Practical Suggestions for Implementing Open Innovation Practices

- Drawing from Open Innovation Practices at Nokia and Procter & Gamble


Abstract

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Title  Practical Suggestions for Implementing Open Innovation Practices: Drawing from Open Innovation Practices at Nokia and Procter & Gamble

Purpose  The purpose of this thesis is to extract and provide practical knowledge and examples from both theory and practice in order to clarify some practices that can be used in the implementation of open innovation. It can be of interest for whomever willing to gain an insight into the practical features of open innovation and for companies considering, or struggling with the implementation of open innovation.

Method  The study was approached with a qualitative and interpretive method. Secondary sources were used exclusively to review the practical aspects of open innovation in theory and practice. Open innovation practice at Nokia Corp. and the Procter & Gamble Company were researched and reported using studies of other authors as well as the companies’ own publications.

Conclusions  The classification of open innovation practices in contemporary literature is not sufficient to provide an understanding for the various types of open innovation practices that can be applied and used in practice. A classification based on types of activities is presented by the authors, and practical suggestions regarding design and implementation concludes the thesis.

Keywords  Open Innovation, Implementation of Open Innovation, Open Innovation Practices, Nokia, Procter & Gamble
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1. Background & Thesis Objectives

Although the concept of open innovation has won a great deal of attention the last decade, many companies are struggling with the implementation. This thesis seeks to scrutinize the fragmented open innovation theme and – drawing from two examples from practice – define some of the shapes and models in which it can be implemented. As the authors have sought to review the central themes and practical aspects of open innovation, it can be of interest for whomever willing to gain an insight into the practical features of open innovation and for companies considering, or struggling with the implementation of open innovation models.

1.1. What is “Open Innovation”?

Open innovation has been promoted as the new concept for understanding innovation (Chesbrough et al., 2006) and become an important management trend over the past decade (Hagel & Brown, 2009). Chesbrough, who introduced the term "open innovation" in 2003, means that “open innovation is the use of purposive inflows and outflows of knowledge to accelerate internal innovation, and expand the markets for external use of innovation, respectively” (Chesbrough et al., 2006, p. 1). In other words, open innovation is a concept where companies realize the abundance of great ideas and knowledge outside the boundaries of their business, and find ways of harnessing and using it to advance their internal innovation processes. At the same time, innovations coming from within a company are not significant for its overall strategy or success, open innovation suggests that the use of external markets can be more economically favorable.

It should, however, be kept in mind that ideas and practice similar to open innovation (e.g. in the pharmaceutical industry) existed before the term was introduced; the novelty lies in the delineation of mindsets and organizational practices, and technological media that assists its implementation (e.g. Gwynne, 2007; Dodgson et al., 2006). Open innovation should, further, be distinguished from outsourcing strategies as those generally seek to transfer work to low-cost providers while open innovation is about finding good ideas and bringing them in to the company to enhance and capitalize on internal capabilities (Huston & Sakkab, 2006; Witzeman et al., 2006). In a broad sense, open innovation captures and reflects ongoing changes and new possibilities taking place in today’s society and business (openinnovation.se). Hence, the term open innovation should rather be seen as referring to a concept that has specified and brought together a set of certain innovative modes and mindsets.

1.2. Why is open innovation relevant?

When companies were smaller and the world was less competitive, companies could rely on internal R&D – resided within their own four walls – to drive growth (Huston & Sakkab, 2006). In today’s dy-
namic business environment, innovation is crucial for survival and the companies that create innovations with the greatest value will have a significant competitive advantage (Chesbrough, 2003). The ability to develop and commercialize profitable innovations is a strategic skill (Bartlett and Ghoshal, 1989) and companies have to take into account the profound changes in the nature of technology, demographics and the global economy that are taking place and giving rise to new trends, such as online communities, collaboration and self-organization (Tapscott & Williams, 2006).

New information and communication technologies, enables companies to use low-cost intermediaries ranging from wiki’s¹ and blogs² to free Internet telephony and open source software to global outsourcing platforms (Tapscott & Williams, 2006), and eliminates geographic and organizational boundaries. Many rising companies appear to have realized this as they tend to innovate with research discoveries of others’ and use open innovation processes that entitle them enhanced competitive advantage (Chesbrough, 2003). In contrast, many of the former industry leaders that still uphold traditional innovation processes and in-house R&D are now finding increasingly strong competition.

Advocates of open innovation (Chesbrough, Gallagher, West, Vanhaverbeke etc.) have argued for faster innovation processes, better responsiveness to market changes and overall improvement of innovation based growth strategies. However, open innovation is not only a concept for profiting from innovation; it is also a cognitive model that conceptualizes innovation phenomena, and assists in creating, interpreting and researching innovation practices (Chesbrough et al., 2006).

1.3. The Gap between Research and Practice

The concept of open innovation was first introduced in 2003 (Chesbrough, 2003) and the theories have developed quite rapidly. Although there are a few examples of large multinationals successfully having adopted open innovation – regarding theory; confusion remains for many companies as to what open innovation is, how it can be implemented and what benefit and/or loss it could imply.

In theory, open innovation promises profit, growth and competitive advantage. Furthermore, the objectives and broad principles can seem very appealing. However, it should be kept in mind, that at the moment, there are only a few thorough studies of applied open innovation practices available. And, since those various practices that do exist has not been in operation over significant time, there is no possibility of reliably assessing potential risks that might be involved in the implementation stage and in practice.

Nevertheless, the fact that many companies are struggling with the implementation suggests a need for more explicit information and guidance regarding the practical aspects of open innovation; and mostly to how open innovation can be implemented. The gap between research and practice in open innovation inspired the authors to the purpose of this thesis; to extract and provide practical knowledge and examples from both theory and practice in order to clarify some practices that can be used in the implementation of open innovation.

¹ “A Wiki enables documents to be authored collectively in a simple markup language using a web browser. "Wiki wiki" means "super fast" in the Hawaiian language, and it is the speed of creating and updating pages that is one of the defining aspects of wiki technology" (Cambridge AssessNet Glossary).

² A blog is a log on a website “in which items are posted on a regular basis and displayed in reverse chronological order” (Cambridge AssessNet Glossary).
2. Composition and Disposition of the Thesis

The authors of this thesis became aware of the open innovation concept during a course that touched upon the subject of innovation management and decided to study the issue further; highlighting open innovation practices with examples of applied open innovation from the companies Nokia and P&G. The thesis was approached with a qualitative and interpretive method and data was gathered exclusively from secondary sources – via various databases – throughout the whole writing process. This chapter discusses the issues regarding the composition of the thesis further and ends by outlining the disposition of the thesis.


The authors of this thesis have their background in international business management studies. Management trends, and primarily of the international kind, are matters that the authors find of particular personal interest. Taking a course that touched upon the subject of innovation management the authors became aware of the open innovation concept and decided to study the subject further in relation to this master thesis.

2.1.1. Focusing the Subject of the Thesis

Primary studies of literature on the open innovation concept revealed that European companies were struggling with the implementation of open innovation. Furthermore, the authors found that the literature very much concerned the theoretical aspects of the subject. E.g. open innovation mindsets and the difference between “traditional” innovation processes and open innovation processes, as well as matters of leadership and culture were much discussed, while practical aspects, such as open innovation practices, were given less attention in the context. Adding these facts together, the authors came to the conclusion that a gap existed between contemporary literature and practice, and thus, decided to focus this thesis on the practical aspects of open innovation, to provide whoever interested, with examples of applied open innovation practices.

2.1.2. Selecting the Studied Companies

Further review of the open innovation literature revealed Nokia, Procter & Gamble (P&G) and IBM as companies that were frequently exemplified in the open innovation context⁴. P&G even had their articles by two top managers published in the journals “Research Technology Management” and

⁴ Authors’ note: Examples from the medical industry were also available, yet the authors found those fragmented; e.g. several different medical firms were often cited at once and the information provided about the companies’ operations and practices was only superficial.
“Harvard Business Review”, explaining comprehensively how they adopted their own version of open innovation. Initially, the authors had an ambition to study one company that was successful and one that was struggling or had failed with the implementation of open innovation. Unfortunately, the authors were not able to find examples of the latter kind neither in the literature nor on the Internet. Thus, it was decided that the empirical part of the thesis should highlight applied open innovation practices at two companies that were successful in their implementation of open innovation. As Nokia and IBM are companies that both operate in high tech industries, the authors decided that studying one of those, in addition to P&G would serve the purpose of the thesis more appropriately, as the probability of providing examples of more diverse practices were judged as better. The authors found Nokia more interesting (than IBM) in the context of this thesis, as they perceived Nokia as facing tougher competition, operating in a more heterogeneous environment and trying to vary open innovation practices to reach a broader spectrum of the company’s external environment.

2.2. How was the Study Carried Out? – The Approach Used

The authors approached this study with a qualitative and interpretive method. The main distinction between qualitative and quantitative methods is the search for causes, vis-à-vis the search for happenings (Stake, 1995). Qualitative research pursues understanding of the complex interrelationships among cases or phenomena; seeking patterns of unanticipated as well as projected relationships. The method calls for making observations, exercising subjective judgment, analyzing and synthesizing, and using the individual consciousness.

When composing the thesis at hand, the authors began with searching literature on open innovation via databases such as Google Scholar, OAIster, Google Books and Libris; resulting in the finding of books and articles that concerned the subject matter in general. The literature of restricted access in Google Scholar and Google Books was retrieved via the university library and the several databases made available thereby. The initial literature review led the authors to the specific focus of the thesis and the selection of the companies. Subsequently, the authors searched appropriate and required literature throughout the entire writing process. The literature search was based on key phrases (such as “open innovation”, “business models”, “open innovation mindset”, etc.) and supplemented with related words when applied for (such as “culture”, “practice”, “practical” etc.).

The data used in this thesis was entirely retrieved from secondary sources, meaning that data collected by other authors was used and that the authors of the thesis did not gather data from sources of origin exclusively for this thesis. For expanding the information provided by other authors, as well as for validating sources, the references in books, articles and Web Pages were examined. The selection of secondary sources for the empirical part of the thesis was based on the authors’ belief that an accumulation of primary data would have consumed time beyond what the time frame of the thesis allowed, and also that the possibility of gaining a broad insight that covered strategy, transition to open innovation and the main part of the open innovation practices of two large multinationals was highly unlikely. In this instance, the sought information concerning the companies was available, and even though it was not collected by other authors in the same purpose as that of the imminent thesis; it was possible to gather from different sources.
As the focus of the thesis implicated practical aspects of both theory and practice of open innovation, the authors selected the information they found most suitable to the subject matter of the thesis. For that reason, issues of leadership and culture and management were only given so much attention as was relevant to illustrate the full open innovation concept. The practical aspects, such as business models and tools, technologies, processes and practices – as well as the examples from open innovation practice at Nokia and P&G – were addressed more thoroughly when sources were available.

2.3. What could have been done differently?

As previously mentioned, the authors initially had the ambition to provide examples of one company that was successful in its implementation of open innovation and one that was struggling or had failed the task. The main difference probably would have been that factors leading to successful implementation could have been identified and put in contrast to factors that might cause failure. As this thesis was written in response to the present problem of European companies’ implementation of open innovation; it could also have been convenient to put forward factors that impeded the implementation process. Furthermore, such comparison could also have indicated types of businesses improper for the open innovation concept. Moreover, it is fully possible that a study using primary sources could have resulted in a quite different outcome, but as previously argued; this would have called for a more extensive time frame.

2.4. Disposition of the Thesis

As the main concern in this thesis is open innovation practices, all chapters are intended to highlight practical aspects. Open innovation has a broad theoretical base; hence, this thesis begins with defining the concept, further clarifying main views relevant to the context and ends the literature review by touching upon the design of business models and outlining theories of approaches to implementing open innovation practices.

While contemporary literature does not discuss open innovation practices thoroughly, examples from companies applying open innovation are substantial. Drawing from examples of two renowned open innovation appliers; Nokia and P&G, this thesis highlights practices and other relevant issues such as the companies’ respective transition to open innovation.

The examples from Nokia and P&G are then discussed in relation to the literature, based on which the conclusions are presented. Drawing from both theory and practice, suggestions concerning the design of business models and suggestions for further research then end the thesis.
This review aims to give a broad understanding of open innovation as a concept and highlight practical aspects regarding open innovation practices. While a general definition of open innovation was provided in the opening of the thesis, this chapter begins by uncovering theoretical descriptions, and remarking the main reasons for the transition to open innovation. Then, advantages are discussed to provide an understanding for why open innovation should be applied, and challenges that generally are needed to deal with in the implementation process are highlighted. Furthermore, the need to shift mindset to apply open innovation successfully is discussed; touching upon critical aspects such as leadership and culture and intellectual property (IP) management. Business models are tools central to the open innovation theme and vital for open innovation practices, for that reason, those are outlined additionally. To end with, theoretical aspects on approaches to implementing open innovation practices are presented.

3.1. The Concept of Open Innovation

3.1.1. Background

Innovation processes has changed significantly over time, along with changes in the economic climate, the industrial development, the balance of supply and demand factors and globalization among other things (Rothwell, 1994). Recently, both in academia as well as in management, the “open innovation” concept has gained certain attention. The term open innovation was first introduced by Chesbrough and gained international recognition with the book “Open Innovation: The New Imperative for Creating and Profiting from Technology” (2003), in which Chesbrough explains how companies have shifted from what he calls closed innovation processes towards more open ones.

3.1.2. Defining open innovation

In closed innovation processes – the traditional way of innovating – the product development and marketing of new products occurred within the company’s boundaries (Chesbrough 2003). The following depiction illustrates what Chesbrough calls “the closed innovation paradigm”.
The theories of open innovation claim that a number of factors that were initiated in the end of the 20th century, wore down of the traditional innovation models (Chesbrough, 2003). Firstly, the mobility and availability of highly educated and skilled individuals increased and, as a result, a large amount of useful knowledge was sited outside the companies’ R&D departments. Also, as employees changed jobs, knowledge began to transfer amongst companies. Secondly, the access to venture capital increased drastically, which led to an increase in R&D activities outside the R&D departments of larger corporations, for instance in entrepreneurial firms. There were also other possibilities exposed – such as spin-offs and licensing agreements – that further took R&D outside the corporations. Lastly, it became more and more established to give other parties important roles in companies’ R&D activities – commonly suppliers – but the tendency also leaned towards the involvement of other partakers in the companies’ supply chain.

As the above factors (among others) challenged the traditional way of innovating, companies started to change their innovation processes (Chesbrough, 2003). The main tendencies in this development were the active search for ideas or technologies to develop outside the organization, an increase in out-licensing and cooperation with outside parties such as competitors, suppliers, universities, and end-users. The open innovation theories builds on these developments and assumes that organizations should use external (as well as internal) ideas, and external (as well as internal) paths to market as they seek to advance their development of new ideas/technology. The model below depicts Chesbrough’s (2003) “Open Innovation Paradigm”.

Figure 1 – Description: Ideas flow into the boundaries of the company from the left. There they are screened and filtered during the research process. The ideas that succeed in this phase are taken further to development, and flow out to the market on the right. Research and development is tightly connected and internally focused in closed innovation. The closed innovation model is intended to eliminate false positives; that is projects that might look attractive in the beginning but later turn out to be of no use to the company. The objective of the model is to weed out projects that potentially have the greatest chance of success in the market with series of internal screens.

Figure 2 – Description: The open innovation model fades the boundaries of the firm and enables it to interact more with its surroundings. Projects can be initiated from the surroundings as well as from the inside, regardless of stage of development. The paths to market are also broadened to include other markets through other parties in the firms surrounding, rather than only the firm’s current market. Options as licensing out and spin-offs are additional ways to new market.
3.2. Advantages and Challenges of Open Innovation

Open innovation has become increasingly important over the past few years (OpenInnovation.eu). In theory it is assumed to enable co-operating parties to maximize value creation by sharing resources on a mutually dependent basis (Chesbrough, 2003).

3.2.1. Advantages

Open innovation has two main views that differentiate it in comparison to traditional innovation models (Chesbrough et al., 2006). This lies in the facts that it (1) anticipates spillovers and treats them as unavoidable consequences of a company’s business model, rather than rejecting it as something redundant, and (2) doesn’t treat intellectual property rights as an approach for protection of the company, but rather as a new category of assets.

As business increasingly experiences more sophisticated markets, rapidly changing technology and shortening time-to-market and product life cycles (Bartlett and Ghoshal, 1989) – open innovation promises organizations a quick and flexible way to respond to changes in the environment while remaining competitive (OpenInnovation.eu). OpenInnovation.eu – a European network intended to contribute to the development and knowledge diffusion of the concept of open innovation – suggests that open innovation is equally beneficial for smaller European companies as for large multinationals, and that managers of European companies are increasingly acknowledging open innovation as a means to speed up their company’s innovation process and to improve innovation based on growth strategies.

3.2.2. Challenges

Despite the acknowledgement, open innovation as a management model is just recently gaining grounds in many industries (Fredberg et al., 2008). The reason why we see few European examples of open innovation work is assumed to be that many firms in Europe are struggling with the appropriate implementation (OpenInnovation.eu). An exception can be found in the pharmaceutical industry as companies have started to emphasize on core competencies in technology platforms and therapy areas and using collaborations with appropriate partners since it has become too costly to cover all competencies within the company (Fredberg et al., 2008).

Since only are a few examples of applied open innovation practices at present, and since those various practices that do exist has not been in operation over significant time, the possibility of reliably assessing the challenges and disadvantages of open innovation is quite difficult. West and Gallagher (2004) identify three main challenges to making open innovation successful in Open Source Software (OSS) development (where early models with similar principles to open innovation have been observed and studied for quite some time). The three challenges that need to be addressed for integrating internal and external innovation are identified as:

- **How to maximize the returns to internal innovation?**
  A widespread selection of approaches is necessary to maximize returns to internal innovation. Maximizing returns should not be interpreted only as broadening the company’s range of prod-
ucts. The possibilities of outbound licensing of IP, patent pooling and even giving away technology to stimulate demand for other products should be taken into consideration.

- **How to incorporate external innovation into internal development?**
  Scanning, absorption and a political willingness to incorporate external innovation are necessary factors for implementing open innovation. External knowledge doesn’t benefit the firm if the firm cannot find and incorporate it into innovation activities.

- **How to motivate an ongoing stream of external innovation?**
  A constant flow of external innovation is necessary for a company’s open innovation in the long-term, but what happens to the availability of external innovation if many companies start to exploit? To avoid decline in the willingness to innovate, some kind of motivation is necessary to keep the flow of external innovation constant. Extrinsic (e.g. fame or fortune) motivational factors, comprehensible paths to rewards and compliance to professional scientific norms are the factors that best motivate individuals to generate and contribute IP.

### 3.3. A different mindset

Shifting to open innovation first and foremost implies a change of the organizational mindset and realizing that not all the ideas initiated in the company are necessary to develop within the company and that better suited ideas could be available in the firms’ surroundings.

The basic contrasting principles of closed and open innovation are presented in the table below.

<table>
<thead>
<tr>
<th>Closed Innovation Principles</th>
<th>Open Innovation Principles</th>
</tr>
</thead>
<tbody>
<tr>
<td>The smart people in our field work for us.</td>
<td>Not all the smart people work for us. We need to work with smart people inside and outside our company.</td>
</tr>
<tr>
<td>To profit from R&amp;D, we must discover it, develop it, and ship it ourselves.</td>
<td>External R&amp;D can create significant value; internal R&amp;D is needed to claim some portion of that value.</td>
</tr>
<tr>
<td>If we discover it ourselves, we will get it to market first.</td>
<td>We don’t have to originate the research to profit from it.</td>
</tr>
<tr>
<td>The company that gets an innovation to market first will win.</td>
<td>Building a better business model is better than getting to market first.</td>
</tr>
<tr>
<td>If we create the most and the best ideas in the industry, we will win.</td>
<td>If we make the best use of internal and external ideas we will win.</td>
</tr>
<tr>
<td>We should control our intellectual property, so that our competitors don’t profit from our ideas.</td>
<td>We should profit from others’ use of our intellectual property, and we should buy others’ intellectual property whenever it advances our own business model.</td>
</tr>
</tbody>
</table>
Even though leadership and culture in open innovation is a relatively unstudied area, the literature that does touch upon the subject tends to agree on the evident need to support innovativeness (Fredberg et al. 2008). But every organization that wants to improve their ability to generate, develop and disseminate new ideas will face its own challenges, and in that sense, the approach to supporting innovativeness will be different for different organizations (Hansen & Birkinshaw, 2007). Huston & Sakkab (2006) argues that seen solely as a R&D strategy or tested as an experiment, open innovation is destined to fail. Consequently, it must be made an explicit strategy and priority, driven by the top leaders of the organization.

Witzman et al. (2006) has argued that the role of R&D leadership changes when firms start to source externally; the more external innovation is sourced by the firm, the more routines, values and culture will need to be transformed, along with an increased need for supportive technological systems. In an open innovation environment, managers must lead a cultural shift away from an “internal” thinking, and into a mindset that encourages the organization to see the world as their base.

Within the concept of open innovation, the importance of considering intellectual property (IP) as any other corporate asset is emphasized, and, as the company engages in active buying and selling IP, it should be recognized that a different – more proactive – type of IP management will be necessary (Chesbrough, 2003). Furthermore, the benefits of giving away IP through publication or donation should not be underestimated since – in the long run – it makes better economic sense (ie. profits for developing goods instead of innovating from scratch) and benefits the entire society (von Hippel & Krogh, 2006; similar theories has also been presented by Berkhout et al., 2006).

3.4. Business Models

Companies can have different innovative roles; they can support innovations, generate innovations, bring innovations to market, or manage two or more of those roles simultaneously (Chesbrough, 2003). In its simplest form, a business model describes how value can be created from innovations and which elements that should be sourced internally or externally (OpenInnovation.eu). The primary function of a business model is to define how the organization can create value from innovations (Chesbrough, 2003). That entails defining how and when external knowledge is required and used. Consequently, the business models should be designed to fit the innovative role of company and its partnerships, but they also have important roles in conveying open mindsets.

First of all, it is important to understand that companies can (and do) apply openness in different degrees; ranging from low to high (Chesbrough, 2003). Jacobides & Billinger (2006) has argued that it is possible to change the permeability of organizations by managing their boundaries. Hence, firms should be able to manage the degree of openness they wish to apply by designing appropriate business models.

More recently, Chesbrough (2007) defined a company’s business model as having two functions – to create value and to capture a portion of created value. Open business models, as compared to traditional business models, additionally utilizes external R&D resources – cutting costs and increasing productivity, and increases revenues by making the most of every idea - including spillovers – and enables the company to profit from all internal ideas. Efficiency is thus increased in both functions.
Companies embracing open innovation must adapt their business models to open innovation in order to be able to generate more value from intellectual property (Chesbrough, 2003).

In a study of the practical application of open innovation in the Dutch industry, van der Meer (2007) found that innovative Dutch companies had adopted the principles of open innovation successfully, such as the culture and mechanisms enabling external ideas to flow in to the company. However, challenges were found in the utilization of mechanisms taking internal ideas to external markets, but the most difficult challenge the author found for these companies lied in finding flexible and open ways of handling their business models. The study indicates that an articulated business model could be crucial for succeeding with implementations outside the company’s typical field of business.

Chesbrough and Schwartz (2007) claims that successfully designed business models can reduce R&D expenses, expand innovation output and open paths to new markets. The design of the business model is of great importance in all open innovation models, but especially when co-development partnerships are involved. Designing business models should be carried out in three steps according to Chesbrough & Schwartz (2007). A short summary of how to successfully design business models is presented below, a detailed and more practical outline can be found in the appendix.

In the first step of designing business models, the objectives for partnering should be defined together with the business requirements for the distinct objectives (Chesbrough & Schwartz, 2007). The second step is to classify the company’s R&D capabilities according to the categories Core, Critical and Contextual. Core capabilities are key sources to a company’s competitive advantage, Critical capabilities are complementary capabilities that are critical for a complete product/service offering, and Contextual capabilities are those that provide marginal differentiation or value-added to business. Each type of capabilities has different implications on decisions on and management of partnerships. And finally, in the third step the business models should be aligned and ascertained that both partners would benefit equally from successful execution. Partnerships with aligned business models are easier sustained over time and also possible to develop further.

3.5. Approaches to Implementing Open Innovation Practices

As innovation becomes a more distributed activity across a wide range of different actors; technologies, tools and processes that connect those actors becomes vital in the management of relationships (Dodgson et al., 2006). The existing innovation models focus on internal sources of ideas and competence, rather than – as open innovation suggests – towards external sources (Fredberg et al., 2008). The flexibility of open innovation as a concept implies that it can be implemented in many ways. Having reviewed present findings in open innovation, Fredberg et al. (2008) broadly classify available technologies tools and processes in contemporary papers into three categories; coordinating/aggregating, liberating and allowing/including.

3.5.1. Coordinating/Aggregating

Coordinating/aggregating processes can be used to leverage sources internally and externally to leverage the distributed innovative capacity (Fredberg et al., 2008). The processes involve shaping the interface of the organization to connect with outside parties with the intention of finding ideas, understanding customer needs, finding solutions to problems etc. For instance, organizations can colla-
borate with external search providers to find solutions for their specific needs. Standard open source methods are also included in this category.

3.5.2. Liberating

Piller and Walcher (2006) argue that users’ need-related information is “highly sticky”, meaning the information desired by product developers are not easy to reveal, and thus, only can be transferred at high cost and difficulty. Liberating processes suggest that companies can establish structures enabling user input where users’ creativity (and thereby their hidden knowledge and preferences) can be released. The authors suggest internet-based tools for realizing idea competitions can be one such process.

3.5.3. Allowing/Including

As open innovation implies a greater focus on external sources, Fredberg et al., (2008) suggest that transition should be initiated by changing the formal models that govern work processes; behavior and culture. In the implementation of a new innovating strategy, working-systems should be aligned with leadership and involvement of at least one senior executive is crucial (Huston & Sakkab, 2006 in Fredberg et al., 2008). Moreover, roles, responsibilities and relationships of individuals and processes should be adapted to fit the new strategy.
4. Examples from Applied Open Innovation Practices

While contemporary literature does not discuss open innovation practices thoroughly, examples from companies applying open innovation are substantial. This chapter presents how Nokia and Procter & Gamble applies open innovation with focus on practices and other aspects relevant to the context; such as the companies’ respective transitions to open innovation and strategies. The companies are exemplified as both use many activities to connect with external sources, and allow external sources to connect with their respective organizations. Despite the fact that both are large in size, the companies operate in different environments and industries, thus facing different opportunities and challenges.

4.1. Open Innovation at Nokia Corp.

Nokia’s openness towards the outside world, and in particular towards academia, has led to many studies of Nokia’s application of open innovation. The uniqueness in Nokia’s open innovation case can be related to the use of a renowned world spanning innovation network and the explorative approach the company has taken on, which guides the overall strategy and enables open innovation processes – both in day-to-day and in overall operations.

4.1.1. Nokia and the Telecom Industry

Nokia Corporation has succeeded to become a world leader in the development and manufacturing of mobile telecommunications (Dittrich & Duysters, 2007). The company developed by a number of mergers and acquisitions (M&As) (Dittrich, 2005), and was one of the main actors in the development of the mobile telecom industry in the 1980’s and 1990’s (Chesbrough et al., 2006; Dittrich & Duysters, 2007). Nokia has realized that effective R&D is vital to remain competitive in the mobile communications industry and invests a rough 10% of net sales into R&D (Nokia.com, Research).

The mobile telecommunications industry experienced early in its development that protecting research results would benefit neither operators, not suppliers (Bekkers et al., 2001). The strong need of creation and implementation of standards, and the many relationships required to be built around those (Tilson & Lyytinen, 2006), led to the emergence of an industrial culture – where it was considered improper for manufacturers to demand licensing fees from suppliers – and the industry became more receptive towards openness and collaborations, compared to other industries (Bekkers et al., 2001). This culture has affected most actors in the industry, nonetheless Nokia that gradually has developed openness and collaborative networks over the last decades.
4.1.2. Moving towards an Open Innovation Strategy

Nokia adopted open innovation strategies early, which strengthened their position in the mobile telecommunications industry. In the development of 2\textsuperscript{nd} generation standards, GSM (Global System for Mobile Communication) was by far the most successful cellular technology (Bekkers et al., 2001). Much of the design belonged to Nokia and Ericsson, who had the most home market experience among the European manufacturers (Chesbrough et al., 2006).

The standardization of GSM is often considered as a case of open standardization (West, 2005). When the initiative of standardizing GSM in Europe was taken, the European network operators – in fear of competition from Japanese manufacturers – realized the need to reduce potential uncertainties from the suppliers (Bekkers et al., 2001). First of all, they had to make sure that GSM would be standardized across Europe and no foreign technologies would be allowed (Chesbrough et al., 2006). Secondly, they stressed GSM patent cross-licensing, which enabled suppliers of important innovations incorporate in the standard to attain royalties on the equipment sales by competitors, including both the handsets sold to consumers and the network infrastructure sold to mobile phone operators.

The development of the GSM standard reflects an early form of Open Innovation, where the innovators attained income from licensing fees from the standards they developed, and later entrants were obstructed by high entry barriers (West & Bekkers, 2006). The effect of these open innovation strategies for Nokia was that the company remained active, vertically integrated manufacturers and developed both new technologies and continued to be a major global supplier of cellular handsets (Chesbrough et al., 2006). While, at the same time, many equipment manufacturers realized they were losing money on the handset business and exited.

During the development of 3\textsuperscript{rd} generation standards (WCDMA - Wideband Code-Division Multiple Access), Nokia, along with other companies in the mobile telecom industry, pursued the same patent strategy. In this case, when the patents of the CDMA (Code-Division-Multiple-Access) inventor were added in, it turned out to be a substantial cost disadvantage. The combined royalties were estimated to reach twice that of the leading competitor. Nokia alone required 5\% of total WCDMA royalties, but ended up winning support for “reasonable” licenses only. So it turned out, for Nokia as well as for other leading GSM manufacturers that the strategy used for the 2\textsuperscript{nd} generation standards, was no longer applicable for the 3\textsuperscript{rd} generation.

4.1.3. Nokia’s Strategy & Business Model

Towards the end of the 1990’s, while trying to maintain its leading position in the development of 3\textsuperscript{rd} generation mobile technology, Nokia made a decision to change strategy from exploitation to exploration. The change of strategy has led to, among other things, the development of Nokia’s famous international innovation network (Dittrich, 2005) and effective use of open innovation (Chesbrough 2003), which offer them flexibility, speed, innovation, and a capacity to adjust efficiently to shifting market conditions and new strategic prospects (Dittrich & Duysters, 2007).
During 1997 and 1998 – the time period preceding Nokia’s strategic change from exploitation to exploration – Nokia had 11 partners (Dittrich, 2005).

Between 2001 and 2002, after changing strategy and during the development of 3rd generation standards, a substantial increase can be seen in Nokia’s alliance network. During this period of time, Nokia’s alliances increase to include 44 partners (Dittrich, 2005).

Not only do the figures above illustrate the increase in Nokia’s alliances during this short time period, they also reveal an evident change of network character and interconnectedness (Dittrich, 2005). Furthermore, the company’s allied partners and products also changed. The increased need of standards during the development of the 3rd generation mobile technologies made partnerships with competitors vital. Also, while Nokia was more focused on telecom equipment during and prior the 2nd generation standards, the need for software development became more important. During 2001 and 2002, almost half of Nokia’s alliance agreements were related to software development. What’s further interesting is that 88% of Nokia’s strategic alliances during this time were with entirely new partners – some of which in entirely new areas of business for the company.
Nokia continues to develop its international innovation network – shifting from M&As to strategic alliances – reinforcing their core competencies, and extensively uses networking strategies for the development of new products (Dittrich, 2005). The company divests and refocuses its business activities instead of diversifying them. Core competencies are now defined as mobile handsets, network technology and middleware, and speed has become the most critical element for the strategy as the technological environment changes rapidly.

Nokia only co-develops with external parties on product and software if the partnership meets the competencies necessary and indicates good possibilities of being first to market (Dittrich & Duysters, 2007). If those requirements are not met, they rather choose some form of collaboration or outsourcing with a company that has the necessary competency and/or speed. Nokia classifies products outside core as “context”. Those are generally outsourced since there are no economies of scale for Nokia in producing them. Agreements for “context” products differ from strategic partnerships to buyer-supplier relationships.

4.1.4. Hands-on Open Innovation at the Nokia Research Center

Nokia Research Center (NRC) was founded already 1986 to be “the global leader of open innovation for human mobility systems of the fused physical and digital world” (Nokia.com, Research). It’s intended to be the core of Nokia’s growth in business – exploring new frontiers for mobility and solving scientific challenges to alter and join Internet and communications industries. Recent research focuses on areas of rich context modeling, user interface, high performance mobile platforms, and cognitive radio (Nokia.com, Nokia Research Center).

NRC both actively advocates and employs open innovation in their work. One important open innovation strategy is to benefit from selective and deep research collaborations with world-leading institutions (Nokia.com, Nokia Research Center, Open Innovation). In collaborations, NRC believes in sharing resources, leveraging on ideas, and tapping each others’ expertise. According to NRC, their collaboration network gives them the capability to (1) create new, exciting innovation ecosystems, (2) multiply efforts on projects, (3) enhance innovation speed and efficiency, and (4) derive more value for the organizations involved and ultimately their end-customers as well.

The geographic and selective coverage of Nokia’s academic network is, according to the company, a reflection of its objective to nurture innovation, cope with crucial technical challenges and reveal global business opportunities (Nokia.com, Nokia Research Center, Open Innovation). The following figure illustrates Nokia’s worldwide open innovation network of collaborations within academia (Nokia.com, Research).
4.1.5. More Open Innovation Functions Applied by Nokia

To apply open innovation, Nokia uses many different types of tools, technologies and processes. A selection of the most commonly used practices is presented below.

4.1.5.1. Nokia Innovation Center

Nokia Innovation Center (NIC) is a quite new open innovation network, designed for information to flow freely between collaborators and joint teams that work together on a regular basis (Nokia.com, Nokia Innovation Center). NIC was founded 2007 and occupies nearly 80 researchers. The foremost collaborative partner is the Finnish Tampere University of Technology (TUT), and the collaboration is co-funded by Tekes – the Finnish Funding Agency for Technology. In the future, Nokia has the objective of collaborating with other research institutions and complementary research companies as well within the boundaries of NIC.

4.1.5.2. Open Threads

Seven times a year Nokia issues a newsletter called “Open Threads”. Open threads is a open innovation by and for Nokia, Nokia Innovation Center, Tapere University (TUT) and NRC as well as their respective interest groups (Saarinen & Pitkänen, 2008). Other significant target groups are the local and global research community and business and technology management. While the newsletter, in the beginning, only covered media, it later developed to encompass a broader scope with other relevant areas as well.
4.1.5.3. Nokia Media Laboratory

The main areas of focus for Nokia Media Laboratory (NML) is finding innovative media and communications solutions to new human practices and social trends (Nokia.com, NRC Media laboratory). The objective is to provide innovations that enable creativity and experiences that will create a bond between the users and Nokia’s services. NML is also an important provider of scalable media technologies.

4.1.5.4. Nokia Beta Labs

Nokia users are presented the opportunity to contribute to software development by using prototypes of products and giving feedback. Nokia Beta Labs is a lead-user focused community built to support innovativeness, where users’ suggestions are realized by the company (Nokia.com, About Nokia Beta Labs). Users are encouraged to be active online while the most important requirement for the developer teams is to pay attention and listen to user suggestions.

4.1.5.5. Forums & Communities

Many forums and communities are linked to Nokia’s website, both for users and developers (Nokia.com, Forum Nokia). Nokia users can, for instance discuss and share advice online in local and global communities provided by the company (Nokia.com, Nokia Support Discussions). Nokia offers all developers interested in developing applications, content or services for Nokia devices a variety of resources such as training, online learning, events and contests. Recently Nokia opened up their Symbian platform and made it fully available for development. Although the new Android platforms are made available by Google under one of the most progressive, developer-friendly open-source licenses (Google.com, Google Press Center; Press Release), Nokia has decided to carry on using (the now fully Nokia owned) Symbian platforms for their mobile devices (Stadigs, 2008).

4.2. Open Innovation at the Procter & Gamble Company

Procter & Gamble’s (P&G’s) open innovation success has been acknowledged by many, and the company actively promotes the concept towards other organizations. The uniqueness in P&G’s open innovation case is partly based on the magnitude of the company – both in size and nature of operations – and partly on the fact that the open innovation concept is intensely driven and promoted from top to bottom with a distinct culture, while still keeping the concept simple and functional.

4.2.1. P&G – One of the World’s Largest Consumer Businesses

Procter & Gamble (P&G) is one of the largest consumer businesses; operating in an extremely competitive, mature, global market (Dodgson et al., 2006), employing approximately 140 000 people and holding one of the largest and strongest brand portfolios (PG.com, Who We Are). The company started as a small family-operated soap and candle company and was founded by William Procter and James Gamble in 1837 (Dyer et al., 2004). The venture grew to become an industrial giant producing some of the greatest brands in history. As a few examples of well-known P&G brands Ariel, Brown, Duracell, Eukanuba, Gillette, Lacoste, Max Factor, Oral-B, Pringles and Puma can be mentioned (PG.com, US Products by Category).
P&G is one of the world’s most successful businesses mainly on account of the company’s brand building skills (Dyer et al., 2004). The company has been in the top ten in the Fortune’s list of the world’s most admired companies since 2006 and was ranked the 6th most admired in 2009 (Fortune Magazine). In comparison with the other companies on the list, P&G scored very high in the category “use of corporate assets”, and praised on the ability to maintain its core brands and develop new, popular products simultaneously.

P&G invested 3.5% of net sales in R&D in 2004/2005 and considers R&D a key contributor to the company’s success in the marketplace. Regarding R&D, the company has a strong commitment to find the best researchers, and retain them with a culture designed to reward success, stimulate learning, challenge complacency and nurture innovation (PG.com, R&D Mission). R&D assets include 7,500 scientists and researchers in 71 countries and 25,000 active patents, and an average of 5,000 are added each year (Dodgson et al., 2006).

4.2.2. Moving towards an Open Innovation Strategy

For generations, P&G grew by internal R&D – building global research facilities and employing talented scientists (Huston & Sakkab, 2006). However, during late 1990’s, P&G started experiencing low sales growth due to insufficiency to generate new products and satisfy consumers’ changing needs (Dodgson et al., 2006). An assessment of the situation within the company revealed that the primary problem was that P&G did not always benefit from its existing knowledge, and did not listen and learn enough from the outside world. Exploring the problem, the company came to terms with the fact that the world’s innovative landscape had changed, while P&G still was using the same innovation model they initiated in the 1980’s. P&G became aware of the following facts (Huston & Sakkab, 2006).

- Important innovation was increasingly being done at small and mid-size entrepreneurial companies.
- Even individuals were eager to license or sell their intellectual property.
- Universities and government labs had become more interested in forming industry partnerships and needed funding for their research.
- The internet had opened up access to talent markets throughout the world.
- A few forward-looking companies were trying a new concept of leveraging one another’s innovation assets.

Consequently, the company reckoned that building brands should be based on innovation and continuous improvement throughout processes and activities (Dyer et al., 2004). P&G decided to develop their innovation model, while maintaining their focus on core competencies and strengths – consumer understanding, brand building, innovation, go-to-market capability, and global scale (Laflay, 2009).

4.2.3. P&G’s Strategy and Business Model

In 1999 P&G undertook a new strategy called “Organization 2005” (O-2005) to increase growth through innovation (Dodgson et al., 2006). One of the main components of O-2005 was to interconnect P&G’s fragmented communications and make them more outwardly focused. A senior manager
at that time said that he wanted to create a culture that connected people and technologies in a more effective way, and to further emphasize his point, that R&D could become C&D – “Connect & Develop”. The term developed into a concept called Connect + Develop (C+D) by P&G (PGconnectdevelop.com, P&G Connect + Develop, Learn More), and became fundamental to the O-2005 strategy (Dodgson et al., 2006). Based on the new concept – betting that external connections would be vital for future growth – the company made it their goal to develop half of new products in their own labs, and half through them, meaning that 50 % of the innovations would come from outside the company (Huston & Sakkab, 2006). Other initiatives of the O-2005 strategy included buying entrepreneurial companies and the creation of internal seed funds (Dodgson et al., 2006).

To apply C+D, the main challenge lied in accessing external resource, and to change the culture to encourage and facilitate searching outside of the company for innovations (Dodgson et al., 2006). P&G needed to move the company’s attitude past “not invented here” to enthusiasm for “proudly found elsewhere”, and the perception of the organization from “7,500 people inside” to “7,500 plus 1,5 billion outside with a permeable boundary” (Huston & Sakkab, 2006). The commitment of CEO A.G. Lafley in driving the O-2005 strategy change and C+D has been highly acknowledged and drawn attention to the importance of top management in the open innovation literature (e.g. Huston & Sakkab, 2006; Hansen & Birkinshaw 2007; Chesbrough, 2007 etc.).

Today, P&G works both inbound and outbound; aggressively looking for solutions for the company’s needs and actively seeking innovations while leveraging on licensing their innovation assets at the same time (pgconnectdevelop.com). Yet, P&G believes that the most profitable arrangements are the ones where the company licenses to and licenses from the same partner (Huston & Sakkab, 2006). The connection nodes established to realize C+D include small to medium size enterprises, capability and service Providers, government funded research & development organizations and academia (P&G, Connect + Develop Brochure). To collaborate effectively with innovators, the company aspires to be flexible and responsive in its approaches to partnerships in the belief that “one size doesn’t fit all”. Also, the company emphasizes that C+D should create value for both collaborating partners (P&G, Connect + Develop Brochure).

Through C+D – along with improvements in other aspects of innovation – P&G’s R&D productivity increased by nearly 60%, the innovation success rate more than doubled and the costs of innovation has decreased (Huston & Sakkab, 2006). As a result, P&G has come to see C+D as a “How to Win” strategy for the company’s innovation processes (P&G, Connect + Develop Brochure). The corporate vision is simple; P&G wants to be known as the company that collaborates – inside and out – better than any other company in the world.

4.2.4. Hands-on Open Innovation with C+D

Using the large interface of a multinational company, the C+D program connects the organization towards external actors over the world to find products/ideas, identify customer needs and find solutions to the company’s needs (Fredberg et al., 2008). The use of technology, such as intranets and ‘smart’ reporting systems for knowledge sharing (as well as high-tech tools like data searching and mining, simulation and modelling, and virtual and rapid prototyping) are key to C+D’s performance (Dodgson et al., 2006).
4.2.4.1. Seeking External Resources

P&G primarily seeks ideas that already have some degree of success and would benefit specifically from the application of P&G technology, marketing, distribution, or other capability (Huston & Sakkab, 2006). Prototypes and/or verification of consumer interest are preferable when cooperation is considered. The company has three environments under constant surveillance to focus their search; (1) consumer needs are scrutinized and arranged into a top ten list every year, (2) adjacencies; new products or concepts that complete product offerings and help improving brand equity for existing products, are identified, and (3) technologies are reviewed to see if there are possibilities of strengthening key technologies, acquiring new technologies and/or license, sell, or further co-develop internal technologies.

4.2.4.2. Networking

P&G’s global networks are the platform for the activities that constitute the connect-and-develop strategy (Huston & Sakkab, 2006). The company utilizes closed proprietary networks (secure platforms with exclusive participants) as well as opens networks of individuals and organizations to look for ideas in government and private labs, academic and other research institutions, among suppliers, retailers, competitors, development and trade partners, small & medium-sized enterprises, spin-offs, service providers, VC firms, and individual entrepreneurs. A part of the company’s networking activity consists of using intermediaries connecting companies on a need-basis.

4.2.4.3. Screening

Products and ideas identified by the networks P&G utilize are initially screened inside the company (Huston & Sakkab, 2006). P&G believes that their corporate culture defines their wants and needs, creating a core understanding for the grounds on which products/ideas should be evaluated that guides their technology entrepreneurs when they meet lab heads, scan patents or select products off shelves. The second step, when a product/idea is found, is to register it into P&G’s intranet catalog “Eureka”. The employee that discovered the product/idea examines it further and logs it in the catalog by specifying certain facts about it and adds pictures if possible. Finally, specific lines of business, departments and/or managers that might be interested are specified. Thereafter, managers are responsible for reviewing the Eureka catalog and assessing the match between relevant products/ideas and their lines of business. When a match is found the manager engages the External Business Development Group (EBD) and licensing, collaboration, or other structures are negotiated.

4.2.4.4. Internal Management

A very important part of C+D is that the organization supports the efforts to reach outside (Huston & Sakkab, 2006). P&G promotes internal idea exchange as they realize that products/ideas that are to be developed within the organization will need the entire organizations support; ranging from R&D, manufacturing, market research marketing to other related functions. In the process of product development, P&G encourages R&D staff to seek related work elsewhere the organization, than external sources can be considered as already established partners or suppliers might have a solution. If none of those possibilities apply, the company can initiate inventing a solution from scratch. Employees involved in the development of successful products are rewarded regardless if the solution comes from the inside or the outside. The P&G reward system is based on two objectives; that the
best ideas should be acknowledged and the continuous shift of mindset away from “not invented here” should be induced.

4.2.5.  More Open Innovation Functions Applied by P&G

To apply open innovation with the C+D strategy, P&G uses many different types of tools, technologies and processes. A selection of the most commonly used practices is presented below.

4.2.5.1.  pgconnectdevelop.com

The C+D project has its own web page, connected to the company’s main portal on the Internet (pgconnectdevelop.com). Via pgconnectdevelop, outside individuals, organizations, suppliers, academia and government (among others) have the possibility of browsing P&G’s needs and submitting innovations. Submissions should meet pre-specified criteria and be of interest for the P&G organization (PGconnectdevelop.com, P&G Connect + Develop, Submissions). Successful submissions are rewarded based on merits (PGconnectdevelop.com, P&G Connect +Develop, FAQ). At pgconnectdevelop, the company also lists assets such as trademarks, technologies, solutions, services, market research methods and models they have available for licensing, and an interested parties can request an introduction.

4.2.5.2.  InnovationNet

InnovationNet is the corporate intranet that connects P&G employees around the world (Dodgson et al., 2006). The platform is automated and supports data mining through the use of artificial intelligence; remembering users’ interests and selecting specific information that might be of interest for the user and connecting individuals based on mutual interests. Acting as a portal to external databases and extranet connections to business partners, InnovationNet both helps link the company to external sources and accelerate internal innovation (Sakkab, 2002).

4.2.5.3.  Communities of Practice

P&G divides the organization into Communities of Practice (CoP) based on type of discipline and shared interests (Analytical, Packaging, Robotics, Biotechnology etc.) (Sakkab, 2002). CoP activities include active problem solving by e-mail, conferences, knowledge sharing via live seminars and websites, recognition for expert practitioners and active seeking of internal and external expertise and diffusion throughout the organization.

4.2.5.4.  Technology Entrepreneurs Network

The Technology Entrepreneurs Network (TEN) is an extended network of approximately P&G senior scientists and specialists that help link P&G to external innovation possibilities (Huston & Sakkab, 2006). The TEN develops the company’s needs lists, adjacency maps and technology strategies. Furthermore, they establish external connections by meeting with university and industry researchers and form supplier networks. The network also reviews scientific literature, patent databases and similar sources of data that might provide new ideas. Other screening activities, such as surveying shelves in stores around the world or arranging fairs are also the in their line of responsibility.
4.2.5.5. **CreatelInnovate**

A small group of employees within P&G comprise CreatelInnovate; functions for designing new packaging to support P&G to create brand equity (Dodgson et al., 2006). The group integrates different sources of knowledge within and outside the organization (e.g., design houses) in the process of design, and tests representations of package designs with consumers. Brainstorming, visualization and CAD are the principal tools used by the group.
5. Discussion

Having outlined relevant theoretical aspects and illustrated hands-on open innovation work with examples from Nokia and P&G, this discussion aligns and puts theory and practice in perspective. Why the companies applied open innovation, how they handled challenges, indications of their respective mindsets and business models, and finally, their open innovation practices are the main issues addressed in this chapter. As regards the latter, the companies’ respective practices are classified according to the categories that were presented in theory and further discussed. In general, there seems to be a strong coherence between the presented theories and practical examples of applied open innovation.

5.1. Advantages & Challenges...

Open innovation is assumed to enable maximized value creation by anticipating spillovers and treating intellectual property rights as a new asset (Chesbrough 2003, 2006). Both companies exemplified in this thesis have managed to reach leading positions in their respective industry and both acknowledge their openness as having part in their success. Procter & Gamble (P&G) even argues for a connection between increase in external connections and increase in profits from innovations.

5.1.1. Why did the companies apply open innovation?

It was argued that companies, with the help of open innovation, could remain competitive and receptive to changes when markets are getting increasingly sophisticated, technology changes rapidly and time-to-market and product lifecycles are shortening. These industry characteristics seem to apply in both Nokia’s and P&G’s case. In fact, Nokia (along with its competitors) was shaped by the mobile telecommunications industry into a culture where outbound licensing and patent pooling is standard practice. Industry participants realized early that cooperation was necessary for rapid technological development; otherwise all participants would suffer major losses in the long-term. The consumer products industry does not necessarily require co-development or licensing agreements analogous to the telecom industry. It is however, strongly affected by shortening time-to-market and product lifecycles. The initiative to apply P&G’s Connect + Develop (C+D) model of open innovation was taken by the company to maximize profits and enhance competitive strength. However, the size of the company and their establishment of internal open innovation channels as well underlines that the shift to open innovation was initially influenced from within the organization.

5.1.2. How did they handle challenges?

Drawing from open source software (OSS) development, West & Gallagher (2004) identified three basic challenges in open innovation; How to maximize the returns to internal innovation, how to in-
corporate external innovation into internal development, and how to motivate an ongoing stream of external innovation. Both Nokia and P&G seem to have found means of managing such challenges successfully.

Nokia utilizes outbound licensing of intellectual property (IP), patent pooling and has even realized benefits of giving away technology to stimulate demand for other products. The latter was illustrated with the example of the company’s opening of the Symbian platform and offering beta versions of their latest applications. The mindset and culture at Nokia, which has grown over the latest decades, further enables the company to incorporate external innovation into internal development through the many channels established by the company, converging external parties from suppliers, academia, end-users etc. Moreover, Nokia seems to be aware of the need for motivating external innovation as they e.g. reward suggestions from their active users.

P&G has embraced the open innovation view of IP as assets, and makes their IP available for licensing. The incorporation of external innovation is enabled via internet-based channels and network nodes that include government and private labs, academia, suppliers, retailers, competitors, small & medium-sized enterprises, individual entrepreneurs etc. Submissions of IP are rewarded based on merits. The innovative culture at P&G appears perceptible; carried by values and beliefs connected to the C+D culture.

5.1.3. The Relevance of Strategy

Nokia advanced and decided to become more explorative in its strategy in the late 1990’s for prospects of better competitive strength and survival in the future. While the company did have long-term partnerships before the change of strategy, those were based on the exploitation of innovations. By means of their new strategy, they formed explorative collaboration agreements with organizations which they did not have very strong relations with; resulting in a more organic way of working and embedding the company in numerous local and international innovation networks.

Prior to “Organization 2005” (O-2005), P&G relied fully on internal capabilities. The company certainly had partnerships, but the organization was isolated from the outside world. C+D was designed to be a “how to win strategy” drawing on the synergy of external partners and internal expertise. The change of strategy gave P&G access to externally developed IP through the establishment of channels connecting the company with external parties. Furthermore, O-2005 motivated and guided change with clearly defined objectives and a strong support of top-management.

5.2. A different mindset...

Chesbrough (2003) argues that one of the essentials for adopting open innovation is to change the organizational mindset and realize that not all ideas initiated within the company are necessary to develop within the company and that better suited ideas could be available in the firms’ surroundings. Both companies exemplified in this thesis have come to terms with these facts. This is evident first and foremost by their decision to implement open innovation, but also as they actively search for ideas outside the boundaries of their own organizations and as they treat their IP as assets. However, deviations from the open innovation mindset, such as Nokia’s reasoning to only co-develop
when possibilities of being first to market are good, indicates that the change of mindset might come gradually or never be fully embraced throughout the organization.

5.2.1. Leadership and culture

Leadership and culture plays a crucial role in achieving and managing an open mindset (Chesbrough, 2003, Witzman et al. 2006, Fredberg et al. 2008). The case of P&G and CEO A.G. Lafley in this thesis illustrated just how crucial leadership can be in open innovation, and how important it is that management reinforces innovativeness, and perhaps also open-mindedness. Witzman et al. (2006) argued for an increased need of routines, values and culture along with increased external collaborations. As regards routines, designing appropriate business models for each particular partnership carries great importance; and subsequently, there is a great need for establishing routines for how partnerships are initiated and managed. However, in line with P&G’s “one size doesn’t fit all”-logic, there is reason to believe that routines and management will differ depending on the characteristics of each particular partnership.

5.3. Business Models...

Business models describes how value can be created from innovations; defining how and when external knowledge is required and used, and includes descriptions both for how the company should innovate in general as well as in each particular partnership engaged in (OpenInnovation.eu, Chesbrough 2003, Chesbrough & Schwartz 2007, etc.). Nokia has a set of routines of when and how to enter relationships. If those requirements aren’t met, they choose some form of collaboration or outsourcing instead. P&G has made it their task to be known as the company that collaborates better than any other company in the world. Therefore, P&G’s routines are somewhat more flexible, and their definitions of innovation and whom they wish to partner with are looser. Nevertheless, both companies are full-scale innovators that display all three innovative roles defined by Chesbrough (2003); they support, generate and bring innovations to market.

5.3.1. Degrees of openness

It was argued earlier, that companies can - and do - apply openness in different degrees on a scale from low to high. The examples illustrated that the two companies have a generally high degree of openness – i.e. in their mindsets towards open innovation – but differ in their degree of openness in different collaborations and concerning different parts of their businesses.

5.3.2. Successfully designed business models

The benefits of successfully designed business models according to Chesbrough & Schwarz (2007) are reduced R&D expenses, expanded innovation output and opened paths to new markets. As both Nokia and P&G don’t share entire business models for evident reasons we can only make assumptions concerning innovations on the company-level (in contrast to particular partnerships). P&G considers C+D as their “innovation business model”, but in fact, C+D only defines the general principles the company should follow, meaning probably that it has greater effect in establishing an open innovation culture and initiating action, rather than articulating procedures. While Nokia lacks such a
concept defining the general principles, they reveal their classification of capabilities and according choices of strategies. Core competencies are defined as mobile handsets, network technology and middleware, and the remaining areas as “context”. Strategic alliances and networking strategies are used for reinforcing core competencies while agreements for “context” areas differ from strategic partnerships to buyer-supplier relationships. P&G only mention their definitions of core competencies as consumer understanding, brand building, innovation, go-to-market capability, and global scale, but does not reveal the effects on partnerships in their strategy. However, both companies have realized the need to assert that partnerships should work both ways; resulting in equal win-win situations.

5.4. Tools & Technologies...

As Nokia and P&G shifted to more open innovation processes, many external actors became involved. The examples illustrated how both companies developed tools, technologies and processes to connect and manage those relationships. Grouping those according to Fredberg, Elmquist and Ollila’s (2008) classification into the categories coordinating/aggregating, liberating and allowing/including gives the following.

![Figure 6 – Categorization of Nokia’s and P&G’s open innovation practices.](image)

<table>
<thead>
<tr>
<th>NOKIA</th>
<th>P&amp;G</th>
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<tr>
<td><strong>Coordinating/Aggregating</strong></td>
<td><strong>Eureka (a)</strong></td>
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<td>Nokia Research Center</td>
<td>InnovationNet (a)</td>
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<td>Nokia Innovation Center</td>
<td>Communities of Practice (a)</td>
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<td><strong>Liberating</strong></td>
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<tr>
<td>Nokia Beta Labs</td>
<td></td>
</tr>
<tr>
<td><strong>Allowing/Including</strong></td>
<td><strong>Eureka (b)</strong></td>
</tr>
<tr>
<td>Online Forums &amp; Communities</td>
<td>InnovationNet (b)</td>
</tr>
<tr>
<td></td>
<td>Communities of Practice (b)</td>
</tr>
</tbody>
</table>

5.4.1. Coordinating/Aggregating

To leverage sources internally and/or externally Nokia adopted an explorative strategy and developed their alliance network substantially. As they engaged in partnerships with competitors and entirely new partners, it is possible to conclude that to some extent, their search for partners became more need-driven.
Nokia Research Center (NRC) can be seen as the company’s foremost process for coordinating/aggregating internal and external actors. But Nokia Innovation Center (NIC), along with the publication Open Threads also serves similar purposes. The use of open source methods is widespread in high-tech industries, and Nokia employs such methods as well; coordinating and aggregating knowledge and skills in technical platforms to develop software.

P&G adopted the C+D concept to enhance their connections towards external sources, anticipating responsiveness and improvement of innovation success. The emphasis lied on establishing functional connection nodes and creating permeable boundaries in order to enhance internal communications and become more outwardly focused and cohesive. Due to the C+D strategy, the main part of P&G’s tools, technologies and processes can be classified as coordinating/aggregating, although many of the processes are designed to function as internal communication enhancers as well.

The Technology Entrepreneurs Network is a core process for C+D’s functionality, designing the foundation for the use of open innovation tools, technologies and processes and screening the outside world for ideas. On the inbound side, the Eureka catalog, InnovationNet, Communities of Practice and CreateInnovate are utilized in the company’s routine work to actively seek internal and external ideas, products or expertise. The latter applies both for P&G immediate partners as well as for unknown sources. On the outbound side, external parties can access the assets P&G’s offers for licensing via pgconnectdevelop.com and easily connect with the company. Altogether, the processes facilitate connecting the organization to external parties by the diffusion of information throughout the organization (such as where to find the solutions to specific needs).

5.4.2. Liberating

Theory suggests that open innovation can be used for revealing need-based information from users, by establishing structures that enable user-input, thereby releasing hidden knowledge and preferences.

Nokia’s Beta Labs is one example of liberating processes. Beta Labs is a lead-user focused community allowing users to test and evaluate prototypes of software. Nokia makes sure to maintain users’ motivation by offering intrinsic rewards. Online learning, events and contests are other activities arranged by the company that can be described as liberating activities.

Another example is the pgconnectdevelop network, which makes it possible for all interested external parties to submit innovations to P&G – including consumers. Still, pgconnectdevelop doesn’t have a general function for extracting users’ hidden knowledge, as innovations are the main concern of the network, which might only appeal to users with scientific skills.

5.4.3. Allowing/Including

It has been stressed that corporate governance should align work processes as well as the roles, responsibilities and relationships of individuals to enable the open innovation concept. Although we lack in-depth knowledge of how Nokia has dealt with issues of alignment with leadership, it is evident that their strategic change to exploration affected leadership and culture, and initiated a set of work processes strongly associated with the open innovation concept. Moreover, the case of Nokia illustrated that relationships of individuals can be managed by utilizing communities and forums.
Perhaps due to requirements based on size, P&G have strong and articulate processes for connecting internally, and employees are encouraged to use them in their day-to-day work. The engagement of top and middle management sets examples and enhances those processes further. Also, processes are designed to fit roles, responsibilities and relationships of individuals, and make work easier and better corresponding to personal interests. Eureka, InnovationNet and Communities of practice all connect and help disseminate information throughout the organization.
6. Conclusions and Practical Suggestions

The main concern in this thesis was to extract and provide practical knowledge and examples in order to clarify the variety of practices that can be used in the implementation of open innovation. Hopefully, the highlighted practical aspects of theory and examples from the applied open innovation practices of Nokia and Procter & Gamble (P&G) in this thesis, has already provided a general understanding for the various ways in which open innovation can be applied and used in practice. It should, however, be kept in mind that open innovation must be made an explicit strategy and priority, and applied exclusively to maximize value creation.

Almost every company can implement open innovation – but to a limited extent. In essence, it is a matter of the degree of openness, and not every company can reach higher degrees. Larger companies have the benefit of scale and reputation, and risk less when opening up some part of the organizations boundaries. Companies handling highly sensitive information, business secrets or intellectual property should think twice before any decision of implementation as the risk of exploitation involved is very high. The same applies for small companies that almost certainly are more vulnerable – in particular pertaining to arrangements involving larger companies. Also, it is unwise to enter agreements or share intellectual property without explicitly defining how value will be created; activities should be highly delineated and serve the objectives by means of their design. Furthermore, the risk of uncertainty, as regards intellectual property rights for innovations developed using open innovation, should be eliminated before entering arrangements or opening up in order to avoid conflicts and exploitation. Industries innovating based on technology or science has much to benefit from intra-industry co-development to drive the general progress further. Other industries might find open innovation beneficial for the receptiveness, the paths to new markets it offers, or for the means of finding new ideas it offers.

The classification of activities according to coordinating/aggregating, liberating and allowing/including, demonstrated the objectives of the tools, technologies and processes used by the companies. To get a better understanding of how to practically approach the design of open innovation practices, we would like to suggest a complementary categorization. Although, it generally is unwise to generalize from case studies, the practices highlighted in this thesis revealed three general types of activities; (1) network based, such as Nokia Research Centre, Nokia Innovation Center and almost all P&G practices, (2) technology based, such as open source activities, and (3) community based, such as online forums and communities. While network and technology based activities have been used for quite a while (although perhaps not always in the open innovation sense); communities can be seen as a quite new medium for connecting and innovating.

For companies that are in the process of applying, or considering to apply open innovation, and reflecting over the practical aspects of designing practices, we would like to suggest the following;
• **Define the needs** of the organization, what needs to be improved to enable that specific organization to connect with the outside world or allow the outside world to connect with the organization?

• **Define the environment.** Examine where the activities need to be directed and try to localize groups of external parties of interest. Are they consumers, suppliers, entrepreneurial companies etc. Take new academic and practical findings and activities as point of reference.

• **Define the objectives** of the practice based on the identified needs. Are the needs related to coordinating/aggregating, liberating or allowing/including?

• **Select a type of activity** that might be appropriate. Network based activities apply in most instances but keep in mind that it takes effort to build and maintain networks. Technology based activities evidently only apply to certain industries. Technological platforms can certainly be built, but the costs should be carefully weighed against benefits. Communities also have a wide application base, but are organic in their existence and can easily take off in an unwanted direction or become too disorganized if not designed and managed properly.

• **Benchmark.** This thesis solely has presented a multitude of approaches to open innovation practices. But keep in mind that the processes must fit the needs and limitations of the specific organization.

• **Keep it simple and be open-minded, but think forward.** Do not exaggerate; simple means as using a corporate web page as a portal or giving away IP in return of development or hidden preferences might do it. Brainstorm; look beyond conventional activities for new practices. Remember, however, that the selected activity has to be functional in the long run, which requires flexibility and adaptability.

• **Define clearly and be articulate.** Use business models (a more detailed explanation is given in the appendix of this thesis) and define the how value will be created. Clearly defined and promoted corporate strategies have a better chance at success as individuals need to understand and be reminded.

This thesis was written as a response to current circumstances indicating that European companies are struggling with the implementation of open innovation. While contemporary open innovation literature highlights issues of conceptional matter, this thesis can be seen as a practical supplement concerning open innovation practices and be used as a point of reference for increased understanding or in the implementation of the open innovation concept.
7. Suggestions for Further Research

This thesis has merely touched upon the practices at two of the many companies applying open innovation. A study of larger scale could assist in providing a better understanding regarding open innovation practices, and facilitate the implementation process which many companies applying open innovation are struggling with. While we have tried to highlight practical aspects by using Nokia & P&G as examples – both successful in their application of open innovation – it is possible that case studies of companies that are struggling with or has failed in their implementation of open innovation could provide a different insight to the field. The question remains, however, of where to find those companies. Furthermore, the costs of implementing open innovation practices were left out in this study. The costs vis-à-vis the benefits of applied open innovation practices, might also be a subject matter to study more thoroughly.
8. References


9. Appendix - Designing Successful Business Models

The following step-by-step guide is composed from Chesbrough’s & Schwartz’s (2007) suggestions on the designs of successful business models. The authors have sought to primarily encompass the practical aspects that relates to the context of the thesis. Thus, the guide can serve well to give an overview of business models, but for companies considering or struggling with the implementation we would like to suggest that the reference should be reviewed for gaining a better insight of the theoretical aspects as well. Subsequently, the following outline can be used as a checklist or guide.

**Step 1. Define the objectives for partnering.**

Start by defining the main objective of the partnership. What is the intent? Then, define the business requirements for that objective. What kind of measures will be required to achieve the objective? Finally, for those requirements - define the implications for co-development design. See table below for applicable examples.

**Table 2 –Examples on how to define business models that fits objectives (Chesbrough & Schwartz 2007)**

<table>
<thead>
<tr>
<th>Objective</th>
<th>Requirement</th>
<th>Implication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shorten time to market</td>
<td>Incorporate previously developed components or subsystems</td>
<td>Seek partners with proven capabilities</td>
</tr>
<tr>
<td>Increase profitability</td>
<td>Lower cost</td>
<td>Increase volume to spread fixed costs; partner for less critical components</td>
</tr>
<tr>
<td>Enhance innovation capability</td>
<td>Increase the number of variety and front end technologies</td>
<td>Create strategic research partnerships with universities, research labs</td>
</tr>
<tr>
<td>Create greater flexibility in R&amp;D</td>
<td>Share risks with partners</td>
<td>Develop research partnerships in bottleneck areas</td>
</tr>
<tr>
<td>Expand market access</td>
<td>Broaden the pathways to markets for products and services</td>
<td>Leverage partner’s complementary R&amp;D to tailor offerings for new markets</td>
</tr>
</tbody>
</table>
Step 2. Classify the company’s R&D Capabilities.

Consider and evaluate the R&D capabilities of the firm. Classify the various R&D capabilities into the categories (1) core, (2) critical and (3) contextual. While all three types of capabilities may be necessary for the company to provide a complete market offering, different types of capabilities have different implications on decisions on and management of partnerships.

Core R&D capabilities are those capabilities that are the key sources of a company’s competitive advantage and value added to its products/services. They must be managed closely and shared scarcely in partnerships. Extensive strategic analysis is necessary before creating business models that involve partnering for co-development of core areas.

Capabilities that don’t match the definition of core capabilities, but are critical for a complete product/service offering in a marketplace should be classified as critical capabilities. Critical capabilities take less effort to manage in co-development arrangements and can dramatically add value to a company’s offerings to customers without increasing R&D investment. Companies should try to make such co-dev arrangements valuable parts of their business models.

Capabilities that are necessary to complete the market offering, but provide marginal differentiation or value added to business can be classified as contextual capabilities. Co-dev arrangements involving one company’s contextual capabilities most often involve the other company’s core capabilities. Partnering with a core firm for their management focus and expertise can be less costly than trying to develop and manage internally.

The following table outlines how the above three types of capabilities affect the design of co-development partnerships.

![Figure 7 – How different capabilities affect design of business models in partnerships (Chesbrough & Schwartz, 2007)](image-url)

<table>
<thead>
<tr>
<th>Partnership attributes</th>
<th>Type of R&amp;D capability</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Core</td>
</tr>
<tr>
<td>Partner role</td>
<td>Vital; utilize in-house R&amp;D or very select strategic partners</td>
</tr>
<tr>
<td>Number of partners</td>
<td>None or very few</td>
</tr>
<tr>
<td>Depth of relationship</td>
<td>Deep</td>
</tr>
<tr>
<td>Contingency/Backup plan</td>
<td>Best to develop your- self (recruit strategic R&amp;D suppliers if needed)</td>
</tr>
</tbody>
</table>
Step 3. Align the business model of the partnering companies.

A potential lack of alignment between the partners' business models can be harmful to the cooperation. Therefore, the alignment of the business models is vital for all co-development partnerships. When selecting a partner, an analysis should be made to determine the match between the two business models – that is if both partners would benefit from successful execution of both models respectively. Partnerships with aligned business models are easier sustained over time and also possible to develop further.