

Collecting ideas

In 2011 the Open Innovation channel *Innovate* was launched on the Web. The intention for this webpage was to collect new ideas and mobilize resources both within and outside the company. Dokka describes this process as *"Statoil is going to open up for Open Innovation".* On this webpage corporate challenges, which are needs that Statoil faces within different business areas, are published. People that have ideas or concepts that match the challenges can easily submit ideas through the website. This is an important tool to get access to new ideas that can reduce costs and improve the company´s ways to find oil and gas. It is important that Statoil articulates the published challenges in a precise way and place the challenge in a context to ensure that people understand what Statoil is looking for. This is critical to get submitted ideas with relevant substance, and to avoid rejecting ideas. Statoil has seen that ideas from employees do often have more substance than the external ideas. As Dokka said, *"It is not the number of ideas that is our need. A large volume of idea is uninteresting; Statoil must have the right ideas with the right substance"*.

Through *Innovate* the company also receives general inputs such as solutions or concepts, which could be used in the oil and gas industry, that are used in other industries. People who see synergies between the industries are submitting these ideas. The corporate challenges are also published on Statoil's LinkedIn community where people can discuss the published challenges without submitting ideas. This is a network with high engagement rate, where people have high education and insights from different industries. Because Statoil shares some of its challenges the company has to be clear on what the company can share with externals, because competitors could benefit from its exposing of challenges.

A panel consisting of relevant specialists evaluates every submitted idea and gives feedback to the contributor. The evaluation of the ideas can sometimes be difficult because of the complexity of ideas submitted. Feedback requires a lot of time and resources, due to the large amount of incoming ideas. The panel includes business developers, IP advisors and technical experts. If the panel endorses the idea, Statoil can offer different financial support inter alia *LOOP* funding, seed capital or venture capital (depends on the stage of the technology development), project supervision and control, technical expertise, business insight, network and general advice support. The company wants to share its knowledge with people who have ideas that can be useful for Statoil and the industry if it creates a win-win situation. This could help Statoil to reduce R&D intensity and ensures that the company gets access to technologies needed in the future.

Some ideas are suited for the *LOOP* program, which is a program for product development together with suppliers, where the focus is on specific projects. The aim of this program is to help young companies (SMEs) to accelerate their product development, and to grow to independent suppliers for Statoil and other energy companies. Since the company's start in 1991, the program has been a success and has resulted in a commercial success in two out of three projects, where 260 projects so far have been supported (Helgesen, 2009). Through the *LOOP* program, Statoil builds relationships, which is important, to the company´s suppliers.

Statoil shares knowledge with the oil and gas industry if it has any research results that are relevant through publications or by attending different conventions. A result of sharing knowledge with the industry is a good reputation, which is valuable for the company.

Collaboration with academia and research institutes

Most research projects are carried out internally in Statoil, but some parts can be carried out together with external actors. Statoil has close collaboration with academia and research institutes in Norway, such as NTNU and SINTEF, and in other countries. By providing universities and research institutes with funding and modern technology, Statoil supports education and leading research.

The advantages of these collaborations are connected to reduced R&D intensity and reputation. Statoil has a research budget, but the company has problems to consume all the resources internally, and the left overs are used to finance external research projects. Through this collaboration Statoil gets access to new technology and research, and the company builds a good reputation, which attract young skilled workers, in the academic community. Young people are not shaped by the industry and can bring new perspectives into the company, or have new perspectives from other industries that could be useful for Statoil.

Collaboration with suppliers

Suppliers have a very important role for Statoil because they are research partners, and they deliver technologies and equipment like for example rigs. Most of the operations performed by Statoil are run together with the suppliers. This requires close collaboration.

The advantage of the collaborations with suppliers is mutual understanding of what kind of business needs that needs to be solved. Because both parties are mutually dependent on each other there are goodwill to solve the problems together, which create innovative solutions. A challenge of these collaborations is connected to IP-policies. Different policies could be an inhibitor for Open Innovation.

Collaboration with other industries

Statoil has collaborations with other industries that are not related to oil and gas, but face the same problems as the company does. One example is when Statoil found inspiration from the forestry industry to improve its handling of drill pipes, which is several kilometers long, that resulted in a better system. The advantage of these kinds of collaborations is new perspectives, which can lead to alternative and innovative solutions, on business needs. Dokka stresses also what he calls *the power of unexpected partnerships,* which concerns to open up and make the unexpected opportunities be an opportunity. Different industries can have similar problems, and by collaborations both parties could benefit from sharing ideas.

Outward IP-licensing

Statoil has a large portfolio of patents, but these have never been licensed out to externals. The outward licensing of IP has been discussed, but it is hard to work with because of its complexity. Statoil has to do some scenario cases to see how the practice potentially could have been before deciding what to do in the future.

Customer Involvement

Because Statoil is selling products in a commodity market, the company has not had a tradition of involving their customers in innovation processes. The focus on customers is not to involve them in development of products, but on how to sell them products.

4.2.2 Advantages

Statoil has been very clear about its need for being open to obtain sustainable competitive advantage. The company is operating in a high technology industry that is characterized by intense competition. To be able to obtain sustainable competitive advantage, there is no question about its engagement in Open Innovation. The advantages that have been found through the interviews are summarized into bullet points:

- Statoil gets access to new ideas and technologies through *Innovate* from external actors
- Access to technology and research through collaborations with academia and research institutes
- The corporate innovation unit is going to increase innovation capability and capacity through Open Innovation
- Access to expertise through collaborations with external actors such academia and research institutes, suppliers, and other industries
- By opening up Statoil gets access to an environment that fosters new ideas
- Secure access to needed technologies in the future through for example the *LOOP* program
- Expansion of external network through collaborations with external actors
- Reduced R&D intensity internally through collaborations with academia and research institutes
- Statoil builds a good reputation through funding and access to modern technologies to universities and research institutes
- Attracting young educated people and skilled workers through collaborations with academia and research institutes
- Access to new perspectives from young people who are not shaped by the industry, and new perspectives from other industries
- Sharing of knowledge creates win-win situations: Statoil contributes to development of industry, and improvements of industry are good for Statoil
- Creation of innovative solutions through collaborations both internally between different business departments and external partners
- Motivation of the employees through recognition from other employees and managers

- Open Innovation makes it easier to follow changes in the oil and gas industry
- The power of unexpected partnerships is a possibility created when you open up
- Access to innovations that reduce costs and improve their way of working

4.3 Vom og Hundemat AS

In this section the empirical findings related to Vom og Hundemat (V&H) are presented. This is the third of the four case-companies that are presented, and the first company that is defined as a SME. Two employees were interviewed: Magne Østby (Entrepreneur and Chairman of the Board) and Roy Storli (General Manager). The informants do not have an academic background in strategy, nor have they much experience with Open Innovation.

Vom og Hundemat AS was started in 1988 by Magne Østby. Østby, who is educated both as butcher and as a sausage maker, started producing dog food from leftovers at the slaughterhouse in his own kitchen to help his friend's sick dog that did not tolerate dry fodder. This was the early start of the now successful company V&H.

V&H produces and sells wet mash dog food to pet shops in Norway. The company has had a steep growth curve the last five years, and today exports products to Sweden, Denmark, Finland, Russia, the Netherlands and France. The company's production and main storeroom is located in Trøgstad, Østfold in Norway, but recently it has established a manufacturing factory in Sweden as well. Today, V&H accounts for two to three percent of the Norwegian dog food market (Harstad, 2012).

In Norway V&H consist of 25 employees, organized in a small staff section and three subdivisions. The small staff section consists of the manager Roy Storli, an accountant, a nutrition expert and two customers service representatives who are responsible for logistics and taking orders from customers. The three subdivisions are the storeroom, the production department and the logistics department (responsible for deliveries at the "eastern area" of Norway).

4.3.1 Strategy of Vom og Hundemat

Engagement in Open Innovation

V&H has not had a conscious innovation strategy from the beginning. The company has been developed in line with market growth and demand. But in the future, the management of the firm says the company will take a planned strategy for further growth into consideration, where recruitment of employees is an essential task. Externally, V&H has close contact with the company´s

customers (especially dog sled drivers) and focus on external need driven innovations. Mushers are knowledgeable and aware of what nutrition their dogs need for optimal performance, and their impact on the firm through strong ties of friendship has helped build the company.

Networking is, and has always been, important for V&H. Storli uses his personal network to get input and learn how to run the business. Østby uses his professional network established while being a production manager in two large meat companies to find potential suppliers. As Storli said "*networking is extremely important to make good deals*".

Defining Open Innovation

V&H is familiar with the term Innovation, but not the term Open Innovation. However, V&H explains the importance of collaboration with external parties, and how this collaboration has been indispensable for corporate expansion.

Culture and incentives

V&H has a culture of being open and listen to suggestions from external parties. Internally, V&H is concerned with the culture, and every employee´s suggestion for the company is taken into consideration. As V&H is a small company with few employees, the internal communication is not organized, but occurs through verbal interaction. Østby said "*V&H listen to all the advice coming. The company must never be too good - if V&H does not listen to suggestions, it has no chance of staying the best in the area*".

V&H is an open organization, but the company does not share its recipes. The recipes are V&H´s trade secret, and only a few of the employees possess this knowledge.

Why Open Innovation?

Open Innovation, and then especially collaboration with customers and suppliers, has been essential for V&H's growth. As Østby tells us *"V&H has a product no one has been able to copy, and the company has to work with its customers and suppliers to preserve this competitive edge".* V&H collaborates with customers to find their needs, and with suppliers to make good deals to fulfill its customer needs.

Processes

Communication with customers

V&H has close relationships to its customers through continuous dialogue. Customers give feedback on the products, and these are taken into consideration when V&H improves existing or develops

new products. The company´s product portfolio is decided by the feedback from customers. If customers ask for specific products, for example products with different contents of proteins or fat percentage that are not included in the product portfolio, the company produces a batch adjusted to the customers demand. As Østby said "*It is the demand that decide V&H´s product portfolio"*. The advantage of having close relationships with the customers is loyalty to the company. The dialogue with the customers is important to gain customer insight, and this is important to develop competitive products.

Collaboration with academia

V&H collaborates with The Norwegian University of Life Science (UMB). Through this collaboration the company gets access to nutritionists that can do analysis of its products and give expertise and advice. In addition one of the employees in V&H attends an educational program to receive more knowledge about nutrition. Students are also engaged in the company, as several master theses are written about V&H. The collaboration with academia gives access to external knowledge, compression of the firm's learning curve, and a stamp of quality on their products. By involving students V&H also attracts skilled workers and expands the company´s network.

Collaboration with suppliers

The dog food industry is characterized by tough competition, where the suppliers have a strong position because their raw materials are in high demand. In the process of opening a new manufacturing factory for dog food in Sweden, it was difficult to get suppliers of raw materials because of the dominance of large chains that manage the slaughterhouses. By having open communication with suppliers V&H shows that the company is trustworthy and this in turn creates long and permanent relationships. This is important to secure supply of raw materials at a competitive price in a market characterized by tough competition. Through these collaborations V&H achieves a strong network.

Attracting skilled workers

V&H knows that the company does not possess all the skilled workers needed internally. This is why the company hires people with competences within areas such as nutrition and marketing. Østby is conscious of being open in the way of obtaining skilled workers, *"V&H is hiring people that have knowledge and competences that V&H do not have"*. The advantage of hiring skilled workers is gaining external knowledge and a compression of the learning curve.

Sharing knowledge

When starting the company, the leader went out to actively search for new customers, especially in the dog racing milieu and acquired the knowledge about the positive effects of their food. The company also attends industrial fairs. V&H is opening to share knowledge with others, but they keep its recipes secret. This openness gives the company credibility from actors in the industry as well as its customers.

4.3.2 Advantages

The main advantage of the V&H´s Open Innovation approach is the feedback the company gains from its customers. This is essential for product development and gives V&H the opportunity to develop competitive products. The advantages that have been found through the interviews are mentioned in the strategy presented above as reasons why the company goes through with the processes. To highlight the advantages mentioned, we have listed them in the following bullet points:

- Hiring skilled employees to achieve further growth and gain external knowledge
- Strong ties of friendship with mushers have helped build the company
- V&H uses personal network to get input and learn how to run a business
- Use network to find potential suppliers
- Collaboration with customers and suppliers has been essential for the firm's growth
- Get feedback of products from customers to find their need, and hence be able to improve existing products or develop new, competitive products, which fulfill the customers' need
- Customers are loyal to the company from their strong relationship with the company
- Gain expertise and advice from academia/university
- Access to nutritionists that can analyze V&H products
- Access to external knowledge
- Compression of learning curve
- Stamp of quality on V&H´s products
- Expand and strength existing network
- Collaboration with suppliers creates long, trustworthy and permanent relationships with the suppliers, which secure supply of raw materials at a competitive price

4.4 Rocketfarm AS

In this section the empirical findings related to Rocketfarm are presented. This is the fourth case-company that are presented and the second company that is defined as an SME. Two employees of Rocketfarm were interviewed: Halvor Gregusson (General Manager) and Dyre Hult (Part time Software Developer). Gregusson has academic background of entrepreneurship, while Hult has an academic background of computer science. Both of the informants have taken part in the establishment of the firm.

Rocketfarm was established in 2012 as a merger of two companies run by the same employees. The company consists of total eight employees: one entrepreneur and seven software developers, of which two work part-time.

Rocketfarm is located in Sogndal and operates within the business sector of information technology (IT), where the company develops a variety of computer programs and applications. Rocketfarm´s main customers are companies who buy consultancy services. The company has a flat organization where every employee holds shares. However, it is the entrepreneur Gregusson who arrange for business development and strategy planning.

4.4.1 Strategy of Rocketfarm

Engagement in Open Innovation

In addition to being a consultancy firm, Rocketfarm produces its own products during the internal *innovation weeks*. The idea to arrange *innovation weeks* came from the developers that wanted to use time on development of own ideas, and not only do jobs for customers as consultants. The *innovation weeks* were inspired by Google, like the part-time developer Hult said "*It would be cool to do as Google - use ten percent of our time to develop our own projects".*

The *innovation week* is a week where the whole company works together to produce a product in a set amount of time: eight hours, five days a week. Rocketfarm has a goal of performing ten *innovation weeks* per year, and the weeks are arranged when Rocketfarm have earned funding for the week through consultancy services. The goal of each *innovation week* is to develop an idea ready for market during one working week. So far, two such weeks have been arranged. Prior to *innovation week*, Rocketfarm arranges a lunch where different ideas for the *innovation week* are presented. All participating members of Rocketfarm will together choose which idea they are going to develop the coming week during the lunch, and the decision is based on both the expected value of the product

and the attractiveness of the product market. The innovations are therefore both on internal and external need driven. The guy who pitched in the product is appointed as project manager the coming week, and his task is to plan the coming *innovation week* by doing market research, in addition to map out the tasks that should be carried out.

The strategy of Rocketfarm's *innovation weeks* is based on three sources of inspiration. The first source is *minimum viable product* (MVP), which is about reaching the market faster to find the products strengths and weaknesses. By this method Rocketfarm is able to faster find the customers purchase criteria. The second source of inspiration is Open Innovation, where you can access external ideas, and use your network to develop the best solution to the problem. The third source of inspiration is the Google-method for intrapreneurship. Google encourage the employees to use 20% of their time at work on projects that interest them, and this is what the employees of Rocketfarm want to do.

Defining Open Innovation

Gregusson defines Open Innovation for Rocketfarm as *"an innovation process where not only internal personnel are involved, but where you bring external parties inside the development or let the employees in the company interact with external parties".*

Culture and incentives

A good internal environment characterizes Rocketfarm where all employees take part in future strategy planning. The strategic choice of implementing *innovation weeks* is a wish from the employees, and it was decided cooperatively at a strategy gathering, as all employees in the company is shareholders.

The employees get their usual salary income during the *innovation weeks*, but if they put in extra work into the product development either during or after the week, they earn shares in the project. This is a method to make the employees gain motivation and the possibility to work with projects they are interested in at their spare time. Also, Rocketfarm gives external partners who bring in ideas the same incentives as the employees if they work with developing the product.

Why Open Innovation?

Rocketfarm's innovation weeks were decided and implemented based on a wish from the employees. They had difficulties keeping their focus on daily tasks as new ideas often arose while working as consultants. The main reason to have an Open Innovation approach in Rocketfarm is to motivate the employees' and create an ownership feeling.

Processes

Rocketfarm participate in different Open Innovation processes. Most of these processes are related to the *Innovation weeks*. The Open Innovation processes are presented below.

Collecting ideas

Rocketfarm needs ideas to develop during *innovation weeks*. During the first *innovation week* the company worked with an internal idea. The second *innovation week* Rocketfarm worked with an external idea that came from one of the employee's brother. Rocketfarm´s employees are actively interacting within their network. Through these interactions the company gets inspiration and access to new ideas. Gregusson, Rocketfarm's entrepreneur states: *"the design and spearhead of the idea is being worked on internally, but it is usually based on some external impulse".*

Rocketfarm is working on connecting with people in the PR industry, for example journalists, to become more visible for people. This is a process to attract new ideas from the outside. By using network as a source of ideas, Rocketfarm is becoming more visible as a company. In addition, by focusing on expanding the company´s network, the likelihood of coming across good ideas increases.

One limitation for collecting external ideas is Rocketfarm´s current low visibility to external networks. This is a challenge the company needs to overcome. The more people know about the company, the easier is it to collect and attract good ideas.

Hiring skilled employees

Rocketfarm does not hold all the competence the company needs internally. The people employed in Rocketfarm are software developers and entrepreneurs. By hiring experts within design, sale, marketing, legal advisory and distribution solves the lack of competency.

When Rocketfarm hires skilled employees the company gets access to expertise within fields that the company does not possess. They can offer help, advice and useful contacts that are important to Rocketfarm´s projects.

Knowledge sharing

Rocketfarm is a small company, where internal knowledge sharing is essential. By arranging *innovation weeks* Rocketfarm's employees are trained in-house to develop competencies, and to transfer and share competencies and knowledge between employees.

4.4.2 Advantages

Rocketfarm is a small company with employees with an entrepreneurial spirit. The employees like to be creative and do not only be a consultancy company. The main reason to have an open approach is to get motivated employees that can work with exciting new products. The advantages that have been found are highlighted into bullet points below:

- Develop products at limited amount of time to reach the market faster at a early stage of development
- Find products strengths and weaknesses from feedback from customers, hence be able to faster find the customers purchase criteria
- Access external ideas by networking.
- Use network to develop the best solution to the problem
- Employees are encouraged to develop own products, which increase their motivation form feeling ownership to the product developed
- Expand network, hence get access to specific ideas to develop or get inspiration for own ideas
- Make the company become visible for externals through networking with journalists
- Access competence and expertise needed which is not able internally in the firm
- Increase the employees' competences through teamwork and collaboration internally

4.5 Summary of Empirical Study

In this chapter the empirical findings of the FINN.no, Statoil, Vom og Hundemat and Rocketfarm have been presented. The findings deal with the companies' general information, Open Innovation strategies and processes and advantages that the companies gain through Open Innovation. In the next part the empirical findings are analyzed and discussed.

Part 4: Analysis and Discussion

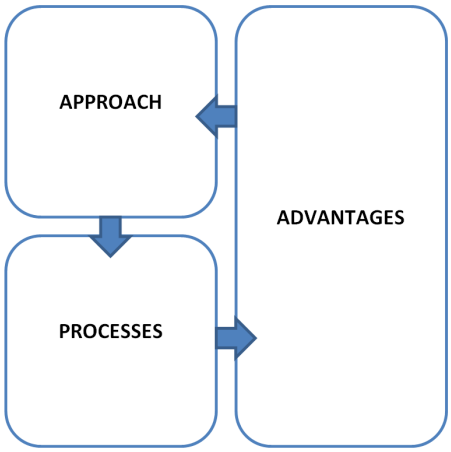


Figure 5: Theoretical framework

In this part the empirical findings of FINN.no AS, Statoil ASA, Vom og Hundemat AS and Rocketfarm AS are analyzed and discussed. The analysis and discussion is linked to the theoretical framework presented in section 3.4 in part one, as seen in figure 5. The first chapter in part 4 presents a within case analysis of each of the firms. The section chapter present a cross case analysis, where the empirical findings are analyzed and discussed.

5. Within Case Analysis

In this chapter, a within case analysis of the empirical findings from our four case companies is presented. The chapter is divided into three main groups based on the theoretical framework. The first part discusses the companies' approach towards Open Innovation, including how the companies define Open Innovation and the companies' engagement, culture and strategic orientation. Second, the Open Innovation processes is discussed and analyzed. The processes are discussed within the three groups; outside-in, inside-out and coupled. These groups are further divided into subgroups, as presented in section 3.2. The third section deals with the advantages the case firms obtain through Open Innovation. The advantages are presented and discussed within the different processes. This is in order to categorize what processes that lead to which advantages.

In addition, the companies' Open Innovation design is discussed, as we wish to describe the pattern between the three mentioned parts of the framework. The large firms FINN.no and Statoil are presented first, continuing with the SMEs, Vom og Hundemat and Rocketfarm.

5.1 Analysis and Discussion of FINN.no

In this part of the chapter a case study analysis and discussion of FINN.no is executed. The analysis is as mentioned above divided into four parts: Approach, processes, advantages and Open Innovation design. To start with, FINN.no's approach toward Open Innovation is discussed.

5.1.1 Approach towards Open Innovation

This section contains a discussion and analysis of FINN.no´s approach and attitude towards Open Innovation. In order to get a holistic view on the company's approach, the definition of Open Innovation, the culture, engagement and strategic orientation are addressed.

FINN.no defining Open Innovation

FINN.no emphasizes need for external, as well as internal, knowledge and ideas in order to obtain good results. The company's Open Innovation strategy is two folded, as FINN.no divides it into an internal Open Innovation strategy in addition to an external part. In contrast to the closed innovation paradigm, FINN.no mentions that there might be valuable people outside the organization that can enhance the company's product development and bring new ideas and knowledge into the firm.

This corresponds with Chesbrough's definition of Open Innovation as presented earlier. That the company has a clear definition is linked to the strategic Open Innovation approach. As the company has a clear definition of Open Innovation, it is easier for FINN.no to develop the strategy further as the company knows what to search for in both theory and through the firm's network.

We believe that the way FINN.no defines Open Innovation is affected by the employees' academic background and their experience with innovation processes. The employees show a good understanding of innovation strategies and management. Although not all of the informants have studied innovation, it is clear that their academic background influence their description of the strategy. In addition the company's Open Innovation strategy seems to be communicated in the company through FINN.no's innovation department, making the term familiar to the employees.

Engagement in Open Innovation

FINN.no has been focusing on Open Innovation since the company started in year 2000. In the beginning, the company implemented Open innovation strategies in an implicit manner. Close collaboration with actors in the industry has been a part of FINN.no's Open Innovation strategy from day one.

One of the points of critique Open Innovation has received is that the strategy is not new (Duarte and Sarkar, 2011). The findings of FINN.no support this criticism as the company states that it implemented the strategy even before the company knew about Open Innovation. However, today the Open Innovation strategy in FINN.no is far from coincidental as it is carefully planned. The company has its own Innovation department that decides the innovation strategies, but at the same time allows the employees to contribute and adjust the methods within each marketplace. Open Innovation may lead to lack of control according to the literature. The innovation unit might however contribute to increase control throughout FINN.no's Open Innovation processes.

Although the company has about 350 employees, FINN.no wish to maintain a flat structure in order for employees to engage in the Open Innovation processes. By keeping the feeling of a flat structure, the employees can easily communicate across departments and share knowledge and ideas.

FINN.no engages in Open Innovation as the company wish to get access to external as well as internal knowledge and expertise. Due to the Internet, globalization and new technologies, the company sees the need to access new ideas and knowledge in order to be prepared for the rapid changes in the market. The company has an explicit Open Innovation strategy, as FINN.no sees the need to open up and embrace external knowledge in order to stay ahead of the company's competitors in the quickly changing industry.

Open Innovation culture in FINN.no

The internal part of the company's Open Innovation strategy seems to be mostly about the innovation culture. In FINN.no, the values (precision, drive, spirit and tolerance) are clear and represent the foundation of the culture the company wishes to have. The management in FINN.no is

open for risk, and gives the employees freedom to test new products and innovations. This is mentioned by Lopez et al. (2004) as an important part of the culture in order to enhance learning. In addition a good relationship between managers and employees will lead to an environment well suited for knowledge sharing, according to Adler (2001). FINN.no emphasize on sharing experiences and knowledge, both successes and failure, which seems to have a positive effect on the company's Open Innovation culture.

FINN.no works towards increasing the company's culture for Open Innovation. The firm has an idea management tool called *FINNopp*, where employees can contribute with ideas and express their opinions. The tool has managed to involve 90% of the employees, as they have given feedback to ideas. In addition, *Sandbox* allows employees to develop their own ideas, and *FINNovation day* allows the employees to work in groups with new ideas. These tools allow employees across departments to communicate and work together, which according to the literature may serve as a driving force for innovativeness as the company is likely to generate new ideas and technology (Woodside, 2005 cited in Cerne et al., 2012). This is further discussed under *employee involvement* in section 5.1.2.

Strategic orientation

As mentioned earlier, FINN.no needs to adapt to environmental changes, such as customer's demands or entry of new competitors. The company focuses on product and market innovations, developing new innovations, and works toward improving existing operations. This indicates that the company has an *analyzer* orientation, which is a combination of both *prospector* and *defender*. The strategic orientation illustrates how FINN.no focuses on managing day-to-day business, as well as developing new innovations.

Discussion of FINN.no's approach

FINN.no has an explicit engagement in Open Innovation. This is seen through the company's definition of Open Innovation and its clear strategic approach. FINN.no has its own innovation department that sets the strategies and emphasize on creating an Open Innovation culture. Although the company has reached 350 employees, the management works toward keeping a flat organizational structure to maintain communication and collaborations across the different departments.

Due to the market FINN.no operates in, the company engages in Open Innovation to make it easier to follow the rapid changes in the market, as well as responding to customers' needs. The culture in FINN.no represents the *internal Open Innovation* where the focus is on involving all employees in the company's Open Innovation processes. FINN.no has incorporated tools such as *FINNopp* and *Sandbox*

in addition to introduce *FINNovation day* and innovation rewards to engage employees and arrange for sharing knowledge and ideas internally. With an *analyzer* orientation, the company is open to new innovations as well as it is focused on improving the firm's existing operations.

5.1.2 Open Innovation Processes in FINN.no

In this section the Open Innovation processes in FINN.no are analyzed and discussed. The processes are categorized into *outside-in, inside-out* and *coupled* processes, and further into subgroups as presented in section 3.2 *Strategies of Open Innovation.*

Outside-in processes

Outside-in concerns the processes of bringing external knowledge, resources and ideas into the firm's R&D department. In this section, FINN.no´s outside-in processes are analyzed and discussed in order to elaborate how the company brings external knowledge into its innovation processes.

Employee involvement

As mentioned earlier, FINN.no has both an internal and external Open Innovation strategy. We are categorizing employee involvement in FINN.no as an *internal* outside-in process, as the strategy involves employees who are not originally involved in R&D processes. FINN.no allows such involvement as the employees of the company can contribute with both knowledge and suggestions.

FINN.no involves employees in several different ways. Due to the size of the firm, FINN.no has introduced tools in order to manage ideas and suggestions from employees, and to ensure smart sourcing. The idea management tool *FINNopp* allows employees to post ideas, comment on ideas and vote for the ideas they wish the management to implement. As mentioned earlier, a large share of the employees have made use of this tool as 65% have posted ideas and 90% made comments on ideas. This shows that employees across departments and in different positions engage in the company's Open Innovation processes. *FINNovation day* includes employees from different departments in the development of internal ideas, which seems to increase the intrapreneurial (internal entrepreneurial) competence and motivation. The company's innovation award is also an encouragement for employees to participate, as the winner gets to take part in the commercialization of the idea. Through the idea management tool, employees have a decisive vote of what projects to commercialize.

Through lean startup projects, employees in different positions of FINN.no are included in the product development. As employees from the IT-department talk to users and through the lean process, they feel more included in the process and get a feeling of ownership. The employee involvement seems to be in close connection to the culture and incentives in FINN.no that are

created with the intention of facilitating the sharing of knowledge and ideas. As stated in the literature, employee involvement and collaboration across the company's departments may lead to new innovations and more realistic suggestions. FINN.no has found a way to benefit through these processes and the employee involvement seems to be an important part of the company's Open Innovation strategies.

Customer and user involvement

Involving customers when developing new products and services have been a part of FINN.no's strategy since day one. According to Parida et al. (2011), customers often know their current and future needs and requirements. FINN.no states that the company through the collaboration with customers ends up with products and services that are targeting the customers' needs. These needs are reached from FINN.no's smart sourcing.

In the case of FINN.no, user involvement should be mentioned as well. Real estate firms are an example of FINN.no's customers, and the person that logs into the web page to find his/her dream house is an example of the company's user. Some of the processes of user involvement in FINN.no are elaborated through lean startups, where the employees go out and ask *people on the street*, representing the users, to give direct feedback to the company's sketches on new projects. In addition, *FINNlabs* is an example of a tool the company uses for online user involvement.

The process of *customer and user involvement* is central in FINN.no's innovation strategy. The company has realized that talking to customers and users from an early stage of innovation projects can save both time and money.

External networking

FINN.no has a large network and uses it to access external ideas, new technology, get feedback and attract new employees. The company has several processes that can be characterized as external networking. FINN.no does also interact with start up environments in Oslo where the company is located. This makes the company aware of new technology, potential competitors and it creates a valuable network for external knowledge. *FINNlabs*, as mentioned earlier, is another example on how FINN.no is networking with users to gets access to external ideas and feedback on new products.

Another external networking process is FINN.no's collaboration with NTNU. This process increases the company's academic network and it might give access to new research as well as new employees. However, as the collaboration is newly established, it is too early to say how these interactions will contribute to FINN.no's innovation processes.

External participation

Penger.no is an example of FINN.no's external participation (and venturing processes, which are discussed later). The company used its internal knowledge and ideas from the idea management tool and brought them into the company's collaboration with the customer DNB. The collaboration led to the new service Penger.no. As the service did not fit within FINN.no's business model, it could has been seen as a spillover that would be put on the shelf. However, FINN.no opened up for external paths to market in collaboration with both DNB and Dine Penger, and the service got launched. All parties have made profit from the collaboration as the service has been launched, and it seems to be a success as it already has attracted many users.

Outsourcing R&D

As FINN.no is an IT-company that has worked with online marketplaces since 2000, the company has established a solid core competence and is able to develop most of its product internally. FINN.no outsources almost none of its R&D. However, one may discuss if *Sandbox* can be seen as a process of outsourcing R&D. *Sandbox* allows employees to develop new products based on selected data and resources the company has available internally. Employees work on the projects outside their set working hours and if the project is a success, FINN.no and the employees split the profits. The R&D conducted by the employees can be seen as outsourced R&D, as FINN.no shares the profits. There is a blurred boundary between internal *outside-in* and external *outside-in* processes in FINN.no, as this example indicates.

Inward IP-licensing

When discussing innovation processes with FINN.no, the company did not mention inward IP-licensing. However, inward IP-licensing could be an option if the company needs to develop new innovation management tools or other software. Through inward IP-licensing, the company can release developers' time and focus on core competences, which may lead to an increasing amount of implemented innovation in the future.

Inside-out processes

Inside-out concerns the processes of letting the firm's internal knowledge, resources and ideas flow out from the company's boundaries. In this section, FINN.no's outbound processes are analyzed and discussed in order to elaborate how the company brings external knowledge out to other company's innovation processes.

Venturing

As discussed earlier, *Sandbox* is a way of making employees use their knowledge and expertise to develop new products and services, which at a later stage can be commercialized through FINN.no's business models or outside the company. This can be discussed as a venturing opportunity, as these projects can become new organizations, which can live on their own if the ideas do not fit into FINN.no's business models.

Venturing is a way for FINN.no to find external paths to market for internal ideas that do not fit into the company's business models. As FINN.no focuses on creation of new services and improving the existing ones, it is expected that the company get ideas that do not fit into its business models. Venturing is therefore a good solution to make profit of ideas that are not suitable for FINN.no. Penger.no, as mentioned earlier, can be seen as an inside-out process of venturing for FINN.no.

Outward IP-licensing

According to FINN.no, the platform of the marketplaces is hard to license out, as it is a complex and integrated system. However, this has been discussed in the early years of the company. Outward IP-licensing could have been a way to earn additional money, as other companies could have used the platform for other purposes. At the same time, outward IP-licensing could have developed more competitors threatening FINN.no's position in the market. However, the most valuable information the company possesses is its *big data* containing statistics and information about the users' behavior. This material will be kept within the firm, as it is crucial in order to understand the users and to develop new revolutionary solutions.

Coupled processes

The coupled processes of Open Innovation are a combination of the inbound and outbound processes. In this section, FINN.no's coupled processes are analyzed and discussed.

Sandbox

The process of *Sandbox* can be seen as an *internal* coupled process. First, the company gives out data from the marketplace *Torget* to employees, and allows them to use FINN.no's resources. Second, the employees develop a new product based on the accessible resources. Thirdly, the new product is brought back to FINN.no in order to be sent to market. The process is described as *boomerang* in literature, as it starts inside the firm, goes out to externals, and ends up within the firm. In order to describe *Sandbox* as a coupled process, the product has to be sent to FINN.no's market. However, if it is not suited for FINN.no's market it can be seen as an inside-out process as described earlier.

Knowledge sharing

FINN.no is also sharing its knowledge in order to improve the company´s network and maintain the firm's good reputation as an innovative company. Through collaboration with students FINN.no shares information about their website finn.no, and in the startup community the company can contribute with experience and technological knowledge. The company´s participation as mentors and in startup activities is ways to give something back to the market. These interactions help FINN.no build the company´s network, which increase the company's access to external information.

Summary of Open Innovation processes in FINN.no

FINN.no performs both internal and external Open Innovation processes. The company implements more inbound processes than outbound. In addition, we see that some processes, such as *Sandbox*, can be categorized as a coupled process. As the company has long experience with Open Innovation strategies, it has managed to implement several processes. In addition, the company possesses a lot of knowledge and competencies that can be valuable in collaboration with external partners through different processes. FINN.no has implemented different Open Innovation processes in order to obtain a better position in the market, follow rapid changes and find new paths to market. These are all advantages resulting from the company's open approach, are further analyzed and discussed in the next section.

5.1.3 Advantages

FINN.no has chosen to perform Open Innovation strategies in order to ensure competitive advantage in the market, by developing targeted products. During performance of Open Innovation processes, FINN.no gains several advantages, which in this section is going to be elaborated. Some of the advantages are mentioned above in the discussion of the company's processes, as reasons why FINN.no perform the various processes.

Table 5 below illustrates the advantages FINN.no gains from performing the various processes of Open Innovation. The advantages FINN.no gains are marked with a green color in the table. Since the empirical findings are presented with another phrasing than the literature, we have adjusted the classification of the findings to fit into the theoretical advantages. The advantages our literature review present for each process is listed with "X's" in table 5. From this, it is easy to see which advantages FINN.no gains that correspond to the advantages presented in the theoretical framework, and which that does not correspond. To illustrate, the advantages marked with both a green color and an "X", shows where literature corresponds with empirical findings.

As FINN.no is performing neither the processes of *inward* nor *outward IP-licensing*, the columns in the table representing the processes are colored grey. As the company does not perform these processes, there are no advantages gained from these processes. These groups are therefore excluded from further analysis and discussion.

When analyzing the advantages FINN.no gains from performing Open Innovation processes, we discuss each process separately. This is done to see which process that brings which advantages, in addition to see which process that bring FINN.no the most advantages. The empirical findings are discussed towards the theoretical advantages found.

Table 5: Advantages FINN.no gains from Open Innovation

		Outside-in						*Inside-out*		
Advantages	***Groups of processes***	Employee involvement	Customer- and user involvement	External networking	External participation	Outsourcing R&D	Inward IP licensing	Venturing	Outward IP licensing	*Coupled*
Access external resources				X	X					
Access other firm's economies of scale					SMEs					
Access complementary assets				X		X				
Access external knowledge		X	X	X	X	X	X			
Access external research				X	X		X			
Access the firm's "external" qualities & initiatives		X								
Access specialized competences		X								
Access external tacit knowledge		X								
Attracting skilled workers				X						
Benefitting from internal unused R&D property									X	
Better and easier organization of complex processes		X						X		
Better financial results			X							
Bring expertise into R&D team/company		X				X				
Capture market in early stage of innovation			X							
Commercializing new products			X		X			X		
Compression of firm's learning curve		X	X	X						
Control cost		X	X							
Develop competitive products			X				X			
Expand application areas					X					
Extension of firm					X					
External paths to market					X					
Improved development		X			X					
Increased absorptive capacity		X	X							
Increased capability		X	X			X	X			
Increased control		X	X							
Increased efficiency		X	X		X		X	X		
Increased growth			X							
Increased market share			X		X					
Increased motivation and commitment to company		X								
Increased profitability			X					X		
Increased rate of innovation		X			X					
Integration of new technologies					X					
Limitation of risk		X	X							
Meet current and future market requirements			X							
Obtain others synergies				X	X					
Protect own IP									X	
Reduced costs							X	X	X	
Share risk					X	X	X			
Spread organizational principles to larger extent		X								
Using internally talents		X								
Utilizing own resources		X								
Access new and external ideas										
Follow rapid changes in market										
Increased external visibility										
Build reputation										

As seen from table 5 above, Finn.no gains far more advantages from outside-in processes compared to its inside-out process. This may be due to the company's less performed outward processes than inward processes.

Employee involvement

FINN.no has an Open Innovation culture based on collaboration between the company's employees, hence a strong culture for internal outside-in processes. As seen from the table above, the inward process employee involvement in FINN.no brings advantages to the firm such as *compression of the company's learning curve*, *higher efficiency* and *increased rate of innovation*. As the employees are included in the process of bringing new ideas into the company, their *motivation and commitment* to FINN.no increases, hence gain the company in the long run.

As seen from table 5, the literature confirms most of the advantages FINN.no gains from involving their employees. The literature discuss however the *increased control* in the company and *limitation of risk* as a result of *employee involvement*. These are advantages FINN.no not states is gained from the process. This may be due to the company's lack of confirmation of Open Innovation's impact at the organization's complex processes. We experience the high degree of employee involvement to have a positive impact of FINN.no's Open Innovation culture. The internal Open Innovation processes of FINN.no are central to the corporate culture, and are important to maintain for succeeding with expansion of the enterprise in the future.

Customer and user involvement

The outside-in process *customer and user involvement* brings FINN.no advantages such as *accessing new ideas* and *development of competitive products*. This makes the process one of the most important for the company, as FINN.no is dependent on meeting the customer and users need and wants in the future. By *expanding the product's application areas*, FINN.no increases the company's ability to sustain its competitive advantage in the market. In addition, the lean process of *customer- and user involvement* makes FINN.no able to *meet the markets future requirements* and *follow its rapid changes*. As the company is involving existing customers and users in its Open Innovation processes, FINN.no *increases the company's external visibility* and *builds reputation in the market*. However, as FINN.no is using most of the company's time to meet existing customer and users requirements, there are less focus on potential customers, hence FINN.no does not *increase the company's market share.*

Compared to literature, FINN.no obtains most of the advantages listed for *customer and user involvement*. However, the advantages of *increased capability* and *control costs* are not seen as advantages FINN.no obtains through this process. As the company's strobes for meeting customers

demand, less radical innovations are developed, hence the company's capability does not increase. In addition, FINN.no's development costs are not controlled, due to continuously feedback from customers, which lead to several smaller changes performed continuously. However, FINN.no's management has seen this lack of advantages from the process. Due to this, the company have arranged for reorganization. This is done to overcome the smaller changes performed, and to focus on the larger innovations which are more radical.

External networking

As seen from table 5, FINN.no gains most of the advantages through performing the inward process *external networking*. It is interesting to see how the process leads to *access of external resources* for FINN.no, in addition to *increase the company's rate of innovation* and the firm's ability to *follow rapid changes in market.* FINN.no uses its external network to gain knowledge about the market and potential collaboration partners, which gains the firm in the long run. In addition, from performing *external networking*, advantages such as *increase external visibility* and *build the company's reputation in the market* are met. These advantages are met from FINN.no's high visibility and many activities in the industry and market.

FINN.no states the company gains far more advantages from external networking than the literature facilitates. This may be due to the company's use of innovation tools and collaboration with academia, in addition to participating in start up environments. All these activities represent FINN.no's external networking activities. The company has facilitated for the external inputs, and makes use of the network in a higher level than literature expects. FINN.no's *external networking* gives the company far more advantages than expected, but from the discussion just mentioned we understand why, and sees opportunities also for other companies: *It is all about being out there looking for opportunities!*

External participation and venturing

The advantages FINN.no gains from *the inward process external participation* and the outward process *venturing* are listed identical in table 5, which is due to the company's collaboration of Penger.no. The service is hard to categorize into only one process, and the advantages are therefore following mentioned as gained from both processes. Further, we see from table 5 that this collaboration brings the company advantages such as *access external resources, expand application areas* and *extension of the company.* These advantages are gained from FINN.no's collaboration with Dine Penger AS and DNB ASA. Further, from the collaborations with the other parties, FINN.no does no longer hold all risk of the service itself, and its capability increases from the new knowledge the

company access. FINN.no also gain advantages of *increased external visibility* and *built reputation,* as the company is collaborating with external partners outside their original industry.

As Penger.no is one specific product, Finn.no does not achieve all the theoretical advantages listed in literature for the processes. As the service penger.no is not included in FINN.no's main product portfolio, the company is neither *increasing its market share* nor *gain external paths to market*. In addition, from being a large firm already, FINN.no is not *access the other firms' economies of scale*. The advantage of *integrating new technologies* is not met, due to FINN.no competence of software development, and the fact that FINN.no has developed the service. We believe that FINN.no could gain more of the theoretical listed advantages of *external participation* and *venturing* if the company continues performing within these processes, and with other collaboration partners.

Outsourcing R&D

As seen from table 5, FINN.no gains advantages such as *using internally talents* and *utilizing own resources* from inward process of *outsourcing its R&D,* when excluding the *coupled process.* This is due to *Sandbox*, where employees are the external party FINN.no outsources its R&D to. Hence to this, *outsourcing R&D* gives FINN.no advantages similarly to the ones the company gains from *involving its employees*. In addition, FINN.no gains advantages as *increased control and control of costs* when *outsourcing its R&D.* This is also due to the employees' involvement, where the employees are familiar to both FINN.no´s technological software and the company's needs.

Most of the advantages Finn.no gains from *outsourcing its R&D* are not listed in literature for *outsourcing R&D*. However, the advantages have many similarities to the advantages firms may gain through *employee involvement*, which is due to the discussion presented in the previous paragraph. FINN.no gains far more advantages for outsourcing its R&D than literature is suggesting. The company has found a way to gain advantages from outsourcing its R&D by building on its employees' knowledge, which shows the company's ability to use its Open Innovation culture in practice.

Coupled processes

Finally, FINN.no is performing coupled processes through *Sandbox* and by sharing knowledge. The advantages of *coupled process* are therefore corresponding to the advantages gained through *outsourcing R&D,* due to *Sandbox* and employees involvement in development of products. Sharing knowledge gives FINN.no advantages similarly to external networking, as the company interacts with universities and start up environments.

General discussion

We can see from table 5 that Finn.no gains most of its advantages from *involving employees, customers and users*, and from *external networking,* which all are inward processes of Open Innovation. These findings reflect on FINN.no's *Open Innovation culture*, which is arranged for involving especially employees and users into the firm's processes.

Table 5 is extended with four advantages compared to the theoretical list of advantages presented in part 2. These are four advantages FINN.no has gained through its Open Innovation processes, which is not mentioned in the literature. We find it interesting that *access new and external ideas* is not presented as an advantage in the literature, as Chesbrough's definition of Open Innovation describes new ideas as an important part of the strategy. However, new ideas may not be seen as a direct advantage for companies performing Open Innovation. Ideas need to be processed and integrated in order to benefit the company. However, *access* to new ideas may be seen as an advantage following from collaboration and networking with external parties if the company manages to implement the ideas. We believe the advantage may be a part of the advantage *access external knowledge,* which is already presented in literature. However, we choose to add the advantage of *accessing new and external ideas* into the table, as it gives a significant value to FINN.no's Open Innovation strategy.

In addition to *access new and external ideas,* FINN.no mentioned *follow rapid changes in market, increase external visibility* and *build reputation* as advantages the company gain from performing Open Innovation. We have chosen to add these advantages to table 5, as it is advantages that follow from collaborating with external parties, in addition to being of a great value for FINN.no.

As FINN.no is acting in the IT-industry, where IP protection is difficult to achieve, we had not expected Finn.no to benefit from neither inward IP-licensing nor outward IP-licensing. As seen from the discussion above, our expectation was accurate. However, we find it interesting how FINN.no gains large amount of advantages as accessing new and external ideas from several different processes. We were positively surprised to see how FINN.no has managed to involve a great share of the company´s employees in its Open Innovation processes. It was not expected due to the firms' size and show both motivation and engagement among the employees in FINN.no. It looks like FINN.no finds Open Innovation essential to maintain its competitive advantage, and to increase its market share.

5.1.4 Open Innovation Design in FINN.no

In this section the empirical findings of FINN.no are discussed to elaborate the pattern of how and why the company implements Open Innovation. The findings are presented in connection to the theoretical framework as shown in figure 6.

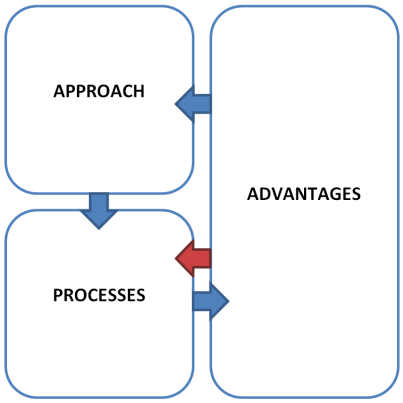


Figure 6: Theoretical framework

From approach to process

FINN.no has a clear Open Innovation approach. Employees feel free to find new solutions and experiment with their ideas. The company´s Open Innovation culture and engagement lead to innovation processes as it makes it easy to share knowledge and initiate new processes. The company is aware of the need to foster an innovation culture to succeed with Open Innovation strategies. To able this, FINN.no has engaged an Open Innovation unit to push the open culture into the entire enterprise. In addition, the company has established Open Innovation tools to gather ideas and suggestions from the employees. The Open Innovation approach in FINN.no seems to be a success as seen through the large engagement among the company´s employees.

From processes to advantages

The Open Innovation processes inn FINN.no results in several advantages as discussed in section 5.1.3. The outside-in processes; customer and user involvement, is the process the company gains most of the advantages from. However the company has both inside-out and coupled processes that lead to several advantages as well. In addition, the company utilizes the knowledge and competencies it possesses in collaboration with external partners through the Open Innovation processes, as well as through internal Open Innovation processes. These processes benefit the company, which is indicated from the achieved advantages. The company has many years of experience and has implemented Open Innovation processes in a way that gains the company.

From advantages to ppproach

As discussed above, FINN.no´s Open Innovation approach facilitates the company´s Open Innovation processes. However, some of the advantages affect the Open Innovation approach in the company, while other works as a driving force for the company to implement Open Innovation. In FINN.no, employees are given the opportunity to contribute through *FINNopp*. This seems to engage and motivate the employees, hence improve the Open Innovation culture in the company. As FINN.no realized the need for external knowledge and increased network, the company changed approach in order to facilitate even more Open Innovation processes.

General discussion of advantages FINN.no gains from Open Innovation

As discussed above, the Open Innovation strategy in FINN.no corresponds to the theoretical framework. However, it seems like the company implement new processes without necessarily changing the company's approach. An example is that FINN.no met challenges connected to the customers' specific needs. To solve the problem and develop the products that were better adjusted to the customers' needs, the company implemented lean processes. This shows how FINN.no changed the process of customer involvement in order to gain more advantages and save developer's time. However, this process is not presented in the theoretical framework, and is based on the analysis of FINN.no, hence marked as a red arrow in figure 6.

5.2 Analysis and Discussion of Statoil ASA

In this part of the chapter a case study analysis and discussion of Statoil is executed. The analysis is as mentioned above divided into four parts: Approach, processes, advantages and Open Innovation design. To start with, Statoil's approach toward Open Innovation is discussed.

5.2.1 Approach towards Open Innovation

This section contains a discussion and analysis of Statoil´s approach and attitude towards Open Innovation. In order to get a holistic view on the company's approach, the definition of Open Innovation, the culture, engagement and strategic orientation are addressed.

Statoil defining Open Innovation

Statoil emphasizes the importance of being open for external knowledge and ideas when defining Open Innovation. The company is aware that there might be knowledge and expertise outside the firms' boundaries.

Statoil´s definition of Open Innovation is similar to Chesbrough´s definition, which indicates that the company has a clear understanding of the concept. The employees´ academic background and the informants' position in Statoil might affect the way the company define the new paradigm. As the informants work within the corporate innovation unit, they are working with the company's Open Innovation strategies on daily basis.

Engagement in Open Innovation

Statoil states to have implemented Open Innovation processes for many years, however initially not explicitly. The company's Open Innovation processes were not labeled as Open Innovation until a few years ago. This can verify the criticism that Open Innovation is not a new term. However, Statoil has an increased focus on the strategy today.

In 2012, the company engaged a corporate innovation unit, which develops Statoil´s Open Innovation strategies. The establishment was meant to ease the communication across departments and to work more systematically with the company´s Open Innovation processes. The department seems to be a solution for the company to remain control of the Open Innovation processes.

Statoil has long experience with Open Innovation through close collaboration with strategic partners. The oil and gas industry is a high technology and knowledge intensive industry, with hard competition. In order to obtain and maintain competitive advantages it is important to access new technologies, skilled workers and build a good relationship with strategic partners. Statoil recognizes the value of Open Innovation, and says that the collaboration with strategic partners has been essential for the company´s development and leading position in the oil and gas industry.

Statoil is operating in a commodity market and the company works toward finding innovations that can solve business challenges and address needs. The company works continuously to access external knowledge in order to stay ahead of their competitors, which explains their Open Innovation engagement. The culture is linked to the approach and engagement, and this is further discussed in the next section.

Open Innovation culture in Statoil

The corporate values in Statoil (courageous, open, hands-on and caring) are an important part of the company´s culture. *Open* is about working together and share knowledge. This indicates an Open Innovation culture. Employees' ideas and contributions are encouraged and valued. As mentioned earlier, one of the reasons for establishing the corporate innovation unit was to increase the communication across departments. This demonstrates how Statoil works toward improving its Open Innovation culture.

Statoil wishes to include the company´s employees in its innovation processes and has incentives for the employees to share both knowledge and ideas. The incentives are that employees are given the opportunity to be a part of the development team, receive recognition from other employees and get rewarded. The idea management tool *Innovate* allows employees to contribute with both ideas and problem definitions, and works as a way to include employees across departments.

Strategic orientation

Statoil strives toward making the company run smoothly as well as developing new innovations. This indicates that the company has a strategic orientation as an *analyzer*. The company improves existing operations as well as focusing on new opportunities, and develop new innovations in order to gain competitive advantage.

Discussion of Statoil's approach

Statoil is a company with a clear idea of its Open Innovation approach. The company has years of experience, and find it valuable to be open for new ideas and external knowledge. In addition the company has a clear definition of Open Innovation.

Statoil has a corporate business unit with the responsibility to manage innovation. This is meant to increase the communication between departments. We believe that the size of the firm is the reason why Statoil has experienced problems concerning flow of knowledge and ideas. Due to the complex and high technology industry Statoil operates in, the company needs to work closely with strategic partners in order to obtain and maintain competitive advantages. This indicates the importance for Statoil to have an Open Innovation approach.

The company emphasizes having an internal innovation culture to succeed with Open Innovation and work toward an open culture. *Innovate* is a way for employees to contribute, and the tool seems to be an important part of building an open culture in Statoil. The positioning as an analyzer reflects how the company tries to balance their need to operate perfectly in addition to continue developing new innovations.

5.2.2 Open Innovation Processes in Statoil

In this section the Open Innovation processes in Statoil are analyzed and discussed. The processes are categorized into *outside-in, inside-out* and *coupled* processes, and further into subgroups as presented in section 3.2 *Strategies of Open Innovation.*

Outside-in processes

Outside-in concerns the processes of bringing external knowledge, resources and ideas into the firm's R&D department. In this section, Statoil´s outside-in processes are analyzed and discussed in order to elaborate how the company brings external knowledge into its innovation processes.

Employee involvement

Statoil includes employees in both ideation and the process of defining problems the company needs to solve. As mentioned earlier, employee involvement can be described as an internal Open Innovation process in Statoil as the employees may contribute in areas outside their departments and projects they are originally involved in.

Employees in Statoil can contribute through the company's Open Innovation channel, *Innovate.* This is a tool that allows employees to contribute with both ideation and through defining needs and challenges, and can be seen as a tool to promote smart sourcing. In addition, employees can be a part of the decision of what projects to commercialize. As the employees in Statoil are familiar with the industry, it is easier for the employees to formulate needs and challenges. This helps the company to get access to external help as these needs and challenges are posted online for external spectators. The way Statoil views their employees' knowledge and expertise corresponds with Lindegaard (2011)'s theory about employees' contributions containing more substance as they have a more realistic view of what is possible to implement.

As some of Statoil´s employees participate in external forums, they may be an important source for the company to access new knowledge and ideas. Statoil has expressed that a part of its strategy is to increase employees' understanding of innovation and make the employees be more aware of the importance of bringing new ideas in to the company. As discussed earlier, culture and incentives are closely connected to employee involvement. The Open Innovation culture in Statoil makes it easier to share knowledge and ideas, hence increase the company´s employee involvement.

Customer and user involvement

Statoil has expressed that the company do not has a traditional customer focus when innovating. This is because of the requirements in the markets Statoil operates in. The company's products are sold in a commodity market, which means that the developed products are sold on a commodity exchange. This indicates that although the company strives to please customers, Statoil does not involve customers in processes of product development. However, the company includes customers when developing processes of how to sell products and services.

If Statoil decide to involve users and customers to a larger extent, one may think that the company could get access to more external knowledge and ideas, as well as increase the company's network. Due to lack of information concerning these processes in Statoil, we have chosen not to discuss them further.

External networking

Statoil has a large network and uses it to obtain new inputs. The company values interactions with suppliers and participates in collaborations with academia and other industries. In addition, *Innovate* can be seen as a way the company increases the company´s network as the tool invites external parties to contribute. Through Statoil´s LinkedIn community the company also allows external parties in the company´s network to contribute with opinions and knowledge.

Statoil believes in *the power of unexpected partnerships*, meaning that the company sees the opportunity to gain unexpected value through the network. This indicates how Statoil sees Open Innovation, as a way to obtain new knowledge and get access to people that can be valuable to the company in the future. Statoil's external networking is an important contribution to the company's innovation processes and the network has been essential for Statoil´s development and leading position in the oil and gas industry.

External participation

Statoil has several processes that are categorized as external participation. These processes are connected to *Innovate* where external ideas are submitted. Ideas that Statoil finds interesting could either get financial support through the *LOOP* program, or through seed or venture investment. Due to Statoil´s needs for technology, external participation is a way for the company to gain access to future technologies and reduce R&D intensity.

Through external participation, Statoil develops relationships to possible future suppliers. These relationships are important as the company operates in an industry with high competition. In addition, external participation increases the company's network and builds the company´s reputation focused on start ups and innovation.

Outsourcing R&D

Statoil is actively outsourcing R&D, which is about buying R&D services from other organizations, like universities and suppliers for instance. Due to Statoil´s Open Innovation approach, the company believes that it is not possible to do everything within the company's boundaries. Through outsourcing R&D, Statoil can share risk and increase the company´s capabilities.

As Statoil operates in a high tech industry, it seems reasonable to include external partners in the company´s R&D processes. This will reduce the company´s need for investing in new R&D departments, and allow Statoil to instead focus on the company's core competences.

Inward IP-licensing

Through the interviews the informant shared no information about their Inward IP-licensing. This might be due to the fact that the main focus of the corporate innovation unit does not include this part of Open Innovation. We know that Statoil conducts inward IP-licensing through the company´s operations in for instance Brazil, as stated on its webpages. However, as the informants do not describe the processes in depth, we have not focused on this any further.

Inside-out processes

Inside-out concerns the processes of letting the firm's internal knowledge, resources and ideas flow out from the company's boundaries. In this section, Statoil's outbound processes are analyzed and discussed in order to elaborate how the company brings external knowledge out to other company's innovation processes.

Venturing

As a high-tech company, Statoil possess a lot of knowledge and technology that can be used in spin-offs through venturing. However, the informants of Statoil did not focus on this when describing the company´s Open Innovation processes; hence we have not enough information to discuss this further.

Outward IP-licensing

Statoil has expressed that outward IP-licensing is something the company has discussed to implement in the future. Until now, Statoil has not been licensing IP to customers, as this is a complex process that requires careful preparation.

The oil and gas industry has not a tradition for sharing patents, because patents are protection of its technology that might be conflicting to share with other companies in fear of competition. However, we see it as an opportunity for Statoil to conduct outward IP-licensing. This may increase the company´s profits and reduce spillovers.

Coupled Processes

The coupled process is a combination of outside-in and inside-out processes. Statoil has two processes that can be characterized as coupled processes, which are presented next.

Knowledge sharing

Some of the processes in *Innovate* can be seen as coupled processes. External ideas submitted through *Innovate*, are outside-in processes. If Statoil finds the submitted ideas interesting the company offers support, technical expertise, business insight and advice in order to develop the idea further. Then, the ideas are sent back to an external market (inside-out). This describes a coupled passing-on process.

Statoil shares research results that are relevant for the industry. This can be discussed as a boomerang process, as Statoil expects to receive new products or knowledge that the company can benefit from. Statoil shares research results in hope to gain from it after it has been modified and further developed by outside parties.

Through knowledge sharing, Statoil has the opportunity to combine external and internal knowledge in a way that is beneficial for the company at the same time as it contributes to other companies.

R&D collaborations with suppliers

A part of the collaborations with suppliers could be seen as a coupled process. This is due to the R&D collaborations where both parties contribute with knowledge and funding, and the processes are carried out together. The advantage of R&D collaborations with suppliers is the mutual understanding of what business needs and which challenges that have to be solved. The R&D collaborations with suppliers could be boomerang or passing-on process depending on whether the ideas originate inside or outside the firm´s boundaries.

LOOP represents ideas that Statoil wants access to, but does not wish to develop internally. Through *LOOP*, the company´s future suppliers can develop ideas with the contribution of technical expertise and financing from Statoil. This will accelerate the development of a specific new technology of interest to the company. If Statoil takes ownership in the company it can be seen as a coupled process as Statoil ensures the rights to the technology through this collaboration with the potential supplier.

Summary of Open Innovation processes in Statoil

Statoil has expressed that the collaborations with suppliers, academia and research institutes have been especially important for the company´s position in the industry. A high technology industry requires constant development of technology and skilled employees. Due to Statoil´s needs, the company focuses mainly on outsourcing R&D through its Open Innovation processes. This corresponds with the theoretical findings.

The analysis shows that Statoil perform most outside-in and coupled processes. Statoil, which act in a high technology industry, might be seen as an exception to Gassmann and Enkel (2004 cited in De Backer et al., 2009)'s statement of inbound processes to be more important for low technology industries than high technology industries. We see that Statoil shares knowledge and research results in order to allow external parties to develop it further and hopefully benefit Statoil in the long run. This includes an inside-out process. However, as the process is combined with an inbound process, it is a coupled process. We believe the reason why Statoil does have few inside-out processes could be explained through the company´s leading position in the industry. The position gives Statoil the freedom to be selective in the choice of what to share. As Statoil does not want to share knowledge, it does not benefit the company.

Both inward and outward IP-licensing seem to be a complex process for Statoil as the company need to keep its technologies secret in order to maintain the competitive advantage in the industry. However, we see this as an opportunity for Statoil to explore further in the company´s Open Innovation planning.

The inside-out processes have been less discussed for Statoil as we have received limited information about how these processes are carried out in Statoil. As Statoil is a large company with many departments it has been a challenge to get a hold of information about all of their processes. We have therefore chosen to focus more on the processes the informants talked about during the interviews. Which advantages Statoil obtains are further discussed in the next section.

5.2.3 Advantages

Statoil chose to implement Open Innovation strategies to maintain the firm's growth, in addition to be able to adjust to the industry's rapid changes. In addition, improving the company's Open Innovation strategies have been essential for accessing new ideas and technology. When performing Open Innovation, Statoil gains several advantages, which will be further elaborated in this section. Some of the advantages are mentioned above in the discussion of the company's processes, as why Statoil perform the various processes.

Table 6 below illustrates the advantages Statoil gains from performing the various processes of Open Innovation. Statoil's gained advantages are marked with a green color in the table. Since the empirical findings are presented with another phrasing than the literature, we have adjusted the classification of findings to fit into the theoretical definitions. The advantages the literature review present for each process is listed with "X's" in table 6, and advantages marked with "X" and green color are advantages both present in Statoil and the literature.

Several of the columns representing processes of Open Innovation strategies are colored grey in table six. The column of *customer and user involvement* and *outward IP-licensing* is colored grey due to Statoil's lack of these processes in its Open Innovation strategy. The *inward-IP licensing* and *venturing* processes are colored grey as well, as we have not received any information about the processes and which advantages they bring to Statoil. However, we find it reasonable to believe that Statoil gains the advantages listed in the theory for both processes. From this information, we can in table 6 see that the company's advantages are only gained from *outside-in* and *coupled processes*.

Each process is discussed separately, as in the within case analysis of FINN.no (5.1.3 Advantages) in order to show which processes that lead to most advantages for Statoil.

Table 6: Advantages Statoil gains from Open Innovation

	Outside-in						*Inside-out*		
Groups of processes / ***Advantages***	Employee involvement	Customer- and user involvement	External networking	External participation	Outsourcing R&D	Inward IP licensing	Venturing	Outward IP licensing	*Coupled*
Access external resources			X	X					
Access other firm's economies of scale				SMEs					
Access complementary assets			X		X				
Access external knowledge	X	X	X	X	X	X			
Access external research			X	X		X			
Access the firm's "external" qualities & initiatives	X								
Access specialized competences	X								
Access external tacit knowledge	X								
Attracting skilled workers			X						
Benefitting from internal unused R&D property								X	
Better and easier organization of complex processes	X						X		
Better financial results		X							
Bring expertise into R&D team/company	X				X				
Capture market in early stage of innovation		X							
Commercializing new products		X		X			X		
Compression of firm's learning curve	X	X	X						
Control cost	X	X							
Develop competitive products		X				X			
Expand application areas				X					
Extension of firm				X					
External paths to market				X					
Improved development	X			X					
Increased absorptive capacity	X	X							
Increased capability	X	X			X	X			
Increased control	X	X							
Increased efficiency	X	X		X		X	X		
Increased growth		X							
Increased market share		X		X					
Increased motivation and commitment to company	X								
Increased profitability		X					X		
Increased rate of innovation	X			X					
Integration of new technologies				X					
Limitation of risk	X	X							
Meet current and future market requirements		X							
Obtain others synergies			X	X					
Protect own IP								X	
Reduced costs						X	X	X	
Share risk				X	X	X			
Spread organizational principles to larger extent	X								
Using internally talents	X								
Utilizing own resources	X								
Access new and external ideas									
Build reputation									
Follow rapid changes in market									

As seen from table 6 above, Statoil gains all their advantages from either performing *outside-in* or *coupled processes*. This is due to our lack of information about Statoil's outward processes.

Employee involvement

The inward process of *employee involvement* brings Statoil several advantages, as illustrated in table six. The use of *Innovate* in this process gives the company advantages such as *increased capability, increased rate of innovation* and *access to new and external ideas*, as Statoil enables its employees to suggest ideas. As the employees are familiar to the Statoil's technology, processes and needs, the ideas gathered from the employees are valuable to the company. Statoil is additionally gaining the advantage of being able to *follow rapid changes in the market.* As the company's employees gain information from participating in various forums, it expands its knowledge within the company´s specialized areas. Flowingly, the employees familiar to the industry implement ideas in *Innovate* attractable for the company.

We can see from table 6 that the empirical findings of Statoil correspond to the advantages literature presents for the inward process of *employee involvement.* In addition, the by involving its employees Statoil gains the advantage of *meeting current and future market requirements.* This is also from the employees´ involvement in *Innovate*, where the employees are familiar to the industry from working within it at a daily basis. Hence to this, the employees implement ideas concerning the market opportunities and future requirements. We experience the high degree of employee involvement to have a great impact of Statoil's Open Innovation processes, as the company makes use of internally talents and their specialized knowledge.

External networking

As Statoil gains information from other parties in industries and academia from performing the inward process of *external networking*, the company's knowledge about other application areas for its products increases; hence Statoil may *expand its application areas* for the company's developed products. Additionally, from having an apparent profile at universities, Statoil *builds its reputation* and attract possible future employees, which is important for the company's future growth. The newly educated students are updated with new research, and by collaborating with the universities Statoil is gaining the ability to *rapid changes in market*.

The theoretical advantages listed for *external networking* correspond to a great level the advantages Statoil gains from the process. This is due to Statoil's high degree of *external networking*, and indicates the literature's accuracy.

External participation

Statoil gains most of the advantages from the inward process of *external participation* through the company's *LOOP* program. As Statoil invests in the potential suppliers through the program, close collaboration between the parties rise, as Statoil will be the other part's potential customer. In addition, Statoil *builds its reputation* in the market. From this close collaboration advantages for Statoil as *access to the other party's complementary assets* follows, and the collaborating party may be seen as an *extension of the firm.* The collaboration with the potential suppliers gives Statoil *access to its specialized competences and tacit knowledge*. This increases the company's *rate of innovation*, and the firm's *capability increases*. In addition, this close collaboration makes Statoil *meet current and future market requirements*, as this is a highly prioritized criterion when the Innovation department chooses ideas from *Innovate* to process through *LOOP*. As Statoil choose which ideas to implement in the *LOOP* program, the company *increases its control, reduce the firm's development costs and share risks* as the external supplier develops the product. The external party increases Statoil's ability to *follow rapid changes in the market and industry,* due to the other party's external knowledge. In addition, the collaborating partner may have knowledge about other application areas for the product developed, which gives Statoil the opportunity to *expand the company's application areas.*

When comparing to literature, Statoil gains all of the theoretical listed advantages when performing *external participation*. This is an indicator of the literatures accuracy. In addition, it gives us the implication of how well defined and performed Statoil's *external participation* is, and shows the process importance for the company.

Outsourcing R&D

Statoil gains advantages such as *increased capability and the ability to follow rapid changes in the market* from performing the inward process of *outsourcing R&D.* This is due to their close collaboration with the party the R&D is outsourced to, where the other party's knowledge gains Statoil in the long run. As seen from table 6, *outsourcing R&D* gives Statoil several advantages. One of the most important is how Statoil *increase its rate of innovation*. By outsourcing processes the company are not competent to develop, Statoil releases time internally to develop other innovations that build on the company's specializations. In addition to this, the company is by outsourcing R&D *reducing the company´s costs*, and *shares its risk* with the external party.

We can see from table 6 that Statoil gains additional advantages from *outsourcing its R&D* than mentioned in literature. As Statoil provides funding to universities, they *access external research* and the universities *specialized competences.* Statoil is at the same time *attracting skilled workers*, as the

company is *building reputation* among the university education engineers, whose competences are highly required in Statoil. We see the outsourcing of R&D as an important process for Statoil's further development and growth. The company has understood the advantages of Open Innovation, which gives Statoil the ability to specialize. The processes, research and developments outside Statoil's specialization are outsourced to other parties that have the required competence.

Coupled processes

Through sharing knowledge and developing new products with parties in other industries, Statoil is gaining several advantages from its *coupled processes.* Through *Innovate* Statoil gains *access to new and external ideas* and the ability to *follow rapid changes in market.* As Statoil shares its knowledge, the company gains *access to external knowledge* and *resources* from the collaboration. In addition, as Statoil participates in complex collaborations, there is reason to believe that the company gains several more advantages from its *coupled processes*. However, we have not included these advantages in the table, due to insufficient information from the informants.

General discussion of advantages Statoil gains from Open Innovation

We can see from table 6 that Statoil gains most of its advantages from the inward processes *external participation* and *employee involvement,* when excluding the *coupled process*. Regarding the *employee involvement*, increasing the company´s employees' knowledge of Open Innovation has been fundamental for increasing Statoil's Open Innovation culture. With a well performing Open Innovation culture and Open Innovation processes, Statoil work towards maintaining the company's sustainable competitive advantage. This is important for the company due to operating in a high technology industry that is characterized by intense competition.

The advantages of *access new and external ideas, build reputation* and *follow rapid changes in market* is added to our theoretical list of advantages. These are advantages Statoil claims the company gains from its Open Innovation processes. As Statoil sees these advantages as crucial for the company´s choice of processes, we find it important to add them to our list of advantages.

Statoil uses tools, such as *Innovate* to gather external ideas, and *LOOP* to ensure future suppliers. Statoil uses tools to make its processes less complex, due to its large number of participants in its Open Innovation processes. However, Statoil has not developed a tool for providing their IP to externals. From Statoil's many resources and specialized developments there rises a large amount of patents. We expected the company to have an arrangement for spreading this knowledge to a larger extent, in addition to benefit from the protected property.

In addition, we had expected to learn about Statoil's *venturing* and *inward IP-licensing*, as such processes might be important for the company's several specialization areas. However, due to

interviewing Statoil's innovation unit, which is focused on *Innovate*, in addition to performing interviews focusing on the unit´s well known processes, we find this lack of information reasonable.

5.2.4 Open Innovation Design in Statoil

In this section the empirical findings of Statoil are discussed to elaborate the pattern of how and why the company implements Open Innovation. The findings are presented in connection to the theoretical framework as shown in figure 7.

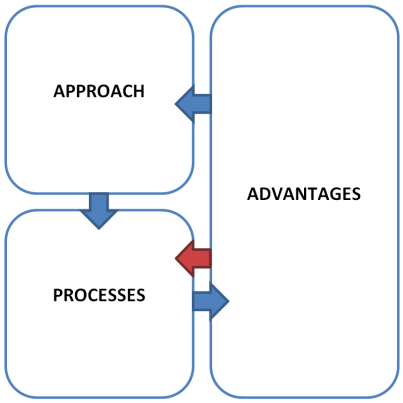


Figure 7: Theoretical framework

From approach to process

The culture in Statoil is built on trust, and the company emphasizes openness and knowledge sharing. Statoil has recently established a new innovation unit, which shows how the company works towards an improved Open Innovation culture and to increase the company´s engagement in the strategy. The new unit was established to deal with challenges linked to communication across departments, and to help the company perform the company´s innovation processes more systematically. Statoil hopes that the new organization and approach will boost the company´s innovation processes and the communication across departments. In addition, the Open Innovation channel, *Innovate* allows employees as well as externals to participate in Statoil´s Open Innovation processes. This seems to lead to more innovations for the company.

From processes to advantages

According to Statoil, the company gains several advantages through performing Open Innovation processes. As Statoil is open, the company access new ideas and it is easier to share knowledge. Through the different Open Innovation processes, the company gains advantages as it develops more innovations. As discussed earlier, Statoil gains many advantages through its Open Innovation processes and most of them are achieved through various inward processes. As the innovation unit was recently established, it can be discussed if the company will implement more Open Innovation processes, hence gain more advantages in the years to come.

From advantages to approach

Some of the results coming from Open Innovation processes lead back to the company's approach. The establishment of the corporate innovation unit was a result of the need to increase the company´s communication across departments and to perform innovations more systematically. This shows how Statoil wanted to obtain increased advantages, and improve the company´s Open Innovation approach. The reorganization seems to lead to more successful innovations that again lead to more advantages. In addition, the employee involvement through *Innovate* seems to have a positive effect on Statoil´s Open Innovation culture, hence improving the company´s Open Innovation approach.

General discussion

Statoil has implemented or renewed the company´s Open Innovation processes without changing its approach towards Open Innovation. An example is how the company experienced challenges when gathering ideas when the incoming ideas were not specific enough. In order to enhance this process, Statoil implemented *Innovate* as a tool for gathering ideas and define more specific problems. This can be seen as a process Statoil implemented without making a radical change in the approach, and is illustrated by the red arrow added to the framework in figure 7.

5.3 Analysis and Discussion of Vom og Hundemat

In this section a case study analysis and discussion of Vom og Hundemat is executed. The analysis is as mentioned above divided into four parts: approach, processes, advantages and design. Vom og Hundemat´s approach toward Open Innovation is discussed first.

5.3.1 Approach towards Open Innovation

In this section Vom og Hundamat's approach and attitude towards Open Innovation is analyzed and discussed. The section is separated into analysis of the company´s definition of Open Innovation, engagement, culture and the company's strategic orientation is addresses.

Vom og Hundemat defining Open Innovation

Vom and Hundemat, from this point forward presented as V&H, has no clear definition of the term Open Innovation. However, the company knows the term innovation.

When given the definition of Open Innovation by Chesbrough, V&H understood that the company has been conducting Open Innovation implicit as the company rely on strategic partners and include both internal and external resources in its product development.

That V&H does not have a clear definition of Open Innovation might be due to the employees´ lack of academic background concerning strategy and innovation. In addition, the firm does not have someone in charge of only its innovation processes, as it is a small firm.

Engagement in Open Innovation

V&H states that the company´s network is and has been very important for the growth of the company, which shows that it has been engaged in Open Innovation since the beginning. As the company has implemented the strategy in an implicit manner, this may support the criticism of Open Innovation is not new.

The company emphasizes suggestions and input from customers. However, the company is planning to implement a more organized strategy for future growth. This shows that V&H is a company where a planned strategy of how to implement innovations has not been crucial. This could be explained by the V&H´s size. Because of the company's size it is possible to manage innovations without having a systematical strategy. The company has a flat structure allowing employees to communicate easily across the firm.

V&H has expressed that the company´s engagement in Open Innovation is driven by the need to develop competitive products, as well as the need to access external knowledge such as input on how to run a business. It seems that it is especially important to have good relationship with customers, because of the low barriers to enter the market. As V&H expressed, is it not possible to patent the company´s dog food recipes, and the recipes could be copied. It is therefore important for V&H to build close relationships with its customers to maintain the loyalty to the firm. Because of the market conditions, the innovations are focused on improving products to satisfy customer needs.

Open Innovation culture in Vom og Hundemat

V&H has an open culture where contributions and ideas from employees are valued. It seems that the employees have trust in the leadership as their opinions are heard. This is important in order to manage knowledge sharing. Because of the absence of hierarchy in the organization and the informal communication between employees, there are low barriers to share knowledge across the firm. The openness in V&H seems to foster an Open Innovation culture.

Strategic Orientation

As Vom og Hundemat seems to be more focused on making existing operations more efficient than developing groundbreaking innovations, it looks like the company has a *defender* orientation. Although the company is innovative in the sense of adjusting to customers' needs and inputs, V&H seems to be more dependent on existing products than the need to develop new innovations. The

company's limited resources might affect the company's orientation, where all its resources are set on improving the existing products.

Discussion of Vom og Hundemat's approach

V&H has no clear definition of Open Innovation, however the company has implemented the strategy in an implicit manner for many years. As the management has little academic knowledge about strategic innovation it is expected that it is not using the term Open Innovation. The manager decides the company's innovation strategies. The company's flat structure makes it easy for the employees to share knowledge and ideas and enhance the Open Innovation culture. V&H engaged in Open Innovation in order to develop competitive products and to receive inputs on how to run the business. With a strategic orientation as a *defender*, V&H is working toward improving the company´s processes.

5.3.2 Open Innovation Processes in Vom og Hundemat

When analyzing the different processes V&H performs through its Open Innovation strategies, we have categorized them into processes of *outside-in,* inside-out and coupled. We start to analyze and discuss outside-in processes of V&H.

Outside-in processes

V&H is performing processes as em*ployee involvement, customer and user involvement, external networking* and *outsourcing R&D* when the company performs Open Innovation strategies. These processes are categorized as outside-in processes and are further discussed in the following sections. As V&H does not perform processes of *inward IP-licensing* and *external participation,* we have chosen not to analyze and discuss these groups further.

Employee involvement

Employee involvement is an important part of the openness in V&H. Suggestions from all employees is taken into consideration for further development. We look at this as a positive influence on the innovation processes, as employees may know where the best innovation opportunities lie and have a realistic view of what is possible to implement. Because of the flat organizational structure, it is easy to follow up the ideas, which makes it easy for V&H to respond to contributions. It seems like the employees in V&H are involved in the processes, and that their opinions are valued.

Customer and user involvement

V&H has expressed that *customer and user involvement* is very important for the business. The company use customer and user insight to develop and improve products, and their demands

influence V&H's product portfolio. We observe that V&H has a role in a market where customer orientation is required for the firm to maintain the company's competitive advantage. This has V&H realized as the firm takes all feedback from customers into consideration. We can conclude that V&H's *customer and user involvement* is high, which we had expected as the company operates in a high competitive market with low barriers to enter.

External networking

Through external networking V&H gains contributions of external knowledge, ideas, feedback and input. The company has several processes that can be characterized as external networking. Important contributors in the company's network are the company´s suppliers. These interactions are very important for V&H, due to the supplier´s contribution of raw materials. A challenge for V&H is to find reliable suppliers, due to the suppliers' high bargaining power in the market.

Collaborations with academia, as seen through the collaboration with UMB, give V&H's products a mark of quality. In addition, the company´s visibility at UMB may attract skilled workers to the company.

V&H says that the company utilizes its personal network as well as its professional network in order to gain external knowledge. The company uses this network in order to get insight on how to run the business better and handle the growth the company is facing.

Outsourcing R&D

Although V&H conducts its product development internally, the company outsources some of its research. In order to improve products, V&H pays UMB to conduct analysis and research. The research results are used to improve the quality of V&H´s products. V&H has realized that the external knowledge is needed for the R&D processes, as the company does not possess the competence internally.

Inside-out processes

Due to lack of *venturing* and *outward IP-licensing processes* of V&H, inside-out processes are not analyzed and discussed further in this section. However, V&H performs coupled *processes*, which are described in the next section.

Coupled processes

V&H is sharing knowledge with other actors in the industry and participate at conferences to *build reputation* and *increase its external visibility.* As V&H shares its knowledge, the company seems to gain access to external knowledge from the other parties. This shows how V&H may gains

advantages through sharing information as the company receives knowledge and inputs in return. This might be seen as a coupled process and the process may contribute to V&H´s future development.

Summary of Open Innovation processes in V&H

V&H has expressed that collaborations with customers and network has been especially important for the company´s growth. V&H is operating in a high competition market where customer orientation is important to obtain substantial competitive advantage. This is why V&H´s degree of customer involvement was expected from our point of view.

The analysis shows that V&H performs most *outside-in* processes, in addition to some coupled. This could be explained from the company´s lack of resources, in addition to its focus on feedback from customers. We also found that V&H does perform neither *inward nor outward IP-licensing*. Since the company has no IP protection of its products, this was expected.

The company implements different Open Innovation strategies, as discussed in this section. How the company benefits from these processes are further analyzed in the next section.

5.3.3 Advantages

Vom og Hundemat implement Open Innovation strategies to arrange for the company's further growth. During performance of Open Innovation, V&H gains several advantages, which is further discussed in this section.

Table 7 below illustrates the advantages V&H gains from performing the various processes of Open Innovation. As in FINN.no and Statoil, the advantages gained by V&H are marked with a green color in the table and connected to the advantages presented in the theory which are marked with "X's".

Several of the columns representing processes of Open Innovation strategies are colored grey in table 7. The columns of *inward- and outward IP licensing* is colored grey due to V&H's lack of these processes, as the company neither has internal patents nor need for external IP. In addition, the columns of *external participation* and *venturing* are colored grey due to the company´s lack of these processes in V&H Open Innovation strategy. From this information, we can from 7 seven see that the company's advantages are only gained from *outside-in* and *coupled processes*.

The empirical findings are discussed in connection to the theoretical findings in order to see which processes that brings V&H most advantages and from which processes they are obtained.

Table 7: Advantages Vom og Hundemat gains from Open Innovation

		Outside-in						*Inside-out*		
Advantages	***Groups of processes***	Employee involvement	Customer and user involvement	External networking	External participation	Outsourcing R&D	Inward IP-licensing	Venturing	Outward IP-licensing	*Coupled*
Access external resources				X	X					
Access other firm's economies of scale					SMEs					
Access complementary assets				X		X				
Access external knowledge		X	X	X	X	X	X			
Access external research				X	X		X			
Access the firm's "external" qualities & initiatives		X								
Access specialized competences		X								
Access external tacit knowledge		X								
Attracting skilled workers				X						
Benefitting from internal unused R&D property									X	
Better and easier organization of complex processes		X						X		
Better financial results			X							
Bring expertise into R&D team/company		X				X				
Capture market in early stage of innovation			X							
Commercializing new products			X		X			X		
Compression of firm's learning curve		X	X	X						
Control cost		X	X							
Develop competitive products			X				X			
Expand application areas					X					
Extension of firm					X					
External paths to market					X					
Improved development		X			X					
Increased absorptive capacity		X	X							
Increased capability		X	X			X	X			
Increased control		X	X							
Increased efficiency		X	X		X		X	X		
Increased growth			X							
Increased market share			X		X					
Increased motivation and commitment to company		X								
Increased profitability			X					X		
Increased rate of innovation		X			X					
Integration of new technologies					X					
Limitation of risk		X	X							
Meet current and future market requirements			X							
Obtain others synergies				X	X					
Protect own IP									X	
Reduced costs							X	X	X	
Share risk					X	X	X			
Spread organizational principles to larger extent		X								
Using internally talents		X								
Utilizing own resources		X								
Access new and external ideas										
Build reputation										
Follow rapid changes in market										
Increased external visibility										

As seen from table seven above, V&H gains all its advantages from either performing *outside-in* or coupled *processes*. This is due to V&H's lack of outbound processes performed.

Employee involvement

V&H gains several advantages from performing the inward process of *employee involvement*. The company is taking all the employees ideas into consideration, which make V&H gain from the employees' *external knowledge*. As the most of the company's employees are familiar to dog sled ricing and see the importance of proper nutrition for active dogs, the employees *bring expertise into V&H's R&D process*. Hence, the company's development of the products improves.

As seen from table 7, V&H gains several of the advantages listed in literature from *involving its employees* in its Open Innovation strategy. However, V&H gives us no confirmation whether the company *increases the company's control of costs* from the process of involving employees. Further, the same holds for the advantage of *better and easier organization of the company's complex processes.* This may be due to V&H's insufficient strategies planned.

Customer and user involvement

The inward process *of customer and user involvement* is the process that gains V&H the most advantages. In addition, it is the process that makes the company able to maintain its market growth. As a large part of V&H's customers and users are dog sled ricers, their *tacit knowledge and expertise* are crucial for V&H's development of demanded products. Flowingly, from gaining *external knowledge* from customers, V&H's development of products becomes targeted, which makes the company able to control its cost of product development. As the customers are affecting V&H's Open Innovation processes, they provide the company with advantages such as *improved development, increased rate of innovation* and *external paths to market*. In addition, the customers contributed to *expand the application areas* of V&H's products when the main customer shifted from dog sled ricing to the ordinary consumer market.

As seen from table 7, the advantages presented by V&H from the process of *customer and user involvement* correspond to all advantages listed for the process in the literature. This indicates the literatures accuracy of presenting advantages regardless of the firms' size. We also see that V&H is dependent on the company's interaction and collaboration with customers, which indicated the main reason why V&H is *defender oriented.*

External networking

As seen from table 7, V&H gains several advantages from the inward process of *external networking*. As an example, due to networking with actors within the dog sled racing environment, V&H *access specialized competences* and *external resources* through the process, similarly to the companies' involvement of customers and users. In addition, V&H gains input leading the company to *meet current and future market requirements* from external networking. V&H also gained the advantage of

bringing expertise into R&D team when hiring its nutrition expert through *external networking*, as the company met the current employee while networking within the dog sled racing environment.

Outsourcing R&D

As V&H in its inward process *outsourcing R&D* to UMB, the company gains advantages of *accessing the universities research and specialized competences.* From the collaboration, V&H is gaining *access* to the universities *complementary assets*. This advantage is especially met for V&H, as the company's nutrition expert is studying on the university, which drives *external networking* at daily basis.

However, literature lists advantages from *outsourcing R&D* V&H does not obtain. V&H does not *share their risk* from outsourcing their R&D, as the university only performs certain and specific developments for the company.

Coupled processes

V&H gains advantages such as *accessing external knowledge, build its reputation* and *increase the company's external visibility* from its coupled *process* of sharing knowledge. The process may be seen as similar to the process of *external networking;* hence most of the advantages gained from coupled process are identical to the advantages gained from the process of *external networking.* However, by participating at various conferences within the industry, the company comes in contact with several external actors, hence *increase the company's external visibility.*

General discussion of advantages Vom og Hundemat gains from Open Innovation

As seen from table 7 V&H gains the most of its advantages from performing inward processes of Open Innovation, and especially the processes of *customer and user involvement*. As discussed, this is also the reason why the company has a defender-oriented strategy.

The advantages of *access new and external ideas, build reputation, increase external visibility* and *follow rapid changes in market* is added to our theoretical list of advantages. These are advantages V&H claims is gained from the company's Open Innovation processes. As V&H sees this advantages as crucial for its choice of processes, we find it important to add to V&H's list of advantages.

V&H chose to drive Open Innovation strategies to arrange for the company's further growth. The company sees its internal limitation of competences and knowledge; hence recruit specialized employees to maintain the company's required growth.

V&H is a company we had little knowledge to before interviewing them. However, as the company is a Norwegian SME, we expected its most beneficial process of Open Innovation was *customer and user involvement.* From the discussion above, we see that this theoretical assumption is accurate.

5.3.4 Open Innovation Design in Vom og Hundemat

In this section, the empirical findings are discussed according to the theoretical framework. In order to gain a complete understanding of Vom og Hundemat's Open Innovation strategy-design, the arrows in the framework are analyzed.

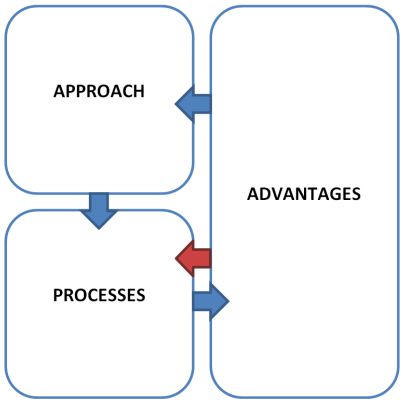


Figure 8: Theoretical framework

From approach to process

Although V&H has none specific Open Innovation approach, the company has a culture that initiates several Open Innovation processes. V&H´s flat structure makes it easy to communicate across positions and share knowledge. The company appreciates contributions and ideas from employees. And as the employees trust each other, the threshold is low to express opinions. It looks like the Open Innovation culture leads to many innovation processes without the company having a clear strategy to make it happen. V&H is a good example of how the culture leverage innovation processes.

From processes to advantages

V&H has implemented processes such as close collaboration with customers within the dog sled racing environment. The close collaboration made the company gain knowledge that influenced the product development, which has lead to several advantages. As discussed earlier, the different Open Innovation processes in V&H lead to various advantages that gain the company as described in the framework.

From advantages to approach

V&H has experienced growth, and realizes the need for specialized expertise and external knowledge. The entrepreneur hired a new general manager in order to increase the organization and handle the growth. This led to more structure, and eased the communication with external partners. In addition the company hired a nutrition expert which increased the company's internal knowledge and that could further affect the Open Innovation processes. This shows that V&H saw the need to

reorganize and improve the organization and the Open Innovation approach, which again seem to increase the quality of the company´s Open Innovation strategies.

General discussion

In addition to the cause and effects presented in the framework, V&H has implemented processes in order to obtain certain advantages without changing the Open Innovation approach. The red arrow represents how V&H realized the importance of meeting their customers' demands and saw the need to improve these processes. The company established collaboration with UMB and outsourced R&D in order to improve the products. This made it easier to meet the customers' demands.

V&H seems to implement Open Innovation strategies in order to obtain knowledge and expertise the company does not possess. V&H is dependent on close collaboration with customers and strategic partners. In addition, feedback from users has been important throughout product development.

5.4 Analysis and Discussion of Rocketfarm

In this section a case study analysis and discussion of Rocketfarm is executed. The analysis is as mentioned above divided into four parts: Approach, processes, advantages and the Open Innovation design of the firm. To start with, Rocketfarm´s approach toward Open Innovation is discussed.

5.4.1 Approach towards Open Innovation

Rocketfarm defining Open Innovation

The entrepreneur in Rocketfarm has a clear definition of Open Innovation, and describes it as a strategy where the company includes external ideas and resources when developing new products. The definition is however not communicated in the company, and it seems that the entrepreneur's focus on the theoretical part of Open Innovation is an exception in the firm.

The definition is similar to the definition stated by Chesbrough (2003). The company has developed a strategy inspired by Chesbrough's description of Open Innovation; *innovation weeks*. This is further discussed below. The academic approach to the Open Innovation paradigm might be due to the entrepreneur's academic background of entrepreneurship and strategy. The second informant has an academic background as an IT developer, with little focus on business strategy and innovation.

Engagement in Open Innovation

Rocketfarm was established in 2012 and has little experience with Open Innovation. The entrepreneur has implemented *innovation weeks* inspired by Chesbrough. However, only two

Innovation weeks have been carried out (per march 2013). The concept of these weeks shows how Rocketfarm focus on engaging in Open Innovation.

The company emphasizes both external and internal ideas. Due to the flat structure and the openness in the company, knowledge and ideas are shared easily. The company has not engaged an innovation department. However, the entrepreneur develops the innovation strategies in collaboration with the employees.

Rocketfarm engages in Open Innovation in order to get access to external expertise and ideas to develop new products and services. The firm includes both internal and external knowledge and ideas in the Open Innovation processes. The culture facilitates collaboration and dialogue, which are further discussed below.

Open Innovation culture in Rocketfarm

The employees in Rocketfarm have worked together for several years and have established a trusting and open environment. This makes it easy to share knowledge and ideas within the company. The entrepreneur is in charge of the innovation strategies.

Rocketfarm has a flat organizational structure, where all employees are shareholders. The employees are involved in the company's strategies although the entrepreneur makes the final decision. The *innovation weeks* are a result of suggestions from the employees that wished to develop their own products and ideas within set working hours. This indicates the open culture in Rocketfarm. In addition, the *innovation weeks* seem to enhance Rocketfarm's *Open Innovation culture*.

Strategic orientation

The Open Innovation strategy in Rocketfarm illustrates how the company needs a close collaboration in order to access new ideas. However, the company is not dependent on Open Innovation due to the company´s consultancy services. It seems like Rocketfarm has an analyzer orientation, with the emphasis on the defender orientation. The prospector orientation is a part of the analyzer orientation, and Rocketfarm seems to have this orientation through its *Innovation weeks*. As the company was established in 2012, it needs to get customers and develop new innovations in order to survive. The focus on new innovations seems to be a way for Rocketfarm to improve the product portfolio and attract new customers, in addition to still focus on making existing operations more efficient.

Discussion of Rocketfarm's approach

Rocketfarm has a clear Open Innovation strategy, where the *innovation weeks* play an important role. The company engages in Open Innovation to access external ideas and knowledge. The

company does not have much experience with Open Innovation, but knows how to foster an Open Innovation culture. The organizational structure of the company is flat, which enables employees to involve in the strategies and improve the Open Innovation culture. In addition, the employees have worked together for several years and know and trust each other. This makes it easier to share knowledge and ideas. The company's strategic orientation indicates Rocketfarm´s need to find new opportunities in order to develop more innovations, in addition to manage existing operations. In the next section, the Open Innovation processes in Rocketfarm are analyzed.

5.4.2 Open Innovation Processes in Rocketfarm

When analyzing the different processes Rocketfarm perform when driving Open Innovation strategies, we have categorized them into the groups of *outside-in* and inside-out processes, and further into the subgroups, as presented earlier. The coupled processes are excluded, as we have no information about coupled processes in Rocketfarm.

Outside-in processes

As Rocketfarm is using its external partners to bring resources into the company's innovation process, the company has a strong *outside-in* approach. However, Rocketfarm has not made use of other's IP in its processes; neither have the company conducted any equity investments in external companies. This is the reason for why neither inward IP-licensing nor *external participation* are further discussed. Below the different processes of the company are further described, starting with Rocketfarm's involvement of employees.

Employee involvement

Rocketfarm has a strong *employee involvement,* as all of its eight employees are involved in the Open Innovation processes. Due to the flat structure, it is easy for the employees to participate. The employees' thoughts and opinions concerning the company's strategies are taken into account. *Innovation weeks* is an example of employee involvement in Rocketfarm, as the idea was originally from the employees.

In addition, the employees also bring new ideas into the company, where they have a decisive voice when screening ideas for the coming *innovation week*. It is according to Lindegaard (2011) smart to involve employees in order to get a realistic view on what ideas that are possible to implement. We believe this corresponds to Rocketfarm, as seven of the eight employees are developers, and the products developed during *innovation weeks* are apps or computer software.

Customer and user involvement

Rocketfarm's products developed through *innovation weeks* are targeting companies who buy the developed idea. The development team finds customers and users important. As products are not further developed without having a customer, the company depends on this involvement. This indicates how Rocketfarm's network of potential customers and user are important to the company.

Rocketfarm is focusing on commercialization, which is according to Nurala (2004 cited in Lee et al., 2010) one of the main reasons SMEs are operating with an Open Innovation strategy. The employees had a wish to receive feedback from customer at an early stage, which is one of the reasons why Rocketfarm included *Innovation weeks* to begin with.

From this, we see that both customers and employees are actuating factors of implementing *innovation weeks* within Rocketfarm. And again, this shows that the company has a culture for Open Innovation with a high focus on customer and user involvement.

External networking

Rocketfarm uses external networking to access new ideas, enter media and access people with expertise. The products Rocketfarm is developing during *innovation* week has until now started with an idea from either the employees or from the employees' *external network*. Rocketfarm receives input and feedback from its *external network*. In addition, Rocketfarm use its external network actively to enter media. Media would be a gate opener for Rocketfarm, as it would improve the company´s visibility to externals. In addition, an improved external network could help Rocketfarm access people with expertise within fields that the company needs. Design, as an example, is a process Rocketfarm currently outsource to other parties, as described in the next section.

Outsourcing R&D

Rocketfarm is as described earlier dependent on external participation in processes as design, sales, marketing and to access external distribution channels. Rocketfarm is currently outsourcing these services to other companies specialized within the different areas, which solves the company's lack of competences.

Outsourcing R&D seems to be important to Rocketfarm due to its size and limited resources. In addition, the company gets to focus on the company´s core competences as it outsources the areas where V&H does not possess the needed competence.

Inside-out processes

Regarding the inside-out processes containing *venturing* and *outward IP licensing,* we have no examples from Rocketfarm. We believe that this is due to their limited resources and short time of experience within Open Innovation. However, we believe that as the company grows and obtains more knowledge and expertise, inside-out processes would be an opportunity for the company.

Their lack of inside-out processes might also be a result of the IP limitation the company might face from operating in the IT industry.

Summary of Open Innovation processes in Rocketfarm

As discussed above, Rocketfarm performs several inward processes. The company is dependent on its user and customer involvement, and makes use of external knowledge and expertise in areas where the company does not possess the needed competencies. Rocketfarm´s Open Innovation processes show that the company sees the value of including external partners in its development. In the next section the advantages are further discussed.

5.4.3 Advantages

Rocketfarm decided to engage in Open Innovation to increase the employees' motivation and commitment to the company. The employees wished to develop their own products, hence *innovation week* was established. The advantages Rocketfarm gains through Open Innovation are further discussed in this section.

Some of the advantages are presented earlier when describing the processes. However, the advantages are linked to the advantages presented in the theory as seen in table 8. The advantages Rocketfarm gains through Open Innovation are marked with the color green and the theoretical presented advantages are marked with "X's".

Some of the columns representing processes of Open Innovation strategies are colored grey in table 8. The columns of *inward and outward IP-licensing* are colored grey as Rocketfarm does not perform these processes. In addition, the columns of *external participation* and *venturing* are colored grey due to the lack of these processes in Rocketfarm's Open Innovation strategy. From this information, we can from table 8 see that the company's advantages are only gained from performance of *outside-in processes*. Each process is presented separately in order to show which advantages the company obtains though each one of the processes.

Table 8: Advantages Rocketfarm gains from Open Innovation

		Outside-in						*Inside-out*	
Advantages	***Groups of processes***	Employee involvement	Customer- and user involvement	External networking	External participation	Outsourcing R&D	Inward IP licensing	Venturing	Outward IP licensing
Access external resources				X	X				
Access other firm's economies of scale					SMEs				
Access complementary assets				X		X			
Access external knowledge		X	X	X	X	X	X		
Access external research				X	X		X		
Access the firm's "external" qualities & initiatives		X							
Access specialized competences		X							
Access external tacit knowledge		X							
Attracting skilled workers				X					
Benefitting from internal unused R&D property									X
Better and easier organization of complex processes		X						X	
Better financial results			X						
Bring expertise into R&D team/company		X				X			
Capture market in early stage of innovation			X						
Commercializing new products			X		X			X	
Compression of firm's learning curve		X	X	X					
Control cost		X	X						
Develop competitive products			X				X		
Expand application areas					X				
Extension of firm					X				
External paths to market					X				
Improved development		X			X				
Increased absorptive capacity		X	X						
Increased capability		X	X			X	X		
Increased control		X	X						
Increased efficiency		X	X		X		X	X	
Increased growth			X						
Increased market share			X		X				
Increased motivation and commitment to company		X							
Increased profitability			X					X	
Increased rate of innovation		X			X				
Integration of new technologies					X				
Limitation of risk		X	X						
Meet current and future market requirements			X						
Obtain others synergies				X	X				
Protect own IP									X
Reduced costs							X	X	X
Share risk					X	X	X		
Spread organizational principles to larger extent		X							
Using internally talents		X							
Utilizing own resources		X							
Access new and external ideas									
Increased external visibility									

As seen from table 8 above, Rocketfarm gain all its advantages from performing *outside-in processes*. This is due to V&H's lack of both outbound and coupled processes performed.

Employee involvement

Rocketfarm gains several advantages from performing inward processes of *employee involvement*. Rocketfarm includes all employees in the *innovation weeks.* The company gives the employees access to suggest ideas in addition to choose which product the company is going to develop. Hence to this, Rocketfarm is *increasing the employees' motivation* and *commitment to the company*. In addition, the same advantages are met from the process where the employees' receive shares in the product if developing further at their spare time. Further, the company is gaining advantages such as *control of costs* and *increased control* from the firm's processes of *employee involvement*. As the employees are familiar and educated within the area of software development, the employees are suggesting achievable ideas to be developed. This makes Rocketfarm able to *commercialize new and innovative ideas* during *innovation week*. In addition, as all employees are collaborating during the process of *innovation week*, the company's *learning curve becomes compressed* and *the firm's absorptive capacity increases.*

We see from table 8 that Rocketfarm gains all theoretical advantages listed during the process of *employee involvement*. This indicates the literatures accuracy, in addition to Rocketfarm's importance of involving the employees in the company's Open Innovation strategy. Another factor that shows the *employee involvement* importance for the company, is the process where the *innovation week* was implemented in the company's strategies. It was the employees who suggested the process, and it is today an important part of Rocketfarm's current strategy.

Customer and user involvement

The inward process of *customer and user involvement* gives Rocketfarm several advantages, as we see from table 8. Rocketfarm gains *access to new ideas* from customers, which is important for the company's following *innovation week*. The customer for the product that is going to be developed the coming *innovation week* is set before the week's start. The main advantage of having a set customer from the beginning is to *increase Rocketfarm's control of the project* and *limit the company's risk* during the process. However, as the collaboration with the customers is set to a low level, we believe Rocketfarm does not *increase its absorptive capacity or capability* from the process of *customer and user involvement.*

As seen from table 8, there are advantages listed in literature for the process of *customer and user involvement* that has not gained Rocketfarm. As the developed products during *innovation week* are targeting a specific customer, Rocketfarm does not *increase the company's market share*. However,

we see the importance of including customers in Rocketfarm's Open Innovation processes. If the customer is not set before starting performing *innovation week,* the week will not be executed.

External networking

Rocketfarm gains advantages also from the company's inward processes of *external networking.* When interacting with externals, Rocketfarm gains information about *future market requirements*. This knowledge gains the company, as they *access input to new ideas* and *external resources* for future development. Additionally, Rocketfarm *increases the company's external visibility* from interacting with media.

As seen from table 8, Rocketfarm gains several advantages from *external networking* identical to the ones listed for the process in the literature. However, we have not seen any implication of Rocketfarm gaining the advantage of *compressing the company's learning curve* from performing the process. This may be due to Rocketfarm's insufficient strategy planning of *external networking*, where the process happens as a coincidence.

Outsourcing R&D

Rocketfarm is aware of their lack of knowledge and resources, and have during the two *innovation weeks* performed *outsourced R&D* to externals for *accessing designers specialized competences, access the other party's complementary assets* and *their tacit knowledge.* Rocketfarm states that the process of *outsourcing R&D also increases* the company's *efficiency*. When Rocketfarm outsources R&D, the company does not need to focus at the outsourced development, hence the company's resources are concentrated at the firm's specialization areas of the development.

When comparing to the literature, we see that Rocketfarm does not gain the theoretical listed advantage of *sharing the company's risk* of the development when outsourcing R&D. The company tells us the difficulties of the process, where Rocketfarm have experiences insufficient development from the collaborating partner.

General discussion of advantages Rocketfarm gains from Open Innovation

We can see from table 8 and the discussion above, that Rocketfarm gains most of its advantages from involving their employees in the company's Open Innovation processes.

Further, we see from table 8 two advantages added to the theoretical list. The advantage of *access new and external ideas* is an important advantage Rocketfarm gain from Open Innovation, as the company is dependent on getting new ideas to develop during *innovation week*. These ideas could be from employees, customers, users and other external parties. In addition, the advantage of *increased*

external visibility is added to the list. This advantage is important for Rocketfarm to reach out to external R&D partners and find potential ideas.

Similarly to Vom og Hundemat, we did have limited knowledge to Rocketfarm before interviewing the company, hence low expectations to the advantages they gain through performing Open Innovation strategies. However, due to being a SME, we had expected Rocketfarm to be dependent on processes of *customer and user involvement*. We have seen that the company is dependent of this collaboration. In addition, Rocketfarm's main goal of implementing Open Innovation strategies is to increase the employees' motivation and commitment to the company. Here, we believe Rocketfarm is succeeding. As the strategy is implemented from being a suggestion from the employees, the company has a larger degree of *employee involvement* than expected.

5.4.4 Open Innovation Design in Rocketfarm

In this section, the empirical findings are discussed according to the theoretical framework. In order to gain a complete understanding of Rocketfarm's Open Innovation strategy-design, the arrows in the framework are analyzed.

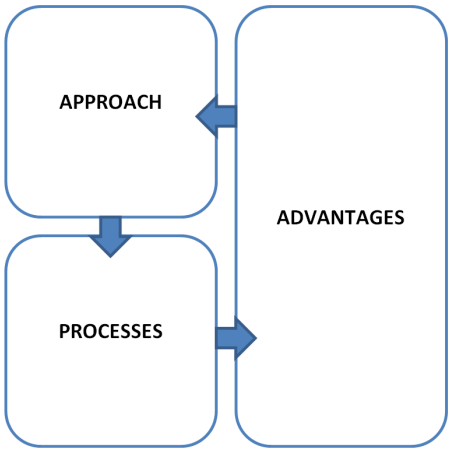


Figure 9: Theoretical framework

From approach to process

Rocketfarm is a small company with employees that have worked together for a long time. The company has an open and trusting environment, as well as a flat structure, which make it easy for employees to share ideas and knowledge. In addition, the entrepreneur has decided to focus on Open Innovation through *innovation weeks*. The company is building an Open Innovation culture, and the firm's approach and culture makes it easier to initiate Open Innovation processes.

From processes to advantages

Rocketfarm implements different Open Innovation processes. The company emphasizes close collaboration with its customers, as this helps them develop more customized products. In addition their concept of the Open Innovation week is an Open Innovation process where employees can bring their own ideas, or external ideas, and implement within work hours. These processes, among others, lead to several advantages for the company.

From advantages to approach

The entrepreneur in Rocketfarm implemented Innovation weeks because he wished to commercialize more ideas and increase the company's profits. In addition, the employees had a wish to realize some of their own ideas. The flat structure allowing employees to utter their opinions and share ideas leads to new projects and inventions in the company. In addition it seems to increase the employees' motivation and engagement. This can describe how the advantages lead back to the company's Open Innovation approach.

General discussion

Rocketfarm is aware that the company does not possess all the knowledge required in order to succeed. The company has opened up for external expertise within both design and sales. The entrepreneur in Rocketfarm believe that the firm will gain various advantages through its Open Innovation processes and it seem like the company will continue implementing Open Innovation processes in order to do so.

6. Cross Case Analysis

In this chapter a cross case analysis of the four case firms is presented. This cross case analysis intends to answer our third and fourth research questions: *How do Norwegian SMEs perform Open Innovation compared to large companies,* and *why do Norwegian SMEs implement and perform Open Innovation strategies compared to large companies?*

The cross case has the same structure as the within case analysis presented in the previous chapter, and is divided into three main groups: Approach towards Open Innovation, Open Innovation processes and advantages gained through Open Innovation. Each group is further divided into subgroups according to the theoretical framework.

In order to compare the SMEs toward the large companies, discussions of the large companies and within the SMEs, respectively are conducted before comparing the main findings against each other. In addition, differences connected to other factors than firm size are discussed when found.

6.1 Approach towards Open Innovation

As described in the theoretical framework, the company's approach concerns the firms' definition of Open Innovation, the company's engagement in Open Innovation, the culture and the company's strategic orientation. Each topic is discussed and analyzed across the four case firms, aiming to present the main differences and similarities between SMEs' approach to Open Innovation compared and the large companies' approach.

6.1.1 Definition of Open Innovation

Both FINN.no and Statoil have a definition of Open Innovation similar to the one of Chesbrough (2003). Due to their size and strategic approach to Open Innovation, both companies have their own innovation unit that pushes the Open Innovation throughout the company. In addition, both companies have several employees educated within and with experience from to the areas of business strategy and innovation. This affects the large firms' understanding of Open Innovation.

The SMEs have different definitions of Open Innovation. V&H have little knowledge about the definition and the definition does not seem to be familiar to the employees in Rocketfarm except from the entrepreneur. However, his definition of the term is linked to Chesbrough (2003)'s definition. However, the comprehension of Open Innovation is not familiar to all employees in Rocketfarm and seems to be affected by the employees' academic background. In addition, neither of the SMEs have their own innovation departments

Comparing the large firms' definition to the SMEs' indicates that the academic background of the employees affect the way they define Open Innovation. The large firms have separate innovation departments, which affect the companies' knowledge of Open innovation, due to the clear strategy that is communicated throughout the company. In contrast, the SMEs' innovation strategies are one of the many tasks the manager needs to focus on. This shows how the size, and the way the firm is organized affect the strategic Open Innovation planning.

Both V&H and Rocketfarm implement Open Innovation. However, the implementation in the large companies seems to be more strategically planned as the companies have a clearer definition of the term. By knowing the definition of Open Innovation, the firm is more aware of the strategy. This makes it easier for the company to learn more about the strategy and improve it further.

6.1.2 Engagement in Open Innovation

In the two large case companies investigated, Statoil and FINN.no, Open Innovation has been a part of the companies' strategy ever since the beginning. Open Innovation strategies were implemented in an implicit manner to begin with in both companies. However, today both FINN.no and Statoil have an explicit Open Innovation strategy. The companies' early implementation of Open Innovation strategies indicates that the strategy existed before Chesbrough presented it in 2003. Further, the increased focus on Open Innovation in both Statoil and FINN.no indicates the importance of the strategy. The increased focus is seen through the establishment of innovation departments that handle the Open Innovation strategies within the firms. As the companies are large, they have the need for a unit to enhance the communication between departments and control the innovation processes. The need for an innovation department seems to be due to the size of the firm, as the hierarchy makes it more bureaucratic and harder to spread knowledge and ideas across the company. Both large firms emphasize the need for close collaborations with strategic partners in order to obtain and maintain a competitive position in their respective industries. In addition, the large firms see the need to embrace external knowledge and expertise in order to follow the changes in the market, improve their products and develop new innovations.

The SMEs have different views on why they implemented Open Innovation strategies. Rocketfarm seems to have implemented the strategy as a result of the entrepreneurs' academic background. The company learned about the strategy, found it suitable, and implemented it. V&H on the other hand, has not implemented the strategy explicitly, but have engaged in strategic collaboration since the starting date in an implicit manner. However, none of the SMEs have a department that concerns the firms' innovation strategies. Due to the companies' small size, the manager has Open Innovation strategies as one of many tasks. It occurs that both SMEs have a flat structure, allowing employees

holding different positions to influence the product development. It seems like V&H focuses on a close collaboration with its customers in order to maintain its position and keep the customers' loyalty. Rocketfarm focuses more on accessing new ideas in order to develop new products. However, both SMEs see the need for Open Innovation processes in order to maintain their position in their market and to get access to knowledge and expertise they do not possess internally.

When comparing the SMEs' versus the large companies' engagement in Open Innovation, we see that the large firms have more experience, hence are commitment to their Open Innovation strategies longer. That V&H state to have implemented Open Innovation processes in an implicit manner, it can be discussed that the SME is at a point where the large companies were some years ago. The other SME, Rocketfarm, seems to have a more explicit Open Innovation strategy. Due to the differences within the SMEs, it is difficult to find a pattern within the SMEs.

There is a clear difference between how the large firms organize their Open Innovation compared to the SMEs. The large companies have a unit that controls the processes and set the strategies. The SMEs' strategies are decided by the leader and influenced by the employees. This might be directly linked to the size of the firm, as SMEs have flat structure and innovation can happen more easily compared to the large firms that require more control in order to keep communication across departments and systematically realize new innovations.

Some of the reasons why SMEs and large companies engage in Open Innovation are similar, such as the need to collaborate with external partners to stay ahead of competitors and to follow the markets rapid changes. However, we see that the SMEs have large need for external expertise and knowledge. It seems like it is more important for SMEs in order for the company to grow, where the large firms seems to implement Open Innovation in order to enhance their R&D processes development. The different emphasis may be explained by Vanhaverbeke et al. (2012) that states that Open Innovation is more important for SMEs than large companies, due to their lack of resources. However, both the SMEs and large case firms see engagement in Open Innovation as a competitive advantage.

6.1.3 Open Innovation Culture

Both FINN.no and Statoil are large firms that work towards building an Open Innovation culture. Their values focus on being open, work together and develop new innovations. The firms' respective values show the firm's sought culture. Both firms focus on the internal innovation culture, where the respective values are strong and knowledge sharing is encouraged and appreciated. Almost all employees in FINN.no are included in the innovation processes through the different innovation tools. In Statoil it seems to be more challenging to engage employees, as the firm has a more

hierarchic organization. However, the establishment of the innovation unit in Statoil might increase the communication that makes the culture more open and lower the barriers for contributions. The differences in the innovation culture in FINN.no in contrast to Statoil's might be due to the fact that the companies operate in different industries. FINN.no seems to be more dependent access new ideas to keep their competitive position. However, Statoil states that they wish to get more ideas and inputs from employees. It may seem like Statoil is trying to establish the Open Innovation culture FINN.no already has managed to create.

Moving on to the SMEs, we see that both firms have an Open Innovation culture in terms of listening to suggestions from employees and including them in the company's innovation processes. Although neither of the firms have a clear internal innovation strategy, the employees are open and trust each other. That the employees are familiar with each other and trustworthy is according to Lopez et al. (2004) important for the company to maintain a culture that facilitates collaboration and dialogue. The flat structure in the SMEs makes it easy to communicate within the firm. The manager is in charge of making the innovation strategies, and the employees are given the opportunity to influence the decisions.

When looking at the Innovation culture in the large case firms in comparison to the SMEs, building an Open Innovation culture seems to be more important for the large firms. This is due to the size of the firm that makes it more difficult to communicate across departments and to engage the many employees. The SMEs have less bureaucratic organizations, which according to Lindegaard (2011) makes it easier and less risky to implement new ideas compared to large companies. One of the main differences within the Open Innovation culture in SMEs and large companies is that the large firms have the need to implement idea management tools in order to organize the employees' contributions. In the SMEs, the Open Innovation culture appears to facilitating knowledge sharing and ideas without engaging such tools. However, the SMEs need to build trust and encourage employees to contribute.

6.1.4 Strategic Orientation

Both large firms have an *analyzer* orientation. FINN.no and Statoil focus on remaining their position in the market through improving their day-to-day business, in addition to realizing new innovations. According to Lindegaard (2011), large companies do often have a *prospector* orientation. However, the large Norwegian firms in this case study seems to have both a *prospector* orientation focusing on new innovations combined with a *defender* orientation making the existing operations more efficient. This indicates that the large companies have an *analyzer* orientation. It is interesting that both companies seem to have an analyzer orientation as this differs from the theoretical findings.

The reason might be linked to the fact that the case study only investigates Norwegian companies and that the Norwegian business culture is different and affect which orientation the large companies take. The results could also be affected by the way the companies' focus on their core competences as they both emphasize how to make their core processes run smoothly at the same time as they strive to implement new innovations.

The SMEs have different strategic orientations. V&H has a *defender* orientation, which seems to be due to its limited resources and focus on adjusting to the customer's needs. Rocketfarm is more focused on exploring new opportunities in order to develop new innovations. This indicated the company's *analyzer* orientation.

When comparing the strategic orientation of the large firms to the strategic orientation in the SMEs, we see a difference in how the companies respond to the environment changes. The large firms have an *analyzer* orientation, which is a combination of the orientation we find in the SMEs. It seems like the SMEs have a more focused orientation due to their lack of resources, as it requires much resources to conduct new innovations in addition to continuously improving their everyday operations. The strategic orientations affect the innovation processes according to Kumar et al. (2012), and companies with a *defender* orientation has less new innovations as seen in V&H. Rocketfarm seems to be an exception with a *analyzer* orientation. We believe that the strategic orientation in Rocketfarm is due to the focus on creating new innovations through its Open Innovation strategy, although the company have limited resources.

6.2 Open Innovation Processes

When comparing the different case firms to each other, it is important to look at their different processes of performing Open Innovation strategies. As earlier, we will start discussing *outside-in* processes, before we continue with inside-out, and finish with the coupled processes of Open Innovation.

6.2.1 Outside-In Processes

We will start discussing the outside-in processes, and each category of *employee involvement, customer involvement, external network, external participation, outsourcing R&D and inward IP licensing* is discussed in the order listed.

Employee involvement

There are several similarities between the large firms' employee involvement. Both FINN.no and Statoil encourage their employees to share their ideas through on their Open Innovation tools such

as Innovate and *FINNopp*. The large companies see the need to access the employees' knowledge as this may lead to valuable innovations and ideas as they possess both tacit and explicit knowledge and know the industry and what is possible to implement. As the employees are familiar to challenges and needs the firm may have, they propose meaningful and helpful ideas to the firm's further development. The employee involvement seems to involve employees across different departments and give the involved parties a feeling of ownership. In addition, as the employees gets involved in the firms innovation process, the employees may feel ownership to ideas proposed, which may increase the firms Open Innovation culture. Both firms have incentives for the employees when contributing in the company's innovation process. FINN.no is giving the employees the chance to be a part of the further commercialization process of the idea. Statoil gives the same incentives to its employees if possible, and the employees are rewarded for proposing ideas that the firm is able to develop further.

Employee involvement in the SMEs is an important part of the Open Innovation processes. However, the feedback and involvement does not seem to be organized through specific processes. As the SMEs are small companies with a flat organizational structure, it is easy to share knowledge and ideas. The employees' opinions in product development are valued in both Rocketfarm and V&H, however the employees in Rocketfarm seems to be more engaged in influencing the strategic development.

When comparing SMEs and large firms approach to *employee involvement* it is a clear resemblance in how the companies value their employees' opinions and expertise. Both large firms and SMEs wish to utilize their employees' knowledge in Open Innovation. The main difference between SMEs and large firms' employee involvement is that the large firm needs innovation tools in order to manage the many ideas and opinions and to encourage the employees to contribute. As the SMEs have a less hierarchal organizational structure than the large firms, it is easier to share knowledge and ideas. Communication seems to flow more easily in SMEs and the employees receive feedback more easily as the amount of ideas is fewer compared to large firms. Both SMEs and large firms have a culture for sharing knowledge and idea, which affects the employee involvement. In addition as employees are involved in Open Innovation processes they are likely to increase their motivation that again has a positive effect on the Open Innovation culture.

Customer and user involvement

Customer and user involvement is important for FINN.no to continue the company's growth. FINN.no is building their business from knowledge of their customers, which also gives the company its competitive advantage. FINN.no depends additionally on meeting the user's demands, and the takes

use of the online tool *FINNlabs* in order to do so. Statoil, on the other hand, have a low degree of customer involvement. As the company sells products in commodity, Statoil is not directly dependent on costumers to succeed.

Similar to the large firms, there are differences in the group for *customer and user involvement* for SMEs as well. Both Rocketfarm and V&H have close contacts with customers. The customers and users ideas are taken into consideration for further development. This is important for V&H in order to sustain the firm's competitive advantage, as the company is acting in a high competitive industry. Rocketfarm, on the other hand, need to have close contact with customers to sell its products as fast as possible. The company's customers may suggest ideas; hence Rocketfarm's products may be easy to copy, similarly to V&H's products. But in difference to V&H, Rocketfarm develops new products each innovation weeks, which does not make this close contact as crucial for Rocketfarm, as they are for V&H.

When comparing the large firms towards the SMEs, we can see that all four firms are dependent on processes of *customer and user involvement*, with the exception of Statoil, which sells products in commodity. Further, it is interesting to look at the industry the firms are acting in. As both V&H and FINN.no needs to have close interactions with customers to keep the companies' competitive advantage and stay in the market, customer and user involvement is not as crucial for Statoil, as the firms are acting in other parts of the industry's value chain. Rocketfarm is as mentioned above dependent on customers to sell products developed through innovation week, but in not dependent on innovation week to survive as a company.

In addition, FINN.no's *lean* processes may be compared to Rocketfarm's *innovation weeks*, as both companies' wants to get feedback of product development at an early stage from customers. FINN.no uses this feedback to improve further development, whereas Rocketfarm have narrowed the company's developments into one week only to sell more products, and develop several products in one year.

External networking

The large companies, FINN.no and Statoil, use tools to gather ideas, knowledge and opinions from externals through their network. Statoil is using tools as LinkedIn and *Innovate*, where FINN.no is using their tool called *FINNlabs*. Both parties are visible and building up their reputations at universities to attract young and skilled future employees into their firms. They are also both acting in academic networks to reach their expertise, research and technology, which may contribute to the companies' processes in the long run. However, where FINN.no is a viable actor with informal interactions in Oslo's start up environment to be aware of new technology and gain knowledge of

their market, Statoil has formal interactions with suppliers to gain the same knowledge, in addition too informal interactions with other industries to gain new perspectives and inspiration to further development. It is reasons to believe that suppliers and strategic partners are as essential for Statoil, as customers are to FINN.no.

Similarly to the large firms, both Rocketfarm and V&H are acting in their external network to get inputs and ideas to further development and processes, hence build competencies within the firm. V&H is especially dependent on its informal interactions with friends and acquaintances, as the company needs to learn more about how to run a growing business. Both firms are also using their external network to attract skilled workers: Rocketfarm needs designers internally in the firm, and use the company's network to get in contact with skilled designers, similarly to V&H who is using its network to get in contact with skilled workers the company needs, as the company did when hiring its nutrition expert.

Rocketfarm is also using its network enter into media to improve their current low visibility for meeting potential customers, in difference to V&H, which is using their external network to find partners, especially suppliers.

Similarly to the group of involving employees, the large firms uses tools to gain knowledge and ideas from their external network, which the SMEs does not. Where the large firms use informal and formal interactions with academic networks to reach potential employees, the smaller firms is using informal interactions with their friends and acquaintances for the same advantage.

External participation

The large firms use external participation. FINN.no is collaborating with external firms, such as DNB, to implement its product Penger.no into market, which also may be seen as a venturing inside-out process. However, Statoil is actively supporting financially with LOOP funding, seed or venture investments to potential suppliers to gain good relations to suppliers and access future technology and reduce the firm's R&D intensity.

Neither Rocketfarm nor V&H gives examples of external participation. This may be due to smaller firms lower capacity to make equity investments.

The large companies engage in external participation, while the SMEs do not. The reason could be that SMEs lack the resources that are required for these processes. According Barney and Clarck (2007 cited in Lee et al., 2010) large companies attract SMEs to collaborate with them because of SMEs lack of capabilities and resources. This is why Statoil attracts SMEs to collaborate through for example the LOOP program.

Outsourcing R&D

Statoil is providing funding and outsourcing its R&D to suppliers through different collaborations and through the LOOP program, and academia and research institutions to gain new technology, research and strong ties to its partners. FINN.no on the other hand, does the most R&D internally. The use of *Sandbox* is as an internal outside-in process, but the incentives for this processes is not that the company lack competences, but rather that they encourage to intrapreneurship (internal entrepreneurship).

V&H provides funding to academia, specified NTNU, for receiving research and analysis of its products. Rocketfarm does also provide funding's to outsource some of its R&D, especially designers, legal help, sales and marketing, as the company is not compatible to do these services themselves.

The main difference between SMEs and large firms when outsourcing R&D is their ability to provide funding. Both SMEs, Rocketfarm and V&H, are outsourcing some of their R&D, but the larger firm Statoil are outsourcing to a much higher level than the smaller firms. According to Narula (2004 cited in Lee et al., 2010), large companies focus mainly on R&D in Open Innovation, while SMEs are focusing on commercialization due to their lack of resources such as marketing channels, network and manufacturing facilities. Because the SMEs lack resources their prioritization is different than large companies.

Inward IP-licensing

Neither the SMEs nor the large firms we have interviewed gave us information about inward IP-licensing in their company. Hence, the inward IP-licensing is not discussed further in this master thesis.

We have now looked at the *outside-in* processes, and are continuing with the inside-out processes of Open Innovation strategies.

6.2.2 Inside-Out Processes

We are continuing discussing the inside-out processes, with the categories of *venturing* and *outward IP-licensing.* Within each subgroup, similarly to those performed in the *outside-in* processes, we start discussing the large firms, FINN.no and Statoil, and continue with the SMEs, Rocketfarm and Vom og Hundemat, before we in the end discuss the large firms towards the SMEs.

Venturing

Statoil did not mention anything about venturing processes. FINN.no, on the other hand, has the tool *Sandbox*, which can be seen as a venturing process, where FINN.no provides funding for good ideas

developed from its employees to push more ideas into market. However, this tool may also be seen as a coupled process, and is therefore discussed further later.

In addition, FINN.no has as mentioned earlier collaborated with both DNB and Dine Penger, provided and developed Penger.no. As the idea for the service penger.no has been developed through the collaboration, and all the firms are now earning from it, it may be seen as a venturing process.

None of the SMEs mentioned anything about venturing processes, and therefore these processes are not discussed further.

Outward IP-licensing

FINN.no does not have IP internally, due to its industry. However, the most valuable knowledge to protect for FINN.no is the big data information about customers and users FINN.no has established from several years as an actor in the market. This information is crucial for FINN.no to keep its competitive advantage; hence the firm is not sharing this information with other actors within the industry.

Statoil has several IPs internally but is currently not outward licensing any of them. The company has, on the other hand, thought about starting outward IP licensing, but due to large costs of starting such processes, it is still an idea not implemented in its strategies.

V&H is conscious about not outward its recipes, as recipes are not able to protect, and the knowledge of these recipes are the firms competitive advantage in the market. Rocketfarm has no IP either, due to its industry and its limitation of protecting computer codes.

As discussed, Statoil has several IPs that the company chooses to not license outward. Neither Rocketfarm, V&H nor FINN.no has such IP protected, but both V&H and FINN.no has internal knowledge they do not want to share with other actors within the industry, due to protection of their competitive advantage. As seen, some information is more crucial to keep within the firms, and may hence to this not be shared to keep the company's competitive advantage.

We have now both looked at the *outside-in* and inside-out processes of Open Innovation. To continue, to get a whole perspective of the case firm's processes through Open Innovation strategies, we continue with coupled *processes* of Open Innovation.

6.2.3 Coupled Processes

Similarly to the outside-in and inside-out processes of Open Innovation, we are in this section looking at the coupled processes of Open Innovation.

Both FINN.no and Statoil are sharing their knowledge with external parties. Statoil is using LOOP as a tool to provide funding and technological expertise to potential suppliers, which may gain the company if the suppliers are well developed and usable for the company. In other words, as the suppliers receive support and help from Statoil, for further develop outside the company, this may for Statoil be seen as a *passing-on* coupled *process*. FINN.no on the other hand, uses *boomerang* coupled *processes*, as the company shares knowledge with its employees through its tool *Sandbox*, where employees may gain valuable information to develop products outside the firm. These products may at a later stage be taken into FINN.no´s product portfolio, hence a boomerang process.

As neither Rocketfarm nor V&H has mentioned any coupled processes within their strategies, this process are not discussed for the SMEs.

6.3 Advantages

In this section, we wish to discuss the advantages our four case companies gain from performing Open Innovation towards each other. This is done in order to elaborate on this master thesis' fourth research question: "*Why do Norwegian SMEs implement and perform Open Innovation strategies compared to large companies".*

In order to find similarities and differences between the advantages SMEs and the large companies gain from performing Open Innovation, we have merged the four tables of each company (see chapter 5) into a new table. This is done to easier see which advantages that are SME specific and which are large company-specific. In addition, we can see from this new table which advantages that both groups obtain.

The process of merging the four tables into one went as follows: First, we compared the advantages FINN.no and Statoil obtain from performing the various processes of Open Innovation, in order see which advantages both of the large companies gained. Only the advantages gained from *both* companies are included in the new table. Secondly, the same process was done for Vom og Hundemat and Rocketfarm, to find the advantages *both* SMEs obtain from performing various processes of Open Innovation. Finally, in order to compare the advantages large companies obtain towards the advantages SMEs obtain, all the advantages were plotted into a new table; table 9. The pink color in the table illustrates the advantages *both* large companies and SMEs gain from performing Open Innovation processes. The blue color represents large company-specific advantages, and the green color illustrates the SME-specific advantages. As seen, all colors represent an advantage, which all are linked to the process the advantages are gained through.

As Statoil has not informed us about the advantages they gain from either the processes of *involving their customers* or *venturing*, we will in table 9 assume that FINN.no gives a representative selection of advantages for the mentioned processes. Hence, FINN.no's advantages are in table 9 seen as advantages large firms gain from performing the Open Innovation processes. The same holds for V&H's *coupled* processes, where Rocketfarm has not engaged in *coupled processes* yet.

After presentation of the new table the advantages gained by both large companies and SMEs are discussed. Continuously, the SME-specific advantages are discussed, before discussing the advantages regarding specifically large companies. Further, the empirical findings are compared to the theoretical findings presented in chapter 3. In the end a discussion of which advantages we can see as generalizing for the case firms are elaborated.

Table 9: SME-specific, large company-specific and general advantages

		Outside-in					*Inside-out*	
Advantages	***Groups of processes***	Employee involvement	Customer and user involvement	External networking	External participation	Outsourcing R&D	Venturing	*Coupled*
Access complementary assets				X		X		
Access external knowledge		X	X	X	X	X		
Access external research				X	X			
Access external resources				X	X			
Access external tacit knowledge		X						
Access new and external ideas								
Access specialized competences		X						
Access the firm's "external" qualities & initiatives		X						
Attracting skilled workers				X				
Better financial results			X					
Bring expertise into R&D team/company		X				X		
Build reputation								
Capture market in early stage of innovation			X					
Commercializing new products			X		X		X	
Compression of firm's learning curve		X	X	X				
Control cost		X	X					
Develop competitive products			X					
Expand application areas					X			
Extension of firm					X			
Follow rapid changes in market								
Improved development		X			X			
Increased absorptive capacity		X	X					
Increased capability		X	X			X		
Increased efficiency		X	X		X		X	
Increased external visibility								
Increased growth			X					
Increased motivation and commitment to company		X						
Increased profitability			X				X	
Increased rate of innovation		X			X			
Increased control		X	X					
Limitation of risk		X	X					
Meet current and future market requirements			X					
Obtain others synergies				X	X			
Reduced costs							X	
Share risk					X	X		
Spread organizational principles to larger extent		X						
Using internally talents		X						
Utilizing own resources		X						

Advantages gained by both SMEs and large companies

We can from the pink colors in table 9 see which advantages both the large companies and SMEs in this study gain from performing the various processes of Open Innovation. The inward processes of *employee involvement* and *customer and user involvement* are the processes that bring the most advantages regardless of company size. This is an indicator of how important the two processes are for all firms that perform Open Innovation, as the advantages are achievable for all of the case firms.

There are 26 advantages listed for both SMEs and large companies in the table, and all of them are achieved by performance of *inbound processes* of Open Innovation. In addition, it is one advantage for both company sizes that is listed specifically from performance of the *coupled process.* The outbound process does not list any advantages achievable for both SMEs and large companies. This is due to insufficient outbound processes for SMEs. The SMEs have less internal resources compared to the large companies. This may be an indicator of how large Norwegian companies are more applicable for performing outward processes, and gain advantages from the performance, than Norwegian SMEs.

SME-specific advantages

As seen from table 9, there are three advantages that are gained by *both* of the SMEs that are not gained from both of the large companies. These are the advantages of *access complementary assets, increased control* and *control cost.* The first advantage is gained from both of the SMEs from their performance of the inbound process of *outsourcing R&D.* The two last advantages are gained by the SMEs from their performance of *customer and user involvement.* This indicates that the SMEs most important process of Open Innovation is their *customer and user involvement*, which correspond the literature. Further, the advantages of the process are important for SMEs, as they are *defender* oriented, as discussed earlier in this cross-case analysis.

From this, we can assume that the advantage of *access complementary assets* is a SME-specific advantage through inbound processes. However, the large companies obtain the same advantage from their coupled processes by use of *LOOP* and *Sandbox*. We believe that large companies may obtain the advantage through inbound processes as well, as the coupled process is a combination of the inbound and outbound processes. The informants of the large companies did not mention the advantage of *access complementary assets* as an important reason for doing inbound processes, and are therefore not included in table 9 as an advantage obtained from inbound processes.

Specific advantages for large companies

As seen from table 9, there are nine advantages gained from both of the large companies that are not gained from both of the SMEs. These advantages are*: Expand application areas, extension of the*

firm, follow rapid changes in market, increased capability, increased rate of innovation, reduced costs and *share risk.* In addition, the advantages *build reputation* and *increased external visibility* is listed as advantages for both of the large companies*,* but for SMEs from *coupled processes* as well*.* Similarly to the SME-specific advantages, we believe these advantages are most achievable for large companies from the inbound and outbound processes.

As seen from table 9, the most advantages listed as large company-specific is gained from the companies' performance of the inward process of *external participation* and the outward process of *venturing.* This is due to the insufficient performance of these processes of the two SMEs investigated. As discussed earlier, this may be due to the SMEs lack of resources, which can make the processes harder to perform than for large companies.

Empirical findings compared to the theoretical findings

When comparing table 9, which are based on this master thesis' empirical findings, to table 9 presented in the theoretical study (see chapter 3), we can see that there are several processes and advantages that are removed. In addition, we can see several advantages added to the empirical based table 9.

As neither the SMEs nor the large companies in this case study performs the processes of *inward- and outward IP licensing,* the columns of the processes are not included in table 9. This is done from out insufficient information about these processes from out investigated companies.

Following, the advantages of *benefitting from unused R&D* and *protect own IP*, are also removed from the table. This is due to the connection between the *licensing* processes and the advantages in literature.

Some of the advantages presented in the literature are not gained by any of the case firms, and are due to this not implemented in table 9. This is done to get an overview of only the gained advantages in this empirical presentation of advantages. The advantages removed are: *Better and easier organization of complex processes, external paths to market, increased market share* and *integration of new technologies.* In addition, the advantage of *access other firm's economies of scale* are not included in table 9. As this last mentioned advantage regards only SMEs in the literature, and due to our SMEs lack of *external participation processes,* we have no foundation to express an opinion on this advantage. Hence to this, the advantage is not included in table 9.

Compared to the list of advantages found in the literature, there are added four advantages to the empirical findings. These advantages are: *Access new and external ideas, follow rapid changes in market, build reputation* and *increased external visibility.* As seen from the discussion above, the advantage of *access new and external ideas* are gain from all of the investigated companies, hence it

is an advantages accessible for all firms, regardless of their size. The rest of the added advantages are as discussed earlier large company-specific, as they are not gained from both of the SMEs investigated.

General findings

It has in order to gain a vision of which advantages both Norwegian SMEs and Norwegian large companies can expect to gain from performing various processes of Open Innovation, been interesting to look at four companies with various sizes and with engagement in different industries.

We can see from table 9 that the advantages firms may gain from performing Open Innovation strategies, regardless of the firms' size, is from performing *outside-in* processes. The advantages that companies may gain regardless of their size can be seen as generalizing advantages achievable for the four companies investigated. The outside-in processes lead to advantages that both SMEs and large companies can gain. This might be because the outside-in processes are related to access external knowledge and resources, and is not affected by the resources the companies possess.

E*mployee involvement* and *customer- and user involvement* is the two processes which gives most of the advantages. This indicates that Ebersberger et al. (2010)'s statement of customer, as the most important collaboration partner for Norwegian companies, is accurate.

We also see from table 9 that there are only large companies who gain advantages from performing outward processes of *venturing*. The SMEs investigated did not perform the process of venturing. The result is not surprising as large firms have more resources, hence are more likely to implement inside-out processes, like venturing. As the SMEs have a smaller resource base, they have less to share through inside-out processes. Although the SMEs in this case study do not perform inside-out processes, we have no foundation to state that no Norwegian SMEs perform these processes.

Our master thesis has spotted three SME-specific advantages from out empirical study, in addition to nine large company-specific advantages. In addition, the theoretical list of advantages presented in chapter 3 (Theoretical study) is modified to fit the empirical findings. However, the processes of inward and outward IP licensing, and the advantages linked to these processes in literature are not presented in table 9. This is because the case firms did not provide us with any information about how they perform any of these processes.

6.4 Open Innovation Design in Norwegian companies

First, a revised version of the theoretical framework is illustrated and presented. Continuously, a discussion of the main differences between SMEs and large companies' performance of Open Innovation is elaborated. Finally, a discussion of the Open Innovation design found in SMEs and large companies are made.

From the discussion above, we see there are several elements of Open Innovation in Norwegian companies that differentiate the SMEs performance of the strategy from the large companies'. To illustrate these findings, we have created a new framework, which is presented below. This new framework is based on our empirical findings, and is a revised version of the theoretical framework presented in chapter 3. The revised framework is applicable for all Norwegian companies performing Open Innovation, and illustrates the difference between SMEs and large companies.

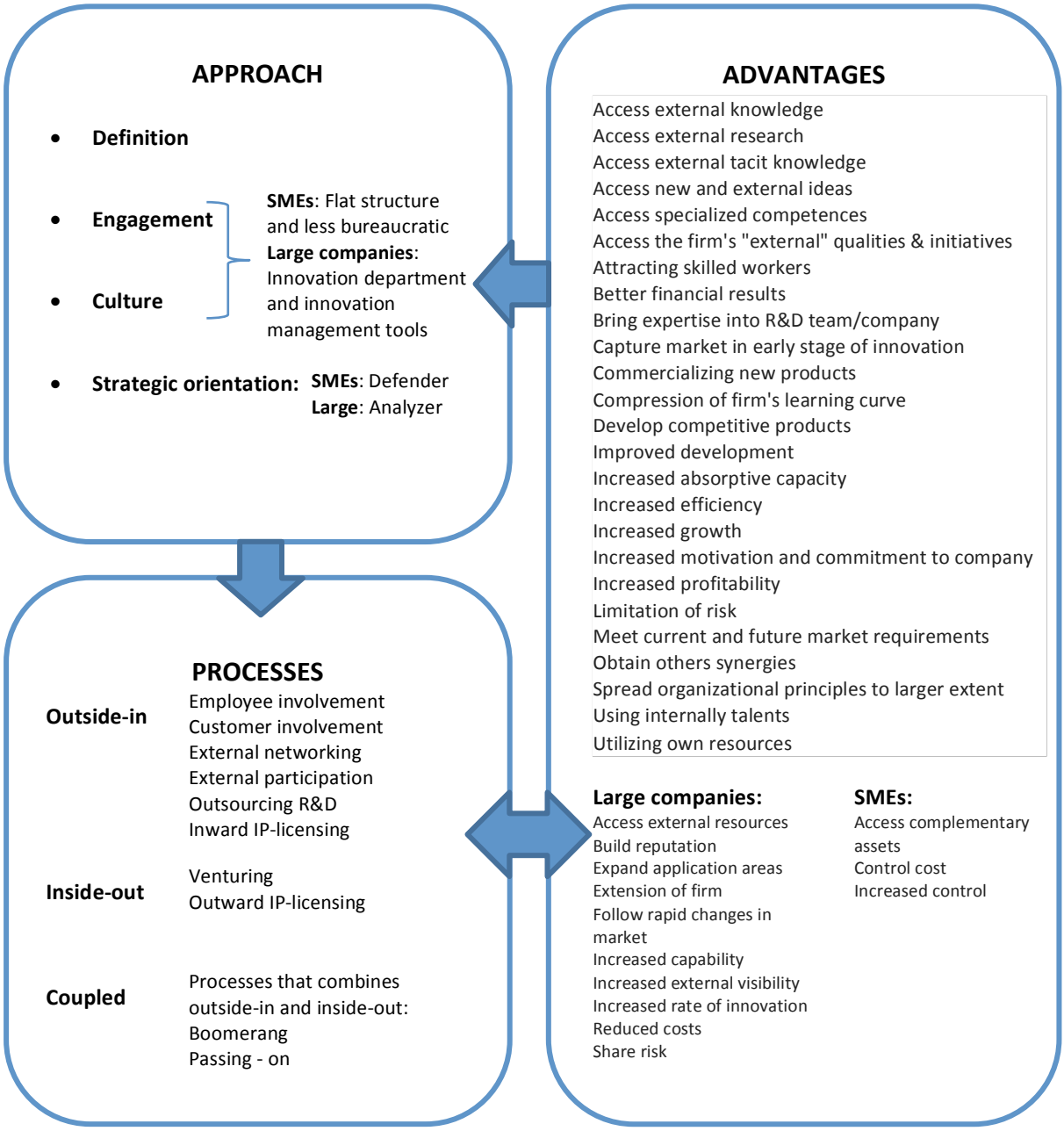


Figure 10: Open Innovation Framework for Norwegian Companies

The theoretical framework has been revised to fit all Norwegian companies, and is based on the empirical finding presented in this master thesis' to be valid for both SMEs and large companies.

When comparing to the literature of differences between SMEs' performance of Open Innovation towards large companies', we see several indications of its accuracy. We see that both of our investigated SMEs are forced to collaborate with other organizations, due to their lack of resources that hinders the companies perform all processes required internally. Rocketfarm indicated the accuracy of the literature's statement of SMEs having a higher level of agility than larger firms. Due to Rocketfarm's small size and the company's strategy of *innovation week*, Rocketfarm plans the

coming Open Innovation process only a couple of days before taken into action. This is an indicator of the SME's high level of agility – a level neither of our investigated large companies can be compared to. However, the literature states that SMEs have a higher capacity to make customized products than larger firms. This is a statement our study indicates are incorrect. Even though Vom og Hundemat are specialized due to close collaboration with customers and users, our case study shows that FINN.no does also have this capacity. FINN.no has similarly to Vom og Hundemat a high degree of *customer and user involvement*, which indicates an uncertainty of the literature's statement.

The design of the framework

The theoretical framework shows that the company's approach toward Open Innovation affects the Open Innovation processes. Through the Open Innovation processes the company gains advantages. The advantages has an positive affect on the company's approach as they see the value of Open Innovation processes and wish to continue implementing Open Innovation strategies. In addition certain advantages such as increased motivation and commitment among the employees seems to have a direct positive effect on the company's approach as this enhance the company's Open Innovation culture.

How these elements are linked together are presented in the theory and found in the four case firms as earlier discussed. However, when discussing FINN.no, Statoil and Vom og Hundemat a new link was found. The linkage is the arrow leading a*dvantages* back to *processes,* and is presented in the new framework presented above. This new arrow indicates how the companies may change their Open Innovation processes in order to gain new advantages. Companies might also implement processes as they have had positive experiences from previous processes.

In addition, the fact that the company gains advantages through a process makes it more likely for the company to implement the process again. However, this might not affect the Open Innovation approach and is not described through arrow 3. The new arrow represents how the company changes their processes while keeping the same Open Innovation approach as before.

Rocketfarm did not mention any processes that indicated the existence of the new arrow. We believe that as the company has performed Open Innovation for a short time, the company has not yet gained enough experience of which advantages the company is able to gain from performing the various processes. As the other three companies have more experience with Open Innovation processes, we believe that Rocketfarm may experience this process after getting more experience with Open Innovation. Although Vom og Hundemat has no explicit Open Innovation processes, the

analysis shows that they have implemented several Open Innovation processes since the beginning, hence gained experience on how to benefit from the strategy.

The revised theoretical framework presented in figure 10 is based on the theoretical findings and the empirical study of four Norwegian companies. However, it is difficult to say whether the framework is suitable for companies in other countries, or if the Norwegian culture may have an effect on the results. The strategic orientations differ from the literature, which might imply that this could be related to the Norwegian culture and business environment. However, several of the advantages found through the empirical study indicate that Norwegian companies gain many of the advantages presented in literature originated from several countries. This indicates that the Norwegian companies might implement several of the processes in the same way as foreign companies, and the results could be transferable to companies outside Norway.

When comparing the SMEs towards the large companies there are several interesting findings within *approach*. We see that the SMEs have Open Innovation culture allowing employees to easily communicate within the firm and that the culture and engagement leads to initiating several processes. We find it interesting that the SMEs seem to obtain several advantages through their processes as they have a less structured Open Innovation strategy. At the same time we have discussed that the large firms implement Open Innovation in an implicit manner to begin with, just as the SME V&H is doing today. This might show how the size of the company may affect how the companies' approach is important in order to initiate processes, but that the larger firms need more organized structure, e.g. innovation department and idea management tools.

Part 5: Conclusion and Implications

In this part a conclusion of the report is presented, gathering the findings in order to answer the research questions presented in chapter 1.2 (Problem definition). In addition, managerial implications and implications for further research are presented.

7. Conclusion and Implications

In this chapter, we conclude the report by answering the research questions of this master thesis. Further, the implications for the study's conclusion are suggested for managers of both SMEs and large companies and for further research.

7.1 Conclusion

In this section, each research question of this master thesis is presented separately, followed by a short conclusion based on the study's findings.

What is Open Innovation?

Open Innovation is an innovation strategy that includes collaboration with external parties to access external knowledge, ideas and resources. Henry Chesbrough saw the shift in the market from the old paradigm of Closed Innovation to the new paradigm of Open Innovation. Closed Innovation is a strategy where internal knowledge and resources are the basis for the company's innovation processes. In 2003, Chesbrough presented the term *Open Innovation,* which describes a strategy where *both* external and internal knowledge and resources are part of the innovation processes.

In a globalizing market, companies need to follow the rapid changes in order to survive. Competition increases, and external knowledge is essential for the company to sustain its competitive advantage. At the same time, the company has to decide which position it is going to take in the market. This thesis has seen the importance of implementing an internal Open Innovation culture, for the company to be able to engage in various processes of Open Innovation, to further obtain several advantages. The companies' approach towards Open Innovation is therefore essential for implementing and performing Open Innovation strategies.

Open Innovation is divided into three main processes: *Outside-in, inside-out* and *coupled*. All the processes address the flow of knowledge, information, resources and ideas across the company's boundaries. Outside-in is when the company opens up for external input. Inside-out is when the company let internal resources flow outward. Coupled is a combination of outside-in and inside-out processes.

Which advantages can companies obtain through Open Innovation?

This report presents 41 advantages companies may achieve when performing various processes of Open Innovation, all found through a literature review. In general, advantages developed through Open Innovation mainly concerns sharing knowledge with externals and access external knowledge. From *accessing external knowledge*, advantages such as *increased capability* of the firm and *increased efficiency* follows. These are all advantages the literature describes as easy to gain, as the

advantages are linked to most of the processes of Open Innovation. Most advantages identified are linked to outside-in processes. *Employee involvement, customer and user involvement* and *external participation* are listed as outside-in processes, which may provide the companies the most advantages. The reason for that the literature present most advantages from outside-in processes, could be that less research has been conducted on inside-out and coupled processes and the advantages firms may gain from these.

How do Norwegian SMEs perform Open Innovation compared to large companies?

Through the investigation of four Norwegian companies, two large and two SMEs, we have found both similarities and differences in their performance of Open Innovation. All companies, regardless of their size, need to have an open approach for performing various processes. The open approach includes a definition of Open Innovation, the companies' engagement in the strategy, an Open Innovation culture and their strategic orientation in the market. However, while the SMEs do not seem to have a need for a structured organization to implement and perform various processes of Open Innovation, the large firms have a department that plans and manages the strategy. In addition, the large companies make use of tools to simplify the Open Innovation processes and keep the employees motivated.

Further, we have seen that both type of firms need to have an Open Innovation culture to be able to proceed with the strategy. However, the companies' strategic orientation in the market differs. Due to the SMEs size, they depend on the markets demands. The SMEs have a *defender* orientation where the companies listen to market needs when innovating. The large companies, on the other hand, are *analyzer* oriented. The large companies listen to market needs when innovating, in addition to develop innovations new to the market that change the current needs.

Both the SMEs and the large companies perform mostly outside-in processes, such as *employee involvement* and *customer and user involvement*. This is due to the partners' closeness to the market, and awareness of the markets demands. The large companies also engage in external participation, which also is an outside-in process, as they have resources to invest in external parties.

Why do Norwegian SMEs implement and perform Open Innovation strategies compared to large companies?

From our multiple case study of four Norwegian companies, we have seen that the companies choose to implement Open Innovation strategies is order to grow and obtain and maintain competitive advantage. This is the reason for *why* the companies choose to implement strategies of Open Innovation. As the companies continue performing Open Innovation, they gain various

advantages. This can be seen as a reason of *why* the companies continue performing and change and/or add various processes of Open Innovation.

In total 38 advantages achievable for Norwegian companies performing Open Innovation is found. Of these advantages, 26 are obtainable for both SMEs and large companies, such as *access to external knowledge, compression of the firm's learning curve* and *increased efficiency*. These advantages are obtainable for all companies, regardless of their size. This seems to be because the advantages are obtained through knowledge sharing between collaborating partners, a process that are independent of the firm's internal resources. In addition, three advantages are achievable through various types of Open Innovation processes.

There are found three advantages that only SMEs gain from Open Innovation and nine advantages that only large companies in the case study gain. The SMEs-specific advantages are: *Increase control, access complementary assets and control costs.* These advantages are specific for SMEs because of the companies' closeness to the market, in addition to their less complex processes internally than larger companies. The specific advantages for large companies are: *Expand application areas, extension of the firm, follow rapid changes in market, increased capability, increased rate of innovation, reduced costs, share risk, build reputation* and *increased external visibility.* These advantages are specific for large companies because of the firms large bases of internal resources which able the firms to interact in several collaborations with various partners in the industry.

The study analyzes and discusses the four case firms. We can from these findings draw general conclusions for the four Norwegian companies. However, we do not have enough information to make generalizing assumptions for either all Norwegian SMEs or all large companies. This means that the findings cannot be generalized for other companies than the ones investigated, however the findings *might* be valid for other companies. To show where the study's conclusions can be implicated in companies, both managerial implications and suggestions for further research are presented in the next section.

7.2 Implications

Based on the literature review and the empirical study, we offer several implications for Open Innovation in Norwegian SMEs and large companies. In this section, both managerial implications and implication for further research are presented.

7.2.1 Managerial Implications

Managers of Norwegian companies should take this report into consideration when implementing and/or performing Open Innovation strategies. They should do this to gain insight into the importance of the company's approach toward Open Innovation, which processes the company could implement and which advantages the company may gain from the various processes. To succeed with the new strategy, the connections between the different activities are important for the manager to understand, as the activities are based on each other.

This part of the chapter is divided into three parts. The first part presents managerial implications for Norwegian companies implementing Open Innovation, regardless of their size. The second part concerns managerial implications for large Norwegian companies. The third part concerns managerial implications for Norwegian SMEs.

Implications for managers of Norwegian companies

The company's approach toward Open Innovation is the first part the manager should look at when implementing the open strategy. It includes defining Open Innovation, the company's engagement in the strategy, the company's culture and the strategic orientation in the market. To obtain and maintain the company's competitive advantage and ensure its growth, it is important for the company to have a solid foundation for the strategy. This makes it important for the company to create an open culture that encourages internal trust, which encourage the employees to contribute with their opinions and knowledge. The open approach will make it easier to initiate Open Innovation processes and in turn affect the advantages the company will gain through implementing the strategy.

Implications for managers of large Norwegian companies

The managers of large Norwegian companies should work towards a trustworthy internal culture. It is important to keep the *feeling* of a flat structure and facilitate communication across different departments, to make the employees motivated to share ideas and knowledge. It is important that the threshold is low for employees to contribute in projects and product development. A way to do this is to implement innovation management tools, where all ideas are appreciated.

In addition to being open for inputs from employees, large companies need to allocate a sufficient amount of resources to handle both internal and external ideas that are submitted to the company. This can also be done by the use of innovation management tools. Because large companies often get large quantities of ideas, it is important to have good tools that can gather the ideas and thoughts, and have resources to manage these tools. Large firms should according to this engage an innovation department, who should facilitate the Open Innovation strategy. The department should focus on employee involvement and participation across different departments in the firm to keep the employees motivated and committed to the strategy, in addition to managing the different processes. When large firms implement Open Innovation and encourage employees and external partners to contribute their ideas, the problem is not how to motivate people to participate, but to handle the many ideas they receive in order to maintain the motivation and engagement. This is also a reason for the large firms to implement Open Innovation management tools.

Implications for managers of Norwegian SMEs

For Norwegian SMEs, the managers should work towards an open internal culture, where employees trust each other. As the companies have less hierarchic organizational structures due to having fewer employees, there is no need for an innovation department within the company. However, the manager should handle the innovation strategies, or give the responsibility to another person in the company. It is important that the employees of the firm trust the manager or the one responsible for the innovation. If he is trusted, the employees will increase their motivation and commitment to the firm. When the employees are motivated and feel committed, they want the best for the company; hence share their own ideas and knowledge. This shows the importance of having an open culture to succeed with the implementation of Open Innovation processes in SMEs. The companies should also implement Open Innovation to gain advantages they could not gain without contribution from externals.

Various processes of Open Innovation might lead to different advantages, which are important for both SMEs and large firms. The theoretical framework presented is suitable for all companies, and through the empirical study we have adjusted it to fit the four Norwegian companies investigated. The adjusted framework presented can work as a guide for both SMEs and large companies. However, as the empirical study is based on only four companies, it is not generalized for all Norwegian companies. This should therefore be further investigated, and is presented as implications for further research in the next section.

7.2.2 Implications for Further Research

As mentioned in the introduction of the thesis, little research has been conducted on SMEs in an Open Innovation context. There is also little literature on how Norwegian companies implement Open Innovation. In this section, several implications for further research is presented in order to suggest how studies can be conducted in the future. As the study includes only four Norwegian companies, there are several implications that could be interesting for further research as presented in this section.

Generalizing the study

As discussed earlier, this study investigates two large companies and two SMEs within different industries. This implies that there should be conducted a study of several companies operating within the same industry in order to see whether the results are valid for companies within the same industry, or if the results are more related to size as this study implies.

Norwegian companies

As mentioned earlier, little research has been conducted towards Open Innovation in Norwegian companies. However, through this study we have seen that there is much attention on the Open Innovation paradigm among several Norwegian companies. Through the investigation of the Norwegian companies the empirical findings lead to the revised framework presented in section 6.4. The findings imply that some of the aspects like the firms approach might be connected to the business culture in Norway as a different strategic orientation was found for the large firms. However, several of the processes and the advantages the companies gain seem to be linked to literature concerning companies all around the world. This implies for further research whether the framework is specialized for Norwegian companies, or if it could be suitable for SMEs and large companies in other countries as well?

Strategic orientation

The strategic orientations represent an interesting finding for the large Norwegian case firms. It was surprising that both of the large firms' orientation differs from the theory, especially when they operate within different industries. That the Norwegian culture could have affected the findings is just one way to see it. We believe that there might be other reasons that could have affected the companies' strategic orientations and encourage this to be further researched within large companies both in Norway and other countries. This would be in order to shed light on what affects the large companies' strategic orientation.

Majority of outside-in processes

This study shows a majority of outside-in processes performed of the investigated companies. The literature review also indicates that there are more outside-in processes than inside-out processes performed in Open Innovation strategies. We find this strange, due to the fact that one company's outside-in process is the other company's inside-out process. However, we know that the majority of outside-in processes performed in our case companies, is by involving employees, customers and users. And in those processes, the collaboration partners of the company are consumers, and not other companies. It would be interesting to investigate the coupled processes further to shed light on the statement of one company's outside-in process being another company's inside-out process, in addition to see if there are in fact a majority of outside-in processes performed in Open Innovation strategies.

Challenges of performing Open Innovation

When companies open up and embrace the new paradigm they get access to external knowledge and resources and as presented in this study gain many advantages. However, we are aware that there are several challenges connected to the Open Innovation strategy. As companies open up and collaborate with external partners, they will encounter some challenges. It would be interesting to investigate how both SMEs and large firms describe the challenges and further link the results to the advantages presented in this study. Are the processes that are connected to the most advantages also connected to several challenges? Are there more challenges for SMEs than for larger companies that implement Open Innovation? This would be interesting to investigate through further research.

SMEs

There has been little research on SMEs in an Open Innovation context. It would be interesting to continue the mapping of how SMEs can and should implement Open Innovation, as it seems like the strategy is suited for companies that possess less resources as well as for larger firms. By including more SMEs in the study, it would be easier to find a common description of SMEs that implement the new paradigm. In addition the SME specific advantages should be further investigated. Are there more SME specific advantages?

We have not found any inside-out processes within the case firms, however this could be due to the industry the SMEs operate in as well as their smaller base of resources. However, it would be interesting to gain a better understanding of how and why or why not companies perform inside-out processes.

Differences between SMEs and large companies

The study shows that both SMEs and large companies gain several advantages through implementing Open Innovation strategy. However, it is interesting to see that SMEs gain almost as many advantages as large companies. But as the lists of SME and large firms specific advantages are based on this case study's firms, it would be interesting to complement the list with results from other companies.

The differences we have found within the companies' approach indicate that the large firms have the need for an innovation department and innovation tools in order to initiate Open Innovation processes. But the SMEs seem to initiate the Open Innovation processes easier through their Open Innovation culture. Both of the large case firms say that they started to implement Open Innovation in an implicit manner, just as the SME V&H states to be doing today. This is an interesting finding as it might imply that the SMEs could be at a place where the large case firms were years ago, when they were implementing Open Innovation implicit. Through investigation of large firms with focus on how they started to implement Open Innovation from the establishment of the firm, would shed light on this connection. Does Open Innovation happen more naturally in SMEs, but change towards a more structured strategy when the companies get larger?

To further investigate the differences between large companies and SMEs are encourage in order to better understand how and why they should implement Open Innovation.

Part 6: List of References and Appendix

This part consists of the master thesis' *list of references* in addition to the appendix where the interview guides used in the case studies are presented.

List of References

ADLER, P. S. 2001. Market, hierarchy, and trust: the knowledge economy and the future of capitalism. *Organization science,* 12**,** 215-234.

AYUSO, S., MIGUEL ÁNGEL, R., GARCÍA-CASTRO, R. & MIGUEL ÁNGEL, A. 2011. Does stakeholder engagement promote sustainable innovation orientation? *Industrial Management + Data Systems,* 111**,** 1399-1417.

AYYAGARI, M., BECK, T. & DEMIRGUC-KUNT, A. 2007. Small and medium enterprises across the globe. *Small Business Economics,* 29**,** 415-434.

BOGERS, M. 2011. The open innovation paradox: knowledge sharing and protection in R&D collaborations. *European Journal of Innovation Management,* 14**,** 93-117.

CAVUSGIL, S. T., KNIGHT, G. A. & RIESENBERGER, J. R. 2008. *International business: Strategy, management, and the new realities*, Pearson Prentice Hall Upper Saddle River.

CERNE, M., JAKLIC, M., SKERLAVAJ, M., AYDINLIK, A. Ü. & POLAT, D. D. 2012. Organizational learning culture and innovativeness in Turkish firms. *Journal of Management and Organization,* 18**,** 193-219.

CHAN, F.-T. 1993. A study of smartsourcing. *Work*.

CHESBROUGH, H. 2006. *Open business models: How to thrive in the new innovation landscape*, Harvard Business School Press.

CHESBROUGH, H. 2012. Open Innovation: Where Weve Been and Where Were Going. *Research-Technology Management,* 55**,** 20-27.

CHESBROUGH, H., VANHAVERBEKE, W. & WEST, J. 2008. *Open Innovation: Researching a New Paradigm: Researching a New Paradigm*, OUP Oxford.

CHESBROUGH, H. W. 2003. *Open innovation: The new imperative for creating and profiting from technology*, Harvard Business Press.

CHIARONI, D., CHIESA, V. & FRATTINI, F. 2011. The Open Innovation Journey: How firms dynamically implement the emerging innovation management paradigm. *Technovation,* 31**,** 34-43.

CLAUSEN, T. H. 2013. External knowledge sourcing from innovation cooperation and the role of absorptive capacity: empirical evidence from Norway and Sweden. *Technology Analysis & Strategic Management,* 25**,** 57-70.

CNN MONEY. 2011. *World's most admired companies* (Online). Available: http://money.cnn.com/magazines/fortune/mostadmired/2011/best_worst/best1.html (Accessed 04.03 2013).

DAHLANDER, L. & GANN, D. M. 2010. How open is innovation? *Research Policy,* 39**,** 699-709.

DAVID, W., LONG, D. & FAHEY, L. 2000. Diagnosing cultural barriers to knowledge management. *The Academy of Management Executive (1993-2005)***,** 113-127.

DE BACKER, K., LÓPEZ-BASSOLS, V. & MARTINEZ, C. 2008. Open Innovation in a Global Perspective: WHAT DO EXISTING DATA TELL US? Paris, France, Paris.

DE BACKER, K., LÓPEZ-BASSOLS, V. & MARTINEZ, C. 2009. Open Innovation in a Global Perspective.

DUARTE, V. & SARKAR, S. 2011. Separating the wheat from the chaff–a taxonomy of open innovation. *European Journal of Innovation Management,* 14**,** 435-459.

EBERSBERGER, B., BLOCH, C., HERSTAD, S. J. & VAN DE VELDE, E. 2010. Open innovation practices and their effect on innovation performance. *International Journal of Innovation and Technology Management, 1,* 22.

ENKEL, E., GASSMANN, O. & CHESBROUGH, H. 2009. Open R&D and open innovation: exploring the phenomenon. *R&d Management,* 39**,** 311-316.

EUROPEAN COMMISSION. 2013. *Small and medium-sized enterprises (SMEs)* (Online). Available: http://ec.europa.eu/enterprise/policies/sme/facts-figures-analysis/sme-definition/index_en.htm (Accessed 05.03 2013).

FILIPPETTI, A. 2011. Innovation modes and design as a source of innovation: a firm-level analysis. *European Journal of Innovation Management,* 14**,** 5-26.

FINANSDEPARTEMENTET. 1995. *SMB - definisjoner og betydning* (Online). Available: http://www.regjeringen.no/nb/dep/fin/dok/nouer/1995/nou-199516/5/2/1.html?id=336716 (Accessed 03.01 2013).

FITJAR, R. D. & RODRÍGUEZ-POSE, A. 2012. Firm collaboration and modes of innovation in Norway. *Research Policy*.

FLAKSTAD, S. & PRYTZ, D. 2012. SMEs and Open Innovation - *Which advantages may SMEs obtain from Open Innovation strategies? (unpublished). NTNU School of Entrepreneurship*

Industrial Economics and Technology Management. Trondheim: Norwegian University of Science and Technology.

GJERTSEN, L. M. O. & KJØBLI, S. S. 2012. Kunnskapsoverføring mellom prosjekter (unpublished). Norwegian University of Science and Technology.

GRÜNBAUM, N. N. 2007. Identification of ambiguity in the case study research typology: what is a unit of analysis? *Qualitative Market Research: an international journal,* 10**,** 78-97.

HARSTAD, L. 2012. På denne gården i Trøgstad lages 2000 tonn hundefôr i året. *Nationen*

HELGESEN, O. K. 2009. Dette er Statoils 10 teknologifavoritter. *Teknisk Ukeblad.*

HUNT, L. 2008. *Part 3. Open innovation - Chapter 3.1. Open innovation,* London, United Kingdom, London, Kogan Page Ltd.

INAUEN, M. & SCHENKER-WICKI, A. 2011. The impact of outside-in open innovation on innovation performance. *European Journal of Innovation Management,* 14**,** 496-520.

INKINEN, S. & KAIVO-OJA, J. 2009. Understanding Innovation Dynamics. *Aspects of Creative Processes, Foresight Strategies, Innovation Media and Innovation Ecosystems. eBook,* 9**,** 2009.

KUMAR, K., BOESSO, G., FAVOTTO, F. & MENINI, A. 2012. Strategic orientation, innovation patterns and performances of SMEs and large companies. *Journal of Small Business and Enterprise Development,* 19**,** 132-145.

LEE, S., PARK, G., YOON, B. & PARK, J. 2010. Open innovation in SMEs - An intermediated network model. *Research Policy,* 39**,** 290.

LIEBERT, U. 2002. Causal Complexities: Explaining Europeanisation. *Jean Monnet Centre for European Studies, University of Bremen, CEuS Working Paper*.

LIND, F., HOLMEN, E. & PEDERSEN, A.-C. 2012. Moving resources across permeable project boundaries in open network contexts. *Journal of Business Research,* 65**,** 177-185.

LINDEGAARD, S. 2011. *Making Open Innovation Work: @lindegaard to Big and Small Companies: You Need to Open Up Your Innovation Efforts! Read This Book and Visit* http://Www.15inno.com *for Good Advice*, CreateSpace.

LOPEZ, S. P., PEÓN, J. M. M. & ORDÁS, C. J. V. 2004. Managing knowledge: the link between culture and organizational learning. *Journal of knowledge management,* 8**,** 93-104.

MINISTRY OF TRADE AND INDUSTRY. 2013. *Små og mellomstore bedrifter* (Online). Available: http://www.regjeringen.no/en/dep/nhd/tema/forenkling_for_naringslivet/sma-og-mellomstore-bedrifter.html?id=614069 (Accessed 16.02 2013).

MITCHELL, R. K., AGLE, B. R. & WOOD, D. J. 1997. Toward a theory of stakeholder identification and salience: Defining the principle of who and what really counts. *Academy of management review*, 853-886.

PARIDA, V., WESTERBERG, M. & FRISHAMMAR, J. Effect of Open Innovation Practices on SMEs Innovative Performance: An Empirical Study. 2011 2011 Washington, United States, Washington. International Council for Small business (ICSB), 1-20.

PUHAKAINEN, J. & MALINEN, P. Business Models That Matter-Towards a Classification of Business Models in SME Context. Advancing Small Business and Entrepreneurship. Halifax, Nova Scotia, Canada: International Council for Small Business World Conference, 2008.

REID, P. 2009. Open innovation: an evolving entrepreneurial technique. *International Review of Entrepreneurship,* 7.

RENZL, B. 2008. Trust in management and knowledge sharing: the mediating effects of fear and knowledge documentation. *Omega,* 36**,** 206-220.

RODRIGUES, L. C., MACCARI, E. A. & CAMPANARIO, M. D. A. 2010. Expanding the open innovation concept: the case of TOTVS S/A. *Journal of Information Systems and Technology Management,* 7**,** 737.

ROGERS, M. 1998. *The definition and measurement of innovation*, Citeseer.

SCHINDLER, M. & EPPLER, M. J. 2003. Harvesting project knowledge: a review of project learning methods and success factors. *International Journal of Project Management,* 21**,** 219-228.

SPITHOVEN, A., CLARYSSE, B. & KNOCKAERT, M. 2011. Building absorptive capacity to organise inbound open innovation in traditional industries. *Technovation,* 31**,** 10.

STATOIL. 2013. *Statoil* (Online). Available: http://www.statoil.com/no/Pages/default.aspx (Accessed 03.04 2013).

TROTT, P. 2012. *Innovation management and new product development,* Harlow, FT Prentice Hall.

TSAI, K. H. & WANG, J. C. 2007. Inward technology licensing and firm performance: a longitudinal study. *R&d Management,* 37**,** 151-160.

VAN DE VRANDE, V., DE JONG, J. P. J., VANHAVERBEKE, W. & DE ROCHEMONT, M. 2009. Open innovation in SMEs: Trends, motives and management challenges. *Technovation,* 29**,** 423-437.

VANHAVERBEKE, W., VERMEERSCH, I. & DE ZUTTER, S. 2012. Open innovation in SMEs: How can small companies and start-ups benefit from open innovation strategies?

WEST, J. & GALLAGHER, S. 2006. Challenges of open innovation: the paradox of firm investment in open‐source software. *R&D Management,* 36**,** 319-331.

YIN, R. K. 2008. *Case study research: Design and methods*, SAGE Publications, Incorporated.

Interview guides

Here the two interview guides are presented. As mentioned we made two interview guides, one for the manager of the company, or the head of innovation and another for the employees holding different positions in the firms. Both are presented below. They are in Norwegian, as the interviews were held in Norwegian.

Interview Guide for Managers/Head of Innovation

Generelt

1. Hva legger ***bedriften*** i begrepet Åpen Innovasjon?

2. Når startet ***bedriften*** med Åpen Innovasjon, hvorfor og hvordan?

Strategi/Prosess

1. Hvordan er ***bedriften*** organisert rundt åpen innovasjon?

2. Hvordan og hvorfor driver ***bedriften*** med Åpen Innovasjon i dag?

3. Hvordan har innovasjonsstrategien i ***bedriften*** utviklet seg fra oppstart til i dag? Har den endret seg?

4. Hva ser ***bedriften*** på som de største fordelene ved å drive åpen innovasjon?

5. Hvordan ønsker ***bedriften*** å fortsette med Åpen Innovasjon fremover?

6. Kan du fortelle oss om en innovasjonsprosess som har blitt / blir gjennomført i dag?

7. Hvis du eller en i ***bedriften*** kommer over en idé... er det da lagt til rette at du kan formidle den videre til bedriften?

Ressurser

8. Hvordan gjør ***bedriften*** seg bevisste på hvilke eksterne ressurser de trenger?

9. Hvordan gjør ***bedriften*** behovet sitt for eksterne ressurser kjent overfor andre bedrifter?

10. Hvilke informasjon eller kunnskap gir ***bedriften*** eksterne tilgang til? … og hvilke deler ***bedriften*** IKKE med andre?

11. Hvordan legger ***bedriften*** til rette for at andre bedrifter skal oppdage deres interne ressurser som bedriften selv er villig til å dele med andre?

12. Hva sitter bedriften igjen med etter flere år med Åpen Innovasjon?

Interview Guide for Employees

Generelt

1. Har du kjennskap til begrepet "Åpen Innovasjon"?

Strategi - Bedriften

2. Hvordan vil du beskrive ***bedriften*** sin innovasjonsstrategi?
   Er mye av innovasjonsarbeidet i ***bedriften*** er åpent?

3. Hvordan driver **bedriften** med Åpen Innovasjon i dag?

4. Hva ser du på som de største fordelene for ***bedriften*** med å drive åpen innovasjon?

Prosesser – de ansattes innflytelse

5. Hva er din oppgave i dagens innovasjonsprosesser i ***bedriften***?

6. Hvis du eller en i ***bedriften*** kommer over en idé... er det da lagt til rette at du kan formidle den videre til bedriften?

7. Kan du fortelle oss om en av ***bedriftens*** innovasjonsprosesser du har vært / er en del av?

8. Hvordan inkluderes *du* i ***bedriftens*** innovasjonsprosesser?