Adopting Open Innovation
A New Framework for the Analysis of the Open Innovation Adoption Process

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Background: The term Open Innovation describes a phenomenon where organizations are no longer solely relying on internal R&D to innovate technologies that they then would bring to market. Instead, firms are looking outside for ideas or working with other organizations to develop technologies in order to capitalize on efficiencies of existing knowledge, reduce investment risks and increase speed to market. We identified a need to analyze the existing open innovation adoption frameworks in order to track similarities and differences so that we could create a new framework which is more comprehensive.

Purpose: The purpose of this thesis is to create a framework for the analysis of the open innovation adoption process which is based on organizational change and other relevant streams of research. In order to do this we were to find answers to the following research questions:

1) How can organizational change theory be used to analyze the movement from a closed to open innovation strategy?
2) In addition to organizational change theory, which research streams should be considered when analyzing the open innovation adoption process?
3) To what extent does our new framework provide an adequate foundation for analyzing the open innovation adoption process at SCA Hygiene Products?

Results: Our new framework is meant for the analysis of open innovation adoption process. The framework helps researchers to analyze how different organizations have adopted open innovation based on the four research streams that we have analyzed. Our framework includes aspects of organizational change theory, knowledge management, networks and managerial roles.

Key Words: open innovation adoption, organizational change, knowledge management, networks, SCA
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After nearly a half-year of writing about the open innovation adoption process, we are finally done. We have gone through a learning process that has provided us with a possibility to, despite our differences, write about a topic that we both find interesting. This thesis is also a symbol of a two year educational journey. We have been able to incorporate knowledge and skills from each of the courses we took in the SMIO program.

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-Jennifer & Merja
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1. Introduction

1.1 Open Innovation

The term open innovation was coined by Henry Chesbrough (2003b) to describe a phenomenon which he identified wherein organizations were no longer solely relying on internal R&D to innovate technologies that they then would bring to market. Instead, firms were looking outside the organizational boundaries for ideas or working with other organizations to develop technologies in order to capitalize on efficiencies of existing knowledge, reduce investment risks and increase speed to market. Also, organizations now saw the possibility to look for external paths to market for innovations that were not directly related to the organization’s core business (Chesbrough & Crowther, 2006). The open innovation paradigm has been described as a continuum in which firms are rarely completely open or closed and the types of open activities also varies within different departments and business units in the firm (Gassmann & Enkel, 2004).

While this phenomenon was by no means new (Spithoven et al., 2011), it is becoming an increasingly accepted (and often thought to be necessary) business strategy, especially in high-tech industries. Studies of organizations pursuing open innovation have been conducted at global giants such as Procter and Gamble, Xerox, Apple and AT&T (Chesbrough, 2003b) as well as small and medium size organizations and low-tech industries (Chiaroni et al., 2011).

Even though open innovation strategy is used in many organizations, they do not necessarily call what they do “open innovation.” Terms that have been used in academic research include dispersed innovation, collaborative innovation, innovation / technology licensing, etc. (Chesbrough & Crowther, 2006). Instead of putting a name to it, companies often see their collaboration with outside organizations as business-as-usual.

SCA is one of the few organizations in Sweden that publicly admits, and even brags, about their use of open innovation. While the organization officially began working with open innovation as part of its innovation strategy in 2006, they have been collaborating with external partners throughout their entire history. SCA is placing an ever-increasing strategic emphasis on its Hygiene Products division, leading to an increased importance in the
innovation activities and growth (Andersson & Johansson 2012a). They have collaborated with universities, suppliers, lead users and intermediaries to make incremental innovations in existing products, develop new products, and improve their understanding of customer needs (Andersson & Johansson, 2012b).

1.2 Research Problem

While there have been many articles and books published on the topic of open innovation in the past decade, very few have considered the adoption process. Those that do discuss the adoption process have mainly done so from an anecdotal or case study point-of-view. For instance, Chesbrough (2003b) recounts in detail how IBM, Xerox and other high-tech firms have slowly gone from closed to open innovation. Procter and Gamble’s own open innovation system, which they have dubbed Connect & Develop, is another example of a success story which has been studied by multiple authors (Huston & Sakkab, 2006; Dodgson et al., 2006; Lichtenthaler, 2011). However, there is a risk that open innovation might become a managerial fad rather than an overarching managerial concept if a theoretical framework which can be used in analyzing the open innovation adoption process is not established (Giannopoulou et al., 2010). In an editorial in 2006, Gassmann published a call for further research into multiple aspects of open innovation, one of which was the adoption process. A number of authors have cited this call as the reason why they have conducted their research. Researchers (i.e. Chiaroni et al., 2010 & 2011; Mortara & Minshall, 2011; Lichtenthaler, 2011) have begun to publish studies and attempting to create frameworks that explain the open innovation adoption process. However, they vary greatly in the dimensions used to analyze the process.

The differences which we have identified in the various frameworks have led us to question why they differ so greatly, especially in their use of organizational change theory. The open innovation adoption process has also been described as both evolutionary and radical; some authors state that the organizational change process associated with open innovation adoption varies depending on the organization’s circumstances while others seem to take a hard position on a specific change theory that should be used. And to our amazement, some nearly totally ignore organizational change theory all together! Since adopting a new business strategy entails great organizational change, it seems that further analysis of this area and how it can be applied to the open innovation adoption process is required.
We believe that organizational change theory is applicable to the analysis of the open innovation adoption process because going from a closed innovation strategy to one that is more open requires an enormous and fundamental change in the processes, activities and organizational culture surrounding the organization’s work with innovation. Organizational change theories vary greatly in their approaches to explaining how and why change occurs in an organization, how to manage the change process, whether it is continuous or intermittent, etc. While some researchers state that change is necessary due to some sort of failure within the organization (Weick & Quinn, 1999), others argue that it is necessary for organizations to adapt and evolve with their surroundings (Moran & Brightman, 2001). Theories on planned change have been dominant since Lewin (1947) published his Three Step Model, though theories of emergent change have increased in popularity since the 1980’s (Bamford & Forrester, 2003). In the 1990’s, there was a movement for the distinction between episodic and continuous change (Weick & Quinn, 1999) and Armenakis and Bedeian (1999) identified four main research themes from the 1990’s: context, content, process and criterion issues.

Other aspects which are treated differently in the current frameworks include which levels of the organizational hierarchy are analyzed, the role of management and so-called “OI Champions”, and types of activities performed during the adoption process. Additionally, the authors take points of departure in knowledge management, the precursory event that led to the decision to adopt an open innovation business strategy, whether it is top-down or bottom-up adoption and business models used. In analyzing the current open innovation adoption frameworks, we will identify and analyze the aspects each framework uses and how they differ from each other. By researching additional articles on open innovation and related research streams, we seek to find overarching themes which can be used as aspects of analysis in our new framework of the open innovation adoption process.
1.3 Purpose

The purpose of this thesis is to create a framework for the analysis of the open innovation adoption process which is based on organizational change and other relevant streams of research.

1.3.1 Research Questions

In order to fulfill the purpose of this thesis, and based on the research problem outlined above, we have developed the following research questions:

1) How can organizational change theory be used to analyze the movement from a closed to open innovation strategy?
2) In addition to organizational change theory, which research streams should be considered when analyzing the open innovation adoption process?
3) To what extent does our new framework provide an adequate foundation for analyzing the open innovation adoption process at SCA Hygiene Products?

1.3.2 Scope

This report has a number of limitations in the scope of what material will be covered. Firstly, when identifying current open innovation adoption frameworks, we consider only those published in the last five years. Secondly, we use only academic research articles about the open innovation adoption process, excluding anecdotal accounts of the adoption process in specific firms and guides on how to adopt an open innovation strategy. Finally, the framework we seek to develop is for the analysis of the open innovation adoption process, we do not seek to provide a step-by-step guide to the adoption of open innovation or identify key success factors.

1.4 Outline

In Chapter 2, we provide a discussion of methodological options from a theoretical basis. This discussion is followed by a description of the method used in this thesis.

Chapter 3 is devoted to a discussion of the relevant theoretical background for our research. In this section we first describe the concept of open innovation—reasons why this strategy is
employed, key managerial issues, and the three strategic dimensions. Next, we provide an extensive discussion over organizational change theory. In order to structure this discussion, we use the example of Senior and Fleming (2006) who divided the issues of organizational change into the rate of occurrence and how the organizational change comes about. We have chosen to limit the theoretical background section to these topics because they are the only streams of literature which we could identify as necessary.

In Chapter 4, we introduce four current frameworks of the open innovation adoption process. This discussion includes a description of the frameworks and the authors’ main findings. As these frameworks differ greatly in the manner which they treat organizational change and which other dimensions they use in the analysis of the adoption process, we tackle these issues deeper in Chapter 5. Chapter 5 includes additional theoretical background on the areas of knowledge management, networks and managerial roles in order to gain insight on the theories which may be relevant when analyzing the adoption process from these perspectives. Our new framework, developed as a result of the comparative literature study conducted in Chapters 4 and 5, is illustrated and described in Chapter 6. We take this opportunity to explain why we believe that each perspective is critical in analyzing the adoption process and give suggestions as to which streams of theory could be most beneficial. Chapters 4-6, when looked at collectively, are the basis to the answers of our first two research questions.

In Chapter 7, we provide a case study of the open innovation adoption process at SCA Hygiene Products based on our new framework. This section includes an analysis of the activities and processes of the organization from the theoretical standpoint outlined in the framework and is used to answer to our third research question.

In Chapter 8, we begin by discussing the results of our study, using our research questions as a frame of reference. We then go on to provide conclusions and recommendations for future research.
2. Method

2.1 Methodology

It is important that, when conducting a research, the researchers use relevant data and manage to explicitly connect it to the theory being used. Research can be either deductive or inductive and the approach taken depends on the logic behind it. If the study is built based on theory and narrowed down by testing and finding a confirmation for the theory, it is called a deductive approach. An inductive approach starts instead with an observation and then tries to find a generalizable theory in the end (Bryman & Bell, 2007). Furthermore, research can be conducted by using qualitative, quantitative or mixed methods. As Bryman and Bell (2007) state, the qualitative method differs from quantitative method by the fact that the former is concerned with words when the latter is associated with numbers. Qualitative research can also be described to be inductive, constructive or interpretive.

Compared to quantitative research, qualitative research takes a closer look at the people being investigated and concentrates on contextual understanding instead of generalizing. It is subjective, looking at how people perceive the situation in reality (Rynes & Gephart 2004). “An important value of qualitative research is description and understanding of the actual human interactions, meanings, and processes that constitute real-life organizational settings.” (Rynes & Gephart, 2004, p.455) This is an advantage, since it provides a possibility to gain awareness of subjects that can be hard to find with a quantitative approach. It also makes available examples of how people have experienced situations and explains them in a deeper manner (Rynes & Gephart, 2004).

Qualitative research can be done through surveys, interviews, case studies and textual analysis, etc. (Rynes & Gephart, 2004). Case studies are conducted by using data that can be both quantitative and qualitative; interviews on the other hand are carried out by interviewing people face-to-face or via communication tools such as telephone and e-mail. Qualitative data can be gathered by using multiple methods (Rynes & Gephart, 2004) and since we are both conducting a literature study and interviews, we will describe the two qualitative methods in more depth.
Eisenhardt (1989) describes a step-by-step process of how to build theory from case studies where the data can be quantitative, qualitative or both. The first step is to define the research questions. Next, cases that either replicate each other or fill in gaps in previous research are chosen and the use of data collection methods is decided. The types of data include publications, internal and external communication, interviews and observations. Once the data collection process has begun, there might be overlapping information and the researchers can change or add to their data collection methods during the research (Eisenhardt, 1989) in order to be able to match: “Matching is, thus, about going back and forth between framework, data sources, and analysis” (Dubois & Gadde 2002, p.556). Once the data has been collected and the researchers have become familiar with it, it will be analyzed and patterns, including similarities and/or differences, will be compared to theory. The cases that that have similarities confirm the validity while cases that differ considerably provide a possibility to extend or redefine the existing theory. What makes the findings valid and more generalized is if they can be tied to the theory that already exists (Eisenhardt, 1989).

Interviews are one of the most flexible forms of qualitative research since they allow the researcher to ask open-ended questions which result in responses that provide a deeper insight into the interviewees’ perspectives instead of answers that are easily coded (Bryman & Bell, 2007). An interview can also be considered to be a better research method than making a questionnaire since there is a possibility to observe the person being interviewed and ask follow-up questions (Bell, 2005).

Qualitative interviews can be divided into two major groups based on the approach taken. An unstructured interview allows the researcher to ask questions that are not necessarily planned beforehand and the interviewee has freedom in how they choose to respond. A semi-structured interview means that the researcher has a list of pre-determined questions and often follows the structure planned beforehand, though they also leave room for follow-up questions. Both unstructured and semi-structured interviews are more flexible than quantitative surveys. These two interview types are extremes; most of the time, the interview conducted falls somewhere between these two types, being closer to one or the other (Bryman & Bell, 2007).
2.2 Method

Regardless of whether it is a quantitative or qualitative research that is being conducted, the most important issue that should taken into consideration when it comes to method is to articulate clearly and explicitly what was done in the research process and how it reflects to the findings and results achieved. Methods do not have to be complicated in order to achieve a reliable qualitative research, instead it is important that the study design and data match and that the data collected is being exhaustively analyzed (Rynes & Gephart, 2004).

Since we were looking for experiences and comments from people who were taking part to the open innovation adoption process, qualitative methodology is better suited than quantitative for our research. We started our study by identifying articles and frameworks that have studied the open innovation adoption process. Since the concept of open innovation is relatively new, the frameworks we identified are no more than five years old. The articles we decided to use differ in their treatment of the open innovation adoption process. However, all of them have one common objective: organizational change theory. After conducting a thorough study of these frameworks, we identified three additional research streams that we perceive as crucial when analyzing the adoption process of open innovation. They are included in the new framework that we have created and we use them when analyzing our case study organization.

When identifying an organization we wanted to use in our case study, we did an extensive search of organizations in Sweden that are familiar with the concept of open innovation and provide information on their use of the strategy. After identifying SCA as the most interesting organization we contacted the Director of Innovation and Knowledge Management and we were directed to contact the Open Innovation Programme Manager. After getting an approval to conduct two interviews with managers at SCA Hygiene Products, we began our case study by first collecting secondary evidence such as newspaper articles, blogs, trade magazines and previous academic studies of the use of open innovation at SCA Hygiene Products.

The aim of the interviews was to answer any questions which the secondary data has not provided answers to and gain information about personal experiences during the adoption process. At the point of the interview, we were also provided with publications which SCA uses to inform customers and investors about their work with open innovation.
In preparation for the interviews, we created a fact sheet (see Appendix) and submitted it to the interviewees one week prior to when the interviews were conducted. This document contained information about the purpose of our study, how the interviews would be conducted and the interview questions.

We began with a pre-interview discussion and then conducted two interviews, lasting approximately two and a half hours in total. During the pre-interview discussion, we were joined by both managers. They began by providing us with some organization background including organizational history, products, and their roles within the organization. We were then asked to present our framework so that they would have a better understanding of what kind of data we were seeking. Next, we conducted separate interviews with Rolf Andersson and Kerstin Johansson, which were each approximately one hour long. During the interviews, we began by asking the pre-determined interview questions, asking follow-up questions when necessary. At the end of each section, we provided the interviewee with time to provide any additional comments. This made it possible to cover the topic more comprehensively. We were also given permission to contact the interviewees later with follow-up questions.

These interviews were recorded so that they could later be transcribed. A copy of the full transcription was submitted to each of the interviewees. Due to lack of time, we agreed to submit the full case study for approve and corrections instead of having the interviewees approve both the transcription and the case study.

2.3 Research Quality

Validity

Some of the biggest challenges with research validity are determining whether the research measures or describes what it is supposed to (Bell, 2005) and ensuring that the authors have an open mindset and present unbiased findings (Silverman, 2010). In an effort to ensure the validity of our results, we have excluded anecdotal accounts describing how a specific company has adopted open innovation, using only academic articles which have been published in the past five years and seek to analyze the adoption process. Researchers should also avoid easy conclusions; instead they should consider multiple perspectives and critically review their findings in order to present objective results. For example, if time limitations lead to the researcher being unable to fully transcribe interviews, then the validity of the results suffers because they are relying on a limited amount of data. If the data can be generalized or
reproduced, it makes a more convincing argument (Silverman, 2010). In conducting a case study of the open innovation adoption process at SCA Hygiene Products, we sought to test our framework and demonstrate the validity and generalizability of our results.

**Reliability**

The reliability of a study depends on whether the results would be the same if repeated under similar circumstances (Bell, 2005). Internal reliability describes whether the answers of a respondent are related to other parts of the research and inter-observer consistency shows whether the observers have different kind of perceptions of the answers (Bryman & Bell, 2007). Recording and transcribing interviews provides the possibility to further inspect the results, the researchers do not have to rely only on their own interpretations while the interview is being conducted (Silverman, 2010). In order to provide reliable results, we transcribed the interviews and sent transcriptions to the interviewees for approval and further comments. However, due to lack of time and because they wanted to see how we had used the interviews in analyzing the case, interviewees decided to provide comments and clarifications to the case study.
3. Theoretical Background

In Chapter 3, we provide a discussion of the relevant theoretical background. We begin by discussing the concept of open innovation and its applications in today’s business climate. We then go on to a more detailed description of the dimension of open innovation, i.e. whether it is an inbound, outbound, or coupled strategy. Next, we compare and discuss a number of organizational change theories. This discussion is divided into two separate categories: rate of occurrence and how organizational change comes about.

3.1 Open Innovation

Owning intellectual property and protecting it (Giannopoulou et al., 2010) and having internal R&D operations with significant resources and control (Chesbrough, 2004) were previously considered necessary for sustained competitive advantage. However, this business model—coined as “closed innovation” by Henry Chesbrough (2003b)—is rarely viable in today’s business environment. In order to meet growth targets (Huston & Sakkab, 2006), develop new products and become more efficient organizations often find that they must cooperate with suppliers, customers, other firms - sometimes even competitors- in order to gain access to the necessary knowledge, technologies and resources for innovation (Giannopoulou et al., 2010). Thus, Chesbrough (2003b) describes the open innovation paradigm as a method to do so.

![Closed Innovation Paradigm](image1)

![Open Innovation Paradigm](image2)

*Figure 1: Closed Innovation (Chesbrough, 2003: xxii)*

*Figure 2: Open Innovation (Chesbrough, 2003: xxv)*
As the amount of research in the area of open innovation increases, a number of definitions of the paradigm have been published. In this paper, we use Chesbrough’s (2006) definition, which is the most widely cited definition of the open innovation paradigm:

“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. This paradigm assumes that firms can and should use external ideas as well as internal ideas, and internal and external paths to market, as they look to advance their technology” (Chesbrough, 2006, p.1).

Central to this definition is the concept of the transformation of rigid organizational boundaries into semi-permeable ones which enable knowledge and innovations to move more freely between the organization and the external environment (Gassmann & Enkel, 2004). These inflows and outflows of knowledge do not spontaneously occur; organizations must create opportunities and mechanisms for identifying available knowledge and transferring it into or outside the organizational boundaries (Spithoven et al., 2011).

There are several reasons why firms may decide to move towards a more open approach in their innovation activities. Keupp and Gassmann (2009) found that if an organization’s innovation activities are negatively affected by information, ability and risk-related obstacles, they will be more likely to adopt an open innovation strategy. Many organizations feel that in order to achieve profitable growth, they must seek innovation and knowledge outside the firm to speed up the process and increase efficiency. Accomplishing growth through open innovation can be achieved for example by developing new products or entering a new business arena. Additionally, organizations have realized that since skilled labor is ever more mobile (Chesbrough, 2003b; Giannopoulou et al., 2010; Gassmann, 2006) and accessing knowledge can be key to developing and retaining a superior knowledge base in comparison to competitors. Thus, developing and maintaining networks and relationships with outside organizations is increasingly important (Enkel et al., 2009). Also the number of high-tech start-ups and the great amount of university research facilitates the decision to move towards a more open approach (Giannopoulou et al., 2010).

Open innovation does not only apply to high-tech companies; low-tech (Chiaroni et al., 2010) and service organizations such as Amazon and UPS have also achieved benefits from using an open innovation strategy (Chesbrough & Euchner, 2011). In the case of service organizations,
when the organization and its customers work together in developing new or improved service offerings, the organization not only benefits from the innovation but also from increased knowledge about and deeper relationships with their customers (Chesbrough & Euchner, 2011). Opening up innovation activities can also create economies of scale because of the access to existing infrastructures and lowering fixed cost due to the higher volume (Laursen & Salter, 2006).

When implementing an open innovation strategy, organizations might face challenges such as how to ensure knowledge retention (Gassmann & Enkel, 2004) and not being so open that there is a risk of losing control over employee attitudes (Keupp & Gassmann, 2009). Absorptive capacity, the ability to identify external information, integrate it and apply it to internal innovations (Cohen & Levinthal, 1990), is an essential capability for organizations practicing open innovation (Gassmann & Enkel, 2004). In order to identify, assimilate and apply external knowledge, a certain amount of prior organizational knowledge is also necessary: there must be some similarity in the knowledge bases of the cooperating organizations but also a degree of diversity in order to result in organizational learning (Spithoven et al., 2011). It can also be challenging to avoid the high costs of coordination activities and internal obstacles such as identifying appropriate innovation partners (Spithoven et al., 2011) and balancing open innovation activities against tight financial targets (Enkel et al., 2009).

When organizations adopt open innovation, they are required to develop new capabilities and learn new methods of working. This change process can be stressful and cause fear in employees, which often results in resistance to the new way of working (Keupp & Gassmann, 2009). Not-Invented-Here syndrome, the negative employee attitude towards innovations not developed in-house, can however be minimized. In order to do so, management must make sure to communicate why it does not currently posses sufficient resources and capabilities to rely strictly on internal R&D and that opening up the processes can provide the company a more profitable future. Another aspect to take into consideration is motivating the commitment of both management and employees to the new processes in a long term aspect so that the organization has time to see what the benefits of the new open innovation strategy can be (Cohen & Levinthal, 1990).

The key to successful open innovation strategy is in finding balance when opening the boundaries of the company for knowledge flows but still fostering the development of core
competencies and making sure that intellectual property cannot be accessed by competitors (Enkel et al., 2009). Therefore, the new task of internal R&D is to identify and choose the external knowledge the organization needs and develop internally what the external knowledge is lacking, integrate both the internal and external knowledge and sell or license out the knowledge that the company does not want to or does not have the resources to develop further (Chesbrough, 2003b).

In summary, organizations have discovered that opening up their innovation practices can lead to accelerated growth, cost and time efficiencies when developing new products, accessing new markets, marketing innovations which do not fit within the current business model, etc. Although the phenomena was first studied in large high-tech companies, examples of companies employing open innovation strategies have been noted in firms of all sizes and a variety industries. While there are many benefits to opening up the firm’s innovation work, it should be noted that this change does not come without challenges. Converting people from the negative mindset of Not-Invented-Here, developing the proper systems and interfaces to store and transmit knowledge, and gaining the support of management for the new strategy are essential to the successful adoption of open innovation.

3.1.1 Dimensions of Open Innovation

**Inbound Open Innovation**

Globalization and rapid technology development have lead to organizations understanding that opening up their boundaries to access knowledge can be beneficial (Gassmann, 2006). When firms practice an inbound open innovation strategy, they open up their boundaries and create and use relationships with external organizations such suppliers and universities to access the knowledge and competences of others. This is done in order to improve their own innovation performance by integrating the knowledge gained (Chioroni et al., 2010; Gassmann & Enkel, 2004; Bianchi et al., 2011). This strategy is said to be explorative (March, 1991a) because the organization is searching for new information and technologies which will enable them to improve their products or services, access new markets or achieve efficiencies.

Instead of relying solely on internal R&D (Enkel et al., 2009; Spithoven et al., 2011), organizations search for knowledge and innovations which external organizations such as suppliers, research institutes, universities, and competitors possess (Kirschbaum, 2005). The
most common practices in open innovation strategy include licensing-in technology, joint ventures, funding university research, purchasing technical and scientific services, joint ventures and acquisitions (Bianchi et al., 2011).

When management is allowed to look externally for sources of innovation, it can provide them with better possibilities to find new ideas and technological innovations. The search strategy is characterized by two variables: Search breadth includes the channels the organization uses for the search activities and the search depth is the intensity of the search. However, the search for this information and organizations to partner with can be time-consuming and expensive and can even be an obstacle for innovation if the organization spends too much time and resources for the search activities (Laursen & Salter, 2006).

**Outbound Open Innovation**

For every organization accessing external knowledge and bringing it into the firm’s boundaries, there is another that is selling their ideas or providing access to them (Chesbrough & Crowther, 2006), this is known as outbound open innovation. Organizations often make long-term investments in R&D only to find that the knowledge or technology is not compatible with their business model, but this does not mean that these innovations cannot be used elsewhere. By licensing these technologies to other firms, the firm can generate revenues from innovations that would otherwise sit on the shelf (Chesbrough, 2003a; 2004).

Globalization and competition have driven companies towards cooperative innovation activities since organizations have realized that they do not have to create everything themselves (Gassmann, 2006). This business model is based on exploitation (March, 1991a) of internal knowledge and technologies. Instead of letting innovations which do not match up with the organization’s core business go unused, they are licensed-out (Spithoven et al., 2011), sold (Enkel et al., 2009), turned into spin-off ventures (Chesbrough, 2003a) or leveraged in joint ventures in which external organizations have the ability to bring them to the market more efficiently (Bianchi et al., 2011). This creates a possibility for the licensor to see if the innovation has possible value and also learn how the licensee develops it further instead of making an investment themselves (Chesbrough, 2003a; 2004). Therefore outbound innovation can be used to increase speed-to-market and access markets that the organization would not normally have access to if it was be practicing closed innovation (Enkel et al., 2009).
Van der Meer (2007) found that larger companies are usually more willing to sell their ideas and knowledge that were created inside. On the other hand, Lee et al. (2010) states that smaller firms and start-ups are more likely to participate in outbound open innovation because they lack the funds or other resources to bring their product to market or their innovations are largely based on components which are then combined with components from other organizations to make a final product. At the beginning of the process of moving from closed to open innovation strategy, organizations have to discover what their key competences are and knowledge which they desire to retain and protect in-house while starting a co-operation with other firms. However small and medium sized organizations do not usually have great R&D possibilities in-house and therefore it is important that larger companies open up their innovation processes for co-operation (van der Meer, 2007). This suggests that the firm size might be a factor that affects to the openness of the innovation activities, however the firm size does not make a difference to the success when collaborating; it is the collaboration itself that is essential for successful open innovation (van der Meer, 2007).

**Coupled Open Innovation**

While many organizations focus on employing inbound or outbound open innovation, a trend has been identified in which firms employ both types of open innovation strategies, though often in separate business units and implemented at separate times (Chiaroni et al., 2011). This third core process when employing both inbound and outbound open innovation is known as a coupled process (Gassmann & Enkel, 2004). Coupled open innovation involves combing inbound activities to gain external knowledge with outbound activities in order to
bring ideas to market (Enkel & Gassmann, 2007). Cooperation, the establishment of research alliances and taking part in joint ventures are key methods of implementing coupled innovation. The degree of involvement of all parties is greater in coupled open innovation processes is greater in proportion to the amount resource allocation the company has placed (Enkel et al., 2009). Strategic networks, in which deep interaction between parties develops over a longer period of time and trust plays an important role, illustrate the typical relationship structure employed in coupled open innovation processes (Enkel & Gassmann, 2007).

The benefits of coupled open innovation include developing standards or a dominant design, reducing risk, and multiplying the effects of knowledge exploitation (Enkel & Gassmann, 2007). In order to get the best out of using the coupled process, organizations have to agree to develop knowledge in cooperation and find the right partners for these processes. Challenges in coupled open innovation include finding a balance in providing and receiving knowledge and making sure that knowledge integration works so that the organizations can achieve the best learning possibilities (Gassmann & Enkel, 2004).

In summary, there are three dimensions of open innovation that can be implemented within a firm: inbound, outbound and coupled. Inbound open innovation practices involve using technology and knowledge found outside of the firm’s boundaries and combining that with internal competencies and knowledge to bring innovations to market. Outbound open innovation involves taking knowledge or technology developed inside the company that does not fit the business model and using methods such as licensing and spin-offs to bring this innovation to market. Finally, organizations using coupled innovation strategy employ both inbound and outbound open innovation strategies, though usually in separate business units.

3.1.2 Exploration & Exploitation in Open Innovation

March (1991a) uses the terms exploration and exploitation to describe the intention behind certain strategies and activities within companies. “Exploration includes things captured by terms such as search, variation, risk taking, experimentation, play, flexibility, discovery, innovation. Exploitation includes such things as refinement, choice, production, efficiency, selection, implementation, execution (March, 1991a, p.1).” It is essential that organizations find a way to balance their exploration and exploitation activities. If they place too much emphasis on exploration, they will take unnecessary risks, end up with half-developed ideas.
and a lack of core competences. On the other hand, organizations that over-emphasize exploitation experience problems in that they fail to adapt with their environment and seize new business opportunities because they are overly-focused on improving efficiencies (March, 1991a).

Gupta et al. (2006) counters March’s (1991a) argument that exploration and exploitation activities are constantly fighting for the same resources and therefore, are in competition with each other. They state that organizations can achieve a healthy balance between exploration and exploitation through two methods: ambidexterity or punctuated-equilibrium. Ambidexterity implies that while exploration activities are done in one unit of the organization (i.e. R&D or product development), exploitation activities are carried out in another. When using punctuated-equilibrium on the other hand, the organization uses short bursts of exploration in order to develop new products, enter new markets, or gather new information and then attempt to exploit this new knowledge for longer periods of time in order to make the most out of knowledge, products or markets which they have gained.

Exploration and exploitation activities linked to open innovation can be connected to the type of innovation, the type of relationship pursued in networks and the method of knowledge management. When looking at the type of innovation, exploration refers to activities which result in radical innovation of products, new product development or entering new markets or industries. Exploitation refers to activities such as incremental changes to products, improving processes and production methods (Gassmann & Enkel, 2004). Lee et al. (2010) state that large organizations concentrate their exploitative R&D work in-house and use inbound open innovation activities to pursue exploration. On the other hand, small and medium sized companies are more likely to pursue major innovations (exploration) in-house and use outbound open innovation as a source of exploitation in order to bring their products to market.

When developing innovation networks, the organization must carefully consider whether the goal of the open innovation activities is explorative or exploitative. The use of networks in inbound open innovation is an explorative relationship because the firm is searching for new information and technologies which enable them to improve their services or products. When the network serves an exploitative purpose, the organization is pursuing outbound open innovation. They seek to use their current knowledge to bring in new income through activities such as licensing of intellectual property, using pre-established distribution channels.
or marketing intelligence, etc (Gassmann & Enkel, 2004). The development and management of networks is closely related to the knowledge management of the organization. If the organization is pursuing exploration networks, the purpose of these networks is to gain access to new knowledge. If the organization is pursuing exploitation networks, they must not only ensure the security of their own knowledge, but also develop methods to share it with innovation partners (Spithoven et al., 2011).

In summary, organizations pursue a combination of exploration and exploitation activities when using open innovation. Exploration involves looking for new technologies, products, and markets and this guides the way organizations implement inbound open innovation activities and which types of organizations they develop relationships with. When organizations practice outbound open innovation, they are seeking to exploit current knowledge and technologies by using their collaborative work to bring innovation to market through external channels. Finally, organizations that use coupled open innovation are pursuing ambidexterity or punctuated-equilibrium.

### 3.2 Organizational Change Theory

Senior and Fleming (2006) use three categories to compare and contrast the major themes and approaches of organizational change theory which were also used in By’s (2005) review of organizational change management. These three themes were rate of occurrence, how change comes about and scale. Rate of occurrence refers to whether change is implemented on a regular, incremental or rapid, profound basis. The category of how change comes about discusses whether change is planned in the organization or emerges through fine-tuning and incremental actions. The final characteristic of change theory is the scale of change. According to Dunphy and Stace (1993), the scale of change programs can be described as fine-tuning, incremental adjustment, modular transformation or corporate transformation.

We use two of Senior and Fleming’s three categories to organize our discussion of organizational change theory because they provide a structure which allows for comparison between a number of theories and models at each level. We omit the scale category because when adopting a new business strategy, i.e. open innovation, modular and corporate transformation are the only two levels of scale which are appropriate and these topics are covered in the discussions on rate of occurrence and how change comes about.
3.2.1 Rate of Occurrence

The first category of change theory is based on the rate of occurrence of organizational change. Weick and Quinn (1999) state that many of the differences between discontinuous change and continuous change theories are due to the perspective of the observer. On the macro level, one observes the organization as being characterized by repetitive action and routines and revolutionary change is enacted episodically in order to catch up with the changes in the internal or external environment. On the micro level, small and frequent adjustments and adaptation to the environment compound and eventually lead to changes in the structure and strategy of the firm. Organizations do not necessarily prescribe strictly to discontinuous or continuous change programs. Often, organizations make small shifts in response to small changes in the environment but can experience the need for radical, discontinuous change when extreme changes in the internal or external environment occur (Senior & Fleming, 2006; Dunphy & Stace, 1993).

In this section, we discuss how organizational change theories differ in regards to their rate of change, i.e. discontinuous and continuous change.

Discontinuous Organizational Change

Discontinuous organizational change is most often characterized as being infrequent and intentional. It is also known as episodic (Weick & Quinn, 1999; Pettigrew, 1987) and punctuated-equilibrium (Weick & Quinn, 1999; Gupta et al., 2006). According to theories of discontinuous organizational change, the organization undergoes short bursts of change which are preceded and followed by longer periods of stability.

Organizations often suffer from inertia; they stand still instead of frequently adapting to shifts in the surrounding environment as they occur (O’Reilly III et al., 2009). As the environment continues to change around them and they neglect to adapt to these changes, the organization finds that their business model, strategy or product offering no longer meets the needs of customers or the organization itself (Weick & Quinn, 1999). Due to this lack of strategic fit, they are forced to make radical and rapid shifts in strategy, structure or culture if they want to survive in the market (By, 2005). In comparison to continuous change, which is costly and can cause turmoil within the organization because of the uncertainty it brings, discontinuous change allows for all changes to be made in one initiative in which the desired end-state, a renewed strategic fit, is clearly communicated (By, 2005).
According to this school of thought, real and lasting change in an organization requires that the organization is in crisis in order to create the motivation needed to make the changes stick (Lewin, 1947; Pettigrew, 1987). Examples of such changes which the organization may face include major technological shifts or changes in key personnel (Pettigrew, 1987). Since the organization is in a state of disequilibrium with the environment, they must make an intentional change, which requires identification what the desired end-state is and how they will achieve it (Weick & Quinn, 1999).

Lewin’s (1947) Three-Stage Model of Change is one of the oldest and most well-known episodic change models. In this model, the organization starts out in a frozen state (i.e. a state of inertia) in which it is clinging to the current attitudes, technologies, processes, etc. Next, the organization enters an unfreezing stage in which they explore the available alternatives for change that they will need in order to be in equilibrium with the market again. Finally, in the refreezing stage, the organization must integrate the change into the processes, activities and culture of the organization in order to maintain the desired state (Bamford & Forrester, 2003). Critical to this model is the idea that before a new behavior, skill, strategy, etc. can be adopted, the old one must be discarded (Lewin, 1947). Though it is more commonly referred to as a planned change model than a discontinuous change model, the two characteristics are not mutually exclusive. Weick and Quinn (1999) state that Lewin’s Three-Stage Model holds basic assumptions which match those of episodic change theory. Firstly, it assumes that movement is linear and progressive in that the organization moves in a forward direction through time and that the end state is better than where they started. Also, the Three-Stage Model assumes that there is a goal or a specific end-state which is desired and that this end state is due to the fact that the organization is in disequilibrium and that the change which is to be made is planned and implemented by people, most commonly upper-management, outside the system. It is crucial that the changes be directed by people outside of the system because a degree of separation is needed in order to ensure that the changes made are done in accordance to the overall organizational strategy.

Dialectic change is another example of discontinuous change models. In this model, there are at least two entities which oppose or contradict each other. The entities could be the firm and the external environment, different business units within the firm, management and employees, etc. At some point, these entities must confront each other and engage in a struggle in which one comes out as the winner or they remain in a stalemate (van de Ven & Poole, 1995). For example, when a dominant design emerges in an industry and the
organization’s product and technologies do not meet the specifications, the organization must choose to continue selling its product as it is or to conform to the dominant design. If the organization wants to continue competing in the industry, it is imperative that they make the changes necessary to conform. Eventually, there will be new changes in the industry and the change sequence will begin again (van de Ven & Poole, 1995).

Teleological change, described by van de Ven & Poole (1995), states that change in an organization occurs when a single organizational entity develops toward a planned goal or an end state. The single entity can be an individual or a group of individuals or an organization that is like-minded and wants to act as a single collective entity. The teleological change process starts with the entity coming to an agreement on an envisioned goal or end-state which they will seek to achieve. Once the goal has been agreed upon, the entity takes action to reach it and the progress is constantly evaluated and monitored. Thus, the development is a repetitive sequence of goal formulation, implementation, evaluation and modification of goals based on what was learned or intended by the entity. There are prerequisites that can be used to evaluate if an entity is developing and can attain the goal or end-state. Therefore, in order to state that the entity has been developing, the functions should be fulfilled, accomplishments achieved and components built. Teleological change is seen as discontinuous change because it is only when the entity experiences an imbalance in its goals or values versus their current situation that they feel a need to implement change in the organization.

Critics of discontinuous change models state that the benefits of the change are short-lived (By, 2005). They also argue that episodic change allows organizations to become complacent and defensive against change (Pettigrew, 1987). If an organization has gotten to the point where it needs to adopt radical change in order to survive in the environment, then the organization will most likely fail to continue to change with the environment and will only be in equilibrium for a short period of time. Employees that are not used to dealing with constant change will have a harder time coping with discontinuous change (Senior & Fleming, 2006).

Another critique of discontinuous change models is that it treats change as though it has a clear beginning and end (Pettigrew, 1987), though the number of steps and what happens during each step varies depending on the model. They fail to mention the mechanisms which bring about change and how an organization or group might not be able to easily identify that they have begun the change process (Pettigrew, 1987). There is also a general lack of information on the actual process of change that the organization goes through including
specific steps which the organization must take to ensure that the change will remain. For example, Lewin (1947) states that old behaviors must be unlearned before new behaviors can be learned, however he does not provide clear information about how this is to be done.

**Continuous Organizational Change**

Continuous change models have become more widely accepted than discontinuous change models since the 1980’s because organizations see the need to adapt with the environment (By, 2005). Continuous change models state that organizations must continually “monitor, sense and respond to the external and internal environment in small steps (By, 2005, p. 372).” In doing so, the organization seeks to ensure that their operations fit strategically with both the internal and external environment (Weick & Quinn, 1999). This does not necessarily mean that change is constantly occurring within the organization; there are models of both smooth and bumpy continuous change (Burnes, 2004). Smooth continuous change is characterized as being systematic and predictable change which occurs at a nearly constant rate in reaction to changes within the environment. Bumpy continuous change, on the other hand, recognizes that while there is a certain amount of planned, incremental change there are also times when the organization undergoes an increased rate of change due to events such as periodic restructuring in the organization (Grundy, 1993).

Evolutionary change theory, which is based on Darwin’s theory of evolution, consists of three major attributes: variation, selection and retention. As environments change over time, variation in the traits of the firm and their ability to adapt with the environment is what makes them more or less likely to survive (O’Reilly III et al., 2009). Variation is seen as the reason why change must occur, i.e. a change in technology, governmental regulations or consumer behavior. Selection refers to how the organization identifies the options they have for change, i.e. developing a new product or technology, making changes to the organizational structure, or entering a new market. Finally, retention is based on the policies and procedures put into place in order to integrate the change into the organization, i.e. knowledge management, management control systems, and policy creation (Teece, 2007).

Two major variations on this school of thought are organizational ecologists and adaptationists. In continuing the metaphor of Darwinian evolution, organizational ecologists believe that organizations are like animals. Change occurs in the population as a whole as new strategies, products or industries which are better suited to the environment replace the old ones. The fundamental argument here is that organizations are inert and will resist change
until their survival is jeopardized because of a lack of strategic fit (O’Reilly III et al., 2009). On the other hand, adaptationists state that organizations can and do change. Evolutionary change as described by van de Ven and Poole (1995) states that the stages of variation, selection and retention are recurrent and cumulative. Thus, the organization makes changes in order to stay aligned with the environment and these changes build upon each other over time instead of merely replacing each other.

Lovas and Ghoshal (2000) take evolutionary change theory a step further in their model of Guided Evolution. In this model, they claim that strategic intent and administrative systems in the organization act on and are acted on by sources of variation, units of selection and agents of selection and retention in order ensure strategic change management in an organization. Contrary to other evolutionary models, management plays an active role in the evolution of the firm in that they both set the strategic intent and are usually the agents of selection and retention. Strategic initiatives are typically guided by the external environment because they are based on how the firm plans to create value for the customer so that they can earn a profit. Since the organization must stay relevant to its external environment in order to create a profit, it is important that this element of strategic fit be represented in the change model. Administrative systems, i.e. organizational structure and routines, are another integral part of this model. They are affected by and influence how strategic initiatives are enacted and the human and social capital as well as other resources which are employed in these activities.

In summary, organizational change can be classified as either continuous or discontinuous. Continuous organizational change is an evolutionary process in which organizations seek to adapt to changes in the market and external environment as they occur in order to reduce the amount of strategic drift. Examples of continuous organizational change models include evolutionary, guided evolution and adaptation. Discontinuous change, on the other hand, is characterized by short bursts of organizational change followed by longer periods of stability. While this method is said to have advantages because of less turmoil within the organization due to constant change, it also means that organizations face problems of inertia and challenges in motivating people within the organization to accept the changes. Examples of discontinuous organizational change models include Lewin’s Three-Stage Model, dialectic and teleological change.
3.2.2 How Organizational Change Comes About

The second category of organizational change theory is how the change comes about: whether it emerges or is planned. Emergent change occurs when incremental changes in the organization and its strategy are implemented in response to changes in the environment. Planned change, on the other hand, tends to involve more drastic changes in the organization and is therefore designed before implementation by upper management (Senior & Fleming, 2006). Planned change is often seen as discontinuous and emergent change is likened with continuous change. The organization must not adhere strictly to either planned or emergent change. Depending on the circumstances of the organization and the environment which it is surrounded by, both types may be appropriate during the same or different time periods (Dunphy & Stace, 1993).

In this section, we discuss how organizational change theories differ in their perspectives of how change comes about: whether it is planned or emerges.

**Planned Change**

Planned change can be incremental or radical, depending on the needs of the organization and how well it currently fits with the environment. If the organization is suffering from a major lack of strategic fit, they will be forced to make radical changes, whereas an organization that quite closely matches its environment requires only incremental changes (Weick & Quinn, 1999). If management can visualize the end-state which it is attempting to achieve and can afford to take its time in getting to that state, then it can implement several phases of incremental change in order to arrive at this state. In other cases, it may be easiest or necessary for the organization to adopt a radical approach to change in which the change is predetermined but implemented in one swoop (Senior & Fleming, 2006).

Lewin’s (1947) Three-Stage Change Model is an example of planned change. The organization must first feel the need for change before they enter the unfreezing stage (Burnes, 2004). When an organization is in the unfreezing stage, their equilibrium is destabilized and the motivation to change is developed. They explore what needs to be done and the possible actions that the organization can take in order to implement the necessary change (Bamford & Forrester, 2003). Once the organization has identified possibilities for change, they arrive at the moving stage. Lewin’s Action Research (Burnes, 2004) emphasizes the necessity of action to facilitate change and states that a systematic analysis of the
organization's situation is required in order to identify the best solution for the organization (Burnes, 1996). Once the change has been planned and enacted, the organization moves into the refreezing stage in which the necessary values, activities, policies, etc. are implemented and the firm returns to a situation of quasi-equilibrium. The new values, activities and policies must be fully implemented and integrated with those previously held in the organization in order for the change to be successful and to prevent the organization from slipping back to its previous state (Bamford & Forrester, 2003).

In Bullock and Batten’s Four Phase Model of Planned Change (1985), organizational change and development is discussed in two dimensions: change phases and change methods. The organization moves through distinct phases as it enacts the planned change within the organization (Burnes, 1996). The phases of change are a foundation which must be included in order to illustrate how planned intervention and activity are utilized. The authors state that the notion of phases is more appropriate than steps because phases indicate a cycle of change and allow for the possibility that the phases may blend and overlap (Bullock & Batten, 1985). The second dimension, change method, is the processes used to move the organization from one phase to another during a planned change campaign (Burnes, 1996). The first phase which the organization undergoes is exploration. In this phase, processes of becoming aware of the need for change and searching for resources and assistance related to the specific needed change are conducted. Next, the organization moves into the planning phase in which it enacts the change processes of diagnosis, design and decision to undertake the change. The third phase, action, relies on implementation and evaluation of the change decisions made in the planning phase. Lastly, the organization moves into the integration phase which includes processes of stabilization, diffusion and organizational renewal (Bullock & Batten, 1985). Bullock and Batten’s Four Phase Model of Planned Change is a combination of a number of other planned change models and has been reported as applicable to a broad variety of change situations and organizational contexts (Burnes, 1996).

Critics of planned change theory state that this type of theory assumes that organizations are operating under stable conditions and that they can plan the changes necessary to remain competitive in their environment (Burnes, 1996). This does not take into account unexpected events or radical changes in the environment that need immediate attention. When such events happen, change emerges and the organization must adopt these changes quickly in order to survive in its environment (Weick & Sutcliffe, 2001).
Another perceived problem with planned change theory is that it assumes that all parties involved can come to a mutual agreement about what changes need to be made and how they ought to be made (Burnes, 1996). Firstly, management may have a general understanding of the end-point which they would like to reach, but the method of getting there might remain unclear. If change is implemented over multiple incremental phases, it can be updated and adjusted as it progresses in order to ensure that the change has the desired effect and that the organization obtains better strategic fit with its environment (Senior & Fleming, 2006). Secondly, organizational politics and conflicts can lead to difficulties in deciding on which actions to take (Burnes, 2004) and persuading everyone to go along with the change (Bamford & Forrester, 2003). In some cases, management must take a directive approach to change and cannot take the needs or opinions of stakeholders into consideration when doing so. This can create resistance to change from employees, customers and stakeholders (Burnes, 2004). If one or a combination of these conditions is present, planned change can become difficult to coordinate.

**Emergent Change**

Uncertainty in the environment often makes planned change inappropriate. Often, change in the environment occurs so rapidly that managers do not have the time to identify a plan and implement the necessary responses to changes (By, 2005). Thus, emergent change is about continuous adaptation to the environment. It is more important that managers understand the necessity of change in the organization and allow the organization to evolve to the circumstances it finds itself in than to develop detailed plans and projections (Bamford & Forrester, 2003). Instead of top-down change which is planned by senior managers, emergent change is often an open-ended, bottom-up process in which small changes are made by employees in response to changes in customer wants and needs, relationships with suppliers and other stakeholders, etc. (Burnes, 1996; Bamford & Forrester, 2003). Employees in lower levels of the organization are better equipped to suggest and make these small changes because they are the face of the company and have the most contact with customers and suppliers (Bamford & Forrester, 2003).

Supporters of emergent change see change more as a learning process than a process of changing organizational structures, strategies and processes (Burnes, 1996). As organizations adjust, they gradually learn new skills and competencies which are often tacit in nature (Cohen & Levinthal, 1990). This learning is not planned, thus it cannot be predicted (Burnes,
Since emergent change is based on the fact that the organization makes frequent and incremental changes from the bottom-up, employees are responsible for developing and maintaining the knowledge needed to move the organization in the same direction as the environment (van de Ven & Poole, 1995).

Evolutionary change theories are based on emergent change in that the organization continuously and incrementally adapts to the shifting environment (van de Ven & Poole, 1995). Ideally, organizations develop the ability to continuously sense shifts in the environment and adapt to them (Senior & Fleming, 2006; Teece, 2007). In order to adapt alongside its environment, the firm must set routines for identifying and tracking variations, selecting which changes to make in order to remain aligned with the environment, and finally implementing processes and procedures to ensure that the changes are retained (Lovas & Ghoshal, 2000). Arguments against evolutionary and emergent change state that organizations often become too comfortable with how things are currently done within the organization and therefore neglect to adapt with their environment (Senior & Fleming, 2006). In order to ensure that organizations continue to evolve with their environment, it is paramount that processes for sensing, seizing and retaining change are clearly defined and utilized at all levels of the organization (Teece, 2007).

In summary, organizational change can be described as coming about in a planned or emergent manner. Planned change is driven from the top-down and enacted intentionally through either radical or incremental change activities. Examples of planned change models include Lewin’s Three-Stage Model and Bullock and Batten’s Four Phase Model of Planned Change. Critics of planned change state that by planning the change ahead of time and directing it from the top-down, the organization becomes limited in how it can react to new changes in the environment and external factors and that it can be hard to combat the unwillingness of employees to change. Emergent change, on the other hand, states that the organization adapts to changes within the environment from the bottom-up and in an informal manner. Evolutionary change is an example of emergent change.
4. Existing Open Innovation Adoption Frameworks

In Chapter 4, we explore four open innovation adoption frameworks which have been published since Gassmann’s (2006) call for more research into the adoption process. The analysis of these frameworks focuses primarily on their use of organizational change theory.

We begin by looking at Chesbrough and Crowther’s (2006) study which explores how early adopters in low-tech industries implemented an open innovation strategy. This study, while it did not produce an open innovation adoption framework, did serve as an inspiration for further research and is cited in two of the other frameworks (Chiaroni et al., 2011; Mortara & Minshall, 2011) which we are analyzing in this paper.

Next, we look at the framework produced by Mortara and Minshall (2011) which looks at how open innovation was adopted in organizations based on the type of organizational change implemented and who instigated the implementation. The result of this study show that there are four main archetypes of open innovation users and further discusses the possibility of firms to change their open innovation methods after they have adopted the strategy.

Thirdly, Lichtenthaler’s (2011) framework about knowledge management in the use of open innovation strategy is discussed. While this framework does not provide a model of the complete adoption process, it is included because we believe that its discussion of knowledge management is an imperative perspective which the other frameworks merely glance over.

Finally, Chiaroni et al.’s (2011) framework about the open innovation adoption process is presented. This is perhaps the most complete model to date, using the dimensions of open innovation, the adoption process and managerial levers to describe how organizations move from closed to open innovation. However, there are some aspects of this model which we debate. Thus, is why we seek to develop a new framework based on all four studies.

4.1 Chesbrough & Crowther

In this study, Chesbrough & Crowther (2006) attempted to learn more about how early adopters of open innovation in low-tech industries moved through the adoption process.
Since most of the firms they studied were practicing only inbound open innovation activities, the authors also focused on inbound open innovation in their study. The results of their research led to a number of generalized conclusions about challenges and key success factors of the open innovation adoption process.

In their study, the reasons given for adopting an open innovation strategy fell most often into one of three categories. Firstly, many believed that they needed to access external technology in order to achieve growth in their industry. Others recognized the need to achieve faster speed to market. Finally, a number of firms felt that open innovation was the best way to identify and monitor potentially disruptive technologies.

In the Open Innovation Strategy Map (Figure 4, below), Chesbrough and Crowther (2006) illustrate how the organization’s choice of innovation strategy and how change comes about in the firm leads to the development of new business strategies. If adhering to closed innovation strategy, the authors classify innovation strategy as business-as-usual, in which incremental changes are made to keep in line with the external environment, or think tank in which speculative research is done in intervals in order for the organization to explore new technologies. While the choice to remain closed in innovation processes may be best for some organizations, it is Chesbrough’s (2003b) contention that open innovation activities are often necessary in order for firms to meet their goals for growth. When focusing on the choice to employ an open innovation strategy, the authors claim that organizations can develop their innovation strategy with the purpose of either creating growth options or optimizing execution.

If the organization pursues open innovation activities in order to create new growth options, they do so with the intention of growing by using emerging technologies or entering into new markets. Since these emerging technologies and the ability to enter new markets involves making radical changes in the organization, this strategy requires employing an episodic change mechanism (Chesbrough & Crowther, 2006). Episodic change allows the organization go through periods of drastic change in their innovation processes, i.e. adopting an open innovation strategy or creating a joint venture in a new industry, followed by longer periods of stability (Weick & Quinn, 1999). Since radical change is costly and disruptive of the organizational routines and processes, supporters of punctuated-equilibrium approaches to change (Gupta et al., 2006; Pettigrew, 1987) state that it is imperative that the organization has time to recuperate, both in terms of getting their money’s worth from the change and
allowing changes in the organizational culture, strategy and activities be cemented through routine (Weick & Quinn, 1999).

On the other hand, if the organization pursues open innovation in order to optimize execution, they will search for possibilities to exploit their current knowledge both inside and outside the firm’s boundaries. This strategy illustrates incremental change as a method of exploitation (March, 1991a; Gupta et al., 2006) in which the organization seeks to gain efficiency in its innovation processes by making incremental changes to its own offerings based on outside innovations or to better the innovations from outside of the firm by applying its own competences. Incremental change is often likened to evolutionary (van de Ven & Poole, 1995; Lovas & Ghoshal, 2000) or adaptive change (O’Reilly III et al., 2009) in which the organization makes small but frequent changes in order to remain aligned with its environment. In applying this theory to the adoption of open innovation, Chesbrough and Crowther (2006) illustrate how the organization is able to contain and manage employee resistance to change through making successive small investments and changes to the innovation strategy.

The most important contribution by the authors is that they allow for the possibility that different types of organizational change can be used in adopting open innovation, depending on the organization’s situation.

![Figure 4: Innovation Strategy Map](Chesbrough & Crowther, 2006 p. 233)
4.1.1 Key Success Factors

Chesbrough and Crowther (2006) detected four core activities that organizations perform during the adoption of open innovation strategy. The core activities are strategy and goals, sourcing, integration and management, metrics and organization. This study, like many of Chesbrough’s other publications (2003a; 2003b; 2006), provides a discussion of some challenges which organizations may encounter upon the adoption of open innovation as well as a number of keys to success. While the authors have not adopted an open innovation adoption framework per se, they have provided some valuable insights into how and why open innovation is adopted in other industries outside the high-tech label which Chesbrough (2003b) originally applied the open innovation concept to.

Strategy and Goals

In the beginning stages of the open innovation adoption process, the activities of strategy and goal setting as well as sourcing were crucial to the success of the program. Organizations which successfully adopted open innovation used a top-down process of strategy and goal setting in which the focus was placed on aligning growth goals. Chesbrough & Crowther (2006) recognized a pattern of using top-down trend when starting the implementation process and also the focus of adjusting the goals and growth targets with this new approach.

Chesbrough and Crowther (2006) identified two growth targets organizations had when implementing open innovation: either to increase present businesses activities or to develop new businesses areas. Based on the identification of these two growth targets, the authors were able to identify two methods of organizational change that organizations employed: incremental and episodic. In order to achieve profitable growth through incremental change, organizations can make small investments in new technologies or enter into joint development projects. Both of these methods are less risky than trying to develop everything in-house, but it is essential that the organization has a clearly stated goal of the targets which they expect to be fulfilled.

Sourcing

In addition, OI Champions worked to build networks between the organization and customers, universities, suppliers, external organizations, etc. in order to identify potential innovations that could be brought into the organization. OI Champions were recorded to be a necessity when practicing inbound innovation since they are the ones that master the needed integration
and describing growth goals when opening up the boundaries of the firm. The biggest challenges that firms face when the adopt open innovation are defeating the threat of Not-Invented-Here syndrome and making sure that the organization has a long-term perspective when implementing the change so that they have patience to wait and see the potential advantages that open innovation can create.

**Integration and Management**

Integration and management of the open innovation adoption process requires a long-term approach. The new activities and work methods must be integrated with existing organizational practices and systems. Inbound open innovation was seen as a complement to the already existing internal R&D activities of the organization, so technologies and knowledge needed to be adapted to fit with what the organization already possessed.

**Metrics and Organization**

Finally, Chesbrough and Crowther (2006) noted that, in order to sustain a long-term focus on and support for open innovation strategy, it was necessary for organizations to create incentives for employees. Often times, members of the internal R&D staff were leery of the prospect of allowing innovations to come from outside of the company. One key to success which was identified was the use of incentives based on employee contribution to innovation, regardless of whether the innovation was developed in-house or as a result of open innovation activities. It was also critical that the organization communicate the importance of open innovation activities in the achievement of organizational goals.

**4.2 Mortara and Minshall**

Mortara and Minshall (2011) studied the paths of companies moving from closed to open innovation strategies. Their framework is based on the driving forces and the coordination of adoption with a focus on evolutionary change theory. They found that the method of implementation was dependent on three factors: innovation requirements, the timing of the implementation and organizational culture of the firm. Depending on their purpose for adopting open innovation, organizations implemented inbound or coupled open innovation activities through radical or evolutionary change. In some cases, the organization adopted a radical change tactic in one business unit while allowing the rest of the organization to evolve at a slower pace.
The research showed that organizations frequently implemented inbound open innovation activities when they operated in less turbulent environments and the purpose of adopting open innovation was to complement their established innovation channels. Thus, it can be said that organizations were seeking to exploit their current knowledge (March, 1991a) to find more efficient methods of conducting innovation activities. Companies that detected a need for ambidexterity (Gupta et al., 2006) implemented coupled open innovation activities because it allows for exploiting current knowledge through outbound open innovation while also exploring outside innovations which lead to growth or increased efficiency (March, 1991a).

At the time of the study, there was a tendency of organizations to move into the direction of open innovation without a clear direction or plan inspired by Chesbrough’s (2003b) paradigm. As the paradigm became more widely recognized, organizations started to build supportive systems and teams for the adoption of open innovation. The organizational culture is important in the adoption of open innovation since they can act either to accommodate or resist the change. The Not-Invented-Here attitude of being negative towards the use outside ideas is a common example of resistance to the adoption of open innovation (Huston & Sakkab, 2006; Cohen & Levinthal, 1990).

The framework created by Mortara and Minshall (2011) is based on existing open innovation literature. The two-dimensional model illustrates rate of change and how the change comes about (Senior & Fleming, 2006). The rate of change is divided into revolutionary (radical) and evolutionary change. Whether the change is distributed (bottom-up) or centralized (top-down) is used to describe how the change comes about. According to the authors, the relevant organizational change models for the open innovation adoption process are teleological and evolutionary. While these two organizational change models are mentioned by the authors, they do not apply the principles of the change theory to the actual analysis of the adoption process.

Teleological change is a goal-oriented, conscious change process in which the organization or a group within the organization undergoes a change process because it experiences a difference between the desired and current state which it is in. The group must come to a consensus about the desired goal and then implement changes in the manner which it conducts its activities (van de Ven & Poole, 1995). This revolutionary change requires radical adjustments in the organizational culture in order to ensure goal congruency (Pettigrew, 1987). Evolutionary change, on the other hand, is based on continuous adaptation of the organization’s strategy to meet changes in the internal and external environment. Instead of
adopting a new strategy because of vision of the future, the organization makes changes in order to save itself from extinction (Burnes, 1996).

Mortara and Minshall (2011) concluded that no matter how the organizations originally adopted open innovation, they desired greater coordination in how they perform the open innovation activities. Therefore, they moved towards the centralized, top-down model in order to have more control and reduce uncertainty (Senior & Fleming, 2006). Another observation was that outsourcing R&D was usually the first step when moving towards open innovation. However, sometimes organizations released too much control over their R&D activities and lost vital knowledge, so they were forced to rebuild their R&D capabilities.

4.2.1 The Taxonomy of Open Innovation Implementation

Quadrant 1- Open Innovation Conscious Adopters
Firms that are classified as Conscious Adopters implemented open innovation after the publication of Chesbrough’s original book describing the open innovation paradigm in 2003. The adoption process was implemented by top management because they recognized open innovation as a method to exploit external innovations by focusing on inbound open innovation as a reaction to environmental changes and technological disruptions. In order to enable the adoption of this strategy, OI Champions made sure that the open innovation activities were well-coordinated, employees were given training, an open innovation language was adopted, and that organizational capabilities necessary were developed. Also,
Restructuring of the organization and changes in the top management reported as an accelerating factor when implementing open innovation.

**Quadrant 2- Open Innovation Ad-hoc Adopters**

Ad-hoc Adopters implemented open innovation from the top-down in specific business units or for some particular products, projects or processes. While these organizations see the knowledge gained from open innovation as a complementary asset, they are also worried about challenges in protecting their own intellectual property. Top management has not made any plans to adopt open innovation into the overall organizational strategy. Instead inbound open innovation activities are used on an as-needed basis at the project level. These organizations stated that since it is more and more challenging to find financing for the growing costs of R&D, if product development timeline is long, it can be attractive to look at technologies outside of the organization.

**Quadrant 3- Open Innovation Precursors**

Open Innovation Precursors state that they have adopted open innovation evolutionarily. They began to move from closed to open strategies before the open innovation paradigm was defined and do not formally recognize the use of this strategy. Rather, they have unconsciously adopted some practices which can be seen as open innovation activities over an extended period of time and cooperating with external partners when innovating. Crises and changes in the environment have pushed the firms towards integrating with others. There is no central coordination or management of open innovation activities; they have been implemented from the bottom-up and include both inbound and outbound.

**Quadrant 4- Open Innovation Communities of Practice**

In Communities of Practice, middle-management began to implement open innovation activities as a means to meet difficult innovation targets and boost growth by accessing external competencies. These organizations have already been cooperating with other firms and organizations before they make the conscious decision to adopt open innovation. Since current open innovation activities focus on accessing external knowledge and capabilities, they focus on inbound open innovation. These managers find that their biggest challenge is to get top management involved and drive the adoption of open innovation strategically.
4.3 Lichtenthaler

Lichtenthaler’s (2011) framework is based on knowledge exploration, exploitation and retention on three interrelated levels: organizational, project and individual. According to the author, the organization needs to make adjustments to and develop new methods of managing innovation depending on whether it is an internal or external process and whether the aim is for knowledge exploration, exploitation or retention. Figure 6 illustrates the interrelationship between the knowledge management processes and the internal and external environment at the organizational, project and individual level.

The most important aspect of this framework is that firms do not necessarily need to create totally new processes when they move towards open innovation. Instead, Lichtenthaler (2011) states that they can build on their existing processes, depending on the organization’s corporate strategy and organizational culture, as long as they pay close attention to the differences at the organizational, project and individual levels of the organization.

Although Lichtenthaler (2011) does not explicitly use an organizational change model in his framework, the emphasis on creation of managerial mechanisms and capabilities needed to manage the open innovation process eludes to the use of planned change. Planned change can be incremental or radical, depending on the needs of the firm and its current strategic fit with the industry environment (Senior & Fleming, 2006). While planned change allows management to enact a specific set of activities, policies and procedures in order to attain the desired end-state (Burnes, 2004), it can be difficult for the organization to adapt to unexpected changes in the environment (Burnes, 1996).

Lichtenthaler (2011) recognizes that the development of the required capabilities and aligning them with the strategy of the firm takes time, in most of the cases several years. Therefore, the firm should have a long-term focus when implementing open innovation. Incremental planned change may be best suited for this strategy because it allows management to adjust its plans based on feedback and changes in the external environment (van de Ven & Poole, 1995). In order to save time with the development of organizational capabilities, it is therefore suggested to develop the already existing processes the firm has to achieve an efficient change towards open innovation. It is crucial to try to balance the knowledge exploration, retention and exploitation activities and recognize the complementary nature of them. Therefore when organizations decide to open up their innovation processes, they should try to avoid
outsourcing too much and make sure that their internal activities work together with their external ones.

<table>
<thead>
<tr>
<th></th>
<th>Knowledge Exploration</th>
<th>Knowledge Retention</th>
<th>Knowledge Exploitation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Organizational level</strong></td>
<td>Inventive capacity</td>
<td>Transformative capacity</td>
<td>Innovative capacity</td>
</tr>
<tr>
<td><strong>Project level</strong></td>
<td>Make decision</td>
<td>Integrate decision</td>
<td>Keep decision</td>
</tr>
<tr>
<td><strong>Individual level</strong></td>
<td>NIH attitude</td>
<td>NCH attitude</td>
<td>NSH attitude</td>
</tr>
<tr>
<td><strong>Absorptive capacity</strong></td>
<td>Buy decision</td>
<td>Connective capacity</td>
<td>Desorptive capacity</td>
</tr>
<tr>
<td><strong>Project level</strong></td>
<td>Buy-in attitude</td>
<td>Relate decisions</td>
<td>Sell decision</td>
</tr>
<tr>
<td><strong>Individual level</strong></td>
<td></td>
<td>Relate-out attitude</td>
<td>Sell-out attitude</td>
</tr>
</tbody>
</table>

**Figure 6: Conceptual Framework for Open Innovation (Lichtenthaler, 2011, p. 80)**

4.3.1 Levels of Analysis

In this framework, Lichtenthaler (2011) states that knowledge management activities, as they pertain to the adoption and use of open innovation, vary based on the level of analysis and the purpose of knowledge management. At the organizational level, the development of organizational capabilities is placed in focus. At the project level, decisions related to a specific project affect the coordination of open innovation and knowledge management activities. Finally, at the individual level, employee attitudes and motivational problems are discussed.

The Organizational Level

At the organizational level, it is important to develop organizational capabilities depending on the situation and the decision between the three knowledge management processes. Inventive capacity, the capability to explore new knowledge internally, and absorptive capacity, the ability to identify and integrate external knowledge, are critical in the use of open innovation strategy. By developing long-term relationships with innovation partners, the organization develops the ability to retain knowledge externally.

The Project Level

On a project level, the company has to be able to make knowledge management decisions which affect not only the specific project, but also how the organization works with innovative partners in general. If the project requires exploration for new knowledge, a decision as to whether make or buy the innovation must be made. If the organization is trying to exploit the knowledge it currently possesses, then it must make decisions about whether to
keep the knowledge in-house or sell it to innovation partners. These decisions are not mutually exclusive. For instance, the organization can decide to develop some knowledge internally while looking outside for specific knowledge or innovations which they do not have the required capabilities in.

**The Individual Level**

At the individual level, knowledge management decisions influence employee attitudes. Since individuals are vital to the organization, it is important to pay attention to employee attitudes so that they do not become barriers for open innovation adoption. Not-Invented-Here syndrome is a negative attitude of employees due to bad previous experiences or non-working incentive systems. Buy-In attitude, on the other hand, is a positive attitude that is present when employees feel that knowledge possessed inside the firm is not enough and that in this case it is better to acquire it from outside. Not-Connected-Here is an interfirm attitude problem when employees do not trust in the relationships between the firm and its innovation partners. Relate-Out attitude is a result of a strategy where the firm has a strong and flexible focus on their core competencies. Not-Sold-Here and Sell-Out are contrasting attitudes in knowledge exploitation, the former appears when employees are negative and the latter is a positive approach to knowledge transfer.

**4.4 Chiaroni et al.**

Chiaroni et al. (2011) introduce a theoretical framework for the process of adoption of open innovation which is based on Lewin’s Three-Stage Change Model: unfreezing, moving, and institutionalizing (Armenakis & Bedeian, 1999; Chiaroni et al., 2010; Lewin, 1947). Chiaroni et al. (2011) look at adoption from a three-dimensional perspective which stresses the importance of managerial levers at different stages in the change process. The authors contend that the manner in which the organization goes through the open innovation adoption process and how they utilize the managerial levers depends on whether the organization pursues inbound or outbound open innovation. These managerial levers incorporate other streams of research which are essential in managing any organization: networks, organizational structures, evaluation processes and knowledge management systems. When looked at through the perspective of open innovation adoption, they provide greater insight into special activities, processes and procedures which must be developed and tailored specifically to open innovation.
Chiaroni et al. (2011) first describe their framework citing theoretical background from various authors and disciplines. Once they have explained their framework, they use it to analyze a case study which they have conducted and previously published about Italcementi (Chiaroni et al., 2010, 2011).

4.4.1 Areas of Analysis

Dimensions of Open Innovation
Chiaroni et al. (2011) consider the inbound and outbound dimensions separately when analyzing the three stages of change. Though their research shows that most firms work with only one dimension of open innovation, some organizations eventually move to a coupled open innovation strategy (Enkel & Gassmann, 2007). The authors hold that because the dimensions are adopted at separate times and the adoption process differs so greatly, they must be analyzed separately as well (Chiaroni et al., 2011). When examining the managerial levers at each stage of the adoption process, the differences between outbound and inbound open innovation are further exemplified.

Stages of Adoption
As mentioned earlier, Chiaroni et al. (2011) apply Lewin’s (1947) Three-Stage Change Model to describe the steps which organizations must undergo in the open innovation adoption process. This is a planned, discontinuous change model (Weick and Quinn, 1999) which states that the organization must move chronologically through three steps of change before a new strategy can be successfully adopted (Armenakis & Bedeian, 1999). This framework
assumes that the change is made in one giant radical change initiative and does not allow for the possibility that organizations may choose to implement incremental change and slowly move towards an open innovation strategy. For instance, Boscherini et al. (2010) described a process in which organizations may first open up their innovation process for a pilot project, and then gradually continue to increase their work with outside companies based on the success of this project.

In the unfreezing stage, the organization realizes that it has been in a state of inertia and that it must make changes in order to improve performance. In order to unfreeze, a sense of urgency must be established and OI Champions need to motivate the rest of the organization as well as external stakeholders. Introducing the new way of innovating and creating for example new units in the company makes the starting change process visible for the employees. The increased awareness of organizations of the available open innovation implementation frameworks gives firms a possibility to act strategically and benchmark their success based on case studies of other firms. However, once employees become aware that the change is being made in the organization, there is a risk for resistance. These negative effects are more common when organizations enact radical change, i.e. episodic change as pictured in this study, than continuous or evolutionary change (van de Ven & Poole, 1995).

In the moving stage, open innovation processes and procedures that are consistent with the new vision and strategy of the firm are implemented while taking budgets, goals, and deadlines into consideration. This is not an easy task; it will require experimentation in order for the firm to find the right combination of closed and open innovation that fits with the industry, the organizational environment and its culture. Since the organization opens up its boundaries, it will need a new approach to knowledge management with an explorative intent by using networks to build relationships.

The institutionalizing stage begins once open innovation has been established within the firm. The organization must create routines and constantly improve the manner in which it works with open innovation to ensure that they do not slip back into old habits and to retain support for the new method of doing business at all levels of the organization. Also the responsibilities of the OI Champion will be divided in the organization to make sure the adoption spreads in the organization.
If the firm does decide to adopt open innovation through radical, discontinuous change, then it is imperative that their evaluation systems are designed to mitigate any negative attitudes. Two methods of decreasing resistance to the adoption of open innovation are the cultivation of an innovation-friendly organizational culture and the design of incentives for all employees involved in successful innovation, regardless of whether it comes from internal or external sources (Huston & Sakkab, 2006). These actions must begin already in the moving step and be formalized through policies and processes in the institutionalizing step in order to ensure that the adoption process does not meet so much resistance that open innovation becomes unviable in the organization.

**Managerial Levers**

Networks are one of the most important managerial levers in the open innovation adoption process because the organization must develop relationships with external organizations in order to find external technologies or external paths to market. These networks include other firms, universities, suppliers and customers. Firms pursuing inbound open innovation develop networks with an explorative intent while those pursuing outbound open innovation need to have an exploitive intent (March, 1991). In the unfreezing stage, the personal networks of the OI Champion and other managers are extremely important because they represent the first contact with potential external sources of innovation. Once the organization comes to the moving stage, firm-level networks become more important than those of individuals because the business unit or organization as whole must interact with the innovation partners.

Organizational structures must also be adapted with the purpose of integrating acquired knowledge into the organization’s processes. This entails the creation of open innovation business units, task forces or cross-functional teams which use an open strategy in their pursuit of innovation. Also, organizational roles must be created with the purpose of championing and managing open innovation within the firm. Reward systems should be established for employees when they are involved with successful innovation, irrespective of whether the innovation came from internal or external sources.

Evaluation processes to systematically scan and monitor the external environment for external technologies need to be created and managed when firms adopt inbound open innovation. For outbound open innovation adoption, processes need to be created which make sure that the organization considers the possibility spin-outs or licensing their technology to external partners from the beginning of the innovation development process.
Knowledge management systems need to be implemented or improved as to ensure the diffusion, transfer and sharing of knowledge within the firm as well as between the firm and external partners. If the purpose of the relationship between the organization and its innovation partner is knowledge exploration, then knowledge management interfaces which facilitate knowledge transfer and learning into the organization must be implemented. If the purpose is to exploit current knowledge, then intellectual property protection is key.
5. Discussion of Existing OI Adoption Frameworks

In Chapter 5, we compare, contrast and discuss how the frameworks presented in Chapter 4 treat the four perspectives which we have identified as essential in the analysis of the open innovation adoption process: organizational change theory, knowledge management, networks and managerial roles. In order to provide a better discussion of these perspectives, we include theory which was not provided in the theoretical background section and is not necessarily directly linked to previous studies of open innovation, but has contributed to the specific research field. It is important to note that each of the aforementioned frameworks places a different amount of emphasis on these perspectives and, in some cases, a particular perspective may not have been considered in all of the frameworks.

<table>
<thead>
<tr>
<th>Framework</th>
<th>Organizational Change</th>
<th>Knowledge Management</th>
<th>Networks</th>
<th>Managerial Roles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chesbrough &amp; Crowther (2006)</td>
<td>Incremental or episodic, guides the way OI is used and method of adoption</td>
<td>Build on existing innovation processes in order to facilitate integration</td>
<td>IO Champions instrumental in the development of networks</td>
<td>Combat NIH, create incentives for cooperation, communicate benefits</td>
</tr>
<tr>
<td>Montara &amp; Minshall (2011)</td>
<td>Teleological and/or evolutionary</td>
<td>N/A</td>
<td>N/A</td>
<td>Coordination of activities in order to reduce uncertainty of results and minimize risk</td>
</tr>
<tr>
<td>Lichenthaller (2011)</td>
<td>Planned change is implied but not thoroughly discussed</td>
<td>Managing internal and external knowledge, decision making processes and employee attitudes</td>
<td>Connective capacity</td>
<td>N/A</td>
</tr>
<tr>
<td>Chiaroni et al. (2011)</td>
<td>Lewin’s Three-Stage Model of planned change</td>
<td>Managerial leversystems for managing internal and external knowledge</td>
<td>Purpose of network: explorative or exploitative</td>
<td>Internal information about the importance of OI, developing incentives, combatting negative attitudes</td>
</tr>
</tbody>
</table>

5.1 Organizational Change Theory

Chiaroni et al. (2011) state that the transition from closed to open innovation requires a planned change approach and use Lewin’s (1947) Three-Stage Model in order to analyze this process. In using this model, Chiaroni et al. (2011) are effectively stating that all organizations go through the same three stages of unfreezing, moving and institutionalizing,
in some way or another, regardless of how they intend to use open innovation. Lewin’s (1947) Three-Stage Model, as well as other episodic organizational change models, assumes that the organization’s top management has a specific end-state in mind when the change is enacted (Weick & Quinn, 1999). However, according to Mortara & Minshall (2011), many organizations did not consciously set out to adopt an open innovation strategy; they merely evolved into working openly and did so from the bottom-up. Chiaroni et al. (2011) state that they are the first to use Lewin’s (1947) Three-Stage Model to analyze the adoption process, perhaps there is a reason why other authors have chosen to analyze the process from another perspective. While some organizations may choose to adopt a radical, episodic change mechanism in order to adopt an open innovation strategy, previous studies (Mortara & Minshall, 2011; Huston & Sakkab, 2006; Chesbrough, 2003a; Chesbrough & Crowther, 2006) suggest that this is not the only or even the most common method of doing so.

Lewin’s (1947) Three-Stage Model is also an example of planned change, which Lichtenthaler (2011) seems to support, though he never outright discusses organizational change in his framework. In planned change theory, the organization’s top management decides a course of action and implements it through planned activities, new processes and policies, and changes in the organizational structure. The strategy is then communicated from the top-down and more detailed actions are put into place further down in organizational structure (Senior & Fleming, 2006). The problem with planned change is that it does not allow, or can be difficult to accommodate, changes in the new strategy (Burnes, 1996). In addition to changes in the external environment which may lead to the need to adapt the planned change, management is likely to encounter backlash from employees if they do not understand why the change is essential for the organization or do not agree with how it is implemented (Bamford & Forrester, 2003).

Instead of subscribing to one method of organizational change in the open innovation adoption process, Chesbrough & Crowther (2006) state that organizations may choose to use incremental or episodic change in the open innovation adoption process as well as the type of innovation they are pursuing. According to the authors, organizations use radical, episodic change to enter new markets or develop new technologies—what they call a growth creation strategy. Additionally, incremental, evolutionary change is used to improve on existing technologies and increase efficiency, in the optimization of executing strategy. Mortara and Minshall (2011) also support the conclusion that organizations may take different approaches to the adoption process. They note four separate approaches to managing the open innovation
process based on whether the change process is implemented top-down or bottom-up and whether it is revolutionary or evolutionary.

An evolutionary approach to open innovation adoption allows for the possibility that the change is enacted from the bottom-up or at the middle-management level (Bamford & Forrester, 2003). One example of how evolutionary adoption of open innovation could occur is by trying a pilot project first. If the organization attempts external collaboration for a specific project and it is a success, it can help to win over skeptics both in top management and in the R&D department (Boscherini et al., 2010). But in some instances, radical change is needed in order to combat organizational inertia and ensure that the organization’s strategy fits with its external environment (Birkinshaw et al., 2007).

5.2 Knowledge Management

One of the main reasons for firms to implement open innovation is accessing external knowledge (Chesbrough & Crowther, 2006; Chiaroni et al., 2011); therefore knowledge management is one of the key issues when looking at open innovation adoption. Marshall et al. (1996) categorize knowledge based on what organizations can do with it. These aspects are generation, accessing, transferring, representing, embedding and facilitating. Knowledge can also be divided based on the nature of the knowledge; whether it is explicit or tacit, the integration strategy (Hansen et al., 1999), and whether it is exploitative or explorative (March, 1991a). Knowledge can also be individual or collective in nature and creating and communicating it further, therefore it can be different based on whether the goal is to make it more personal or collective (Nonaka & Konno, 1998). Another main aspect is exploration and exploitation (March, 1991a): Knowledge exploitation is about using and adapting the existing knowledge when exploration is referred to search of new knowledge (March, 1991a). Knowledge exploitation is often related to be a safe choice and less risky, however knowledge exploration can provide, when successful, higher returns and actually is needed in long-term for the organization to improve its learning (March, 1991a).

Knowledge that is tacit is personal, difficult to communicate and is seldom written down, instead it is stored in routines and individual’s minds and in order to communicate it further it needs to be taught from person to person or group (Hansen et al., 1999; Marshall et al., 1996), so that it can be transferred to a group level in the organization for a wider access (Marshall et al., 1996). Tacit knowledge can be know-how and skills or i.e. personal values or beliefs. The
opposite of tacit knowledge is explicit knowledge that can be expressed in words and numbers and can be written down in manuals and databases (Nonaka & Konno, 1998; Marshall et al., 1996, Hansen et al., 1999). Therefore, in a so called codification strategy, knowledge is stored in i.e. databases and it can therefore be accessed easily when in personalization strategy the tacit knowledge is stored in individuals and shared via person-to-person or person-to-group contacts. In order to a personalization strategy to work, it is important to have networks and possibly move people in the networks so that knowledge can be accessed and transferred. For a codification strategy to work, systems have to be compatible in the organizations so that the information can be accessed (Hansen et al., 1999).

Reasons to concentrate on knowledge management are that knowledge sharing can provide cost saving, decision making process can be more comprehensive and accessing people with expertise and specializations gives a better possibility to innovative solutions (Marshall et al., 1996). Chiaroni et al. (2011) emphasize the importance of knowledge management systems as a managerial lever. Knowledge management systems should include both managing knowledge internally but also externally since in open innovation knowledge can be transferred both outside-in and inside-out and there is also a need of retaining the knowledge (Lichtenthaler, 2011). Lichtenthaler (2011) argues for knowledge management and organizations capacity, decision making and attitudes of employees to be central when implementing open innovation. When striving for collaboration in order to share knowledge, there can however be barriers to overcome, such as unwillingness to make an effort to share knowledge (Marshall et al., 1996; Hansen & Nohria, 2004) and learn from others or not being able to find the expertise when it is not located where it used to be. Two other aspects are reluctance to act in a helpful manner and lack of ability to co-operate (Hansen & Nohria, 2004).

Employees need to be willing to share their knowledge in order to make knowledge explicit, available and transferable (Marshall et al., 1996). Reasons why employees do not want to share their knowledge can be inadequate incentive systems and a belief that performance will be incorrectly measured due to the strong emphasis put on individual achievement, or if there is too much internal competition (Marshall et al., 1996). Management can use different kind of tools to reduce the negative attitudes and reluctance when sharing knowledge. Most common method to increase motivation is to inform employees of the reasons to share knowledge and to create different kind of incentives to promote the desired behavior (Chiaroni et al., 2011).
Based on Nonaka and Konno’s (1998) model, knowledge can be either internalized or externalized; internal knowledge that is tacit can be shared via socialization (Marshall et al., 1996), making tacit knowledge explicit is done via externalization to groups, explicit knowledge can be shared in either between individuals, groups or in organizations when making explicit knowledge tacit is done via internalization. Marshall et al (1996) emphasize the importance of organizational change and management’s behavior when setting an example and creating a culture for knowledge sharing.

It is not enough to access external knowledge, the organization must be able to integrate and make a fit with the knowledge and processes in-house (Chesbrough & Crowther, 2006; Chiaroni et al., 2011). Transferring knowledge also requires skills of people to be able interpret and develop the knowledge that has been accessed (Marshall et al., 1996). For a successful exploitation of external knowledge, absorptive capacity is needed. Absorptive capacity is the capability to see the value in novel knowledge and the ability to exploit that knowledge. Organizations that have their own R&D or manufacturing have usually better absorptive capacity to recognize the value of new information due to their already existing knowledge and experience in the area since learning performance is higher when the area of knowledge is already known till some extent. Therefore innovation related knowledge is more difficult to share since the absorptive capacity of individuals and organizations is not that developed in the subject. When changing the knowledge generation and sharing procedures in the organization, new learning capabilities need to be developed (Cohen & Levinthal, 1990). Communication systems, information technology (Marshall et al., 1996) and structures are a way of enhancing the transfer of information and managing information flows (Lichtenthaler, 2011). New interactions and flows of information can be a possibility for novel ideas and new relationships. Interfaces in networks enhance the absorptive capacity of individuals and organizations (Cohen & Levinthal, 1990).

Lichtenthaler (2011) has used knowledge management as the main departure when analyzing an open innovation adoption process. Chiaroni et al. (2011) also recognize the importance of this aspect, however mostly paying attention to the risks that opening up the boundaries bring for the knowledge management aspect. In order to reduce the possibility of others accessing the knowledge crucial for the success of the firm there must be procedures and processes developed to protect the intellectual property rights of the organization (Enkel et al., 2009). Reed et al (2012) studied the balance between having innovation done in-house and openly. The challenge is in finding out at what point is it more beneficial when it comes to reducing
costs at internal innovation to do it jointly and compared to risking the intellectual property rights for external competition. They conclude that there are risks with open innovation, but not doing open innovation can almost be more risky.

5.3 Networks

When adopting open innovation, organizations can find it difficult to break out of their pre-established routines, a phenomenon known as inertia. The same forces of inertia can be found in how organizations approach their relationships with outside organizations, especially if those relationships have been profitable in the past (Birkinshaw et al., 2007). Instead of continuing to partner with the same people and manage innovation in the same way, organizations adopting open innovation are forced to find new and creative methods of developing networks that meet their needs. Since the amount of knowledge which can be gained and retained from the network is based on the member’s past experiences, network members must be chosen based on their potential to provide a mutual benefit (Lee et al., 2010).

Chiaroni et al. (2011) point out that the use of networks in adopting open innovation depends on the reason for their establishment: whether they are explorative or exploitative (March, 1991a) in nature. Explorative networks are developed to bring in outside knowledge (Chiaroni et al., 2011). These networks include universities and research labs and have the purpose of exploring the commercial potential of new technologies through inbound open innovation (Vanhaverbeke, 2005). On the other hand, exploitative networks serve the purpose of using external resources to bring internal technology to market (Chiaroni et al., 2011). Large organizations are more likely to focus on R&D networks with an explorative intent while small and medium sized firms seek out exploitative networks with the intent of developing commercialization possibilities (Lee et al., 2010).

Another method of describing the type of networks used by companies pursuing open innovation strategy is to classify them into deep and wide. Deep networks mean working with a relatively small number of organizations, and developing trust through long-term relationships. Most often, deep networks lead to incremental innovation through exploitation of current knowledge and resources (Vanhaverbeke, 2005). Organizations pursuing a differentiation strategy typically pursue deep networks because they help to ensure a good fit-to-market (Neyer et al., 2009). If a company seeks to explore new technologies and markets in
search of radical innovation, they are better off developing wide ties so that they are exposed
to a greater number of ideas (Vanhaverbeke, 2005). Organizations which pursue low cost
strategy and are interested in incremental product innovation develop wide markets (Neyer et
al., 2009). Chiaroni et al. (2011) imply that an increase in both the search breadth and search
depth are required in order to increase the usage of open innovation activities as the
organization moves into the institutionalizing phase of the adoption process.

Chesbrough and Crowther (2006) state that when the open innovation adoption process first
begins, it is a major responsibility of the OI Champion to develop initial contacts with
customers, universities, suppliers and other firms. According to Birkinshaw et al. (2007), the
two main challenges of building networks during the open innovation adoption process are
identifying appropriate partners and discovering how best to work with them. The former
challenge is based on search breadth while the latter refers to how willing the perspective
partners are to work with the organization.

Networks must be managed in order to ensure their creation of systematic innovation
(Vanhaverbeke, 2005). Keeping the network up-to-date and engaged, and building trust and
reciprocity are essential aspects of managing network relationships (Birkinshaw et al. 2007).
Vanhaverbeke and Cloodt (2005) discuss value constellations, a specific type of resource
network in which value creation and distribution surrounding the development of innovations
is the focus. In value constellations, a central firm (i.e. the organization which is adopting
open innovation) brings together a group of organizations that possess various assets and
competences. Naturally, the network or value constellation will be more beneficial for some
of the partners than others. In order to engage and retain members of the value constellation, it
is important to design methods of governance that ensures fair value distribution. Networks
and value constellations imply relationships that are more than arm’s-length contracts
(Vanhaverbeke, 2005), these relationships can be managed through licensing agreements,
strategic alliances, mergers and acquisitions, etc. (Vanhaverbeke & Cloodt, 2005).

Lichtenthaler (2011) states that the connective capacity of the organization, i.e. its ability to
retain knowledge externally through the use of networks, is a major concern at the
organizational level when adopting open innovation. While this is important when
considering how networks will be created and managed, it is more applicable to the discussion
of knowledge management (see Chapter 5.2).
5.4 Managerial Roles

Managerial roles have been described as crucial when guiding an organizational change process (Chesbrough & Crowther, 2006; Mortara & Minshall, 2011; Lichtenthaler 2011; Chiaroni et al., 2011). The organizational change can start both as a top-down process or bottom-up (Chesbrough & Crowther, 2006), however what is common with bottom-up change is that eventually the change will need acceptance and coordination and this is when management has a greater role and implementation becomes more of a top-down process (Mortara & Minshall, 2011). In adoption of open innovation, OI Champions have been recognized as the leaders of change; they can come both from outside of the company or be already existing managers in the organization. OI Champions use different kind of methods to implement the change (Chiaroni et al., 2011; Lichtenthaler, 2011); most important task is however to inform the members of the organization and manage the attitudes of employees but also managers (Chiaroni et al., 2011; Lichtenthaler, 2011). One way of doing this is through rewards and incentive systems in order to motivate the employees for a desired behavior (Chesbrough & Crowther, 2006; Chiaroni et al., 2011). Mortara and Minshall (2011) do not mention incentive systems in their discussion of how to manage the change process; instead they call for more coordination for the activities. This is done in order to be more centralized and to reduce uncertainty and have more control.

Incentives provided for employees can be extrinsic; i.e. monetary or intrinsic where the manager gives recognition, promotion, more autonomy or responsibility for the employee as a reward. Extrinsic incentives provide often a more short term benefits when intrinsic ones have a possibility to give long-term benefits due to the committing nature of the reward (Kim, 2011). However, the way an individual perceives an incentive or a reward depends on person to person and how it motives them. When a person is motivated and committed to the organization, their innovativeness is also greater (Lampikoski, 2005).

Since change can happen as an evolutionary and non-directed process, employees do not even necessarily notice the changes immediately. Meyerson’s (2002) concept of Tempered Radicals is applicable to managerial roles during evolutionary change. These leaders implement changes in such a moderate way, that employees do not necessarily notice what is happening. Meyerson (2002) emphasizes changing the organizational culture and the reason for managers to implement the quiet way for the change is because they realize that
confrontation and aggressive change will not provide any positive results. This can also be a way of managing negative attitudes that often arise as a resistance to change. In the open innovation concept, this usually appears as the Not-Invented-Here syndrome (Chesbrough & Crowther 2006; Chiaroni et al., 2011). However, employee resistance is not a surprising behavior if the employee is not provided with information about potential benefits about the change or does not understand the benefits of the change (Kim, 2011). Lichtenthaler (2011) discusses the attitudes on the individual level as one of the three most important levels and it is being discussed what are the positive and negative attitudes that employees can have when it comes to exploration, exploitation and retention. However he does not really explain how you can manage these attitudes.

Mortara and Minshall (2011) noticed a pattern in which organizations in the other quadrants were working towards a top-down coordinated adoption of open innovation, however they do not emphasize the role of OI Champions. Kim (2011) introduced three different aspects that provide positive contribution for managing a change in the organization. These were “anticipated benefits of the change (motivator), the quality of the employment relationship and formal involvement in the change (behavioral control)” (p.1665). In order to motivate the employees to act in favor during the organizational change, as mentioned earlier, it is important to find motivational factors for the employees to support and take part into the change process. Personal beliefs that the employees have about the change will have a great effect on their attitude and willingness to participate, but social pressure that works as a management control method has its influence also. As Mortara and Minshall (2011) found in their study, organizational culture does not necessarily have to be considered as an obstacle when implementing open innovation; instead it can be used to help the change process.

According to Furst and Cable (2008), a positive relationship that employees have with their managers can make them to be less resistant to changes especially if the organizational changes include sanctions and legitimization. However these two mentioned methods usually have negative effects. Therefore the quality of this relationship determines how employees react and behave during change efforts. To reduce the employees resistance to change can be eased by giving the employees a possibility to participation (Szabla, 2007). Lichtenthaler (2011) emphasizes the connection between organizational capabilities, learning and individual attitudes; inward and outward knowledge transfer requires special organizational capabilities but also the ability to absorb and learn and positive attitude on all the levels (individual, project, organizational) of the organization to these processes. Managing the attitudes should
start on the individual level since they are the micro foundations when building organizational capabilities.

Szabla (2007) divided groups in his study of resistance on organizational change on three different categories based on their expectations and feelings about the change process. Based on the study it could be observed the employees can have both positive and negative feelings about the change and also be for example doubting the result of the change but still is supportive in the process. In one group, the employees could see the possible benefits of the change, but remained unconvinced that they would be personally satisfied in the end. This creates ambiguity in the group of employees. Giving the employees a possibility to participate in the planning process can reduce the negative feelings and expectations. In order to make the change process successful, the leaders have to create positive expectations and believe in the organization and also receive full support. By spending time to evaluate the possible expectations and feelings it can be possible for leaders to manage the factors that can get in the way of the change and also understand that there can be both negative and positive feelings about the change. This can help them to understand their employees better. As Mortara and Minshall (2011) recognize, organizational culture is an important factor when deciding the method of implementing the change.
6. Our Framework

In this chapter, we introduce our new framework for analyzing the open innovation adoption process. As we will discuss, this framework was derived based on the analysis of the current frameworks which we performed in Chapters 4 and 5.

<table>
<thead>
<tr>
<th>Organizational Change</th>
<th>How does this affect the management of the following research streams during the open innovation adoption process?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Evolutionary or Episodic?</strong></td>
<td>Top-down or Bottom-up?</td>
</tr>
<tr>
<td>Knowledge Management</td>
<td>Networks</td>
</tr>
<tr>
<td>- Knowledge integration &amp; retention</td>
<td>- Responsibilities for development and management</td>
</tr>
<tr>
<td>- Exploration &amp; exploitation</td>
<td>- Intermediaries</td>
</tr>
<tr>
<td>- IP protection</td>
<td>- Explorative or exploitative intent</td>
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Figure 9: Our New Framework

There are four perspectives which we consider in our new framework: organizational change, knowledge management, networks and managerial roles. Organizational change serves as a background to analyze the adoption process. Knowledge management, networks, and managerial roles are perspectives which are critical to the management of this organizational change when moving from a closed to open innovation strategy. All three of these perspectives interact with each other and organizational change in a manner which may often blur the lines, but for the sake of analysis we treat them separately.

Below, we provide a short description of each component of the framework, including the main themes which we believe should be considered when analyzing an organization’s adoption of an open innovation strategy.
Organizational Change

When analyzing the management of organizational change during the open innovation adoption process, we begin by looking at the rate of change: whether the open innovation strategy is adopted through an evolutionary or episodic mechanism. We also consider whether the change is initiated from the top-down or bottom-up in the organization. It is important to take note of this information when analyzing the adoption process because the activities used, type of plans made and managerial roles vary greatly between the two.

If the adoption process is implemented through an evolutionary change mechanism, then the organization may be more likely to use pilot projects or collaborate with one specific partner. Once this has proven to be successful, then they will likely go on to increase the amount of open innovation activities that they use gradually, before eventually implementing a concrete open innovation strategy. An evolutionary strategy typically denotes change that is initiated from the bottom-up: employees at lower levels of the organization are in a better position to detect changes in customer needs, supplier capabilities, the external environment, etc. and thus, react to these changes in an informal manner, creating gradual change before they push for formal, strategic change from upper-management.

If the adoption process is implemented through a radical, episodic change mechanism, then it is executed from the top-down in the form of a concrete business strategy, new processes and procedures. This type of change may be needed if the organization is currently experiencing a large gap in strategic fit with the external environment. There may be a specific trigger which results in the adoption of open innovation such as someone from top-management reading about the paradigm, being approached by another company for collaborative initiatives, or seeking to enter a new market. As a result of the adoption of open innovation, new positions or business units might be created to manage this type of work.

Knowledge Management

When analyzing the use of knowledge management in the open innovation adoption process, we seek to explore the interfaces the organization uses to transfer knowledge internally and externally, how the organization manages the integration and retention of external knowledge and how the organization protects their intellectual property.

Knowledge management can include many different aspects; however, the basic ingredients are the nature of the knowledge, how it is accessed, built and integrated in the organization
and whether the organization intends to explore new knowledge or exploit that which it currently possesses. Storing, developing and communicating knowledge has its challenges and when organizations adopt open innovation, they have to pay attention to not only how to protect their knowledge but also how to make the most out of the external knowledge which they gain access to. They also have to concentrate on knowledge retention and how to motivate people to share their knowledge and reduce the drawbacks of Not-Invented-Here syndrome. In order to be able to integrate knowledge, interfaces, networks and information management systems are the core of managerial tools in open innovation. Depending on the size of the organization, they might have different kind of procedures when it comes to cooperating and sharing knowledge; not all knowledge can and should be shared and external knowledge that is being accessed should have a fit with the existing knowledge in the organization.

**Networks**

When analyzing the use of networks in the open innovation adoption process, we look at three main issues: responsibilities for developing and maintaining networks of open innovation partners, the use of innovation intermediaries, and whether the intent of these relationships is explorative or exploitative in nature.

The first step is to look at who has the formal responsibility for developing and managing networks of innovation partners. This includes identifying potential innovation partners and establishing initial contact, but once cooperation has begun, building a relationship based on trust and mutual benefit. As the adoption process progresses, the use and management of external networks evolves and the responsibility for creating and managing these networks is spread throughout the organization. Intermediaries and innovation brokers also play an important role in that they allow participating organizations to post innovation challenges to thousands of independent researchers worldwide which the organization would not have access to otherwise.

Next, we seek to identify whether these networks are established for the purpose of knowledge exploration or exploitation. This is important because the method of developing and maintaining the networks varies greatly depending on their purpose. When pursuing inbound open innovation, networks have an explorative intent in that the organization is seeking to gain access to the knowledge of others. Outbound open innovation, on the other
hand, is characterized by exploiting the organization’s current knowledge and innovations in a manner which results in innovation partners bringing the organization’s innovation to market.

**Managerial Roles**

OI Champions are of importance when organizations move into open innovation practices. An open innovation adoption process does not necessarily need to start as a top-down. It can also start as a bottom-up process. However, the acceptance and alignment of the management and also coordination is needed in order to implement open innovation successfully. We look at how OI Champions act as role models and liaisons between top-management and the rest of the organization and manage employee attitudes towards open innovation.

OI Champions have a significant role in communicating and informing the organization about the new practices; they can be persons that come outside of the organization to trigger the change to start as a more radical change but they can also be people working already in the organization for a longer time and actually be the ones that have been pushing the firm to move towards open innovation.

Since change is often associated with some negative attitudes and people can show signs of resistance to change, it is of importance to make sure that employees understand the need and purpose of changing the innovation processes of the organization. In order to motivate them to act in the wanted way, some organizations have introduced incentives and rewards for employees to guide the required behavior. These rewards and incentives can be either intrinsic or extrinsic and there can also be a combination of these two. Having a positive relationship between management and employees and giving employees a possibility to participate in planning the procedures can also make the employees more committed to new processes.
7. The Open Innovation Adoption Process at SCA Hygiene Products

In this chapter, we seek to test the validity of our framework by analyzing the open innovation adoption process at SCA Hygiene Products. We begin by providing a brief organizational background and discussion of how open innovation is employed in the Hygiene Products division. Next, we analyze the adoption process in the organization based on our new framework. In the case study, we use the theoretical background provided in Chapters 3-5 to analyze the empirical data which we have gathered.

7.1 Organizational Background

SCA was founded in Sweden in 1929 when ten Swedish forest companies were merged into one. From the beginning, SCA had a strong focus on the milling of forests and the production of paper pulp. Over time, SCA expanded into the production of various types of paper-creating packaging solutions, tissue and hygiene products (SCA, 2012c). In 2011, SCA had business units in four core areas: tissue, personal care, packaging and forest products. Under a number of leading local brands, SCA sold its products in more than 100 countries on six continents with total sales of more than SEK 106bn in 2011 (SCA, 2011b).

The Packaging division at SCA is the second largest in its industry in Europe. They not only develop packaging solutions for SCA’s own products, but also serve as a full-service supplier to a large number of external customers. The Forest products division offers magazine paper,
newsprint, pulp, customized wood products, biofuel, etc. and is one of the most profitable companies in Europe who do so (SCA, 2012d).

SCA is the third largest supplier of tissue products in the world. The Tissue division sells products such as kitchen rolls, facial tissue and toilet paper to consumers as well as industrial tissues, dispensers and hygiene solutions to the away-from-home market segment. The Personal Care division produces baby diapers, incontinence and feminine care products and SCA’s brands, which when combined, makes it one of the world’s largest producers in this segment (SCA, 2012d). SCA’s largest brand in the Personal Care division is TENA incontinence products. Due to the growing and aging population and an increased amount of disposable personal care products used worldwide, they have identified a need for focus and innovation in this business unit (Andersson & Johansson, 2012a; SCA, 2011b). For example, in 2011 SCA launched a new product called TENA Belt, a protective underwear product, which was the first of its kind on the European market (SCA, 2011b).

SCA has recently made some strategic decisions that will drastically affect the markets and product segments which they will compete in the future. Georgia-Pacific’s European tissue operations were purchased by SCA at the end of 2011, which will be combined with the company’s current tissue operations (Scott, 2011). Additionally, SCA announced in January 2012 that they have divested the majority of their packaging operation, selling them to UK packaging company DS Smith PLC for SEK 15.3bn (Rolander, 2012; SCA, 2012a). These strategic actions have been made with the purpose of increasing the company’s focus on its Hygiene Products division by moving away from the core pulp and paper industry (Scott, 2011) and freeing capital for additional growth through acquisitions in the Tissue and Personal Care units (SCA, 2012b). At the time which this thesis was written, the Hygiene Products division was undergoing a period of reorganization (Andersson & Johansson, 2012a).

“Innovation is a means of developing and differentiating SCA’s products and services, retaining and strengthening market positions, building stronger brands and driving growth” (SCA 2011b, p. 18). The company has innovation centers located around the world for its various brands and product divisions. Innovations are based on customer needs and are developed with the purpose of strengthening the organization’s overall market position and growth. They also have increased the speed of innovation, submitting 74 patent applications in 2011, of which 35 were in the Personal Care unit and 32 were in Tissue (SCA, 2011b).
7.1.1 Open Innovation at SCA Hygiene Products

When SCA purchased the Swedish personal care company Mölnlycke in 1975, it marked the organization’s entry into this market segment (SCA, 2012c). Mölnlycke had a history of working with outside organizations in the development of new products and technologies. They also frequently bought and sold companies and parts of companies, giving them access to new knowledge and technologies as well as the ability to capitalize on innovations which did not currently match their business strategy. It is for this reason that Andersson and Johansson (2012) state that in some ways, SCA Hygiene Products has always performed open innovation.

Upon SCA’s acquisition of Mölnlycke, a research and innovation culture clash was experienced because the organization’s tradition of a basic research culture in its pulp and paper business was very different from the established product development culture in the Hygiene Products division. In 1991, SCA decided that they needed to build a research department for the Hygiene Products division and in 1992, a research lab was opened at the Chalmers University campus. When the SCA Hygiene Products division moved into their new headquarters on the outskirts of Gothenburg in 1995, the research lab from Chalmers University joined them (Andersson, 2012).

Open innovation strategy was formally adopted at SCA in order to gain better access to competencies and resources which the firm does not possess. They gain enhanced customer insight, know-how from other companies in the same industry and a faster product development process with lower costs (SCA, 2009). While basic research is done in-house (Altmann & Kämpe, 2010), open innovation is practiced in a variety of ways within the SCA Hygiene Products. The main methods in which SCA employs open innovation is through patent exchange, the use of innovation intermediaries such InnoCentive and partnerships with suppliers (SCA, 2009). Inbound open innovation is used to gain access to creative problem solvers and attain new market knowledge. SCA has begun using outbound open innovation to license out patents for technologies which do not currently fit with the organization’s business model. Additionally, the company pursues coupled open innovation with their key suppliers in order to gain access to the suppliers’ customer knowledge and help them to improve the overall value-added to products (Altmann & Kämpe, 2010).
“I put ‘open innovation’ in brackets. Because we don’t have an open innovation strategy: we have an innovation strategy and open innovation is a part of that. I don’t think you can have an open innovation strategy without realizing what kind of innovation strategy you have in the company. If you take SCA’s innovation strategy: a certain part of that is focusing on open innovation. And that is what we call combined innovation. We don’t work with open innovation as such, because we combine it with internal resources—that’s the combination.” (Andersson, 2012).

It is important to note that SCA’s official definition of open innovation differs from how they use the term in practice. Even though SCA officially states that “Open Innovation is a way of utilizing external solutions, ideas and knowledge in conjunction with internal competencies and resources to create new and insightful solutions and bringing them successfully to the market” (Johansson, 2012b), they place a distinction between their internal innovation strategy and their open innovation strategy. During our interview, we were reminded multiple times that open innovation was just a part of what the company did. Innovations which were developed in an open manner at SCA could be small components of the overall product or technology which was developed, complete products or new technologies. Based on Chesbrough’s (2006) definition and model of open innovation, we would argue that using an open innovation strategy encompasses inbound, in-house and outbound innovation activities. Therefore, we refer to SCA’s innovation strategy as an open innovation strategy.

7.2 Analysis of Open Innovation Adoption at SCA Hygiene Products

7.2.1 Organizational Change

Even though SCA Hygiene Products has always worked in an open manner (Andersson, 2012), it was first in the mid-2000’s that they started placing an emphasis on practicing open innovation. People within the organization first started talking about open innovation in 2004 and the term was officially used within the company from 2005 (Johansson, 2012a). “When Chesbrough’s book came… there were a lot of seminars and everyone started talking about open innovation—of course then we moved into that as well. So that it was, in a way,
formalized and we put the label to it. But that was in a way, nothing new to the company” (Andersson, 2012).

Members of the research department at SCA Hygiene Products have always been encouraged to seek out information and cooperate with academia, especially after the mid-1990’s when the organization began to place a strong emphasis on innovation. But this type of cooperation had an informal work structure and there were no set policies or procedures on how to perform cooperative R&D activities. Evolutionary change theory states that members of the organization, at all levels, will adapt their work methods to their external environment (van de Ven & Poole, 1995). As these changes build upon each other, the strategy of the organization is affected and management implements formal changes in policies and procedures to ensure strategic fit (Lovas & Ghoshal, 2000). It was because of the increased focus on innovation that members of the research team and the Research and Innovation Support department began searching for new ways to expand the innovation efforts of the business unit. This department pointed out a need for a formal innovation strategy.

Once they developed the first innovation strategy, SCA began trying to persuade the rest of the organization of the importance in working in this manner (Andersson, 2012). Thus, it can be said that open innovation adoption at SCA has occurred from bottom-up and has since moved towards a top-down approach as the open innovation strategy has been concretely implemented within the organization. This fits with the evolutionary process that Andersson and Johansson (2012) describe as well the findings of Mortara and Minshall (2011) that Ad-hoc Adopters tend to move towards a more centralized approach as they became aware of the open innovation theory.

While Andersson and Johansson (2012) insist that SCA has always worked with open innovation in some manner, they also acknowledge that their strategic method of doing so has evolved into a formal innovation strategy in which open innovation is clearly outlined. This change process can be seen as an example of teleological change (van de Ven & Poole, 1995). Research and Innovation Support, and the research department in the Hygiene Products division have worked together towards the development of an organizational culture and strategic plan which prioritizes open innovation as not only a method of working but also as a mindset (Andersson, 2012). Teleological change is a discontinuous theory in which a group comes together, decides upon a specific end-state or goal which they would like to achieve, constantly monitors their progress and updates their plan until the goal has been achieved (van
It was first the Research and Innovation Support department who realized the need for a formal innovation and open innovation strategy, based on how members of the research department were already working. This department then began speaking with other departments and top management in order to get their support in working towards an open innovation culture and strategy (Andersson, 2012).

Chiaroni et al. (2011) state that organizations may create new positions upon the adoption of open innovation strategy in order to create a greater commitment. Bengt Järrehult, so-called “innovation guru”, has held the official titles of Director of Innovation and Knowledge Management of the Hygiene Products division and Fellow Scientist since 2006. He is also an adjunct professor at Lund University’s faculty of engineering and a visiting professor in the school of economics and management (Andersson & Johansson, 2012b). Järrehult is the public face of innovation at SCA and helps the organization connect open innovation and other theories to how the organization can work in practice (Andersson, 2012). One way in which he does this is publishing a blog on SCA’s intranet called Dr. Beng’s Innovation Blog which discusses many types of innovation theory and how it is used in practice at SCA and other organizations. Some parts of this blog are even available to the public on the company’s website (SCA, 2011a). In 2010, SCA created a new position within the Hygiene Product division in order to manage their work with innovation and open innovation. Kerstin Johansson, in her position Open Innovation Programme Manager, has the responsibility of handling the practical and operational side of open innovation. Johansson is responsible for internal communication and marketing, work with intermediaries, and developing policies and procedures for how open innovation is practiced within the Hygiene Products division (Johansson, 2012a).

The role of OI Champions evolves as organizations make their way through the open innovation adoption process (Chiaroni et al., 2011). In the beginning, it was Research and Innovation Support who pressed for the development of open innovation processes and strategy. As open innovation became more widely accepted and used within the organization, a need for people specifically assigned to the initiative was determined. The creation of these OI Champion positions and a formal innovation strategy in which open innovation activities play a significant role enable top-management to steer the direction of open innovation management without making a formally planned, top-down change initiative. Järrehult and Johansson also work with fostering an open innovation culture within the organization, which has the goal of creating greater commitment from employees and management.
7.2.2 Knowledge Management

Personalization and codification are two knowledge management strategies (Hansen et al., 1999), both of which are used at SCA. Codification is a strategy in which certain types of information are recorded, through reports and databases, so that other members of the organization can access the information at a later date. This method works well for explicit knowledge (Hansen et al., 1999) and is said to be exploitative in nature because the organization is seeking to re-use the same information at a later date (March, 1991a). At one point in time, SCA had a Knowledge Manager who was in charge of ensuring the codification and storage of data from projects and research (Andersson, 2012). While this position no longer exists in the company, it is essential that the storage and sharing of data continues to occur. In order to do so, the responsibility has been shifted to the employees. They are expected to file reports and complete project documents which can be referred to by other members of the organization at a later date (Johansson, 2012a).

Personalization strategy, on the other hand, is used when members of the organization possess tacit knowledge which cannot be merely written down and stored in a database for others to access (Hansen et al., 1999). In the case of SCA, the knowledge is highly specialized and not easily transferable. Instead, it is important that employees are able to find out “who knows what” so that they can contact the person for assistance with their innovation problems (Andersson, 2012). Since knowledge required for innovation within the SCA Hygiene Product division is highly specialized, the company relies more on personalized knowledge management strategy than codified (Andersson, 2012). It can sometimes be very difficult to identify “who knows what” within the organization because it is so large and there are different product divisions. Some knowledge areas may overlap, and technologies or innovations may be applicable to more than one business unit (Johansson, 2012a), so it is essential that areas of expertise are cataloged. Also, Johansson, as an OI Champion, is a key figure in helping employees to determine “who knows what” and who to contact both externally and internally (Andersson, 2012).

SCA performs inbound open innovation activities in order to attain new market knowledge and to improve their already existing products. They pursue outbound open innovation when they want to license out technology that does not fit to their business model (Altmann & Kämpe, 2010). Knowledge management interfaces, including databases, reports, file sharing, mentorships, etc. are essential in assuring the storage and transfer of knowledge (Hansen et
al., 1999). For instance, SCA is currently working on upgrading their Idea Management system. This system allows employees to post ideas for new products, improvements to existing products or processes, special features, etc. internally. This system is used to encourage collaboration on ideas between employees and departments, and can even serve as a starting point for open innovation projects. In the future, they expect that this system will also be used in additional ways such as posting research problems or challenges similar to the innovation challenges posted with InnoCentive to increase collaboration and knowledge sharing within the firm before turning to outside organizations (Johansson, 2012a).

Andersson and Berggren (2007) studied the role of inventive individuals in R&D departments and concluded that they need to know how to best exploit their networks in order to work efficiently. Open innovation not only sets new challenges of sharing knowledge with external organizations, but R&D departments also need to transfer knowledge to new generations of employees. The critical element is creating guidelines and restrictions on how much and what kind of knowledge you can share with external partners in open innovation activities. Creating an atmosphere of competition between internal R&D and external partners is usually not beneficial.

In order to insure compatibility in the knowledge stored from various types of innovation projects, both in-house and external, the same project models and types of reports are used within SCA. This system requires that project managers file reports at each tollgate during the project, keep track of the progress that they are making and document what they have failed at. Some additional steps are taken when working with intermediaries such as InnoCentive. Innovation challenges and reports are first submitted internally for approval and then published on InnoCentive’s website in accordance to their documentation standards. If a solution is received, it is analyzed and tested, the results codified and reported into SCA’s knowledge management database (Johansson, 2012a). It is particularly important that knowledge gained from collaborative work is stored within the organization because SCA can benefit from that information, even after the collaboration has ended. Even though a specific project ends, SCA retains a relationship with the innovation partner. This means that, in some ways, tacit knowledge remains intact but codifying the explicit knowledge makes it easier to access at a later date and also to modify and develop it (Marshall et al., 1996) and exploit in the future (March, 1991a). In order for individuals and groups in the organization to learn and absorb knowledge, it must first be either documented with the help of information technology or personalized (Hansen, et al., 1991).
Even though open innovation is prevalent within the division, some people within the SCA Hygiene Products division still have a Not-Invented-Here attitude or an unwillingness to share their knowledge. They have trouble admitting that they do not always possess the required knowledge and might be unwilling to ask coworkers or people outside the organization for assistance (Andersson, 2012). In order to tackle these challenges, it is important that the organization communicates with employees that it is acceptable and even encouraged to look outside for knowledge and that it could very well be more time and cost efficient to do so (Hansen & Nohria, 2004). While the literature points to solving Not-Invented-Here attitude problems by developing incentives for people who are involved in working on successful innovations, whether they are developed internally or externally (Chiaroni et al., 2011). SCA does not do this. Instead, they rely heavily on creating an open organizational culture and providing examples of success stories in order to gain enthusiasm for their work with open innovation (Andersson, 2012; Johansson, 2012a). They also try to get employees to be active throughout the projects and make sure that their expectations are correct (Hällbrandt & Ingvarsson, 2012). Motivating people to work together is easiest when examples can be given; “every success story that you can show will encourage people” (Andersson, 2012). Johansson is in charge of publishing information about open innovation on the company’s intranet. She provides examples of open innovation initiatives which have been successful, information about policies and procedures for starting an open innovation project, etc (Johansson, 2012a). Also, many people might have the willingness and motivation to co-operate but still not be able to do efficiently because of lacking skills or tools for the communication (Cohen & Levinthal, 1990). SCA has also worked to develop an open innovation vocabulary so that there is a shared understanding of the concept and how it applies to the organization (Andersson, 2012).

When adopting an open innovation strategy, organizations must develop their absorptive capacity so that they can make the most out of the knowledge gained through collaboration. Absorptive capacity is based not only on the capabilities of the firm, but also on the amount of trust in the relationship between innovation partners (Cohen & Levinthal, 1990). For innovative purposes, the SCA Hygiene Products division often times enters in to long-term relationships with the organizations it chooses to partner with. This allows them to build trust and commitment to developing and sharing knowledge base from which both parties can profit. “It’s people! You need to work together for a while before you can trust each other and know each other” (Johansson, 2012a). Mutual trust is essential when working cooperatively.
because all parties must feel secure in sharing their knowledge and that they receive a fair share of the benefits resulting from the collaboration (Lee et al., 2010). Andersson (2012) noted that geographic proximity plays a large role in the ability to develop trust between organizations and cited this as one of the main reasons why SCA’s cooperation with Chalmers University in Gothenburg has been so fruitful. “The geographical location is so important because we can physically meet, it takes 10 minutes by car to go there (Chalmers University). If you have competence which is good enough in the neighborhood… it is very valuable to develop that” (Andersson, 2012).

Intellectual property rights are another important aspect of knowledge management when working with open innovation. In order to insure trust between the innovation partners so that they can feel comfortable and protected when sharing knowledge with each other, both parties must be sure that their intellectual property is protected (Giannopoulou et al., 2010; Reed et al., 2012). SCA has strict guidelines about how to deal with intellectual property issues and there is a legal department that assists when needed to make sure that all parties are legally protected. For instance, SCA requires that any person or organization that approaches them with an idea has protected that idea with a patent before discussions even begin (Andersson, 2012). They also try to remain ambiguous about why they are looking for information about specific technologies as to not give away any trade secrets (Johansson, 2012a).

7.2.3 Networks

SCA’s networks include suppliers, lead users, universities, intermediaries and the external environment / organizations in unrelated industries. As shown in Figure 11, SCA’s closest innovation relationships are with some of its key suppliers and lead users. Since SCA focuses on innovations based on the needs of customers and consumers (SCA, 2009), it is logical that these groups would be the ones that SCA works most tightly with when developing or improving products. Suppliers can give insight on new materials, process improvements and information which they have gotten from other members of the value chain. Lead customers, especially in the case of the away-from-home market segment, can also supply critical insight into what product features are most important and any needs that are currently not being met (Johansson, 2012a) as well as loose conceptual ideas which are then further developed in-house (Altmann & Kämpe, 2010). The open innovation network at SCA also includes research institutions, intermediaries such as InnoCentive and organizations from unrelated industries. Intermediaries help to broaden the scope of an organization’s networks in that they
provide connections to a large number of potential partners and help the organization gain access to new technologies and markets (Vanhaerbeke, 2005). SCA has also developed outbound open innovation practices in which it sells or licenses technologies which do not fit with its current business model to external organizations (Altmann & Kämpe, 2010).

It is clearly stated in the job descriptions of researchers and scientists at SCA Hygiene Products that they are responsible for creating and maintaining relationships with external organizations, scientists and professors. “We are expected to form networks. People should be able to come to us and ask if we know someone in a specific organization or with a competence and we should be able to answer” (Andersson, 2012). These networks are meant to be connected to the specific research area of the employee so that others in the organization know who within SCA to contact if they need assistance within a specific research area (Johansson, 2012a). In addition to the formal network building requirements of the scientific group, all employees are encouraged to foster relationships with external parties, even with people in seemingly unrelated industries (Andersson, 2012; Johansson, 2012a).

As SCA’s use of networks and open innovation continues to increase, it is important that their method of creating and developing networks evolves. As found by Mortara and Minshall (2011), open innovation networks adapt and change based on the needs of the organization and how relationships have been managed. Even if an innovation project is completed, the network remains intact and can be a source of further knowledge exploration in the future.
(Lee et al., 2010). Thus, it is important for SCA to manage its reputation with innovation partners and constantly become better at developing its networks (Hasanic & Jakus, 2010).

There is a potential, which the interviewees (Andersson, 2012; Johansson, 2012a) recognized when they met together in preparation for our interview, to take advantage of the networks not only of employees, but of other people and organizations in the network. If an organization’s networks have proven profitable in the past or if they are over-reliant on specific innovation partner relationships, it can be difficult for organizations to expand upon and grow their open innovation networks (Birkinshaw et al., 2007).

“Normally, when you contact a professor at a university, you do it for certain specific questions. And I don’t think that we ask: what type of network do you have which might be of interest for us? So, I think in the future we would be much more interested in further developing our network through the network we have” (Andersson, 2012).

If SCA is able to expand their network contacts by being introduced into the networks of their partners, then these networks will serve both explorative and exploitative purposes (March, 1991a): SCA is exploring new technologies and innovations while they are also exploiting their contacts in order to develop additional and more efficient methods of adding members to the network. It is important that, when building new relationships and expanding networks, the organization should enter into relationships which have the potential for mutual benefit (Lee et al., 2010).

Intermediaries such as InnoCentive also play a large role in the open innovation strategy at SCA. When employees realize that they need a solution which the organization or their current open innovation partners do not possess the knowledge required in developing the solution themselves, they create innovation challenges. This process requires that they state the problem which needs to be solved and the criteria which need to be met, which previous attempts have been made, the budget to do so, and which type of deliverables are expected (Johansson, 2012a). Thus far, SCA has posted more than 25 innovation challenges with InnoCentive which have received responses from 150-650 researchers each (Alpman, 2010) and has been in general, satisfied with the responses they have received (SCA, 2009). Additional benefits of working with InnoCentive that SCA has experienced include the
refinement of open innovation processes and a better ability to determine what knowledge they really need (Hasanic & Jakus, 2010).

Since a fee must be paid only if the challenge is met (InnoCentive, 2012), it is important that SCA is precise with how they formulate their challenge and that they inform the solution providers of all of the things which they have attempted but were not successful. SCA purchases all solutions which meet their requirements, as to ensure that they are not made available to competitors (Hasanic & Jakus, 2010). If they are not very specific, it is possible that SCA will have to pay for innovations or knowledge which they have already developed or that does not meet their needs. Before the challenges are posted with InnoCentive, they must first be approved by Johansson. Since this is a paid service, it is important that SCA makes sure that none of their existing innovation partners, suppliers or customers have the knowledge required to solve the problem. “I am the main contact and I have some control questions to pose to them if they want to have a challenge posted at InnoCentive…we have our own networks, but if they can’t help us, we have to go outside” (Johansson, 2012a). Another benefit of using InnoCentive is that it gives SCA access to experts from other industries, which widens the scope of their networks (Andersson & Johansson, 2012b).

7.2.4 Managerial Roles

Organizational change does not necessarily start as a top-down process, however it is typical that it will become more like that in the later phases due to the need for coordination (Mortara & Minshall, 2011). When guiding the change process, it has been noted that OI Champions play an important role. Järrehult and Johansson’s positions, which were created as a result of an increased focus on open innovation, serve the purpose of OI Champions. These OI Champions work not only as internal marketers for open innovation but also as a support for guiding the methods of successfully working with open innovation. Järrehult, as Director of Innovation and Knowledge Management, is the face of the innovation strategy at SCA and works to connect innovation theory to how SCA can strategically work with innovation. Johansson, the Open Innovation Programme Manager, works with the internal marketing and the implementation of the open innovation strategy, informs employees via the communications on intranet, presentations, encourages and supports employees in their efforts (Andersson, 2012).
One particular challenge for SCA has been informing and communicating the importance of open innovation for the entire organization, as the organization is made up of multiple product divisions and located across the globe (Andersson & Johansson, 2012a). Whenever introducing a change, communicating is in a vital role. Also, creating positive expectations and giving the employees a possibility to take part in the change activities can make employees more satisfied and less afraid of the change (Szabla, 2007). Working with expectations and motivating people is important for SCA (Hällbrandt & Ingvarsson, 2012). SCA has put emphasis on encouraging their employees to value competences that can be gained from working with external organizations and to have a long-term mindset in order to keep the organizational culture which is inclined to cooperative open innovation (Altmann & Kämpe, 2010).

Johansson, in an effort to make the use of open innovation less intimidating for employees, provides success stories, offers assistance and helps employees to navigate the innovation networks. She also makes sure to communicate to employees that a greater reliance on open innovation will not replace or diminish the internal R&D department (Johansson, 2012a). In fact, it can even lead to new jobs within the company because SCA requires people to identify opportunities for collaboration, and then evaluate and adapt the innovations to the specific needs of the organization (Andersson, 2012). At SCA they see innovation work as a combination of in-house and open innovation. They do not want to use open innovation as something that would be competing with their own resources and competencies; instead it should be seen as a complementary competency (Johansson, 2012a).

People tend to have negative associations when it comes to changes that involve the organizations which they work in. Therefore, talented managers create relationships with their employees, support them, provide incentives but also use different kind of controlling systems to direct the desired behavior (Furst & Cable, 2008). When it comes to tackling the challenges of Not-Invented-Here syndrome at SCA, success stories and staff members communicating with each other about their experiences has been helpful in the adoption process (Andersson, 2012). InnoCentive is a one example of how they can encourage people to post challenges and take initiatives. “And then you don’t tell them to do it, you allow them to do it” (Johansson, 2012). Often times, it is more useful to allow people to do things instead using control to direct them. Employees will also feel less uncertain about the new way of working since they have been educated how to do it and why it is important (Andersson, 2012). Meyerson (2002) describes Tempered Radicals: managers and leaders that gently guide
employees to the wanted direction instead of directly ordering that the change occurs. These managers excel at reducing the resistance and fear since the change happens evolutionary and without really realizing it.

Lichtenthaler (2011) described different kind of attitudes employees can have when implementing open innovation, Not-Invented-Here syndrome being the most well-known. Other examples include Not-Connected-Here and Not-Sold-Here attitudes. It is necessary to take these possible negative attitudes into consideration since many times it is not only individuals but groups that share these feelings and therefore they should be managed both at the individual and the group level. These aspects demonstrate also the organizational culture of an organization. Only Not-Invented-Here syndrome was brought up in the interviews. However, based on the interviews the two additional open innovation challenges are also present in the organization, it is just that SCA has not given them a name (Andersson & Johansson, 2012a). Järrehult says that in order to manage Not-Invented-Here syndrome, the focus should be on converting employee mindset to that of a Proudly-Found-Elsewhere attitude (Hasanic & Jakus, 2010). The most essential part of managerial roles in the adoption of open innovation at SCA has been that managers need to lead by giving a good example (Johansson, 2012). Managers cannot affect negative attitudes if they do not truly support the changes being made.

When adopting open innovation, organizations can use different kind of incentives, monetary or non-monetary, to encourage employee participation and cooperation (Kim, 2011). SCA does not use any monetary incentives to encourage people to open innovation efforts. This is because open innovation has been practiced throughout the history of the company; it is just a new label and some new policies and procedures for how to go about it (Andersson, 2012). Therefore, SCA needs to make sure that people know and understand this and that the organizational culture stays as open minded as it is now. According to Johansson, they do not need incentives since the key of successful open innovation is actually internal collaboration: “If you cannot collaborate internally, how could you then collaborate externally?” (Johansson, 2012a). SCA has an Idea Management system that is currently being updated. They see that system as a crucial element in their ability to store and retrieve knowledge about innovation work. They are not planning to introduce incentives for their idea management system either; instead they will use non-monetary incentives such as recognition to motivate people. The main goal is a more effective cooperation; if one person comes up with an idea, another person can develop it further (Johansson, 2012).
8. Discussion and Conclusions

The purpose of this thesis was to create a framework for the analysis of the open innovation adoption process which is based on organizational change and other relevant streams of research. In order to do so, we began by investigating the open innovation phenomena and subsequent specialized research streams. This included how open innovation is practiced in reality, research streams which are at the forefront of academic research in the subject area, key issues for success and challenges when using open innovation. Based on our research, we understood that organizational change theory would play an important role in the analysis of how organizations move from a closed to open innovation strategy. Thus, we sought out more information on the various forms of organizational change, using two of the three categories which Senior and Fleming (2006) recommend for comparing organizational change theory: rate of occurrence and how change comes about.

Once we had developed a theoretical discussion of open innovation and organizational change theory, we began by looking at open innovation adoption frameworks which have been recently published. We narrowed the scope down to four frameworks, based on their relevance to our topic. A brief description of these four frameworks and their use of organizational change theory were provided. Then, we compared how each of the frameworks treated three additional research streams: knowledge management, networks, and managerial roles. Based on our background research and the frameworks, we deemed that these three categories were essential when analyzing the open innovation adoption process.

We then developed a new framework for the analysis of the open innovation adoption process in which we described the four elements and discussed relevant theoretical contributions which could be used during analysis. In order to test our framework, we conducted a study of the open innovation adoption process at SCA Hygiene Products.

Below, we discuss our findings as they pertain to our research questions, which were outlined in Chapter 1 of this report. Then we present our the implications for theory and practice, limitations and suggestions for future research.
8.1 Discussion of Research Questions

1) How can organizational change theory be used to analyze the movement from a closed to open innovation strategy?

When we first identified the current open innovation adoption frameworks, we believed that Chiaroni et al.’s (2011) use of Lewin’s Three-Stage Model of organizational change was a good example of how to analyze the organizational change process which companies go through when adopting open innovation. Their framework is the first to use this organizational change model, or any one specific organizational change theory, for that matter. At first glance, using the three steps of unfreezing, moving and institutionalizing seems to be both easy to understand and apply when analyzing a company’s open innovation adoption process. However, after researching organizational change theory more thoroughly and analyzing the other existing open innovation adoption frameworks, we have come to the conclusion that each organization’s adoption process is unique. Therefore, we believe that no one organizational change model is appropriate to analyze this process.

Instead, we agree with the conclusions of both Chesbrough and Crowther (2006) and Mortara and Minshall (2011) that the adoption process can be analyzed from a variety of angles, and therefore multiple organizational change theories can be used. In using our framework, the researcher must first gather information about how the organization went from closed to open innovation through interviews at multiple levels in the firm as well as secondary data. Once they have gathered pertinent information about the process, they can decide which type of organizational change theory to apply for analysis. It is critical that researchers form their own opinions about how the change came about and the implementation method, and not rely too heavily on the opinions of interviewees. Firstly, the open innovation strategy has most likely already been adopted or is currently being implemented and personal perspectives change with time and may differ greatly amongst the interviewees. Additionally, the researcher will undoubtedly be better informed of the various organizational change theories, which allows them to make a more accurate assessment of which type was used.

In our framework, we use two classification methods: the rate of change and how it comes about. With the rate of change, we mean whether the adoption process is evolutionary or episodic. If the adoption of open innovation is evolutionary, it means that it emerges in response to changes in the internal or external organizational culture. In this case,
organizational change theories such as Lovas and Ghoshal’s (2000) Guided Evolution model or van de Ven and Poole’s (1995) Evolutionary Change Model. Episodic change, on the other hand, refers to short bursts of organizational change followed by longer periods of stability. Lewin’s (1947) Three-Stage Model, as used in Chiaroni et al. (2011) is an example of how episodic change can be applied to the open innovation adoption process. We do not try to say that one method is better than another or that a specific change model should be used when adopting open innovation, only that the researcher should choose which model(s) to use based on the actual method of adoption in the specific case.

When analyzing how change comes about, we look at whether it was initiated from the top-down or the bottom-up. Most of the time, this corresponds to whether the change came about in an episodic or evolutionary manner. However, as Mortara and Minshall (2011) note, many organizations who began working with open innovation in an evolutionary manner based on actions taken at lower levels in the organization eventually implemented a specific open innovation strategy which was communicated from the top-down. Thus, in some cases both types of theory will need to be applied when analyzing the open innovation adoption process.

2) In addition to organizational change theory, which research streams should be considered when analyzing the open innovation adoption process?

After analyzing the current open innovation adoption frameworks, we came to the conclusion that our framework should include four dimensions: organizational change, knowledge management, networks and managerial roles. As we noted in Chapter 5, the current frameworks varied in how and if they used each of these perspectives, so we applied additional background theory to develop our arguments for why these research streams were essential for analyzing the adoption process. These three additional perspectives are all linked to how the organization manages the organizational change process and are interdependent. However, we treat them as distinct areas for analysis in order to provide a clear set of aspects to analyze during the adoption process.

Knowledge Management

When analyzing knowledge management, we focus on four factors: knowledge management interfaces, learning in the organization, employee willingness and ability to share knowledge, and intellectual property protection. Lichtenthaler (2011) bases his study of the open innovation adoption process on various factors related to knowledge management and Chiaroni et al. (2011) state that it is one of the managerial levers which must be acted upon as
the organization makes its way through the adoption process. Chesbrough and Crowther (2006) and Mortara and Minshall (2011) state that exploring new knowledge or exploiting existing knowledge leads to cost reductions and increased speed in innovation, which is one of the main reasons why organizations adopt open innovation. Since one of the main factors in the development of successful innovations is managing the knowledge involved, this research stream must be considered when analyzing the open innovation adoption process.

When we refer to knowledge management interfaces, we mean the processes and systems which the organization must develop in order to have the capability to absorb, integrate and retain external knowledge. The organization does not necessarily have to build completely new processes, but since they have not previously had the need to integrate and retain large quantities of external knowledge, they will probably need to be improved (Lichtenthaler, 2011). We agree that improving on existing processes can be an efficient action instead of introducing completely new methods during the adoption of open innovation. Knowledge and idea management systems enable communication internally and externally about successes, failures, and lessons learned during the innovation process.

Absorptive capacity, the ability to take advantage of external knowledge and apply it to innovation (Cohen & Levinthal, 1990), is a core capability which the organization must possess in order to successfully adopt an open innovation strategy. The use of knowledge codification and personalization strategies to store and transfer knowledge is also important when considering how people within the organization learn (Hansen et al., 1999). Employee attitudes also factor in to the absorptive capacity of the organization. If employees are not willing and able to share their knowledge with external partners and accept the fact that others outside of the organization sometimes possess greater capabilities, they will likely fight against the adoption of open innovation. Not-Invented-Here syndrome can and must be combated by managers in order to sure the greatest amount of learning possible (Cohen & Levinthal, 1990).

Protection of intellectual property is another important aspect of knowledge management. Processes must be put in place to ensure that both the organization and its innovation partners are protected when working collaboratively on an innovation. This protection also fosters trust in the relationships between organizations which leads to more efficient collaboration (Enkel et al., 2009).
Networks

Networks are a fundamental ingredient and implicit in the use of any open innovation strategy. While Lichtenthaler (2011) discusses their specific correlation to knowledge management, Chiaroni et al. (2011) focuses on the role of managers in creating and managing relationships with innovation partners. In our framework, we look at who has the responsibility for creating and managing networks of innovation partners, how their use varies depending on whether there is an explorative or exploitative intent, and the use of intermediaries. Since one of the main purposes of networks is to facilitate the development of new innovations, there is a strong correlation between how organizations create and manage their networks and the knowledge management interfaces which it relies on.

OI Champions lead the way in creating and maintaining networks; it is often their responsibility to make initial contacts with external organizations and encourage employees in developing their own external contacts. As the organization moves through the adoption process and working with external organizations becomes more accepted in the firm, the responsibility for maintaining these relationships slowly shifts over to other members of the organization (Chiaroni et al., 2011). However, the OI Champion or other managers will always have the responsibility of maintaining the organization’s reputation within its networks and developing trusting relationships. This is extremely important because the organization will seek to expand its innovation networks and if they have not built up a good name for themselves, they will have a hard time finding new innovation partners (Lee et al., 2010).

The use of networks and who the organization chooses to partner with depends on whether the intent of the collaboration is for knowledge exploration or exploitation (March, 1991a). When the organization is looking to gain access to new knowledge and innovations externally via inbound open innovation, their networks have explorative intent. Explorative networks are characterized by a large number of partners and relatively shallow relationships (Vanhaverbeke, 2005). When organizations pursue outbound open innovation, the purpose of their networks is knowledge exploitation in that they are seeking to develop partnerships with external organizations that can take their innovations to market. Exploitative networks involve a small number of partners and deeper relationships (Vanhaverbeke, 2005).

Another important aspect for many organizations is the use of intermediaries. Intermediaries, also known as innovation brokers, assist the organization in finding new innovation partners.
They do this by providing a platform for the organization to post innovation challenges or knowledge searches which can be viewed by organizations and free-lance researchers. If an innovator is able to develop a solution to the posted problem, they are paid for their intellectual property. Intermediaries not only provide a platform to make connections, but also help the organization to improve and streamline their search processes (Chesbrough, 2003a).

**Managerial Roles**

Lastly, our framework considers a set of managerial roles which are essential in facilitating the adoption process. In this section, we look at how OI Champions act as role models and liaisons between top management and the rest of the organization and manage employee attitudes towards open innovation. Each of the four existing frameworks includes a section about the role of OI Champions and other managers during the adoption process, using similar background theory to stress the importance of communication and managing employee attitudes.

We suppose that managers, whether they are considered OI Champions or not, are essential in managing the organizational change process from closed to open innovation strategy. Managers need to lead by example and be a role model for employees. This means that they must also work in an open manner and embrace the changes within the organization. In creating positions within the organization that specifically deal with the adoption and use of open innovation, it signals employees that the organization is committed to the change (Chiaroni et al., 2011).

OI Champions can be found within the organization or brought in to spearhead the adoption process. It is their chief responsibility to convince top management that open innovation is a necessary strategic move for the organization and to create enthusiasm for the new strategy at lower levels (Chiaroni et al., 2011). They do this by illustrating how opening up the boundaries of the firm allows it to reduce risk, increase speed to market and meet organizational growth goals. They provide education as to how to use knowledge management systems, work with network partners and develop new contacts. Success stories, both from within the organization and other companies using open innovation, are communicated to gain support and motivate employees. It is also the responsibility of OI Champions to lead the way in building networks and relationships with external organizations (Chesbrough & Crowther, 2011).
Since the adoption of open innovation requires change in the organizational strategy and how employees perform their daily activities, the organization can expect resistance from employees. There are a number of actions which OI Champions can take in order to manage fear of change and negative attitudes such as Not-Invented-Here syndrome (Keupp & Gassmann, 2009). These include communicating the importance of the strategic change to success of the organization, providing incentives, and allowing employees to determine their level of involvement. If incentives given, they should be given to employees involved in any successful innovation, regardless of whether it came from internal or open innovation efforts. These incentives can be monetary or non-monetary, such as public praise and recognition, increased responsibility, or other benefits. Negative attitudes stem from an unwillingness to admit that someone else possesses the knowledge or skills that necessary to solve a problem or bring an innovation to market. In order to combat this attitude, managers must show employees the benefits of exploiting the knowledge of others, thus converting the attitude to one of Proudly-Found-Elsewhere (Hasanic & Jakus, 2010). With that being said, some employees will still remain skeptical to open innovation. It is important that these employees be allowed to determine their level of involvement in open innovation activities.

3) **To what extent does our new framework provide an adequate foundation for analyzing the open innovation adoption process at SCA Hygiene Products?**

In order to test our framework, we attempted to apply it to the open innovation adoption process at SCA Hygiene Products. To perform this case study, we conducted two interviews and gathered secondary empirical data such as newspaper articles, studies previously conducted about open innovation at SCA, annual reports and trade magazines. Our study would have benefited from greater access to internal communication about the adoption of open innovation, observing open innovation at work within the firm and a larger quantity of interviews with employees at all levels of the firm. That being said, we believe that the analysis which we were able to conduct provides a good example of how our framework can be applied to the analysis of the open innovation adoption process at SCA Hygiene Products or any other organization.

The results of our case study support our decision to include the four dimensions of organizational change theory, knowledge management, networks and managerial roles. The interviewees stressed that they had always performed open innovation activities at SCA Hygiene Products, even though they had not given it that label or developed a specific open
innovation strategy (Andersson, 2012). However, we were able to detect an evolutionary adoption process which eventually resulted in a formalized innovation strategy. This strategy includes processes and procedures to develop networks, manage knowledge flows between the organization and innovation partners, and the use of OI Champions to facilitate the adoption and manage collaborative efforts. This supports our stance that organizational change is an overarching theoretical stream which guides the use of knowledge management, networks and managerial roles. However, we recommend that the four dimensions be organized into distinct sections when performing the analysis. This may lead to some overlapping, but will make it much easier for the researcher to organize the analysis and for the audience to understand.

During our interviews at SCA Hygiene Products, the concept of organizational culture came up repeatedly. Building up a collective mindset in which collaboration with external partners and the use of external knowledge in developing innovations is not only accepted but celebrated was said to be key to the success of open innovation adoption at SCA (Andersson & Johansson, 2012a; Andersson, 2012; Johansson, 2012a). OI Champions can affect the development of an open innovation-friendly organizational culture by communicating how this strategy helps the organization to achieve its growth and efficiency goals, taking a long-term approach. It is also important to develop a collective understanding of what the organization means when they use the term open innovation or other concepts surrounding this strategy. When an open innovation vocabulary has been adopted within the organization, it is a good indicator of the willingness and motivation of employees to work in this new way. While we see this as a part of both organizational change theory and managerial roles, we acknowledge that a greater emphasis could be placed on the role of organizational culture in our framework. This area could easily be expanded in the managerial roles and organizational change theory sections by using relevant background theory.

The use of intermediaries as part of the open innovation network can be extremely important to some organization’s open innovation strategy. We have included some data and analysis about how SCA uses the services of InnoCentive and how they gain access to new experts and organizations from other industries by posting innovation challenges (Andersson & Johansson, 2012b). Another interesting aspect of using intermediaries which we did not consider in depth in this study is the correlation between the use of intermediaries and intellectual property protection. When posting innovation challenges, SCA is careful not to reveal sensitive information about the organization or how they plan on using the knowledge
and innovations which result from the innovation challenge (Johansson, 2012a). Not only does this lead to more responses, but it also helps to insure that the knowledge and innovations do not end up in the hands of competitors.

Another interesting aspect which we encountered in our case study was the use of idea management systems as a part of knowledge management at SCA Hygiene Products. The organization is currently working to upgrade their idea management software which, when completed, will allow employees in all departments to post ideas and contribute to the ideas of others. The idea is that employees will be able to format their ideas on the internal system much like the innovation challenges which the organization posts with InnoCentive (Johansson, 2012a). Ideas generated within the organization can then lead to both internal and collaborative innovations. Although we did not encounter any research in the use of idea management systems in open innovation, we believe that idea generation and management should be included in the knowledge management dimension.

8.2 Implications and Contributions for Theory and Practice

It was not our intention to provide a model which outlines the steps an organization should take when adopting an open innovation strategy. Neither was it our purpose to identify characteristics of successful open innovation adopters. Due to the unique organizational history, culture, strategy and use of open innovation activities, the adoption process cannot be generalized. Thus, we sought to identify which research streams were most appropriate to analyze how organizations adopt open innovation and why they take the actions they do.

Our framework allows the researcher to choose which background theory within the four research streams they find relevant for the analysis. Open innovation is a relatively new research stream and while some interdisciplinary connections have been established, most of our theoretical background came from classical theory in these areas. Therefore, we suspect that as open innovation theory continues to develop, new correlations will be established which will prove a better basis for analysis.

Additionally, our framework could be used by organizations looking to adopt open innovation, especially if additional studies using the framework were to be carried out. This report provides a solid theoretical background which could be used to inform management of
the issues surrounding the adoption process. It could also help management to identify areas which are essential to consider when implementing an open innovation strategy such as the risks and benefits of intermediaries, managing employee attitudes, and developing absorptive capacity.

8.2.1 Limitations

As we noted in the research problem, there are relatively few open innovation adoption frameworks, most of which have been published in 2011. If any frameworks have been published in 2012, we did not take them into consideration when writing this report. Neither did we consider anecdotal accounts of how specific organizations have adopted open innovation. These accounts may provide interesting insights into what organizations see as the most important aspects of the adoption process or provide empirical evidence to be used in a comparative case study.

Another limitation of this report, as we noted in our discussion of the third research question, is that we were granted limited access to the organization. We were only given two interviews, because the department is currently undergoing a strategic reorganization, and no access to internal communications or possibility to observe the workplace was granted. When we began searching for secondary data, we thought that we would be able to make up for the lack of interviews, but we realized later that many of the sources which we were able to identify provided the same information. A more in-depth case study should be conducted in order to provide a better assessment of the validity of our framework.

8.2.2 Suggestions for Future Research

We suggest that a more in-depth analysis of an organization which went from a completely closed innovation strategy to an open innovation strategy be conducted. It would be best if this could be a longitudinal study in which the researchers follow the organization’s adoption process over a period of three to five years and conduct interviews with people at all levels of the organization. This would allow for greater insight into the actual management of organizational change and employee attitudes.

OI Champions are discussed frequently in the open innovation literature and we acknowledge their critical role in the adoption process. They can be people are already working in the organization or they might be brought in to the organization to kick-start the change process.
We suggest further research into the role of OI Champions in various organizations: whether or not they are given formal responsibility over managing the open innovation activities within the organization, if their title reflects this position, and how management and staff perceive them.

Other areas which we have encountered that would be interesting for future research but were outside the scope of this study include: how the adoption process differs among other companies in the fast moving consumer goods industry, the prevalence organizations practicing of open innovation in Sweden and the creation of an internal “OI vocabulary”.
References

Articles


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**Books**


**Case Study References**


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Appendix

Fact Sheet & Interview Questions

Topic of the thesis: Open Innovation Adoption Process

Programme: Strategy and Management in International Organizations (SMIO)

University: Linköping University

Authors: Jennifer Ferguson and Merja Ukkonen

THE PURPOSE OF THE STUDY AND THE INTERVIEW

The purpose of this interview is to test the framework which we have developed in order to determine if it is an adequate foundation for the analysis of the adoption process in an incumbent organization.

We aim to conduct a semi-structured interview based on four dimensions which we have included in our open innovation adoption framework: organizational change, knowledge management, networks and managerial roles. The questions presented below are meant to guide the interview, but please feel free to bring up any other issues which you think were important to the open innovation adoption process in your organization. We are certainly looking for perspectives which we may have failed to include in our framework.

Thank you in advance for your time and assistance!

Best regards,

Jennifer Ferguson and Merja Ukkonen
Interview Questions

Section 1: Organizational Change
1. Were you employed at SCA when the open innovation strategy was first implemented? If so, please recount how you were informed about the adoption of this new strategy and your personal perceptions of this change.
2. What triggered the adoption of an open innovation strategy? To what extent were employees involved in the development of the open innovation strategy? What was your role in this process?
3. Would you characterize the adoption of the open innovation strategy at SCA as radical change initiative or an evolutionary process? Please give examples of how this was done.

Section 2: Knowledge Management
1. Which knowledge management interfaces have been developed as a result of the adoption of open innovation? Has the organization experienced any difficulties in retaining or storing the knowledge of innovation partners?
2. Does the organization set any restrictions on the amount or type of knowledge which they are willing to share with innovation partners? Which processes are used to ensure the security of intellectual property?
3. Are the employees willing and able to integrate their current knowledge with that of innovation partners? What, if any, limitations have been experienced in the ability to absorb and retain knowledge gained through open innovation initiatives?

Section 3: Networks
1. Who is responsible for developing and maintaining networks? What are the main factors considered when deciding on who to partner with in innovation activities?
2. How does SCA use networks of innovation partners in their open innovation strategy? Has the use and/or management of these networks changed since the initial adoption of open innovation at SCA?

Section 4: Managerial Roles
1. Is there one particular person in the organization, a so-called OI Champion, who was responsible for spear-heading the open innovation adoption process and acting as a
liaison between top management and the rest of the organization? If so, please describe their responsibilities to the best of your knowledge.

2. Please recount the general attitudes of employees in your division to the adoption of open innovation in the organization. What methods were implemented in order to counteract any employee negativity?

3. What, if any, changes were made in the organizational structure upon the adoption of open innovation? What implications did these changes have to the management of innovation activities? Were there any lay-offs due to the re-organization?