



**UNIVERSITY OF GOTHENBURG**  
**SCHOOL OF BUSINESS, ECONOMICS AND LAW**

Master Degree Project in Innovation and Industrial Management

# **Open Innovation Portals, Maximizing Submission through Quality and Volume Contributions**

David Andersson and Jonathan Molin

Supervisor: Rick Middel  
Master Degree Project No. 2015:30  
Graduate School



Written by: David Andersson and Jonathan Molin.

© DAVID ANDERSSON AND JONATHAN MOLIN

School of Business, Economics and Law, University of Gothenburg, Vasagatan 1,  
P.O. Box 600, SE 405 30 Gothenburg, Sweden.

Institute of Innovation and Entrepreneurship.

All rights reserved.

No part of this thesis may be distributed or reproduced without the written permission  
by the authors.

Contact: [andersson.dav@gmail.com](mailto:andersson.dav@gmail.com); [jonathan.molin@gmail.com](mailto:jonathan.molin@gmail.com)

## Abstract

As the environment for companies is being affected by numerous factors, the competitive landscape is becoming more and more fierce. One way for companies to stay flexible, and supporting the internal innovation capabilities is through an Open Innovation Portal. This qualitative case study tries to find what features that affect the volume and quality of contributions entering an Open innovation Portal. The features can be altered and used by a Portal owner in order to maximize both volume and quality of contributions. With the significant absence of academia within the subject, the theoretical framework is based on derived theories from similar environments. The result has identified 9 different features that can be used to overcome barriers, increase motivation and maximize quality of the submitted contributions. Furthermore, a theoretical model has been developed in order to describe what features affects what step in the submission process.

**Keywords:**

*Open Innovation, Open Innovation Portal, Innovation Portals, Portal, Portal Contribution, External Collaboration, Direct Portal, Volume Features, Quality Features*

*This page is intentionally left blank*

## Table of Contents

<b>1</b>	<b>Introduction .....</b>	<b>5</b>
1.1	Background .....	5
1.1.2	Open Innovation Portals .....	7
1.2	The FMCG industry and OI Portals .....	8
1.2.1	SCA and Open Innovation .....	8
1.3	Problem discussion .....	10
1.4	Research Question.....	10
1.4.1	Limitation .....	10
<b>2</b>	<b>Theory .....</b>	<b>11</b>
2.1	Open Innovation .....	11
2.2	Practical benefits of Open Innovation Portals .....	12
2.2.1	Open Innovation Portals .....	13
2.3	Website traffic and volume maximization .....	13
2.4	Motivation for professional collaboration.....	14
2.5	Trust and professional collaboration.....	15
2.6	Quality of ideas and submission in OI Portal .....	16
2.7	Summary of theory.....	18
2.7.1	Theoretical model with features for maximizing submission into OI Portals .....	20
2.7.2	Trust, motivation and identified features .....	20
<b>3</b>	<b>Methodology .....</b>	<b>23</b>
3.1	Research Strategy .....	23
3.2	Research Design .....	23
3.3	Research Method.....	24
3.4	Cases studied and criterions.....	24
3.4.1	Limitations of sample .....	25
3.5	Interviews.....	25
3.5.1	Verification of data.....	26
3.6	Data Analysis.....	26
3.7	Research Quality .....	27
3.7.1	Reliability .....	27
3.7.2	Validity.....	27
3.8	Overview of methodology for this thesis .....	28
<b>4</b>	<b>Empirical Findings .....</b>	<b>29</b>
4.1	Presentation of Case Companies .....	29
4.2	Summary of Case companies.....	31
4.3	General empirical finding about Innovation Portals .....	31
4.4	Empirical findings about Quality in Innovation Portals .....	33
4.5	Empirical findings about Volume of Innovation Portals.....	36
4.6	External Consultants about Open Innovation Portals .....	38
4.6.1	Introduction to consultants.....	38
<b>5</b>	<b>Analysis .....</b>	<b>40</b>
5.1	Definitions of quality .....	40
5.2	Definition of volume.....	40
5.3	Why engaging in Open Innovation Portal.....	41
5.3.1	Strategic Intentions .....	41
5.4	Features of quality and volume in OI portals.....	43
5.4.1	Quality Features.....	43
5.4.2	Volume Features.....	45
5.5	Summary of features important for volume and quality.....	47

5.6 Developed academic model of OI Portals.....	48
5.7 Feature interrelationships .....	48
5.7 Contra productivity .....	49
5.7 Resource constraints .....	49
6 Conclusions .....	51
6.1 Recommendations for SCA .....	52
6.2 Future research .....	53

## Table of Tables

Table 1 - Overview of features, derived from theory and the empirical findings, on how Portal owner can increase quality and volume. ....	21
Table 2 - Explanation of symbols used in table 1.....	21
Table 3 - Overview of interviewed companies with respondent title and interview setting ...	26
Table 4 - Consultant interviewed for this thesis .....	26
Table 5 - Summary of case companies, time of operation and type of Portal.....	31
Table 6 - General quotes and reasons for having a Portal.....	33
Table 7 - Empirical findings about quality of contributions in OI Portals.....	36
Table 8 - Empirical findings about volume of contributions in OI Portals.....	38
Table 9 - Quotes of contribution quality from consultants.....	39
Table 10 - Quotes of contribution volume from consultants.....	39
Table 11 - Overview of features, if they affect volume or quality, and if they are identified in the theoretical framework or been added from the empirical findings.....	47
Table 12 - Explanation of symbols used in the table 11.....	48

## Table of Figures

Figure 1 - The different strategies of OI activity (Enkel and Gassman, 2004) .....	7
Figure 2 - Classification of the different OI methods (Authors, 2015) .....	9
Figure 3 - The Open Innovation Process (Chesbrough, 2003c) .....	11
Figure 4 - Model over the submission process through an OI Portal.....	18
Figure 5 - Features that from a theoretical point of view affect volume and quality in the submission process.....	20
Figure 6 - Visual overview of how the thesis was executed.....	28
Figure 7 - Further developed model with features affecting quality and volume. ....	48
Figure 8 – Finished model over features improving the OI Portal submission process.....	52

## List of abbreviations

OI	-	Open Innovation
OIP	-	Open Innovation Portals
NDA	-	Non Disclosure Agreement
SEO	-	Search Engine Optimization
IPR	-	Intellectual Property Rights
FMCG	-	Fast Moving Consumer Goods

# 1 Introduction

## 1.1 Background

In nearly every industry, competition and market demand has rapidly changed during the last decades (Grant, 2013). The cycle times for products are decreasing and products from the consumer discretionary sector have shifted toward everyday purchases. The implications for companies, especially those with short product cycle times, such as the Fast Moving Consumer Good (FMCG) industry, are among others, that they need to increase their flexibility and innovation capabilities to satisfy the consumer needs and to create value (Zhou, K.Z. and Wu, F. 2010). Traditionally, innovation processes has with a vast majority been conducted internally through research and development (R&D) projects involving company employees and hired consultants. During the 21st century, the subgenre of Open Innovation (OI) has been defined, adopted and amplified throughout many industries and companies (Chesbrough, 2003a).

In 2003, Henry Chesbrough published his paper on Open Innovation, and for the last decade it has become one of the most cited and influential topics in the management research field. The subfield of OI has roots, such as the client-supplier collaboration, going back several decades (Christiansen et. al., 2005; Gann, 2005) but it was not until Chesbroughs' (2003a, 2003b, 2003c) publications it became a fixed field of study with clear definitions. The fundamentals of OI is that the company can exploit external knowledge by internalizing it and hence, complement the firms own R&D. The external knowledge is transferred by for example transactions, supplier agreements, alliances or joint ventures. Moreover, a firm that by accident develops knowledge that it cannot commercialize within the own organization can profit by spin offs, licensing or other means of appropriation (Chesbrough, 2003a; 2003b). The core focus of OI is therefore to open up the innovation and research processes (Eelko K.R.E. Huizingh, 2010). One of the most used definitions of Open Innovation has been stated as:

*“The use of purposive inflows and outflows of knowledge to accelerate internal innovation, and to expand the markets for external use of innovation, respectively”*  
(Chesbrough et. al., 2006)

Since the concept of Open Innovation is fairly new, much of the research done in the area uses different definitions and focus (Dahlander and Gann, 2010), which makes it hard to build a body of knowledge that is coherent, and therefore conducting systematic research (Huizingh, 2010). It has been concluded that future research within the area should be specialized towards specific sub genres (Carlsson and Corvello, 2011). These subgenres are mentioned as for example, *“How to conduct OI?”*, *“Best practice of OI?”* and *“When to conduct OI?”* (Carlsson and Corvello, 2011). A joint difficulty for these areas is to access and internalize external



knowledge because of both external and internal barriers. The “*Not invented here*” syndrome (Katz and Allen, 1982) is one example that creates friction when trying to internalize knowledge from the external world. Moreover, the “*Not sold here*” syndrome also affect the ability for firms to benefit from new business opportunities created by OI (Lichtenthaler et. al., 2010). External barriers that impose challenges can be understood by analyzing the market for ideas with transaction cost economics (Williamson, 1981), which would suggest high search cost as well as asymmetric information. At the same time, it is becoming more and more vital for large organizations to efficiently work with Open Innovation (Chesbrough, 2003a).

Currently there is a lack of detailed understanding about how to efficiently conduct OI and especially about the different tools, such as the OI Portal, that are used to execute it. When classifying OI, there are usually three different strategies that a company can adopt according to (Enkel and Gassman, 2004). These are:

(1) ***The outside-in process:*** Boosting the firm's own knowledge base by tapping into the knowledge of suppliers, customers or other external sources. The implication for the company can be that knowledge can be congregated with low investments, leading to increased innovativeness.

(2) ***The inside-out process:*** Knowledge that cannot be applied in the focal firm's own industry can be valuable in another industry. For example can IP rights be sold or licensed for a profit.

(3) ***The coupled process:*** Coupling the outside-in and inside-out processes in terms of partner collaboration.

All of these strategies are important in order for an organization to efficiently engage in Open Innovation, and are said to be equally important in order to increase a company's innovativeness (Laursen and Salter, 2006; Lettl et. al., 2006; Piller and Walcher, 2006). In our study we focus on the Outside-in process of Open Innovation which focuses on tapping into external knowledge. The main sources for external knowledge and collaborative innovation are identified as *clients*, *competitors*, *suppliers* and *commercial research institutes*. However, about 65% of the knowledge inputs come from other sources, namely *non-customers*, *non-suppliers*, and *partners from other industries* (Enkel and Gassmann, 2008). This inclines that firms can benefit even more from the outside-in process by reaching sources of knowledge outside of their own industry boundaries (Dittrich and Duysters, 2007; Chesbrough and Prencipe, 2008; Enkel, 2010).

The OI Portal is a tool designed to reach outside of the firms' own network and reach, by allowing submission directly to the firm. It is a passive process but with full disclosure of the problem seen from both the contributor and the Portal owner's perspective. The OI Portal provides a chance for innovators to remain secretive about their ideas that in some competitive situations is necessary to secure commercial success. Another way of reaching beyond industry boundaries can be done through

intermediaries<sup>1</sup>[1] such as InnoCentive<sup>2</sup> [2], which from the firm perspective is a complementary tool to reach outside of firm boundaries where they can remain secretive about their problem formulation. For a visual illustration, see figure 1 below:

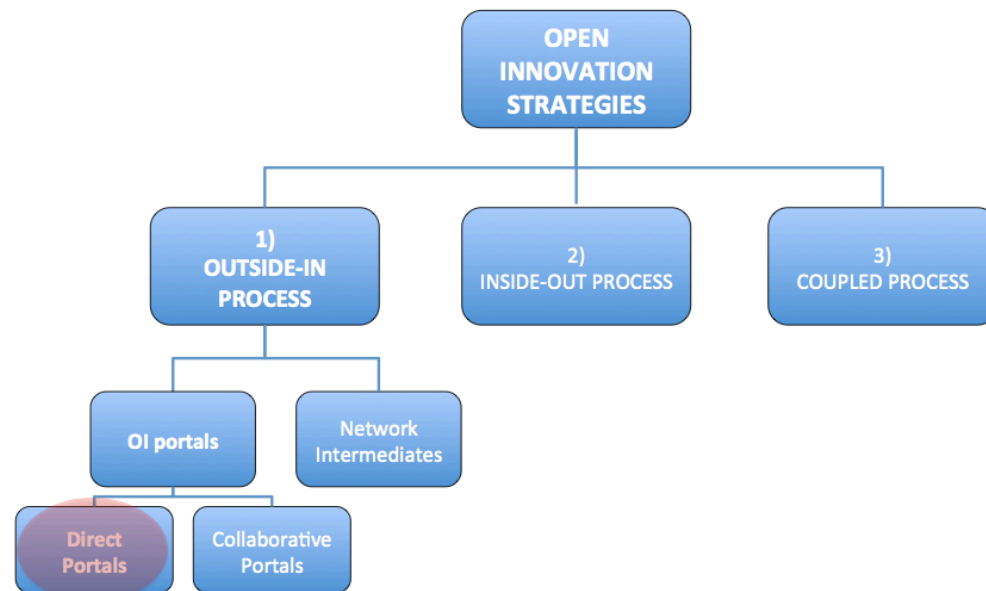


Figure 1 - The different strategies of OI activity (Enkel and Gassman, 2004)

### 1.1.2 Open Innovation Portals

The Latin word *Porta* describes a passage where something will have to pass in order to get to another place. Portal rather empathizes the necessity or convenience of the place something must pass in order to get to the final destination. For example, when travelling by plane, the airport is the necessary and perhaps convenient place that needs to be passed before reaching the intended destination.

Two major archetypes of OI Portals have been crystallized by Marais and Schutte (2009); *Direct* and *Collaborative*, Where the first main purpose is to receive contributions directly without disclosing the submission to any other party than the firm. The outside-in strategy has been described by Marais and Schutte (2009) as an Innovation mall, where the firm can display a range of problems openly and anyone can enter to submit a solution. After this, the firm can evaluate and choose which contributions to proceed with through a transaction/monetary reward, joint venture or another kind of partnerships. Collaborative Portals on the other hand are designed in order to reveal submitters ideas to everyone so that discussion, comments and

---

<sup>1</sup> **Intermediaries** act as matchmakers between two parties, allowing for anonymity from the firms side and increased perceived security for the other side. Services include everything from collaborative matchmaking to technology scouting and problem solving.

<sup>2</sup> **InnoCentive** is an intermediary where companies can post problems anonymously and anyone can contribute to a potential solution.

collaboration is possible. Furthermore, collaborative Portals are ideal to stimulate creative discussions with stakeholders, referred to as “the crowd”. The hosting firm can also set up contests via the collaborative Portal with prizes for the best ideas generated.

## 1.2 The FMCG industry and OI Portals

The concept of OI Portals is relatively new, the oldest Portal is hosted by P&G, a global FMCG that launched their OI Portal about 10 years ago (Procter & Gamble, 2015a). Besides being first the FMCG-company to do so, the FMCG industry hosts the majority of OI Portals that we have come across when scanning large corporations from the NYSE and OMX Nordic. Reasons for this has been stated as for example the shortening cycle times for products, and the companies desire to stay flexible with rapid response times in order to satisfy customer needs (Zhou, K.Z. and Wu, F. 2010).

### 1.2.1 SCA and Open Innovation

SCA is a leading global hygiene and forest products company. The Group develops and produces sustainable personal care, tissues and forest products. SCA is a publicly traded company on NYSE and OMXS. Sales are conducted in about 100 countries under many strong brands. The Group has about 44,000 employees worldwide and in 2013, sales amounted to SEK 93 bn (SCA, 2015a).

According to SCA, innovation drives growth and profitability and comprises one of SCA’s three strategic priorities. Development and differentiation of products and services boost customer and consumer value while strengthening the company’s market positions and brands. SCA’s innovation process is deeply embedded in the Group’s strategy and business model. Innovation activities are based on market trends, customer and consumer insight, new technology and business models, with sustainability and product safety integrated into the process. SCA’s presence in both mature and emerging markets provides a good understanding of trends and customer and consumer needs. This is used to develop new business models, products and services adapted to the prevailing conditions in these markets (SCA, 2015b).

Open Innovation, meaning cooperation with external parties, constitutes an important part of SCA’s innovation efforts and is a resource-efficient way of delivering increased customer and consumer value (SCA, 2015c).

The OI Portal is one out of many methods of executing OI at SCA; it is differentiating itself towards other methods both by structure and strategic purpose. The OI Portal is external in terms of audience scope and the problem access is open for everyone.

Strategically, the Portal deals with R&D challenges for SCA and the timeframe is tilted towards long term, potentially disruptive innovation<sup>3</sup>.

Based on the problem specific characteristics, such as the audience scope and the accessibility to the problem, a matrix for making the tool decision can be derived. From the internal, department specific tool, found in the third quadrant, to the OI Portal found in the first quadrant. The matrix is presented below in figure 2.

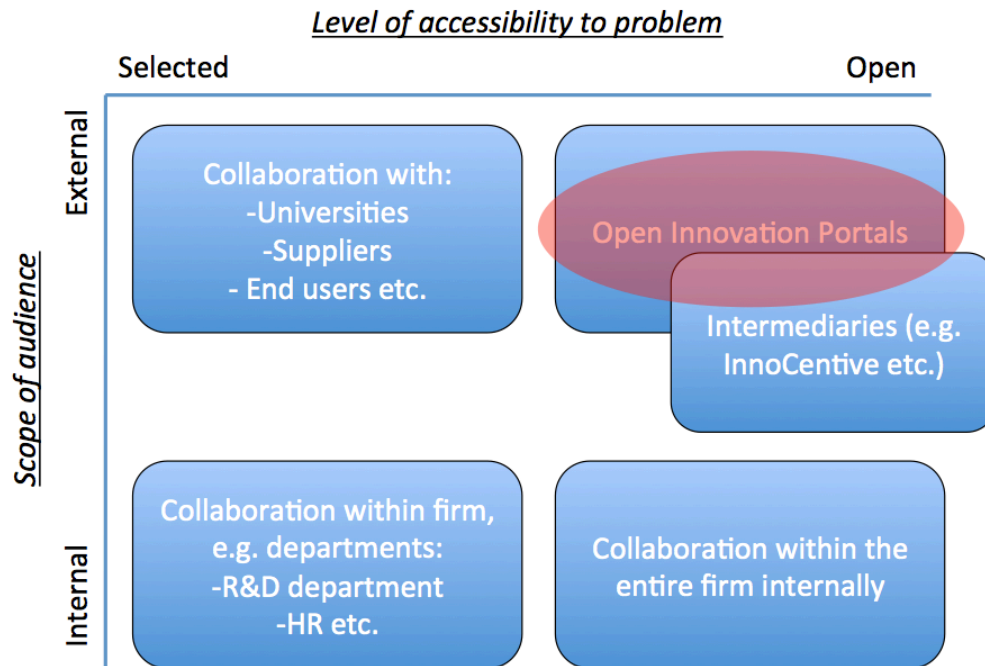


Figure 2 - Classification of the different OI methods (Authors, 2015)

The Portal itself is hosted on the corporate webpage of SCA and at all times you may find everything from broad topics to narrow scoped problems posted on the Portal. The topics and problem formulations represent challenges for SCA where outside help is seen as a viable way of solving the problem, either completely or by complementing in-house research and/or development. Using this method, SCA establishes contact with parties that have access to technology and products that can help the group strengthen its innovation efforts and, ultimately, the offering to its customers (SCA, 2015c).

<sup>3</sup> Interview with Kerstin Johansson, Open Innovation Program Manager, SCA, 2015-01-30

## 1.3 Problem discussion

For SCA, a company perhaps mostly known for their individual brands and not the SCA brand itself, it is likely that many excellent solutions around the globe never find their way to SCA's OI Portal. This fact has a potential negative effect on one of the prime uses of an OI Portal, reaching beyond the focal firm's own network. Other negative effects can be the decreased volume of contributions due to the lack brand recognition. Moreover, while it is in SCA's interest to get more ideas in through the OI Portal, it is also necessary to increase the quality of contributions to maximize value. It is these two factors, volume and quality, that nearly all Portal-owners around the globe, and especially SCA, are facing and wants to solve.

## 1.4 Research Question

With the current situation for large firms and their Open Innovation Portals, combined with the problem discussion, the research question for this thesis has been formulated accordingly:

### **Main question:**

- *What features will enable SCA to maximize submissions into their Open Innovation Portal?*

### **Sub queries:**

- *How can the Open Innovation Portal owner maximize the volume of submissions?*
- *How can the Open Innovation Portal owner maximize the quality of submissions?*

### 1.4.1 Limitation

The brand recognition of the firm will have spillover effects on the volume and traffic to the Portal and this has been excluded from the thesis. More specific marketing theories, such as Search Engine Optimization (SEO) are however considered. When evaluating the performance of an OI Portal it is tempting to look on how many concrete outcomes it has generated, such as process improvements or product launches. We want to avoid the biased screening process where one idea may be rejected in the screening phase and the very same idea may generate a significant ROI when commercialized by a different firm. We have therefore chosen to exclude screening and commercialization aspects in this thesis. Moreover, we want to focus on the challenges that can be affected by the Portal owner, such as quality and volume, to in isolation increase the performance of the OI Portal.

## 2 Theory

*In this chapter, the different theories and frameworks that are available and relevant are presented. A systematic literature review has been conducted in order to identify these and to secure the holistic point of view. Open Innovation, the different strategies for OI and motivational collaboration factors are presented together with features for increasing volume and quality.*

### 2.1 Open Innovation

The concept of Open Innovation was launched and defined by Henry Chesbrough in 2003 (Chesbrough, 2003c). As defined in the introduction of this thesis, the innovation process has become more and more important for a competitive advantage as the globalization and competitiveness are increasing in all industries (Grant, 2013). Further on, many researchers and scholars have found that more and more companies are opening up their processes when undertaking innovation work (Chesbrough, 2003a; van de Vrande et. al., 2009). This can be seen as a consequence of the psychological changes in mind-sets of how companies can collaborate (Lakhani, 2006). The clearest distinction between the traditional R&D process and the OI process, lays in the openness, were ideas from external partners, outside of the firm boundaries, can be integrated with the internal innovation process. Therefore contributing to both existing and potentially new products and markets, see figure 3 below (Chesbrough, 2003c).

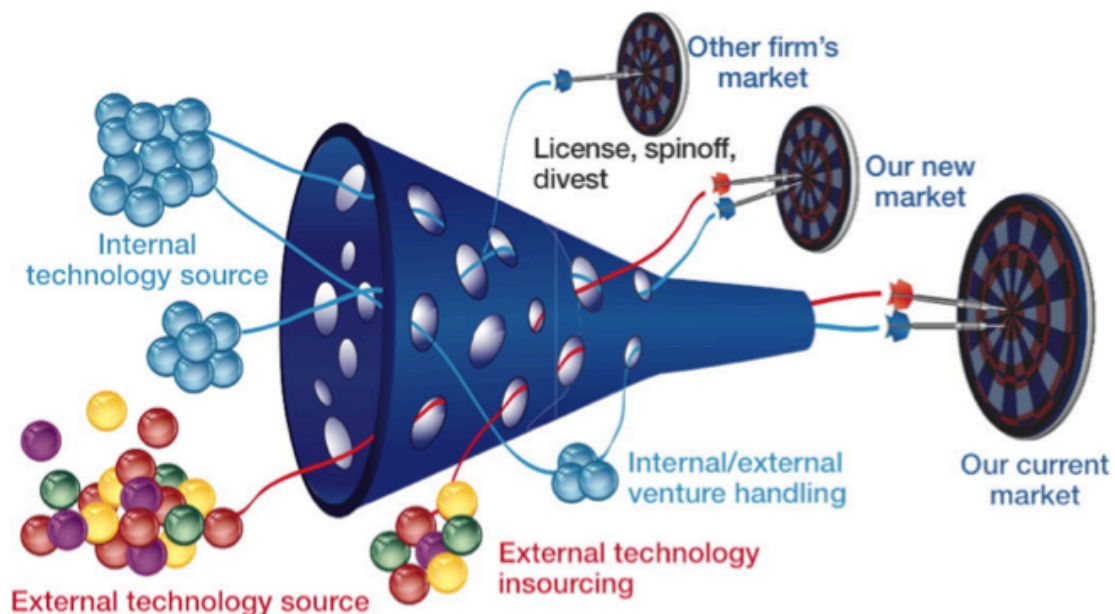


Figure 3 - The Open Innovation Process (Chesbrough, 2003c)

When conducting OI, the organization has a wide arrange of options and tools to utilize. One of the first, systematic, approaches of this is the way Toyota have been working together with their suppliers in order to minimize cost and maximize

efficiency and quality (Boston Consulting Group, 2011). The firm-supplier relationship can be considered as the most established way of conducting OI to this date (Grant, 2013). Other OI tools can for example be a physical suggestion box used in-house at a firm, or using focus groups of customers in order to provide data for R&D. Everything connected to external information gathering can be defined as an OI tool (Chesbrough, 2003c). With the digitization and information technology development, most tools and processes has been rapidly developed to allow for decreased cycle times and quicker response both from the respondent, but also for the correspondents feedback and issuing of problems (Bonnet et. al., 2014). One of these digital tools is the Open Innovation Portal, widely adopted in many industries with leading examples within the FMCG industry (Franklin, 2000).

## 2.2 Practical benefits of Open Innovation Portals

The benefits related to Open Innovation and conducting this practice, if only to some extent, are usually by far exceeding the costs. For example, Procter and Gamble states that the projects starting off in their OI Portal have an average Net Present Value (NPV), 70% higher than internally initiated projects (P&G, 2013). Major reasons behind these financial benefits are associated with the cost structures that are often minimized with the external contribution. Again, looking at P&G, they are currently having a contribution ratio of 50% of their ideas coming from an external source, making their innovation process one of the most ‘open’ in the industry (P&G, 2013). Another example is Reckitt Benckiser (RB), a British FMCG company in household cleaning and personal care categories. The outcomes of open innovation according to Dr. Kevin McFarthing on the ISPIM (2008) June conference are Incremental and profitable growth. The success has been predominant in outside-in strategies aimed at improving the internal innovation by bringing in external knowledge. However, the attempts to fully exploit the theoretical values in inside-out strategies by creating spin offs and ventures failed, and the success has been limited to only licensing out Intellectual Property (I.P.) (McFarthing, 2008).

One of the key tools for RB is the “*Idea-link*”, an OI Portal hosted on the corporate website that has enabled opportunities that would not have been found using traditional scouting. The *Idea-link* has been the first touch point for actors later engaging in long-term strategic alliances as well as regular alliances that populate the Innovation pipeline and produce serial innovations (McFarthing, ISPIM conference, 2008).

Studies on the relationship of OI and performance indicate increased profitability (Chiang and Hung, 2010; Lichtenthaler, 2009). OI enables firms to delay capital commitment and early exits from projects that reduce losses, hence lowering R&D costs (Vanhaverbeke et. al., 2008). As mentioned earlier, P&G have made significant improvements of their financial ratios after opening up their innovation process. Decreased risk is also brought up as a key benefit by (Cheng and Huizingh, 2010;

Chesbrough, 2003c). As with all innovations projects there are some significant risks. Often they can be classified as either project specific risks or firm related risks. The project specific risk, such as the breadth of ideas, know-hows, and opportunity recognition can be minimized as a consequence of efficient OI work. Moreover, Cheng and Huizingh (2010) highlight the benefit of evolving the business model in light of successful OI. Through both internal and external usage of knowledge and innovation capabilities, the firm usually becomes significantly more adaptable to the market place that is constantly changing along with customer preferences (Mortara, 2009). The business model has to be adaptable and flexible to secure future growth and financial pay off from the faster time to market that OI enables (Grant, 2013).

### 2.2.1 Open Innovation Portals

OI Portals are usually set up as a separate website or part of the website linked to the managing firm. This is done in order to maximize the accessibility of the problems for the public body on knowledge (Bynghall, 2013). When using OI Portals, the firm has to make a clear definition and goal for what they are actually looking for in order to define the OI strategy that will serve the operations around the Portals and the internal processes of the innovation capabilities (Cheng and Huizingh, 2010)

The requirement of *Intellectual Property Rights* (IPR) are often used by Portal owner as a way to secure the firm against violations of patents and to secure the ownership or licensing of contributions given through the Portal (McFarthing, 2008). However, the contributor when submitting to the Portal often disregards these requirements. This creates a situation where the firm must deny the contribution and pursue without it, as patents intrusions etc. become problematic. Often, this is perceived as a major barrier for the contributor as they feel that they have ownership for an idea that the firm can use, or patent themselves, after the contribution (McFarthing, 2008).

## 2.3 Website traffic and volume maximization

One of the most well established theories and methods around maximizing the traffic to a site is through Search Engine Optimization (SEO). SEO allows for website owners to cost efficiently, and with high precision, reach out to their target audience (Blankson, 2008). Search engines, such as Google, collects data from websites including keywords and phrases in order to maximize the relevance for their users (Sweeney, 2001). If a site owner has knowledge around how SEO work, they can significantly improve and increase the traffic to their website (Turban et. al., 2015).

To increase the amount of contribution of ideas making it all the way to the screening phase, it is vital to maximize both the amount of visitors and have high conversion of traffic into volume. The amount of inventors that visit the Portal are likely to increase the total starting input and is strongly related to theories around attracting traffic to e-



commerce websites, such as the paper of Soonsawad (2013), which focuses on the conversion of visitors into buyers.

Once a potential contributor is visiting the OI Portal, it is important to foster interaction, support decision-making and encourage the contributor to return to the site (Helander and Khalid, 2000). E-commerce design principles are concerned with these aspects and they are to some extent transferable to the OI portal design. The challenges and strategies describing an “*information dynamical B2B portal*” by Clarke and Flaherty (2003), also concerns the conversion of traffic to transaction. The suggested strategy for the generic B2B portal was to use marketing and to secure high traffic and customization to improve conversion (Clarke and Flaherty, 2003).

A more detailed aspect of website quality in e-commerce pointed out usability, information quality and service capabilities. Where usability refers to the degree to which users perceive that using the particular system can achieve their objective (Kumar et. al., 2007). Enabling easy navigation and avoiding the possibility of errors are two major aspects. Information quality refers to the relevance, accuracy, understanding and usefulness of information provided by the e-commerce website. (Susser and Ariga, 2006). It is not referring to the quality of the parts in the transactions, i.e. submissions for an OI Portal, but rather the characteristic of the Portal itself. In some cases it can be difficult to provide complete and accurate information, in that case updating the information continuously is a powerful tool. Moreover, service capabilities is a key aspect in e-commerce design and basically reflects the support capabilities of the website. Customer support is one of the few touch points that exist over the Internet and therefore becomes an important tool (Wolfenbarger and Gilly 2003). It is in the website's interest to overcome the lack of face-to-face contact, and constantly explore opportunities to improve relationship with the visitor (Liu et. al., 2006). Substitutes that may be empowered are support via phone, chat, virtual advisor and e-mail. In general website quality is defined as the e-commerce system's performance in delivering information and services (Liao et. al., 2006). High website quality will among other things, increase the perceived trust by the visitor (McKnight et. al. 2002a; 2002b). Websites that are operated ineffectively slow loading times and lack of secured services creates great dissatisfaction when visited (Liu and Arnett, 2000).

## 2.4 Motivation for professional collaboration

There is currently a lack of good understanding on how to motivate actors to voluntarily contribute knowledge to the OI Portal. By looking at comparable situations, such as innovation networks and Incentive Theory we can suggest a theoretical framework of motivation for Portal contribution.

Intrinsic motivation refers to situations where people commit an action based solely on the pleasure, fun or experience of competence associated with the action (Deci and

Ryan, 1985). The research around intrinsic motivators has so far mainly been conducted upon Open software communities, with interesting findings, such as voting systems (Deci and Ryan, 1985), but relatively low transferability to Direct OI Portals.

Extrinsic motivators, such as monetary rewards for external contributors are important according to Incentive Theory, (Laffont and Martimort, 2001). Moreover, studies conducted on innovation networks also point towards, among others, that monetary reward is a significant factor of motivating participation (Antikainen and Vääätäjä, 2010). Another set of significant factors are described as “*social motivators for participation*”, these are recognition by peers and firms, for example the publishing of success stories (Antikainen and Vääätäjä, 2010; Jeppesen, 2006; Lerner and Tirole, 2002). Professional reputation, the experience of sharing and reciprocity are also factors of motivation for contributors (McLure et. al., 2000). Studies has also found *influence* as a significant factor for idea contribution, in example, actors like to make a noticeable impact with their contribution (Antikainen and Vääätäjä, 2010).

According to a web survey by Antikainen and Vääätäjä (2010), respondents agreed that the recognition by the Portal owner, ranking lists by quality and public acknowledgement all increased motivation. The survey was conducted on 49 respondents where the majority were members of an electronic design community

Further more, other motivational factors for collaboration, or overall interaction, can be derived from loyalty programs, mentioned by Bowen (2015). The loyalty programs used in many e-commerce situations are aimed at creating lock in effects to secure future traffic and increase the total number of transactions (Bowen, 2015).

## 2.5 Trust and professional collaboration

Beyond the intrinsic and extrinsic motivators for collaborations, the question about trust is fundamental for the process of matchmaking. The transaction scenario is derived out of the typical OI Portal setup where the contributor has to engage in a speculative behavior with IP rights already in place. The matchmaking for this thesis has been defined as following:

*“In this paper ‘matchmaking’ is defined as all of the social interactions between two or more parties from the first intention to the matching decision regarding the conditions of an idea transfer or the decision to stop a specific interaction”*

(Katzy et. al., 2013)

A successful matchmaking is a challenging process because of social dilemmas, best explained by using Game Theory between two actors, the firm (buyer) and contributor (seller). Where the buyers’ incentive is to acquire the knowledge at lowest price versus the seller who wants to maximize the price of the knowledge. Hence without cooperation both actors are facing uncertainty and risks associated with the

transaction because of asymmetric information (Elster, 1989; Taylor, 1987; Williamson, 1986). This risk, in the context of speculative contribution with IP rights, has been elaborated upon by Harlanda and Nienaberb (2014), were waste of resources and the disclosure of the idea has been identified as problems for the contributor. Moreover, Harlanda and Nienaberb (2014) also found risks perceived by the buying firm; *long process, risk of overpaying for the knowledge, losing contributions because of high barriers and too little contact* with the contributor. The key to overcome this prisoner's dilemma is the enactment of trust (Kirchgässner 1991; Riegelsberger et. al., 2003).

*“Trust can be understood as the willingness to be vulnerable to the actions of another party based on the expectation that the other person will perform a particular action that is important to the trustor, irrespective of the ability to monitor or control the other party“*

(Mayer et. al., 1995)

For OI Portals, the problem is magnified because of the high level of anonymity present in relationships over the Internet (Urban et. al., 2009), which makes it difficult to create long-term relationships and trust (Wang and Emurian, 2005). The lack of personal contact over the Internet is the main barrier to trust and trustworthiness of firms (McKnight et. al., 2002a; Riegelsberger et. al., 2003). The issue of trust is also highlighted in B2C digital marketing as the key differentiator between a successful web shop and a web shop that merely is understood as a self-service product catalogue (Urban et. al., 2000). Some of the proposed actions to increase trust are to provide virtual advisory technology, include competitive products and provide unbiased information (Urban et. al., 2000).

## 2.6 Quality of ideas and submission in OI Portal

Because there is a lack of actual features that would increase quality in previous theory, we focus on understanding what quality means in order to find features to our research. The only feature we have found to primarily improve the quality is complementary information. One of the most common definitions of quality has been created by Joseph M. Juran in 1951:

*“Fitness for Use”*

Where the customer or end-user then defines the ‘fitness’. By applying this broad definition to the concept of quality, a variety of different perceptions and definitions can be identified which often is the case when it comes to businesses and products. Since the quality usually only affects the customer, there is no point in defining it from a supplier side.

In total quality management, (TQM) there are three main styles of quality, (1) Attractive quality, (2) Competitive quality and (3) Must be quality. The most

prevalent of these styles is the “*Must be quality*” style, which is about reducing errors, because a process or product without error must mean high quality. The concept of competitive quality refers to fulfillment of customer expectations and attractive quality fulfills new needs (Kano, 2001). The aspect of attractive quality is especially useful in innovation because it is aligned with innovation and introduction of more or less radical innovations. New to the world product or services that appeals to customers unspoken needs have an attractive quality and must come through innovation (Kano, 2001).

The quality of ideas in innovation initiatives is clouded with much uncertainty and even if there is a set of great ideas it is not certain that the firm will recognize them. Hence, for the majority of firms it is better to get one great ideas than 99 useless compared to 99 averages and one useless (Terwiesch and Ulrich, 2010). Knowing that success will come out of the great ideas make firms eager to pick a couple of ideas that they have evaluated as top potential to make sure that the great ideas is not missed. Extreme value theories with application of innovation use 4 variables to assess the quality of idea generation: (1) Average quality of ideas, (2) The number of ideas generated, (3) The variance of quality of ideas and (4) The ability to recognize the best ideas (Terwiesch and Ulrich, 2010). Improving any of or all of these variables should lead to a higher chance of arriving at the extreme value of a great contribution that has attractive quality (Terwiesch and Ulrich, 2010).

Assessing the quality and value of an idea is difficult in the initial stage due to the lack of hard and quantifiable facts, which this is especially true for novel ideas (Cooper, 1981). To picture the hardship of buying and selling ideas it viable to draw upon transaction cost economics with special focus to information asymmetry, uncertainty and hence risk of opportunism (Williamson, 1981). An idea’s value is very difficult to assess, both for the seller and buyer, and this is further enhanced by the asymmetry of information between the actors of the transaction. The inventor knows more about the actual idea, while the buyer may assess the economic impact of the idea more accurately, given that the idea works as specified. This Prisoner’s Dilemma leaves both parties worse off unless they can establish trust and create a win-win deal. The hardships is put in context by Berggren and Nacher (2001), who found that up to 95% of all new product development initiatives fail to provide positive financial return.

While previous research indicate that a formal and structured process of screening ideas improves the go to market success rate (de Brentani, 1986). Others have suggested that a highly customized approach according to the special characteristics of the firm is even more effective when screening ideas (Choffray and Lillien, 1980). Edgett (1993) also observed a difference between screenings of new services compared to product innovation, where services use a more informal process. The complete process from ideation to launch often applies a process where screening is present in some form at every gate, commonly referred to as stage-gate innovation (Cooper, 2008).

Generic indicators for the early stage, proposed by de Brenatani and Droge (1988), has mainly focused on:

1. *Overall corporate synergy*
2. *Production/technical synergy*
3. *Marketing synergy*
4. *Competitive advantage*
5. *Expected performance*

However, global industries in the 21th century has developed into a more uncertain and fast changing direction, which has lead research to incorporate cycle time to a greater extent. Melissa (2005) has suggested an approach that relies on maximizing the of customer requirements, cycle time and controlling development costs. Similar findings but with the addition of product quality was proposed by Wink et. al. (2006).

## 2.7 Summary of theory

Even though there has been a vast amount of publications and academic research conducted within the area of Innovation and foremost Open Innovation (Chesbrough, 2003a; 2003b; 2003c), there is still a considerable lack of knowledge and publications around OI Portals. With the goal to identify and solve the features needed for optimization, with emphasis on increased volume and quality, it is necessary to separate the building blocks of a generic OI Portal and review the theories of these building blocks one by one. We have made a generic model that describes the process steps, starting with a search by a potential innovator.

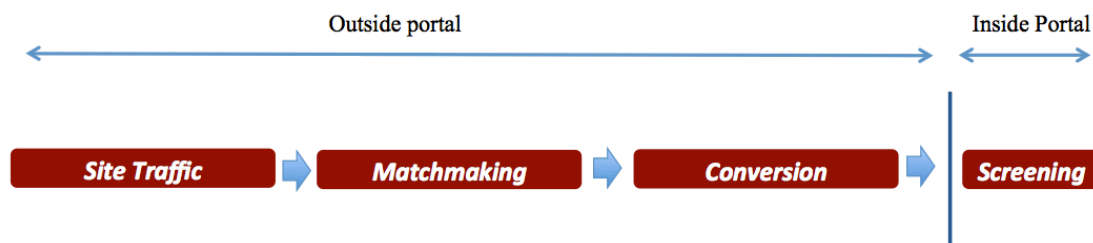


Figure 4 - Model over the submission process through an OI Portal.

Figure 4 describes how the process of submitting contributions is functionally working linearly. From site traffic that is coming into the portal website, then the matchmaking starts and finally a conversion from visitor to submitter takes place. The figure is simplified but the major building blocks has been narrowed down and presented.

Once a potential submitter has found their way to the portal it is important to provide the necessary design aspects to support the process of idea contribution and convert site traffic to actual idea volume. (Susser and Ariga, 2006; Wolfinbarger and Gilly, 2003). This process has much resemblance with the characteristics of a web shop described by (Helander and Khalid, 2000) or, perhaps more specifically, a B2B Portal. The challenges and strategies describing “information dynamical B2B portal” by Clarke and Flaherty (2003) also concern conversion from traffic to transaction.

The suggested strategy for the generic B2B portal was to use marketing and to secure high traffic and customization to improve conversion (Clarke and Flaherty, 2003). Moreover, B2B portals should strive to foster interaction, support decision-making and encourage the contributor to return to the site (Helander and Khalid, 2000).

The success of a B2B portal can be measured as the amount and size of the transactions it processes during a specific time. The OI Portal is often too evaluated upon how many ideas that are generated and the financial impact, even though other factors has a major contribution to this as well.

Studies on motivation with respect to crowdsourcing and idea collaboration have shown that both intrinsic and extrinsic motivators are significant factors that drive the motivation of actors submitting ideas or solutions (Laffont and Martimort, 2001). The opportunity to influence and gaining recognition by peers and the buying firm are important motivational drivers and can be transferred to OI Portals. Relevant examples from innovation networks are; successful featured projects and follow up stories on the development of past innovations (Antikainen and Väättäjä, 2010). The anonymous nature of the direct Portal limits some of these actions, such as peer-peer votes, but adding stories of success cases should only be positive (Laffont and Martimort, 2001). Moreover, there is always a possibility for the Portal owner to adapt the extent of disclosure according to the innovators wishes. Buying and selling ideas can be analyzed by the use of transaction cost economics with special focus to information asymmetry, uncertainty and hence, risk of opportunism (Williamson, 1981). This transaction of two actors is described in game theory as the Prisoner's Dilemma, and leaves both parties worse off unless they can establish trust and create a win-win deal.

Trust is stated as the mitigating factor in overcoming the prisoner's' dilemma and would enable transactions between the inventor and Portal owner to come about with less friction (Urban et. al., 2009). OI Portals need to infuse trust to a greater extent to improve matchmaking, a prerequisite for increasing the conversion rate from visitor to submitter, as well as enabling a potential future transaction. Trust is mainly facilitated by relationships, which unfortunately is hard to accomplish over the Internet (Mayer et. at., 1995). Other actions that has been found to work in B2C web shops, which is potentially transferrable to B2B OI Portals includes: Setting up a virtual advisor, Keeping content updated, linking to other OI Portals and related subjects to gain credibility (Liu et. al., 2006).

Quality can be defined as fitness for use (Juran, 1951), which suggests that each portal owner has his or her own definition and specific aspect that are evaluated when screening. An alternative, more specific approach to quality would be to assume the definition of attractive quality (Kano, 2001), which focuses on the benefit of meeting a previous unmet demand by the customer. In either case, the firm has to align their portal features with the own definition of quality.

### 2.7.1 Theoretical model with features for maximizing submission into OI Portals

The theory around OI Portals, and especially the Portals with a direct design, are currently close to non-existing. With the theoretical framework presented earlier in this thesis, a model with different identified features and their relationship to the submitting process of an idea is presented below in figure 5.

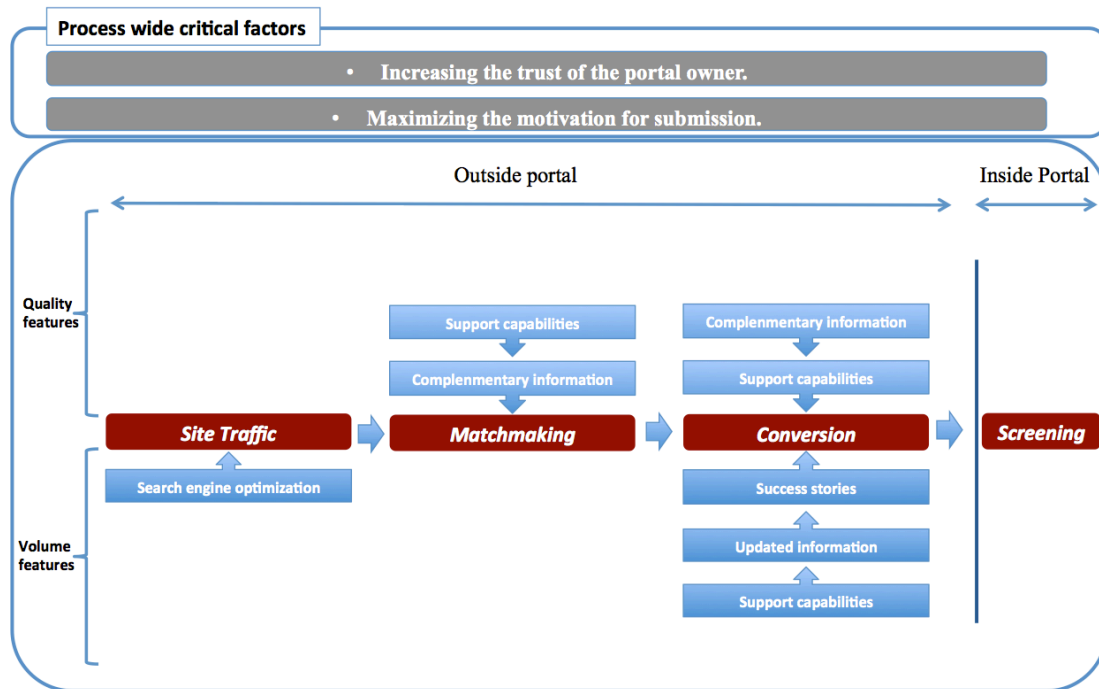


Figure 5 - Features that from a theoretical point of view affect volume and quality in the submission process.

### 2.7.2 Trust, motivation and identified features

Trust is the major variable that mitigates the hinder of operating over the Internet and should be increased to improve the portal. Motivation is also an important aspect that needs to be stimulated in the portal to increase the volume of submissions. Hence, the theoretical intent is to shape the OI portal to yield submissions of high quality according to the portal owners own definition, while also growing the volume. We have found that increased trust and motivation can be achieved in numerous ways through altering of the portal by installing different features. Moreover, as quality is very subjective, each firm must decide what aspects to value and how to align them with the portal features.

In table 1 below, the different features are presented by what attributes of volume and quality they are affecting together with the authors mentioning them.

<b>Features</b>	<b>Volume</b>	<b>Quality</b>	<b>Authors</b>
1) Search Engine Optimization	✓	~	Blankson, 2008; Sweeney, 2001 Turban et. al., 2015
2) Support capabilities	✓	✓	Liu et. al., 2006, Wolfenbarger and Gilly, 2003
3) Updated information	✓	~	Liu et. al., 2006
4) Success stories	✓	~	Antikainen and Väättäjä, 2010; Jeppesen, 2006; Lerner and Tirole, 2002
5) Complementary information	~	✓	Urban et. al., 2000

Table 1 - Overview of features, derived from theory and the empirical findings, on how Portal owner can increase quality and volume.

<b>Symbol</b>	<b>Explanation</b>
✓	Positive
~	Inconclusive, not mentioned in the theory.

Table 2 - Explanation of symbols used in table 1

### **Search Engine Optimization**

SEO is a very basic tool in order for any website manager to maximize the site traffic and include design aspect of the site to the search engine rules (Blankson, 2008; Sweeney, 2001; Turban et. al., 2015). Specific keyword and phrases, posted on the Portal, can cost efficiently increase the site traffic and therefore create a solid foundation for the conversion of traffic into volume.

### **Support capabilities**

Theory around e-commerce describes the key principles such as “*Support capabilities*” and “*Usefulness of information*” as the fundamentals to guide and support decision-making. These principles can be transferred to the OI portal in order to improve the conversion rate. Moreover, support capabilities will also increase the perceived trust by the visitor (Liu et. al., 2006; Wolfenbarger and Gilly, 2003).



### **Updated information**

Providing clear, easy to understand and most importantly, updated information is fundamental to create site quality. In most cases it is seen as a vital necessity but not a feature that significantly improves the experience of a visitor (Liu et. al., 2006).

### **Success stories**

Incentive Theory and its building block with both intrinsic and extrinsic motivators can be seen as essential in order to motivate the contributor to submit ideas. The motivation is an important factor for the conversion of site traffic into volume. (Antikainen and Väättäjä, 2010; Jeppesen, 2006; Lerner and Tirole, 2002)

### **Complementary information**

In e-commerce, the most successful and trustworthy sites are those that avoid being just a digital catalogue. Having links to competitors for easy comparison gives the impression of honesty and create trust. Other relevant sources could be external reviews or educational material from credible sources (Urban et. al., 2000).

## 3 Methodology

*This chapter provides an understanding for how the research was conducted and why certain tools and methodologies were used. Further on, the process of empirical data gathering and analyzing of the same are presented.*

### 3.1 Research Strategy

This thesis is using a qualitative research strategy. The main difference of using this strategy rather than a quantitative strategy is that the data that have been gathered is not locked into predetermined goals (Bryman and Bell, 2011). Therefore the research will be open to new and not predicted information and data. Further on, the research will have an inductive approach, meaning that an in depth understanding are aimed for, and the possibility for new theory to be developed. By using a qualitative research strategy, the empirical findings will have to be analyzed in order to provide a correct and holistic view.

The major potential disadvantage of using a qualitative research strategy is that, as mentioned earlier, the results will have to be analyzed and interpreted by the researchers, and therefore there is a risk for biased results (Bryman and Bell, 2011). Further on, when analyzing qualitative data it may be difficult to generalize the results and they should therefore be viewed within the context of the study (Bryman and Bell, 2011).

### 3.2 Research Design

For this thesis, the design will be an exploratory, multiple case study, meaning that for the data collection there will be a number of different cases being studied. In order to create a holistic view over the unexplored OI system and especially the Portals, the multiple case study approach becomes appropriate (Bryman and Bell, 2011), this is further enhanced by the considerable lack of earlier academia to it. The theoretical framework designed for the study is significantly based upon theories from other fields of research. In order to make the theories applicable and relevant to other areas, such as the OI Portal process, we have disassembled the theories and extracted some specific parts into our own model. The model we have created is presented earlier under the "Summary of theory" heading. Adding the features identified in the interviewed case companies, the completed, further developed model is presented in the conclusions.

When conducting the analysis, each case study was compared to current and relevant literature, as well as compared to other cases studied. Since the subject being researched has little, or hardly any at all, earlier academic research on it, the multiple case design can create a breadth wide enough to draw conclusions (Bryman and Bell, 2011). The analysis of the theory and the empirical findings was used to redesign the

earlier theoretical model with consideration taken to the input from the case companies.

### 3.3 Research Method

The data collection for this research has primarily been gathered through interviews. Even though both primary and secondary empirics have been gathered, the interviews have been the fundamental collection tool.

The semi-structured interview approach was identified as the most appropriate format for this research due to its flexibility. By using this approach, the correspondent can decide and guide the interview into a specific subject and area, but still leave space for the respondents to think and fill in with other thoughts, comments and even other topics. The semi-structured interviews allows for this research to cover a broader area, and opens up for the possibility to receive information that the authors have not thought of, and therefore provide a more complete picture (Bryman and Bell, 2011). This was especially applicable in this thesis due to the lack of earlier theory and to avoid narrowing down the results to the authors predetermined thoughts.

For the secondary data, a systematic literature review was conducted using key- and search words found in appendix A. With the deficient state of research conducted around OI Portals, the necessity of using other, derived theories became necessary. The databases used for the search were: (1) Emerald, (2) CRSP for the case company search, (4) Business Source Premier, (4) GUPEA and (5) Oxford Scholarship Online.

### 3.4 Cases studied and criterions

When deciding on what cases to be studied, some criterions were established in order to secure relevance and reliability. Since a vast majority of companies with an established and functional OI Portal are larger firms, and that these have a higher likelihood of facing the same trade-offs, this was set as one criterion. Not only as a consequence of the prevalence, but also to fortify the Portal functions and transferability of potential conclusions to other industries. Further on, since the function of the Portal and the efficiency of the same was the topic researched, the industry was not relevant as long as this was considered in the analysis.

Moreover, the type of Portal was set as another criteria. Some Portals use an open approach where all submissions are welcome, some Portals uses public access to the submissions, where other contributors can rate and evaluate each other's contributions. Most Portals on the other hand uses a challenge-based approach where specific, often long term and broad, challenges are posted with a desire for submissions in these specific areas. The latter described type was set as another criteria for the Portal selecting.

**Selection criteria's:**

1. Large companies, >250 employees & 50M € in turnover (European Commission, 2003).
2. Companies using Portals with a *Direct Portal* design.
3. Portals using specific problem formulations as requested submission areas.
4. Having a (relatively) long time of operation, >6 months.

**Delimitations:**

1. Companies in all industries where subject for our sample.
2. Country of operation for the Portal did not matter for our sample.
3. Even though one of the criteria's were that the Portal should have a Direct Design, one case company were interviewed with a collaborative design, this was done as they had experience from earlier operation of a Direct one.

### 3.4.1 Limitations of sample

Difficulties within this study are quite comprehensive when it comes to sample size. Globally, around 30-35 companies matches the earlier mentioned criteria's, due to this it has been proven hard to match the time frame of this thesis with availability and willingness to conduct interviews. Another factor has been the lack of experience of running OI Portals. This since many of the contacted companies had only been running their Portals for a very limited time, some as low as 2 weeks. These companies were regarded as too novice to include in this research.

## 3.5 Interviews

The case studies was conducted through interviews in various setting and with different respondents, see Table 3 below. All of the interviews were semi-structured as mentioned earlier in order to allow to discussion and the discovery of new features not thought of by the authors. Since many of the companies participating in the case study had offices abroad, telephone and E-mail was used to conduct the interviews. The language barrier between the respondents (native Swedish) and the respondents (mostly native English) can be considered small due to the language proficiency level of the researchers and the verification of data that was done subsequently.

**Companies**

Industry	Respondent	Type
Technology	OI Manager	Phone
Pharma/ Biotech	Front end Innovation Director	Phone/E-mail

Consumer Goods (1)	Early Innovation & External Innovation Manager	Phone/E-mail
Consumer Goods (2)	Innovation Manager	Phone
Consumer Goods (3)	Information & Innovation Director	Phone
Consumer Goods (4)	Innovation Manager	Face-2-Face
Basic Material	Innovation Director	Phone
Industrial Goods	Open Innovation Manager	Phone
Material producer	Manager of New Technology & Innovation	Phone
Agricultural	Director of Innovation	Phone

**Table 3 - Overview of interviewed companies with respondent title and interview setting**

### Consultants

Industry	Respondent	Type
OI Consulting	Partner	Phone/E-Mail
Strategy /Innovation Consulting	Consultant	Phone

**Table 4 - Consultant interviewed for this thesis.**

### 3.5.1 Verification of data

Since the interviews were conducted over the phone, and since not all of the interviews were recorded (desired by some respondent), the authors verified the interpretations of data and key quotes by mailing the results back to the respondent. With nearly no exceptions, the data was verified with only minor adjustments regarding quotes and interpretations. This step of the methodology was conducted in order to minimize potential misinterpretations and therefore avoiding wrongful input to the analysis.

## 3.6 Data Analysis

The data used in the analysis was primarily drawn from the interviews and with consultants working with OI and especially Portals.

After writing up the theoretical frameworks we found useful for the study and especially the analysis, we concluded the empirical findings into tables consisting of key take-aways from the interviews. The take-aways were divided into subareas matching the research scope and questions; this was done in order to assemble a body

of data, matching the theory, for the analysis. For the analysis, the theoretical features were confirmed through the interviews, and additional features were identified and contributing to the model developed and presented earlier.

## 3.7 Research Quality

In order to maximize the quality of the thesis, the authors conducted a number of different steps. The verifications of interview finding, described earlier is one of these. Further on, the empirical findings were double checked by both authors and even though the interviews were done by one of the authors, the other one listened into the conversation to minimize interpretation mistakes.

### 3.7.1 Reliability

The reliability refers to if the research can be conducted and replicated by another researcher with the same results (Bryman and Bell, 2011). With most qualitative studies, this is typically problematic as the interview settings hardly ever can be exactly replicated (Bryman and Bell, 2011). The multiple case studies conducted for the benchmark within this research are affected by many different variables, it is unlikely that the same setting can be replicated and therefore creating differences in a replication study would be possible..

As this thesis comprehends a thorough framework for the analysis together with keywords in the literature review and a clear description of the interviews, all of them providing a fairly high reliability, we believe that another researcher would conclude very similar results if replicating the study.

### 3.7.2. Validity

The validity of a research refers to evaluate if the methodology actually measures what it is claiming to be measuring (Bryman and Bell, 2011). The validity has a major impact on the credibility of the research as it states whether or not the results can be generalized and applied in other cases (Bryman and Bell, 2011). As mentioned earlier, the qualitative research strategy provides some difficulties and especially related to the evaluation of a relatively small sample, which is the case for this thesis.

With this said, the validity have, by the authors, been estimated to be high due to mainly; (1) The respondents are all people with long experience from both the benchmarked companies and the OI process, including the Portals, and (2), With the novelty of the subject being researched, it is likely that most findings will be relevant for the claimed reason. This in combination with the verifications of interviews and the conclusions drawn, it is likely that the results can be applicable in other OIP cases matching the criterions.

### 3.8 Overview of methodology for this thesis

The thesis started of with some background research in order to secure the relevance of the subject wanting to be researched. In addition to this, input was gathered from both an academic point of view as well as from SCA as an organization and Portal owner. Later on, it turned out that these subjects where relevant for other firms in other industries as well.

Secondly, a literature review was conducted to retrieve earlier findings within the topic. After this, the research strategy was chosen to suit the setting of the research and the interviews were conducted. Verification of the data, gathered from the interviews, secured the validity and quality of the empirical input to the analysis.

Third and lastly, matching the theoretical frameworks' perspective with the empirical findings we could perform the analysis, and from this the conclusions were drawn.

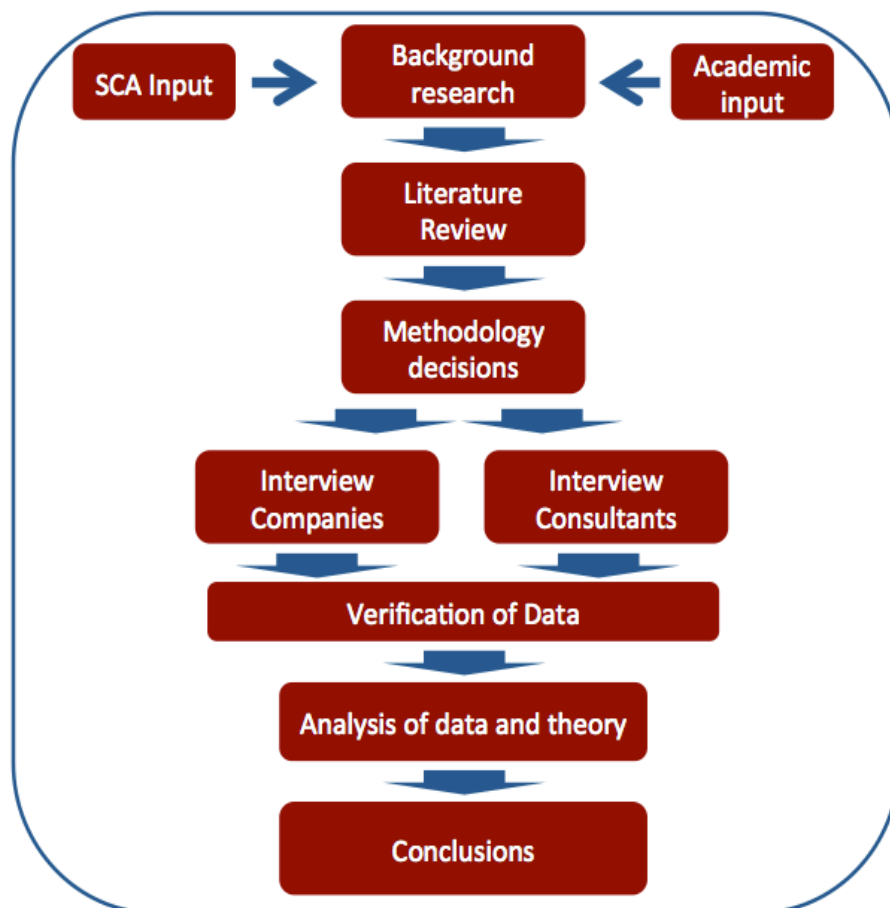


Figure 6 - Visual overview of how the thesis was executed.

## 4 Empirical Findings

*In this part of the thesis, the empirical findings derived from the interviews and secondary data gathering are displayed. First the findings from the case companies are described with a basis is the research sub questions, further on the different consultants learning's are presented together with findings from SCA*

### 4.1 Presentation of Case Companies

The case companies interviewed for this thesis are described below together with the type of Portal they are using. The companies are spreading over an arrange of different industries and they all have experience in using Portals as a tool of Open Innovation.

#### **1. Technology Company**

The group consists of around 40 companies, all of them active within the technology industry from early, basic R&D to finished product, ready to sell to end user. With around 10,000 employees and 1.5 bn € in turnover they are an established company with a distinct competitive advantage in their capability to conduct R&D.

They launched their Portal in early 2014 in order to minimize risks associated with the research and development process, both financial and commercial. They are currently running their own Portal that can be classified as a direct one, and the Portal is directed to professional collaborations with academia or other companies.

#### **2. Consumer Goods (1)**

The company is a consumer good company with activities, placed in the value chain, from early development of products, all the way to direct sales to end users. They have about 4.5 bn € in turnover together with around 13,000 employees.

They launched their Portal in 2008 and it has gone through some significant changes over time. Starting of as a Direct Portal it is now a Collaborative one where other submitters can evaluate each other's ideas. The Portal is targeting the end users of the product but is open to everyone.

#### **3. Consumer Goods (2)**

With an annual revenue of around 1 bn € and about 4,500 employees, this consumer goods company has activities in every step of the value chain from early product development to consumer retailing. Since their launching of the Portal in 2012, they have gone from a collaborative version to a more direct Portal with specific problem formulations. Targeting professional collaborations.



#### **4. Consumer Goods (3)**

The company is a global consumer goods company with annual sales of around 50 bn € and well above 200,000 employees. They have been operating their Portal since late 2012 and is currently using a direct Portal design with emphasis on professional collaborations but they also invite the public to contribute.

#### **5. Consumer Goods (4)**

A global company with annual sales of around 10 bn € and more than 40,000 employees. They are using a direct Portal format where they post tangible challenges that will help them in their long-term innovation vision. They operate their own portal which was launched in 2013. They mainly address challenges outside the core areas, where their own R&D is not focused. The purpose of the OI Portal is to reach outside of their own firm network to find ideas and solutions to identified challenges.

#### **6. Basic Material**

One of the major material companies in the world with annual sales of more than 420 bn € and more than 75,000 employees. Presence in most parts of the world and with an increasing customer focus, they launched their Portal in 2013. The Portal is a direct Portal targeting both end consumers and professional partners for product and process development.

#### **7. Industrial Goods**

The company is a producer and developer of high technology products with long life span and high capital requirements. Currently they have around 22,000 employees and a yearly turnover of around 6.0 bn €.

They launched their Portal in 2013 and they have gone from a third party supplier of Portal operation, to running it themselves. The Portal is targeting professional collaboration with direct problem formulations, asking for minor incremental ideas.

#### **8. Pharmaceutical/Biotechnology**

The company produces and sells industrial products in a business-to-business environment. Today the company has around 6,500 employees and a yearly turnover of around 2.0 bn €.

They launched their Portal in 2011 and it is a hybrid version of a direct and collaborative Portal, this is seen as they are actively trying to find contributors by scanning global media hubs. They are targeting professional collaboration with their Portal, searching for incremental ideas.

#### **9. Material Producer**

A global stock listed company, active within the material and steel industry. The company is operational in the whole value chain, from exploiting raw material to retailing of finished products. Annual revenue equals to about 22.0 bn € and 80 000 employees

They launched their Portal in late 2014 with a strategic intent to minimize costs and risk associated with the development of new materials. Even though they have been active for a very brief period of time, they have received several submissions and the problems discussed in this thesis had been identified.

#### 10. Agriculture / Food Producer

The company has around 5000 employees and an annual turnover of about 5.0 bn € with activity in the earlier part of the value chain. They launched their Portal in 2009 and it has since the start been a direct Portal with specific problem formulations, targeting end user and collaborations with private consumers.

## 4.2 Summary of Case companies

Industry/Company	Years with OI Portal	Type of Portal
Technology	1.5 years	Direct Portal
Pharma/Biotech	4 years	Hybrid Portal
Consumer Goods (1)	7 years	Collaborative Portal
Consumer Goods (2)	3 years	Direct Portal
Consumer Goods (3)	2.5 years	Direct Portal
Consumer Goods (4)	2 years	Direct Portal
Industrial Goods	2.5 years	Direct Portal
Basic Materials	2 years	Direct Portal
Material Producer	6 months	Direct Portal
Agriculture / Food	6 years	Direct Portal

Table 5 - Summary of case companies, time of operation and type of Portal.

## 4.3 General empirical finding about Innovation Portals

Company	Findings
Technology	<ul style="list-style-type: none"> <li>- We see the Portal as a complement to our other tools within the Open Innovation portfolio.</li> <li>- The Open Innovation Portal can, if working properly, give significant benefits such as the minimization of cost structure when creating new products. This is one of the benefits we are looking for.</li> </ul>
Pharma/Biotech	<ul style="list-style-type: none"> <li>- The Portal is used in order for us to find incremental ideas and improvements to our products and processes.</li> <li>- Professional collaborations are usually the best ones and we know that a lot of companies have solutions to our problem, without knowing that we have these problems.</li> </ul>

**Consumer Goods (1)** - We have our Portal with the soul purpose of reaching outside of our own industry.

- Since the Portal only is one out of the many tools for Open Innovation, we know that the relatively small investments made in it can create financial value through the collaboration we potentially can find.

**Consumer Goods (2)** - The Portal is working as a creative way for us to find new business and complement our current products.

- The Portal has been running for a couple of years now and when looking at our full OI portfolio, the Portal is just a small cost driver with potentially very high return.

**Consumer Goods (3)** - We want to strengthen our collaboration with other professional parties, and not only using the traditional means of for example: the client-supplier relationship.

-The portal is a tool for us to get in to contact when new, previously unknown actors with potential new solutions that we can benefit from.

**Consumer Goods (4)** - The Portal came as natural next step for us in order to improve our Open Innovation capabilities.

**Industrial Goods** - Since the products that we sell are very capital intense, we want incremental improvement that we can adopt and use to differentiate ours from the competition.

- The Portal is a very efficient way for us to connect with third parties, something that is very important since we have more than 3000 suppliers to our products.

**Basic Materials** - Since our industry is a fairly stagnated one, we want incremental ideas and improvement to complement our own in-house, traditional processes.

**Material Producer** - Beside the obvious reasons such as the financial and risk minimization, we also try to use it as a marketing tool to make our company attractive for collaborations.

- Before the Portal, people and companies contacted us through all kind of options. We try to collect the majority of our external communication for this through the Portal.

**Agriculture / Food** - Before the Portal we used focus groups other tools, during limited time slot, to interact with our customers, the Portal

allows us to constantly receive ideas and feedback that we did not get before.

**Table 6 - General quotes and reasons for having a Portal.**

Summarizing the empirical findings around why companies are using the Open Innovation portal as one of their tools, it becomes clear that the major reason is to find new, external knowledge. In our findings, the special intention many firms shared was the desire to reach outside of their own firms' boundaries. Furthermore, the OI Portal is often used as a complement to other tools in their Open Innovation portfolio.

## 4.4 Empirical findings about Quality in Innovation Portals

In this section the empirical findings around quality is presented. The main question is focused on increasing the quality of received submissions; secondly we tried to find out how each firm defines quality. As one of the case companies do not operate direct Portals, the concept of quality had to sometimes been clarified by using examples to avoid misconceptions. Further on, the sections also relates to how the Portal owner can increase the quality of the contribution.

<b>Company</b>	<b>Findings</b>
<b>Technology</b>	<ul style="list-style-type: none"> <li>- One way for us to “increase” the quality is to only ask for a brief description of the idea to be able to screen that one instead of a major contribution that takes a lot longer.</li> <li>-When we ask for contributions and ideas we will also post the key aspect we are looking for with the potential solution. By doing so we can address the kind of problems we are trying to solve but still try to have an open mind to what kind of solution we will use.</li> <li>- We have a very high openness about how we will evaluate the different solutions, making the contributor aware of how they can increase their contribution before handing it in to us.</li> <li>- We try to find the very best quality in all the contributions made and this is always a stronger argument than volume.</li> <li>- Sometimes we can offer “Business development” support for ideas that we are interested in but that we don’t want to make a transaction on. This can increase the quality in the long run as well as the potential future volume.</li> </ul>
<b>Pharma/Biotech</b>	<ul style="list-style-type: none"> <li>- Quality of contributions comes down to feasibility and commerciality. The idea must be a feasible concept in the sense that we have the internal capabilities to execute it effectively. The new concept will have to transform into a credible business case were profitability and growth is</li> </ul>

analysed.

- Measures we have considered in order to raise overall quality of concepts are among others, demand for academic references to support the business case in addition to potential IP.

- Our screening teams are vital to assess the feasibility of the concept *vis a vis* our internal capabilities and may also help to create a credible business case through use of our internal documents.

- Most firms without global brand recognition struggle to reach even a fraction of potential future partners, we apply a sort of global digital surveillance method that track down discussions about the topics we are interested in. Then we extend an invitation to these groups or firm to please check out our Portal.

#### **Basic Materials**

- Quality for us is when a submission is feasible and can be executed with a short cycle-time that lowers risk.

- An external contribution from other than professional actors generally holds a lower quality than those internally developed.

- We try to raise the quality by choosing to publish areas and narrow problem formulations where we want help.

- The quality is fundamental in order for us to proceed with contributions and adopting them to our business.

#### **Consumer Good (1)**

- The quality, as we perceive it, has been significantly improved with the implementations of problem areas and qualification measurements for our contribution.

- We try to target a broad audience with our Portal to really reach outside of our own network where we believe the best ideas are.

- Because we are looking for inputs from outside our industry and networks, we are willing to take on much more risk in these projects and we think it's necessary to really succeed with open innovation.

- Our open innovation platform is so much more than just the direct Portal, it helps us building an innovative brand that attract the best innovators.

#### **Consumer Good (2)**

- Our Portal is very simple and we think more information would benefit the quality of submissions but also requires more work to keep content updated.

- We sometimes get stuck in a bubble when it comes to design and innovation, the Portal helps us to catch up on what is going on in the market place.

- Even though we run a direct Portal we sometimes help innovators that are rejected to get in contact with the right people that can help them get to the next step and then ask them to come back to us if they get things right.

**Consumer Good  
(3)**

- We try to make the contributor evaluate their own submissions before entering them, as they are likely to improve them before hand in those cases.

- Specifying areas of where we want submissions, such as “processes” or “products” usually increases the quality of the contributions.

- The qualities of the contributions are vital to us in order to maximize the business success.

- We provide background information in addition to our challenges to set the scene.

- We believe that it is very important for the Portal success to involve many parts of the organization. Some of the tasks, like updating content, can be done by the marketing department, as they are usually better at this.

**Consumer Good  
(4)**

-To support innovators we have both a Q&A section as well as a short guide that describes what we are looking for.

-We try to adapt problem formulation according between narrow and wide to guide the variety span of different solutions submitted.

**Industrial Goods**

- We have experienced a significant increase of quality after that we made our evaluation process open to the contributor.

- Quality for us is in direct correlation with how narrow we are in our problem formulations. After making distinct genres of problems, we have increased the quality.

- Even if the quality of the contribution, from an objective point of view, can be considered as high, they can sometimes lack the strategic fit we are looking for.

**Material Producer**

- We are mainly trying to raise quality by reaching out to the right audience through aimed marketing in for example material journals.

- Our criteria's that we screen for in order to find quality are based upon technical feasibility, fit with our firm objects and

	speed to market.
	- Since we are almost alone in our industry having an OI Portal, we are not worried about being the preferred partner because we are the only firm.
<b>Agriculture / Food</b>	- Quality is difficult to define but by focusing on the viability and the vision of the ideas in our challenges we believe it improves
	- When we describe the challenges we try to adapt how advanced the description of the problem is according to how important it is for us that the ideas sent in are explicit.
	-We allow innovators to get in contact with us in an easy way to help them submit their ideas in the best way.

**Table 7 - Empirical findings about quality of contributions in OI Portals.**

## 4.5 Empirical findings about Volume of Innovation Portals

This section provides thoughts and empirical findings from the case companies around how they can maximize the volume of the Portal contributions. As the requirements for a contribution often differs significantly between Portals, for example the requirement of IP rights, the focus has been on how Portal owner can maximize the volume with regards to their own limitations and current Portal design.

<b>Company</b>	<b>Findings</b>
<b>Technology</b>	- The volume of the Portal can be seen as a direct conflicting goal towards the quality of contribution. - We experienced an increase of volume when using targeted SEO of our Portal.
<b>Pharma/Biotech</b>	- Managing expectations among contributors helps mitigate the risk of late stage cancellation. - The volume of contributions increased significantly when we used digital surveillance. - The volume is measured as the number of contributions being submitted into the portal.
<b>Basic Materials</b>	- The volume is usually, as most transactions, dependent on the service level of the Portal itself. - Having not only a direct Portal but a range of innovation touch points such as contest, communities and so on really

	<p>puts us on the map for innovators around the world.</p> <ul style="list-style-type: none"><li>-To motivate people to submit, it is not enough to promise them to get fairly compensated if the ideas flies, the site must feel alive and inspire action.</li></ul>
	<ul style="list-style-type: none"><li>- We constantly try to market our open innovation touch points in universities, among customers and everywhere else we think it might be useful to spread the word.</li></ul>
<b>Consumer Good (1)</b>	<ul style="list-style-type: none"><li>- The volume has increased wince we actively engaged in the collaborative environment, making the contributors being seen.</li><li>- When removing the problem scope or the set areas where we wanted contribution, the volume has increased.</li><li>- Listening to discussions online and inviting them to us has helped us increase volume and quality.</li></ul>
<b>Consumer Good (2)</b>	<ul style="list-style-type: none"><li>- When targeting the end consumers rather than professional collaborations, the volume increased.</li><li>- Problem formulations usually have a negative impact on the volume of contribution.</li></ul>
<b>Consumer Good (3)</b>	<ul style="list-style-type: none"><li>- We try to get as much contributions as possible by having an open and transparent process of the Portal.</li><li>- The volume and quality usually gets directly contradicted and in those cases we choose to have high quality, lower volume.</li><li>- By adding specific submission areas for different groups we have experienced a increase of the volume. The groups are for example “Students”, “Professionals”, “End users” etc.</li><li>- When talking about the volume of contributions, we usually only measure the absolute values of submissions.</li></ul>
<b>Consumer Goods (4)</b>	<ul style="list-style-type: none"><li>-We try to emphasize our win-win attitude towards submissions in order to increase the volume.</li><li>-Commitment and announcements from senior staff to promote the portal.</li></ul>
<b>Industrial Goods</b>	<ul style="list-style-type: none"><li>- The volume of contributions is in direct correlations with how narrow our problem formulations are.</li><li>- In order to maximize the volume of contributions we have tried to make our Portal as transparent as we possible can, something that have given results.</li></ul>
<b>Material producer</b>	<ul style="list-style-type: none"><li>- Aimed marketing is our key initiative to increase interest</li></ul>



---

	and submissions to the Portal.
	- We are running a blog on the Portal site to make it more alive and also broadcast successful collaborations.
	- One of the prime advantages of the Portal is to allow contributions from smaller firms to reach us, they are otherwise unsure of how to get in contact.
<b>Agriculture / Food</b>	- Increasing volume is not our main goal, we get a fair amount of contributions today that we are happy with considering we are not Apple or Starbucks.
	- We believe that as long as we can succeed once in a while and have short response time to contributors the volume will increase as word of mouth in a comfortable pace.
	- Even though volume is wanted and needed for the success of the Portal, its usually actors within the same industry contributing.

---

**Table 8 - Empirical findings about volume of contributions in OI Portals.**

## 4.6 External Consultants about Open Innovation Portals

In this section, the empirical findings from external management consultants are presented. This can be seen as a complement and bridge between the theoretical framework and the case companies. This as the consultants often have more experience than the companies themselves around optimization of OI Portals, and that they constantly are trying to adopt the latest research and best practice into their work.

### 4.6.1 Introduction to consultants

#### ***Consultant 1:***

Working at a strategy-focused consultancy with significant experience from working with roll out of OI Portals and external collaboration. Previous to working as a consultant, they have worked internally in FMCG companies with their launches of OI Portals.

#### ***Consultant 2:***

Working at a digitization-focused consultancy with advisory specifically on external collaboration and early innovation capabilities. Experience from launching OI Portals and advising several North American based companies on improvements within Portals and external collaboration.

### **How can company increase the quality of contribution to their Portal?**

---

<b>Comment</b>
<b>Consultant (1)</b> - By using a transparent evaluating process where the submitter is

---

	<p>aware of how their ideas will be evaluated before submitting.</p> <ul style="list-style-type: none"> <li>- With narrow problem formulations, the company operating the Portal can get more contributions that they perceive with high quality.</li> <li>- Using different problem areas for different audience is a way of classifying the contributors into compartments where they can contribute the most with the highest quality.</li> </ul>
<b>Consultant (2)</b>	<ul style="list-style-type: none"> <li>- Since the quality is a subjective assessment made by each organization, the Portal should have an transparent approach to the submitter.</li> <li>- To increase the quality, companies can use very specific problem formulations and, in extreme cases, the need to submit patent or IP rights to be evaluated.</li> </ul>

Table 9 - Quotes of contribution quality from consultants

**How can the contribution volume be increased to the OI Portal?**

	<b>Comment</b>
<b>Consultant (1)</b>	<ul style="list-style-type: none"> <li>- By using specific problem formulations, throughput can be higher since a lot of other not-wanted ideas will not enter.</li> <li>- What gets measured gets done. Its important for companies to track the volume of submission to the portal in order to evaluate changes they make to it.</li> <li>- Offering business development services to the submitters can often create advantages both in the quality and volume of ideas.</li> </ul>
<b>Consultant (2)</b>	<ul style="list-style-type: none"> <li>- Volume can often be increased if the OI team has dedicated resources to help submitters improving their ideas.</li> <li>- A very open and free portal will, with nearly no exceptions, make the volume increase, the difficulties lay in how the company can balance the volume aspect with the quality aspect. And at the same time make sure they don't neglect the contributors, building relationship is another important factor to increase the volume and quality.</li> <li>- There is a number of different techniques the company can use to increase the volume, such as adding compartments in the Portal for strict "ideas" rather than finished products, reaching out for different groups of contributors etc.</li> </ul>

Table 10 - Quotes of contribution volume from consultants.

## 5 Analysis

*This chapter contains the analysis of the empirical findings about Open Innovation Portals, reasons and benefits of engaging together with the case companies views of volume and quality of contributions. The features identified have been integrated with the earlier presented model in order to develop an, earlier potentially inadequate, theoretical framework.*

### 5.1 Definitions of quality

Overall the definition of quality has been defined as a subjective measurement that can vary a lot between the different companies and Portal owners. The theory states that quality can be defined as a “*Fitness for use*”, putting emphasis of the subjectivity of the definition (Juran, 1951), this matches the empirical findings gathered throughout the thesis. Further on, Terwiesch and Ulrich (2010), defines the quality of ideas using the four-variable framework, this has been proven to be a very theoretical approach not actually utilized by the companies in this research.

Most of the interviewed companies state that quality is a more or less directly correlated with the success ratio of incoming contributions. Not necessarily making it an objective evaluation of each contribution but perhaps making the ‘*quality*’ of the contributions dependent on other factors such as the business development capabilities of the Open Innovation team. As Cooper (1981) mentions in his research, there is a great difficulty when trying to evaluate novel ideas, among other reasons, due to the information asymmetry. This dilemma and problematic can be found in the OI Portal process as well. A significant chunk of the companies approached for this research, states that the feasibility and commerciality are the two most significant factors for determining quality.

### 5.2 Definition of volume

Volume is a broad term in this paper that includes the initial traffic to the site, which then has to be converted to an initiative to contribute an idea, very similar to a web shop (Helander and Khalid, 2000). Once the visitor has decided to start the submission process the throughput rate decided how many of these ideas that come out on the other side and lands in the lap of the screener. Most of the case companies defines volume, simply enough, as the number of contributions actually being submitted through their portal. The conversion is defined in a more complex way, and it differs, between the companies interviewed for this research. Some defines it as the fraction of submission in relation to the number of individual visits on their portal. Other defines it as the fraction of submission in relation to the number of people starting the submission process. As the methodology differs, it becomes hard to gain a comprehensive and holistic view of the definition, especially as some do not measure this at all.

## 5.3 Why engaging in Open Innovation Portal

According to the theory, there are a number of different reasons for why a company should engage themselves in Open Innovation Portals. Besides the pure benefits of doing so mentioned by Mortara (2009), Cheng and Huizingh (2010) and Chesbrough (2003b), the empirical gathering for this research has identified a couple of major intents for why the company would do so as well.

### 5.3.1 Strategic Intents

To match the theoretical framework, during the interviews, the case companies were asked to state why they are operating their Portal. The strategic intents will also be reflected upon in the model to further confirm the strategic objectives. Five main reasons could be derived from the empirics:

#### **1. Open Innovation Portal as a complement to existing Open Innovation tools**

In general, firms that are engaged in Open Innovation will engage in a range of activities, such as university, supplier and customer collaboration. The OI Portal is seen as a quite cheap way of reaching even more knowledge. For the firms who have a sophisticated Open Innovation organization, the investment and extra resources to manage an OI Portal is low, making it beneficial in a cost benefit analysis.

#### **2. Increase the speed to market by filling holes in internal development projects**

All firms that have been interviewed apply some sort of challenge driven innovation through their OI Portal, which means that an initiative to guide idea contribution exists. There is a slight difference to how explicit and narrow these challenges are, were some firms state the exact properties of a material they lack and others simply ask the contributor to choose which business area they wish to receive help within. The reason for guiding help towards specific areas are often derived out of an internal R&D challenge connected to a specific product or process but could also come from a strategic decision, for example to expand business in certain areas.

Cheng and Huizingh (2010) states that the risk of internal R&D can be lowered by integrating OI to among others reasons, establishing the necessary know-how. In this study, one firm had identified a high potential, potentially radical product innovation that had been under development for several years. The project had ran into a huge technological obstacle, that was outside of their expertise, looking for the solution through the OI Portal had yielded a solution from an industry they did not know existed and the project was now moving forward again. This example also goes well

in hand with the research of Enkel and Gassmann (2008), which indicated that inputs mainly come from non-customers, non-suppliers, and partners from other industries. When interviewing firms about the intentions and outcomes of their OI Portal, the factor of decreased risk is not always brought up explicitly but often intuitive from their reasoning around speed to market and revenue growth. Our logic is that by finding new business opportunities the firm is also effectively reducing corporate risk as of differentiation. Moreover, improving speed to market will decrease the business risk of certain projects. By looking at the other side of the coin we can confirm alignment with theory around risk proposed by Chiang and Hung (2010) and Lichtenthaler (2009), even though our interviews did not point to this factor explicitly.

### **3. Find entirely new business opportunities that boost future revenue growth**

The benefits of Open Innovation have been described in literature as a powerful method to drive profitability and growth (McFarthing, 2008; Mortara, 2009). The best examples have been concretized by P&G, which claim to have reached a significantly higher financial ratio through the use of the OI Portal. In this study, there are no such concrete examples of financial impact. However, the ambition to use Open Innovation to stimulate future growth is clear and appears critical to most firms. The OI Portal is often a smaller part of a firm's total OI operations and for those firms who recently set up their Portal, it might not yet have generated any major innovations. For firms with a bit longer history and efforts invested in it by the firm, results are pleasing.

OI Portal also enables firms to improve sensitivity to their own marketplace by monitoring trends and emerging technologies. According to Grant (2013), firms improve their innovative capabilities by increasing external knowledge and information inflow from the external marketplace. Quick reaction to changes in the external environment enables faster response in terms business model innovation (Cheng and Huizingh, 2010). Unfortunately it has not been possible to observe any connection with the OI Portal and business model adaptation in the case firms. One explanation for this may very well be that the firm simply have not recognized their OI as a reason, but rather treated it as detached top management decision.

### **4. Establish a formal channel for partnerships and collaboration**

It has been argued on a broad front that the Internet is creating a distance and anonymity towards users (McKnight et. al., 2002a). The firms in this study has both rejected and confirmed this. Some firms indicate that contributors choose informal channels instead of using the OI Portal, while others claim that the OI Portal is a great way of external actors to get in touch with them. All case firms agree that there will always be certain actors that choose informal channels and that this is fine because everyone is not equal, many also prefer a more structured approach through the OI Portal. One factor that has been brought up is the difficulty of getting past gatekeepers in informal channels. In very large firms, the contact information is usually very

limited; the OI Portal may be the only reasonable way of getting hold of the right person. Even more so when there is someone that is entirely outside of the firm network and has no personal connection that can facilitate a contact. In that case, the OI Portal really comes to the right use, due one of its main goals that is to enable entirely new partnerships and collaborations (Chesbrough, 2003a).

### **5. Positive marketing externalities that improve the innovative profile**

*“Launching an OI Portal has created much attention since we are the only one in our industry having one”*

- Said one interviewee representing a material producer. This statement seems more or less true for other firms in our study as well, which is an interesting aspect not found in the literature review. It seems like firms today would like to project a picture of themselves as very modern and up to date towards stakeholders when it comes to innovation. This view of the firm is confirmed by traditional economic behavior and some academia states that the competitive advantage, in some extent, lays in the marketing aspect as well as in the internal capabilities (Grant, 2013). Especially for firms that has put innovation as one of their core strengths. Much buzz surrounds initiatives such as an OI Portal launch, despite its simplicity and low resource requirements. Moreover, besides the obvious contribution to the brand of the entire firm, it is suggested by a few firms that it may raise the perception of a serious Open Innovation strategy among stakeholders, and in turn act a self-fulfillment. Meaning that potential contributors will choose to approach their firm with ideas instead of a competing firm because it is perceived to have more advanced Open Innovation schemes. And, hence a better partner for collaboration.

## 5.4 Features of quality and volume in OI portals

The features presented earlier in the theory chapter, and those mentioned in the empirical findings, can affect different parts of either volume or quality. Some of them will affect both, and other cans be contra productive. Here, the features have been divided into what aspect of volume or quality that they affect the most.

### 5.4.1 Quality Features

There is a number of different ways for how the quality of the Portal contributions can be increased. A preconceived thought is that in order to raise the quality, more limitations, such as the requirement of IP rights, patents and narrow problem formulations are necessary. According to the empirical findings of this thesis, some of these are correct but there is also some insecurity about some of them. The features below are a collection of those found in the theory, and those concretized in the empirical findings.

### **Transparency in the evaluation process**

Both the interviewed companies and the consultants state that transparency in the evaluation process can have a significant impact of the quality for the contributions. Some of the Portal owners had noticed a significant increase of quality when posting an evaluation sheet on their Portal. This can be derived from how the company define quality and if the contribution are aligned with this definition, the perceived quality will increase. Not necessarily will this create an increase of quality in the best contributions, but rather it will make the requirement of evaluation time decrease, therefore contributing to the perceived quality. If all contributions evaluate their commerciality and feasibility, the company will have a higher probability to proceed with the contribution, therefore increasing the earlier defined quality of contribution.

### **Keeping problem formulations narrow**

Many of the Portal owners interviewed for this thesis has been utilizing both direct and collaborative Portal as well as using narrow problem formulations versus open ones. It can be concluded from the interviews that a majority of the quality contribution can be deduced from Portals using narrow problem formulations. There is a consensus that the open setting for contribution leads to an increase of the volume but a decrease of the quality in each contribution. Since the quality can be derived from the feasibility and commerciality of the contribution, it is likely to believe that those suggestions and contributions laying out of scope for the firm, will be perceived with less quality.

With the earlier mentioned definition of quality, the Portal owner will have an increase of quality when using narrow problem formulations, as the contributions are more likely to be adopted and therefore defined as high quality.

Narrow problem formulations are for example when the Portal owner request contributions and suggestions within specific areas such as “*Technology for High Strength, Lightweight Materials*” or “*Sustainable Odor Control Solutions*”. These narrow scoped problem formulations will, derived from the empirics, increase the quality of the contributions. Terwiesch and Ulrich (2010) states that quality is a factor that is, to some extent, dependent of the volume of ideas submitted. This is contrary to what the empirical findings states for this research, important to remember is that the research by Terwiesch and Ulrich is not linked to OI Portals but rather internal ideation.

### **Offering business development of contribution**

Some of the interviewed companies offer aid to ideas submitted as means of helping them improve before the actual screening. Aid is provided when the Portal owner believes that the own firms competence significantly can improve the chances of success in the screening phase and there is a potential future value for the firm. Even though these efforts can be time consuming and have a very small current pay back, the companies offering this creates a relationship that will increase quality of future

contributions from the same contributor. Bowen (2015) talks about how loyalty program creates a lock in effect in e-commerce situations, and states that these can significantly increase the customer satisfaction. To some extent, the business development services given by a portal owner can be related to the theory of loyalty programs. When offering additional services, the organization creates a higher “customer satisfaction” and starts to build loyalty.

#### 5.4.2 Volume Features

##### **Search Engine Optimization**

It is evident that increasing traffic is a measure that is extremely common among OI Portal operators and a potentially effective tool to target a specific audience (Blankson, 2008) but it is difficult to assess to what extent it is being used. Because the SEO initiative was usually set up on an ad hoc basis by or with help from the own company's IT division. Two respondents analyzed traffic information and elaborated upon their approach to SEO. One tactic is to optimize the search words related to the specific challenges instead of the actual Portal, with the intention to attract people interested in the stated field. The widespread use of search words can be explained by the fact that it is a very reliable method to attract users (Turban et. al., 2015) and has been suggested by the designers of the OI Portal when launched. Other methods to raise awareness and interest about the OI Portal are targeted marketing through industry magazines, popular sites with relevant technology content and so on. Firms generally utilize a range of marketing channels but most of their efforts are aimed inside their own industry boundaries. One manager of a global agricultural conglomerate spoke of the difficulty in reaching beyond his or her own industry with marketing because it is difficult to anticipate where it will have an effect. The benefits of finding additional sources outside of the firm network are pointed out by Dittrich and Duysters, (2007) and Prencipe (2008), Enkel (2010) but the practical implication of doing it has not been treated.

##### **Updated information**

In e-commerce, updating the content is essential because if it is not done properly visitors will not trust the site and traffic will decrease (Susser and Ariga 2006; Wolfinbarger and Gilly 2003). Keeping content updated is vital yet cheap action for Portal owners but there is sometime lack of content to update, especially when challenges are unsolved for a longer time. By adding more material in connection with the challenges this can be overcome. For example, providing links to relevant technology sources within the field of the challenge. It is also possible to share interesting news of innovations or technological advancements within the field of the firm. Moreover, having blogs that feature success cases, interviews with firm staff or partners are important aspects of the motivational theory previously discussed. Studies have found motivational factors of influencing and professional reputation (Antikainen and Väättäjä, 2010; Jeppesen, 2006; Lerner and Tirole, 2002), which is possible to leverage through digital channels on the portal.



### **Support capabilities**

Providing assistance to the potential contributors visiting the Portal should not be underestimated because it increase trust, usability and has the potential to solve problems that static information cannot. Theory of e-commerce emphasizes the importance of customized support as a complement to FAQ sections (Susser and Arige, 2006). The support capabilities are seen as one of the few tools that can affect visitors positively because of the limited contact points available over the Internet (Wolfenbarger and Gilly, 2003). Examples include support over the phone, chat and virtual advisors. The importance of providing high quality support is confirmed by our interviews with the addition of benefits such as; improving the perceived commitment by the firm to the Portal and decreasing the feeling of anonymity.

### **Social Media Surveillance**

Social media surveillance is an initiative that is not practiced by many Portal owners but is highly praised by the ones who use it. The idea is to monitor and listen to discussions about the subject, area or field of your innovation challenge and then send an invitation to have a look at your Portal. This method is fairly new and utilizes advanced digital technology and also moves into a grey area of OI Portals. Passiveness is one of the words describing OI Portals and social media surveillance is a rather active approach. It is an interesting finding that was not found in theory. Furthermore, because of the yet limited diffusion of the practice it is even more difficult to assess the outcome of it, but according to our interviews it affects both quality and volume, with emphasize on the volume aspect.

### **Success stories**

Moving past attracting the masses to the site the firm needs to convert their visitors to contributors. Motivation is a key aspect of making this happen and the companies interviewed are mostly concerned about extrinsic motivators such as monetary compensation. Even though it is a strong motivational driver (Antikainen and Väättäjä, 2010), it should not be the only motivator. The case companies that are satisfied with their volume of contribution input also offer different ways of recognizing successful collaborations on their site, by for example, blogs or case studies. One observation during interviews with case companies is that they seldom reflect over what can be done besides marketing success cases and offering fair compensation. Enacting trust, which has been emphasized in the literature as fundamental to increase input has largely been overlooked. The action taken varies a lot from firm to firm, but collectively they cover most aspects found in adjacent literature. This indicates that many cases firms has yet to realize the importance of creating an efficient matchmaking process or that they do not find it significant.

### **Multiple entrances**

The aspect of multiple entrants to the portal comes from the interviews and has not earlier been mentioned in the theoretical framework or in academia at all. By using multiple entrants, for example having dedicated entrances for (1) Students, (2) Professional collaborations and (3) Private consumers, the portal owner decreases the barriers for contributors to actually submit their ideas. Furthermore, the Portal owner can have more problem formulations at any given time with the distributions between the different entrances. Some of the case companies states that even though it demands higher maintenance of the portal, the volume of contributions increases significantly with this practice.

## 5.5 Summary of features important for volume and quality

From the theoretical frameworks and the empirical findings at the different case companies that were interviewed for this thesis, a number of different features have been identified. All of these features are believed to have an impact on either the volume and/or the quality of contributions entering an Open Innovation Portal. These features have been scoped down by the authors and below, in table 11, an overview of their effect can be seen. All of the features identified are features that the Portal owner themselves can affect through various changes done to the Portal itself.

Feature	Volume	Quality	From Theory	From Empirics
1) Search Engine Optimization	✓	~	☑	
2) Support capabilities	✓	✓	☑	
3) Updated information	✓	~	☑	
4) Success stories	✓	~	☑	
5) Complementary information	~	✓	☑	
6) Social Media Surveillance	✓	✓		☑
7) Narrow problem formulations	✗	✓		☑
8) Transparent evaluation	~	✓		☑
9) Multiple entrances in the Portal	✓	~		☑

Table 11 - Overview of features, if they affect volume or quality, and if they are identified in the theoretical framework or been added from the empirical findings.

Symbol	Explanation
✓	Positive
✗	Negative

~	Inconclusive
☑	Mentioned in

Table 12 - Explanation of symbols used in the table 11.

## 5.6 Developed academic model of OI Portals

With the earlier developed theoretical model, used trying to describe what features that will affect the OI Portal and the quality and volume of submissions, a new, further developed model has been created. This model takes into consideration the features mentioned by the case companies, mentioned earlier, and build upon the earlier version presented in the theory chapter.

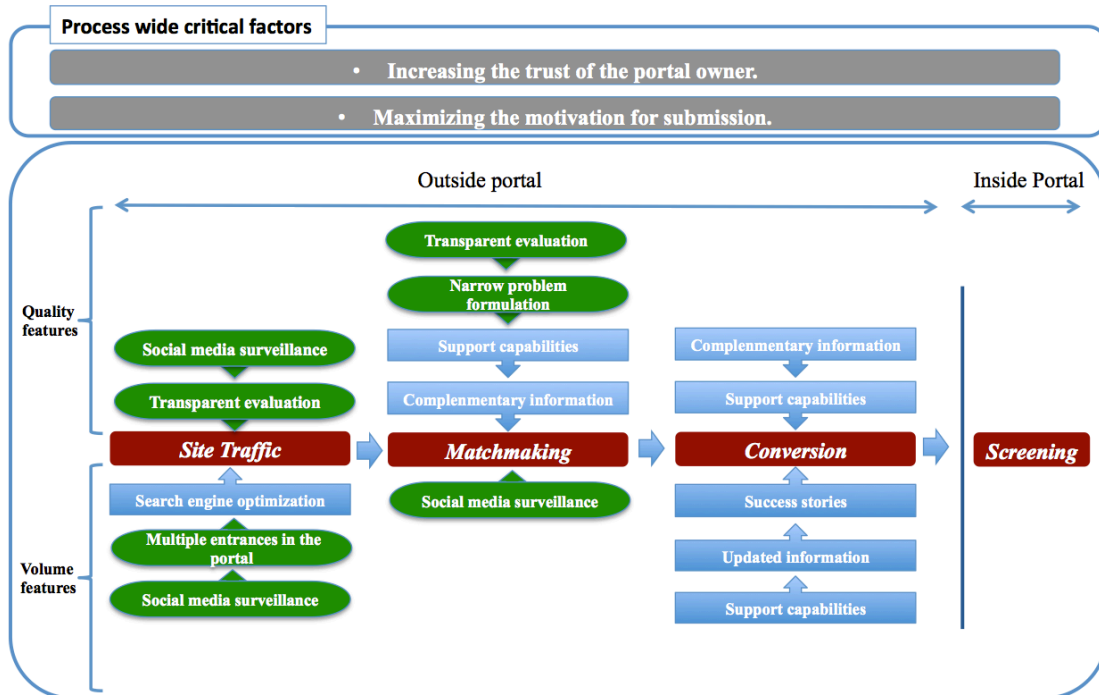


Figure 7 - Further developed model with features affecting quality and volume.

The green boxes represent those features identified from the interviews and the blue ones are those found from earlier academic research. Some of the features are affecting multiple steps in the process and sometimes they affect both the volume and quality aspects of the submission.

## 5.7 Feature interrelationships

From the model above, it is apparent that some features affect both quality and volume in a positive way. It is of course difficult to fully recognize the effect on either quality or volume in isolation of any feature. In our proposed model, the effects are based on both indications from our interviews as well as our own judgment. Furthermore, we suggest that social media surveillance and support capabilities are the two features that have the strongest hybrid effect. Social media surveillance will not only increase rate of visitors and submissions, but also the ability to reach outside

of the firms network, which has been found as the most valuable sources of Open Innovation (Dittrich and Duysters, 2007; Chesbrough and Prencipe, 2008; Enkel, 2010). Likewise will support capabilities affect both quality and volume aspects dependent on how it is being utilized by the portal owner. The service capabilities can for example be focused on decision support to increase the conversion from visitor to volume (Liu et. al., 2006; Wolfenbarger and Gilly, 2003). It can also benefit the perceived trust and better the understanding about the challenges leading to higher quality submissions.

## 5.7 Contra productivity

When investigating the features we have found narrow problem formulations as a clear contradictory feature and we suspect that there might be more but we have been unable to properly identify these significantly. How detailed, narrow or technologically dense the portal owner communicates the challenge decreases conversion amount of visitors to contributors. It is logical that challenges that are very narrow appeals to less innovators as well as technologically dense challenges is overlooked by many visitors who feel they lack the right competence. How the challenges are communicated is therefore a major balancing act for the portal owner that can be dangerous if done wrong but also enables sensitivity towards the intention with the challenge. Some problems may be solved with yet unknown solutions that only make it through the portal with a broadly stated problem challenge. Conversely, some problems are part of a larger systems and are not suited for isolated radical innovations that perhaps create new problems elsewhere. These kinds of problems may benefit from a more narrow problem formulation. Finally we think it can be very difficult to determine which of these categories every single problem belongs to, choosing between a radical or incremental improvement may be a cornerstone dilemma of the problem. Even though there are some significant difficulties when operating an Open Innovation Portal, advantages usually by far outweigh the disadvantages (Cheng and Huizing, 2010).

## 5.7 Resource constraints

Measuring the effect of an OI portal is very difficult and makes these proposed features even more difficult to assess. The main mistake when evaluating the OI portal is to look at quantifiable matrices of the outcome it has generated. For example, for SCA it is tempting to measure the increased revenues from new products that have been launched with the help of the OI portal but it is wrong. The final outcome will depend more on the ability of SCA to recognize ideas in the screening phase and later, how well they can commercialize them. The hardship of internal adoption of external knowledge is according to the interviews foremost the lack of '*strategic fit*' or lack of '*quality of contribution*'. This problem is mentioned in the literature as well (Chesbrough, 2003a). Evaluating the OI portal should be isolated and come down to

how many ideas have been generated and of what quality they are. It is easy to count how many ideas are received, but more difficult to value ideas in an early stage, this fact makes it extremely difficult to measure the effect of the portal and especially individual features.

The problem of assessing the impact of each feature is further complicated as the portal owner in theory could spend everything from huge to minimal amounts on them. Service capabilities could be done cheaply through a virtual advisory, or expensive with 24 hours dedicated phone support. Balancing the effort versus the benefit of the chosen features is challenging in itself.

## 6 Conclusions

This thesis has shown the benefits and challenges for firms engaging in outside-in Open Innovation through an OI portal. The main research question for the thesis has been stated as following:

- *What features will enable SCA to maximize submissions into their Open Innovation Portal?*

With very limited earlier research done to the subject of OI Portals and especially on how they can be improved from a portal owner perspective, we chose to develop a theoretical model of the process. Due to the lack of earlier theoretical contribution, the model contains theories derived from other areas that have been seen as applicable in the OI process. By analyzing the hardship of evaluating and trading ideas with transaction cost economics, we established trust and motivation as vital features. We outlined the model around theoretical strategies and concepts for increasing quality and volume of the submissions to the OI portal. Additional features were added from the empirical findings that developed the model and contributed to earlier research within the subject. The empirical findings can in this field to some extent be viewed upon as more relevant than the theory due to the lack of research.

### **Sub question one:**

- *How can the Open Innovation Portal owner maximize the volume of submissions?*

The different features identified for how the portal owner can increase the volume of submission come from both the theory and the empirical findings. The features we have found to be confirmed and working for an OI portal is:

1. Search Engine Optimization
2. Support Capabilities
3. Updated Information
4. Success stories
5. Social Media Surveillance
6. Multiple Entrances in the Portal

### **Sub question two:**

- *How can the Open Innovation Portal owner maximize the quality of submissions?*

The features for how a portal owner can increase the quality of submissions derives as well from both theory and empirical findings. Four major features were identified:

1. Support Capabilities
2. Complementary Information
3. Social Media Surveillance
4. Narrow problem Formulation
5. Transparent Evaluation

The finished model, with roots from both the theory and the empirics is presented below. The blue marked boxes are features identified by theory and the green boxes represent the empirical addition to the model.

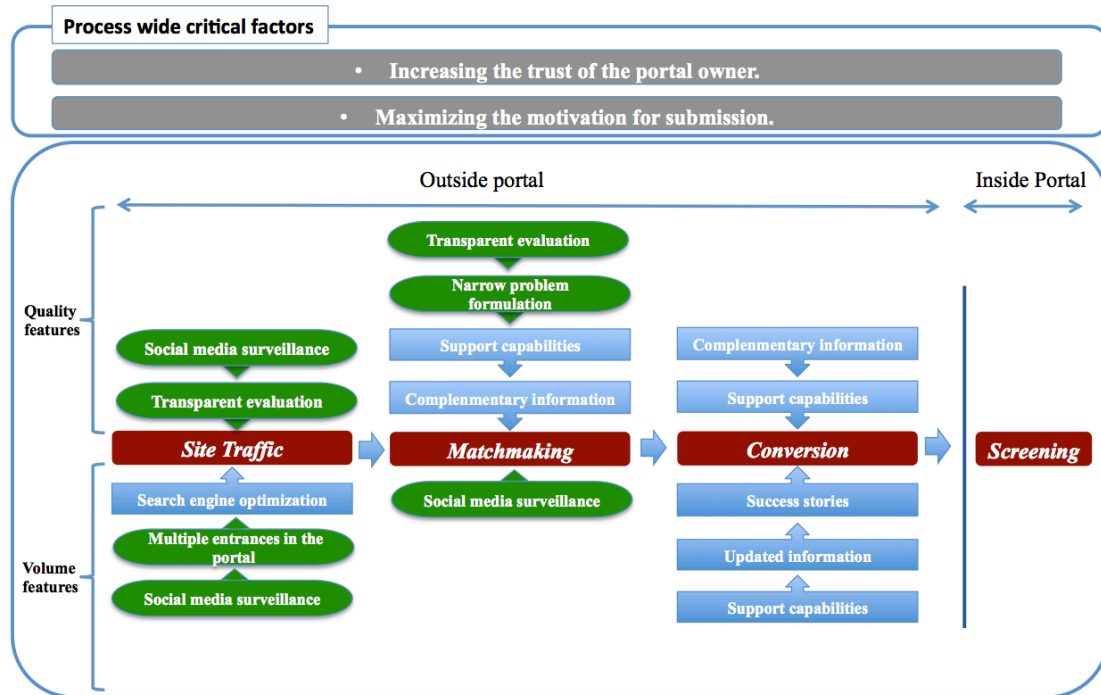


Figure 8 - Finished model over features improving the OI Portal submission process.

In conclusion, nine different, grouped features have been identified as features that will enable portal owner to maximize submissions into their portal. The features are all applicable in different step of the submission process, from site traffic to the conversion. Some of them being contra productive and showing interrelationships with each other.

## 6.1 Recommendations for SCA

SCA's intention is to reach outside of it's of firm boundaries, and the OI portal is an important tool. The portal has only been operational for about two years and it is under revision for improvement. For the submissions to improve, it is important to become more active to bring in traffic to the portal by adding more content and installing digital features. Some of these features can be done with easy and low maintenance and since the portal is still young, it may be in the interest of SCA to

begin with actions that require smaller investments. One example is complementary information and links related to the challenges, another would be to add a more open and transparent evaluation process guide.

The dilemma of how to describe the problem challenge is a tricky decision for the portal owner, we believe much of the answer to conversion from visitor to submitter lies in how the challenge is communicated and understood by the target audience. The support capabilities and complementary features would act to improve the understanding for the visitor and minimize the dependency on the problem formulation and how it is perceived.

Moreover, we have found that OI portals are often staffed only with a senior employee responsible for screening alongside other tasks that demand time. The time constraint from screening tasks has grown to a willingness among comparable portals to focus on quality. SCA should focus on improving the integration of the OI portal with support functions in the organization and the resistance of increased volume can be mitigated. We have also noticed that the firms using a separate website for their external collaborations, usually has a higher volume of submissions as well as reputation from the submitter.

Further more, we believe that it is important for SCA to measure the performance of the OI portal on basis of quality and volume, a practically tricky thing, but necessary in order to assess the cost benefit of future investments.

## 6.2 Future research

This thesis is aiming at providing features that can be to practical use for the portal owner in their quest of improving the portal. At the same time, a theoretical model has been developed to answer the research question from an academic point of view.

The evaluation of portals, in order to identify what portals that are better than others has currently no widely adopted model or methodology. Future research could be aimed at trying to find a model on how to assess and evaluate portals from different industries and firms. It is also interesting to further study the development of the OI portal and how significant it will be for OI in the future. As OI portals still are considered a fairly new concept, consensus about its widespread success has to be seen. It would be interesting to see if firms like SCA could also feel the benefits of a Portal to the extent claimed by global firms like P&G.

Lastly, if the time frame would match the researchers, a confirmation of the features identified in this research could be performed. Even though we believe this research to hold a high reliability and validity, the information taken to the empirical findings are coming from interviews and therefore always subjective in some extent.



## References

- Antikainen, M. and Väättäjä H. (2010) *Rewarding in open innovation communities — how to motivate members*. International Journal of Entrepreneurship and Innovation Management, 11, 440–456.
- Besanko, Dranove, Shanley, and Schaefer (2010). *Economics of strategy*, 5th ed. Wiley
- Berggren, E., & Nacher, T. (2001) *Introducing new products can be hazardous to your company: Use the right new-solutions delivery tools*. Academy of Management Executive, 15(3), 92–101.
- Blankson, S. (2008) *SEO How to Optimize Your Web Site for Internet Search Engines*. EBook ISBN 10:1-9057- 8921-1. UK.
- Bonnet, B., McAfee, A. and Westerman, G. (2014) *Leading Digital - Turning Technology into Business Transformation*. Harvard Business School Publishing, Boston USA, 2014.
- Boston Consulting Group (2011) *Buyer-Supplier Collaboration - A Roadmap to Success*. BCG Perspectives. Boston. 2011
- Bowen, J.T. & Chen McCain, S. (2015) *Transitioning loyalty programs: A commentary on “the relationship between customer loyalty and customer satisfaction*. International Journal of Contemporary Hospitality Management, vol. 27, no. 3, pp. 415-430.
- Bryman, A. & Bell, E. (2011) *Business Research Methods*, 3rd edition. Oxford University Press. USA.
- Bynghall, S. (2013) *Open to Innovation: Using an OI Portal*. United Kingdom. Outsource Magazine, Iss: 32, Summer 2013.
- Carlsson, S. & Corvello, V. (2011) *Open Innovation*. European Journal of Innovation Management, vol. 11, Iss: 4. Special Edition on Open Innovation.
- Cheng, Colin, Huizingh, K.R.E., (2010) *Open innovation to increase innovation performance: evidence from a large survey*. In: Huizingh, K.R.E., Conn, S., Torkelli, M., Bitran, I. (Eds.), 2010. Proceedings of the XXI ISPIM International Conference, Bilbao, Spain, June 6–9.

- Chesbrough, H.W. (2003a) *Open Innovation: The New Imperative for Creating and Profiting from Technology*. Harvard Business School Press, Boston.
- Chesbrough, H.W. (2003b) *The logic of open innovation: managing intellectual property*. California Management Review 45 (3), 33.
- Chesbrough, H.W. (2003c) *The era of open innovation*. MIT Sloan Management Review 44 (3), 35–41.
- Chesbrough, H.W., Vanhaverbeke, W. & West, J. (2006) *Open innovation: researching a new paradigm*. Oxford University Press, Oxford.
- Chesbrough, H.W. and Prencipe, A. (2008) *Networks of innovation and modularity: a dynamic perspective*. International Journal of Technology Management., 42, 4, 414–425.
- Chiang, Y., and K. Hung. (2010) *Exploring open search strategies and perceived innovation performance from the perspective of inter-organizational knowledge flows*. R&D Management 40: 292–99.
- Choffray, J.M. and Lillien, G.L. (1980) *Market Planning for New Industrial Products*. Wiley & Sons, New York, NY.
- Christiaans, H.H. (2002) *Creativity as a design criterion*. Creativity Research Journal, vol. 14 (1).
- Christensen, J.F., Olesen, M.H., Kjaer, J.S., (2005) *The industrial dynamics of open innovation—evidence from the transformation of consumer electronics*. Research Policy 34, 1533–1549.
- Clarke, I. & Flaherty, T.B. (2003) *Web-based B2B portals*. Industrial Marketing Management, vol. 32, no. 1, pp. 15-23.
- Cooper, R.G. (1981) *An empirically-derived new product selection model*. IEEE Transactions on Engineering Management, EM-28, Vol. 3.
- Cooper G. R. (2008) *Perspective: The Stage-Gates Idea-to-Launch Process—Update, What's New, and NexGen Systems*. Journal of product Innovation Management 2008:25
- Dahlander, L., Gann, D.M., (2010) *How open is innovation?* Research Policy 39 699–709.

- de Brentani, U. (1986) *Do firms need a custom-designed new product screening model?*. Journal of Product Innovation Management, Vol. 3.
- de Brentani U. and Dröge C. (1988) *Determinants of the New Product Screening Decision: A Structural Model Analysis*. International Journal of Research in Marketing (1988, NO. 2)
- Deci, E. and Ryan, R. (1985) *Intrinsic Motivation and Self-Determination in Human behaviour*, New York and London.
- Dittrich, K. and Duysters, G. (2007) *Networking as a means to strategy change: the case of open innovation in mobile telephony*. Journal of Product Innovation Management, 24, 6, 510–521.
- Edgett, S. (1993) *Developing new financial services within UK building societies*. International Journal of Bank Marketing, Vol. 11 No. 3.
- Elster, J. (1989) *The cement of society*. Cambridge: Victoria.
- Enkel, E. and Gassmann, O. (2004) *Towards a Theory of Open Innovation: Three Core Process Archetypes*. Institute of Technology Management, University of St. Gallen, Switzerland. 2004.
- Enkel, E. (2010) *Attributes required for profiting from open innovation in networks*. International Journal of Technology Management (in press).
- Enkel, E. and Gassmann, O. (2008) *Driving open innovation in the front end. The IBM case*. Working Paper University of St. Gallen and Zeppelin University, St. Gallen and Friedrichshafen.
- Franklin, P. (2000) *Doing strategy through culture in knowledge-based organizations*. Strategic Change, Mar-Apr 2000. John Wiley & Sons Ltd.
- European commission, (2003) *Commission Recommendation of 6 May 2003 concerning the definition of micro, small and medium-sized enterprises*. [http://ec.europa.eu/enterprise/policies/sme/facts-figures-analysis/sme-definition/index\\_en.htm](http://ec.europa.eu/enterprise/policies/sme/facts-figures-analysis/sme-definition/index_en.htm) (Accessed February 3rd, 2015).
- Gann, D.M., (2005) *Book review: open innovation: the new imperative for creating and profiting from technology*. Research Policy 34, 122–123.
- Grant, M.R. (2013) *Contemporary Strategy Analysis*. 8th Edition. John Wiley and Sons Ltd. 2013.

- Helander, M. G., and Khalid, H. M. (2010). *Modeling the customer in electronic commerce*. Applied Ergonomics, 31, 6.
- Harlanda, P.E. and Nienaberb, A.M. (2014) *Solving the matchmaking dilemma between companies and external idea contributions*. Technology Analysis & Strategic Management, Vol. 26, Iss: 6, p. 639-653. 2014.
- Huizingh, K.R.E. Eelko. (2011) *Open Innovation: State of the art and future perspectives*. Technovation. International Bibliography of the Social Sciences.
- Jeppesen, HJ (2006) *Participation and Prevention When Organizing Shift Work at Company Level in Various European Countries*. Aarhus: Aarhus University Press.
- Kano, N., Seraku, N., Takahashi, F. and Tsjui, S. (1984) Attractive quality and must-be quality. Hinshitsu, Vol. 14 No. 2.
- Katzy, B., E. Turgut, T. Holzmann, and Sailer K. (2013) *Innovation intermediaries: A process view on open innovation coordination*. Technology Analysis & Strategic Management 25, no. 3: 295–309.
- Katz, R. & Allen, T.J. (1982) *Investigating the Not Invented Here (NIH) syndrome: A look at the performance, tenure, and communication patterns of 50 R & D Project Groups.*, R&D Management, vol. 12, no. 1, pp. 7-20.
- Kirchgässner, G. (1991) *Homo oeconomicus - The Economic Model of Behaviour and Its Applications in Economics and Other Social Sciences*. The European Heritage in Economics and the Social Sciences.
- Kumar, V., Mukerji, B., Butt, I., and Persaud, A. (2007). *Factors for successful e-government adoption: a conceptual framework*. Electronic Journal of E-Government, 5, 1.
- Laffont, J.J., and D. Martimort. (2001) *The theory of incentives: The principal-agent model*. Princeton: Princeton University Press.
- Lakhani, K.R. (2006) *The Value of Openness in Scientific Problem Solving*. Harvard Business School Case, No. 608–170.
- Laursen, K. and Salter, A. (2006) *Open for innovation: the role of openness in explaining innovation performance among UK manufacturing firms*. Strategic Management Journal, 27, 2, 131–150.

- Lerner, J and J Tirole (2002) *Some simple economics of open source*. The Journal of Industrial Economics, 50, 197–234.
- Lettl, C., Herstatt, C. and Gemuenden, H.G. (2006) *Users' contributions to radical innovation: evidence from four cases in the field of medical equipment technology*. R&D Management, 36, 3, 251–272
- Liu, C., and Arnett, K. P. (2000). *Exploring the factors associated with Web site success in the context of electronic commerce*. Information and Management, 38, 1.
- Lichtenthaler, U. (2009) *Outbound open innovation and its effect on firm performance: Examining environmental influences*. R&D Management 39: 317–30.
- Lichtenthaler, U., Ernst, H. & Hoegl, M. 2010, "Not-sold-here: how attitudes influence external knowledge exploitation", Organization science, vol. 21, no. 5, pp. 1054-1071.
- Melissa, A. S. (2005) *Strategic management of technological innovation* (International edition). New York: McGraw-Hill. Meyer, A. D., & Hooland, B.
- Mayer, R.C., J.H. Davis, and F.D. Schoorman. (1995) *An integrative model of organizational trust*. Academy of Management Review 20: 709–34.
- McFarthing, K. (2008) *Open Innovation in FMCG*. XIX ISPIM conference June 2008
- McKnight, D.H., and N.L. Chervany. (2002a) *What trust means in e-commerce customer relationships: An interdisciplinary conceptual typology*. International Journal of Electronic Commerce 6, no. 2: 35–60.
- McKnight, D. H., Choudhury, V., and Kacmar, C. (2002b). *Developing and validating trust measures for e-commerce: an integrative typology*. Information Systems Research, 13, 3.
- McLure Wasko, M and S Faraj (2000) *It is what one does: Why people participate and help others in electronic communities of practice*. The Journal of Strategic Information Systems, 9, 155–173.
- Mortara, L. (2009) *Creating an Environment for Open Innovation*. University of Cambridge. Management technology Policy, vol. 1 No. 4 2009

- Piller, F.T. and Walcher, D. (2006) *Toolkits for idea competitions: a novel method to integrate users in new product development*. R&D Management, 36, 3, 307–318.
- Procter & Gamble. (2013) *Partnering with the world to create greater value*. P&G. [http://www.pg.com/en\\_US/downloads/innovation/C\\_D\\_factsheet.pdf](http://www.pg.com/en_US/downloads/innovation/C_D_factsheet.pdf) (Accessed February 10th, 2015).
- Procter & Gamble. (2015a) *What is Connect + Develop?*. [http://www.pgconnectdevelop.com/home/pg\\_open\\_innovation.html](http://www.pgconnectdevelop.com/home/pg_open_innovation.html) (Accessed Februari 3rd, 2015).
- Riegelsberger, J., Sasse, M.A. & McCarthy, J.D. (2003) *The researcher's dilemma: evaluating trust in computer-mediated communication*. International Journal of Human - Computer Studies, vol. 58, no. 6, pp. 759-781.
- SCA. (2015a) *SCA at a glance*. [http://sca.com/en/About\\_SCA/SCA\\_in\\_Brief/](http://sca.com/en/About_SCA/SCA_in_Brief/) (Accessed January 30th, 2015).
- SCA. (2015b) *Innovation - A business driver*. [http://sca.com/en/About\\_SCA/strategy/Innovation/](http://sca.com/en/About_SCA/strategy/Innovation/) (Accessed January 30th, 2015).
- SCA. (2015c) *Collaborate with us*. [http://sca.com/en/About\\_SCA/Innovation-at-SCA/Collaborate-with-us/](http://sca.com/en/About_SCA/Innovation-at-SCA/Collaborate-with-us/) (Accessed January 30th, 2015).
- SCA. (2015d) *SCA launches Open Innovation Portal*. <http://www.sca.com/en/Media/News-features/2013/SCA-launches-open-innovation-Portal/> (Accessed February 3rd, 2015).
- Marais, S and Schutte, C. (2010) *The Development of Open Innovation Models to Assist the Innovation Process*. University of Stellenbosch, South Africa, 2010.
- Soonsawad, P. 2013, "Developing a New Model for Conversion Rate Optimization: A Case Study", International Journal of Business and Management, vol. 8, no. 10, pp. 41.
- Susser, B., and Ariga, T. (2006) *Teaching e-commerce web page evaluation and design: a pilot study using tourism destination sites*. Computers and Education, 47, 4.
- Sweeney, S. (2001) *The E-Business Formula for Success: How to Select the Right E-Business Model Web Site Design, and Promotion Strategy for your e-Business*, p: 159, Canada.

- Terwiesch, C. & Ulrich, K.T. (2010) *Picking the Winners*. International Commerce Review, vol. 9, no. 1, pp. 10-21
- Taylor, M. (1987) *The possibility of cooperation*. Cambridge: Cambridge University Press. United Kingdom, August 1987.
- Turban, E., King, D., Lee, J.K., Liang, T., Turban, D.C. (2015) *Electronic Commerce: A Managerial and Social Networks Perspective*. Springer International Publishing, Cham.
- Urban, G.L., C. Amyx, and Lorenzo A. (2009) *Online trust: State of the art, new frontiers, and research potential*. Journal of Interactive Marketing 23: 179–90.
- Urban, G.L., Sultan, F. & Qualls, W.J. (2000) *Placing Trust at the Center of Your Internet Strategy*. Sloan management review, vol. 42, no. 1, pp. 39.
- Van de Vrande, V., De Jong, J. P., Vanhaverbeke, W., & De Rochemont, M. (2009) *Open innovation in SMEs: Trends, motives and management challenges*. Technovation, Vol 29(6): 423-437.
- Vanhaverbeke, W., Van de Vrande, V. & Chesbrough, H. 2008, "Understanding the advantages of open innovation practices in corporate venturing in terms of real options", Creativity and innovation management, vol. 17, no. 4, pp. 251-258.
- Wang, Y.D., and H.H. Emurian. (2005) *An overview of online trust: Concepts, elements, and implications*. Computers in Human Behavior 21: 105–25.
- Williamson, O.E. 1981, "The Economics of Organization: The Transaction Cost Approach", American Journal of Sociology, vol. 87, no. 3, pp. 548-577.
- Wink, M., Talluri, S., & Pandejpong, T. (2006) *Faster, better, cheaper: A study of NPD project efficiency and performance tradeoffs*. Journal of Operations Management, 24(5), 542–562.
- Wolfenbarger, M., and Gilly, M. C. eTailQ: *Dimensionalizing, measuring and predicting etail quality*. Journal of Retailing, 79, 3, 2003, 183–198.
- Zhou, K.Z. & Wu, F. 2010. *Technological capability, strategic flexibility, and product innovation*. Strategic Management Journal, vol. 31, no. 5, pp. 547-561.





## Appendix A – Keywords and Databases

### **Databases used for literature review, retrieved through Gothenburg University library website:**

1. Emerald
2. CRSP for company search
3. Business Source Premier
4. GUPEA
5. Oxford Scholarship Online

### **Key Search words in the databases:**

- |                                  |                       |
|----------------------------------|-----------------------|
| 1. Assessing quality             | 32. User interface    |
| 2. Attracting firms              | 33. Value creation    |
| 3. Collaboration                 | 34. Volume            |
| 4. Contribution                  | 35. Website marketing |
| 5. Crowdsourcing                 | 36. Webshop marketing |
| 6. Digital surveillance          |                       |
| 7. E-commerce                    |                       |
| 8. External Business Development |                       |
| 9. Idea screening                |                       |
| 10. Incentive theory             |                       |
| 11. Innovation                   |                       |
| 12. Innovation Management        |                       |
| 13. Innovation Portal            |                       |
| 14. Intermediaries               |                       |
| 15. Matchmaking                  |                       |
| 16. Motivation                   |                       |
| 17. Motivational factors         |                       |
| 18. Open Innovation              |                       |
| 19. Open Innovation Portal       |                       |
| 20. Open R&D                     |                       |
| 21. Portal                       |                       |
| 22. Professional collaboration   |                       |
| 23. Quality                      |                       |
| 24. Reward systems               |                       |
| 25. Screening                    |                       |
| 26. Screening capabilities       |                       |
| 27. Surveillance                 |                       |
| 28. Throughput                   |                       |
| 29. Transaction economics        |                       |
| 30. Transactions                 |                       |
| 31. Trust                        |                       |

## Appendix B - Interview guide

### **Overall questions about the Open Innovation Portal**

*Goal of the situational questions is to connect the firm characteristics to how the Portal is operated and designed.*

- When did you launch your Open Innovation Portal? Do you operate it yourself? (yet2)
- What was the biggest reason for opening your Portal?
- Is the Portal the only way in for external ideas and contributions?
- How many suggestions do you receive through your Portal each year?
- Which trade-offs have you identified when operating your OI Portal?
- What is the hit ratio of your suggestions through the OIP?
- What is the fraction of incremental versus radical suggestions?

### **Strategic purpose of the OIP**

*The goal is to investigate how different strategic decisions affect the OI Portal*

- What purpose do you have with the Portal?
  - Strategic, long-term solutions?
  - New revenue streams?
  - Increase collaborations?
  - Incremental improvements on existing products? etc. etc.
- Are you operating your own platform or do you use an intermediary?
  - Why have you chosen the solution?

### **Questions about contribution Quality**

*Our aim with questions about quality is to find out what features are perceived to influence the quality and any potential trade offs or critical points.*

- Do you demand IP rights for contributions?
- Do you use specific problem formulations for receiving contributions or do you have an open, non-specific approach?
- To what extent do you find response time valuable in order to build relationships with contributors?
- What is your strategy to create win-win relationships with contributors?

### **Questions about throughput and volume of Contributions**

*Our aim with questions about throughput is to find out what features that are perceived to influence the of contributions and potential trade-offs or critical bottlenecks in the process.*

- Where do you found the biggest difficulties when trying to attract people?
- Do you publish successful collaboration cases on your OIP?
- Do you actively trying to attract people to enter your Portal?
  - How do you do this?
- How do you manage relationships through the Portal?
- How fast do you respond on your received contributions?

How do you design your processes handling contributions to limit friction