Open Innovation at MNCs:
A Case Study at Tetra Pak

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Introduction

Background

Historically, companies put money into research and development (R&D), which yielded new products, revenue streams and increased customer satisfaction, which in turn led to new money invested into R&D. This was an ongoing cycle, and the most successful companies could attract the best employees. This is the traditional closed innovation (CI) system. However, with an abundance of knowledge made visible due to geopolitical, communicational and economical changes, it became harder to keep ideas within the company boarder, which resulted in a new, more open paradigm (Chesbrough, 2003).

The term open innovation (OI) was coined by Chesbrough in his book Open Innovation: The New Imperative for Creating and Profiting from Technology (2003), where he defined it as: “a paradigm that assumes that firms can and should use external ideas as well as internal ideas, and internal and external paths to market, as the firms look to advance their technology. Open innovation combines internal and external ideas into architectures and systems whose requirements are defined by a business model.” (Chesbrough, 2003, p. xxiv). The concept has gained considerable traction since first documented and now occupies a significant role in many academic and industrial innovation practices (Chesbrough & Bogers, 2014). Following the rapid expansion of the OI concept, the term has inevitably been subject for plenty of different interpretations and people commonly substitute a subset of the field for the whole (Chesbrough, 2017). However, at its essence, OI is about leveraging the dispersion of knowledge. Chesbrough (2003) explained the different principles of closed and open innovation, shown in table 1. He also illustrated the different paradigms’ R&D processes, as shown in figure 1.

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<tr>
<th><strong>Table 1: Principles of CI vs OI (Chesbrough, 2003)</strong></th>
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<td><strong>CI Principles</strong></td>
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<tr>
<td>The smart people in our field work for us</td>
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<tr>
<td>To profit from R&amp;D, we must discover it, develop it and ship it ourselves</td>
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<td>If we discover it ourselves, we will get it to market first</td>
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<td>The company that gets an innovation to market first will win</td>
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<td>If we create the most and best ideas in the industry, we will win</td>
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<td>We should control out IP, so that our competitors do not profit from our ideas</td>
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By utilizing OI, one can capitalise on the dispersion of knowledge by gaining new ideas, share risk and increase speed to market (Bingham & Spradlin, 2011; Munsch, 2009). Companies can, through OI, learn quicker and less expensively, develop new capabilities and create new markets (O’Connor, 2006). However, there is no inherent proof that OI works, there are only success stories and conclusions drawn from independent cases (Brattström, 2018). Aalders et al. (2014) also conclude that there is no consensus on whether it works or not as researchers find both positive, negative and neutral outcomes from OI efforts. Certain environments, however, have been more investigated than others in research. For instance, a search on Lund University Library’s database of academic publications with the search words “open innovation” and “SME” yields 744 hits. The combination of “open innovation” and “MNC” or “large corporations” yield 21 hits respectively. SME being an abbreviation for small and medium enterprise, and MNC for multinational corporation. There seems to be a knowledge gap in literature as to how OI works in the MNC setting. Furthermore, the medium- and high-technology manufacturing industries are both part of industries where OI is implemented the most (Chesbrough & Brunswicker, 2013). Hence, to decrease the identified knowledge gap, Tetra Pak, an MNC in the said industry, was chosen for a singular case study in order to focus on the MNC factor.

**Issue of Study**

The master thesis was conducted at Tetra Pak, a multinational, privately owned, food packaging and processing company in the business to business (B2B) setting. In 2017, the net sales were €11,5 billion, they employed 24,800 people and operated in over 160 countries (Tetra Pak a, 2018). They have a history of renowned innovations and have with their innovations, become the market leader within their industry. In recent history, they have tried using OI for certain projects in an ad hoc manner, but do not have any clear vision, organisation or process for OI. This master thesis aims to describe the role of OI at Tetra Pak, and as such, aims to fill the theoretical gap for how OI fit within a MNC.

**Purpose**

The main purpose of this master thesis is to develop increased understanding of how a manufacturing MNC can gain knowledge and improve its usage of OI. The following three research questions (RQs) are thus defined and investigated in the context of Tetra Pak. The RQs aim to operationalise the main purpose.
RQ1: What is OI and how can it be defined?
RQ2: What are the barriers for OI in companies and how can they be addressed?
RQ3: When, where and how should OI be used?

Method
The master thesis was designed as a singular in-depth case study with a systematic combining approach, as described by Dubois and Gadde (2002). In this approach, the researcher does not follow a linear project approach (abductive method), but instead, goes back and forth between different research activities such as empirics and theory, and thus expands the understanding of both areas. The framework stems from the fact that theory needs empirics to be understood and vice versa. By matching findings with theory, the researcher can avoid forcing empirics to fit into preconceived ideas of the area and instead adapts the theory investigated to the data that is found. Thus, redirection can be made in relation to what theory to focus on and encompass emerging areas of interest.

An important foundation of the master thesis was the conducted literature review. The main source was Lund University Library and its online search engine alongside Scopus where number of citations could be checked. Some sources were included by reference from the supervisor at Lund University. The articles and books were ultimately selected based on relevance by reading abstracts and number of citations on Scopus. From the start, the search word “open innovation” was used as a primary screening, and later the terms such as open organisation, intellectual property, implementation, barriers, MNC and definition were added to narrow down on specific areas.

The empirical data gathering was mainly of the qualitative nature and was conducted by interviewing 27 people. 21 of them being with employees at Tetra Pak and six of them with external parties. The interviews were semi-structured and to validate the results, a workshop and a survey were conducted. In order to gather data from different knowledge sources, five interviewee categories were used. Different interview guides were made for each category, due to their different knowledge base. The number of interviews per category were 11, 3, 7, 3 and 3 respectively, and, the categories were:

Within Tetra Pak:
1) People who have worked with OI first hand
2) Legal advisors
3) Managers

Others:
4) OI intermediaries (innomediaries)
5) People involved with OI activities at other MNCs
An outline of the work process can be seen in figure 2.

![Figure 2: Work Process](image)

Theoretical Framework

To answer key questions, such as, if OI works, how to measure it, what barriers there are and when, where and how to use it, a definition of the concept is vital. There are different definitions found in literature (Tynnhammar, 2017), and they range from “(…) use external ideas as well as internal ideas, and internal and external paths to market (…)” (Chesbrough, 2003) to including different processes in order to distinguish between activities (Gassman & Enkel, 2004), as seen in figure 3, and even definitions opting for a scale of openness instead of a binary one (Tynnhammar, 2017), as seen in figure 4.

![Figure 3: Different OI processes (Gassman & Enkel, 2004)](image)
One main barrier to OI is the legal aspect and there are different ideas on how to use intellectual property (IP). According to Holgersson and Granstrand (2017), when it comes to OI, the main reasons for patenting are to protect yourself legally and increase your bargaining power. They explain that even though it might seem contradictory, patents play an important role in OI as it enables interorganizational innovation processes and technology trade. However, von Hippel and von Krogh (2006) argue that freely revealing your IP will promote others to use it, learn from it and improve it in a manner that benefits you. One of the cornerstones for this argument is that secrets are hard to keep and that there are lots of other knowledge holders out there. Bhaskarabhatla and Hegde (2014) suggest that a strict pro-patent strategy might stem the flow of information and knowledge between organizations and decrease the development of complementary products by other firms. Other main categories for OI barriers, as proposed by Juiz & Oumlil (2016), are shown in table 2.

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<th><strong>Table 2: Main categories of OI barriers (Juiz &amp; Oumlil, 2016)</strong></th>
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<tr>
<td><strong>Environmental barriers</strong></td>
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<td><strong>Managerial and organizational barriers</strong></td>
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<td><strong>Individual barriers</strong></td>
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<tr>
<td><strong>Cultural barriers</strong></td>
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Many different authors have undertaken the task of exploring the topic of OI implementation. However, no coherent framework on the topic have emerged and the results from the attempts to establish OI implementation expertise are, according to Marcolin et al. (2017), generally unusable. A conclusion they share with other authors (Bergman et al., 2009). Despite this, they argue that a structured outline for OI implementation can be drawn.

Eidam et al. (2017) suggest five steps for those who want to implement OI in B2B process-companies, namely; define goals and motives, decide what information you can share and who is responsible for that
task, develop and align current tools with your need, estimate time and resources needed and have top management support.

Furthermore, Chiaroni et al. (2011) identified four levers for facilitating the implementation, shown in table 3.

**Table 3: Four levers for facilitating OI implementation (Chiaroni et al., 2011)**

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<tr>
<th>Networks</th>
<th>Enabling the identification and collection of information from multiple sources</th>
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<tbody>
<tr>
<td>Organisational structure</td>
<td>Adapted to support OI by introducing, for instance, internal networks for reaching and integrating external knowledge, cross functional teams and new organisational roles such as OI champions</td>
</tr>
<tr>
<td>Evaluation processes and metrics</td>
<td>Adapted for external information and situations with large technological or market uncertainty</td>
</tr>
<tr>
<td>Systems for knowledge management</td>
<td>Enabling dissipation, sharing and transfer of knowledge within the company and also between the company and external parties</td>
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Moreover, OI intermediaries, or innomediaries, can be used as brokers and to facilitate OI activities. They have large networks of solvers and plenty of expertise within OI. They can facilitate activities such as challenges, workshops, hackathons etc.

**Result**

There was no true success story found at Tetra Pak within OI, since no open activity had resulted in a new product or other revenue generating products or technologies. The reason that the activities investigated were not successful in this manner could be argued to derive from the solutions not being applicable in the Tetra Pak system. The solutions generated from open activities were either not applicable in the processes at Tetra Pak, or simply too expensive in their scale of business.

**OI Definition**

The definition of OI was found to be different in both academia and between interviewees. There does not seem to be any consensus regarding what the concept entails. In academic research, the definition mostly differed on how well different processes are defined and if the term should be binary or based on a scale. In interviews, the concept differed even more and went from only being about the number of external parties involved, going outside of your own development team (even internally), and differing between working with known external parties and exposing your need for unknown parties. Since the view on OI is so different in theory, at Tetra Pak, and by external parties, finding a suitable definition for Tetra Pak is vital for its usage. If people do not speak of the same thing when discussing OI, it is difficult to understand its implications in cost, expected outcome and measurement. Based on interviews at Tetra Pak, most people believed the definition should be narrow in other to separate it from other ways of working with external parties, such as scouting and conducting joint-development projects with
previously known partners. The people suggesting this type of distinction mostly viewed OI to be when you expose a need openly, and as such, use open channels to send out a request for proposal (RFP). Hence, there are mainly two different approaches to take when defining OI at Tetra Pak. Either you can use the concept from the theory and employ a more open corporate strategy where formulating open RFPs is a part of it, or you can use a narrower definition where examples and expected costs, time consumption and outcome can be shown. In both scenarios you could employ a scale of openness instead of a binary one.

The authors suggest the following definition for OI at Tetra Pak:

“Open innovation is when a company seeks specific solutions, technologies or competencies outside the company’s current network. Which is done by exposing the company’s needs for, not in advance chosen recipients.”

The proposed definition focuses on the inbound process of OI and distinguishes itself from previous definitions by stating that the need should be exposed to not in advanced chosen recipients.

**OI Barriers**

Some of the main barriers that are highlighted in literature are legal aspects such as loss of IP and IP management (Berntsson Svensson & Fernandez, 2017; Eidam et al., 2017; Juiz & Oumlil, 2016), resources (Eidam et al., 2017; Birkinshaw et al., 2015; Juiz & Oumlil, 2016), governance (Birkinshaw et al., 2015; Juiz & Oumlil, 2016) and cultural (Juiz & Oumlil, 2016). The analysis of the master thesis was based on these categories, where governance includes OI related processes and cultural include the individual aspects discussed by Juiz and Oumlil (2016), such as lack of internal commitment. Based on interviews conducted, both internally and externally, the addition of corporate strategy was made.

At Tetra Pak, legal aspects were mentioned in almost every interview but was only ranked as the fifth most important barrier in the survey, indicating that it is a present barrier that most people think of at Tetra Pak, but not the most critical. However, some viewed having legal routines in place as a prerequisite for OI. The way Tetra Pak works with IP, viewing it as an enabler for collaboration, is by the authors argued to be in line with what literature suggests (Alexy et al., 2009), and a reason legal aspects was not ranked higher could be that people believe that it is already in place. This is supported by the fact that no open activity has resulted in a court order. Instead, resources was the highest ranked barrier at Tetra Pak, and it has happened that OI projects were not approved due to direct monetary costs, such as a fee to proposed innomediary, but the most common issue discussed by the interviewees was the commitment of time from Tetra Pak’s own employees, most notably due to the screening of submissions.

Another time-consuming activity is the preparation, e.g. preparing agreements, rewards and RFPs. The lack of a clear process makes time and cost uncertain for OI activities, an issue further enhanced by the internal debit system. As such, some proposed that a central OI budget should be used, whereas some believed that if the value was communicated and the activity facilitated, managers would make room for OI in their budgets, when it was the best alternative, which would mean that no central budget was needed (apart from costs associated with communicating and facilitating).
The issue that there is no real governance or established process for OI has been stressed by almost all interviewees at Tetra Pak. There have been different opinions as to whether or not consultants and innomediaries should play a large role for this function. Some believe that they could mitigate the knowledge gap, and others that they might enlarge the issue to profit from it. Several people have suggested that Tetra Pak should have a OI champion that people can turn to with questions about OI and that can act as a strategic buyer of OI services.

Another issue is whether top management should promote OI from the start or if value should be proven first. However, for top management to support it, several people have made the point that value must first be proven at Tetra Pak. Proving value is also something that could help with the cultural barriers as people get to work with the concept and see if it works. As a start, external success could be used to motivate experimenting with OI. However, how to experiment is tied to the last barrier of confidentiality as Tetra Pak might not want to show in what areas they are looking outside company boarders for assistance. This might indicate that Tetra Pak is struggling within this area, which could send negative signals to customers. It could also be dangerous to let competitors know what Tetra Pak is looking at. At Tetra Pak, confidentiality is historically advocated. Seeing that it is such a niche industry with a few large players they cannot simply use the industry tag on their OI proposals but must remove the tag altogether. Removing the tag would mean that the context is unknown for the ones trying to solve the problem, which might make it too difficult and increase the number of low quality solutions that do not consider the system limitations, tying back to the reason the investigated activities failed. The general actions to overcome the identified barriers can be seen in figure 5.

<table>
<thead>
<tr>
<th>Legal</th>
<th>Resources</th>
<th>Governance</th>
<th>Cultural</th>
<th>Corporate Strategy</th>
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<tbody>
<tr>
<td>• It should be a top priority</td>
<td>• No long-term central budget is needed</td>
<td>• OI focal point/OI champion(s) should be used in</td>
<td>• Most effective way to change is to allow people to</td>
<td>• OI should be used for marketing in order to attract</td>
</tr>
<tr>
<td>• IP should be viewed as an enabler</td>
<td>• Spreading information and helping with</td>
<td>order to have somewhere people can turn to and have</td>
<td>try working with OI</td>
<td>potential future employees and collaboration partners</td>
</tr>
<tr>
<td>• Fear of IP contamination is excessive</td>
<td>facilitation is enough</td>
<td>strategic buyers of OI services</td>
<td>• Another way to assist it cultural change is to</td>
<td>• No recommendation for disclosure of information can</td>
</tr>
<tr>
<td>and preemptive measures should be used</td>
<td></td>
<td></td>
<td>spread information about OI and its potential value</td>
<td>be made due to lack of knowledge of Tetra Pak’s</td>
</tr>
<tr>
<td>to avoid it</td>
<td></td>
<td></td>
<td>• Both internal and external projects could be used</td>
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<td></td>
<td></td>
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<td>in communication</td>
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Figure 5: Actions for the identified barriers
When, Where and How Should OI be Used?

When

As argued by both literature and the empirical study, outbound OI activities are more difficult for companies such as Tetra Pak to implement. Therefore, Tetra Pak should focus on inbound OI. There came many bids regarding what step in the innovation process OI should be used. Some say it should be used for understanding the underlying need, getting help when stuck or for idea generation. Tetra Pak is recommended to allow employees to determine for themselves, with the support of an OI champion, for what step in the process they want to use OI. It should be a pull-based system where knowledge of OI permeates the organisation. there should also be champions available to help facilitate OI efforts, and managers should decide for themselves when it is suitable to use OI.

Where

There have been different opinions on Where in the organisation that OI should be employed. Some believe it’s best suited for departments where it’s easily implemented such as digitalisation and services. Others believe that it should be implemented at R&D, because if you manage to implement it here it will be easier to implement it at other departments with less barriers. Many valid points were made by interviewees, that it might be harder to get desired results in certain areas, such as R&D within core, where the technology is very advanced and legal constraints are prominent, compared to services and digitalisation. OI is also seen as a favourable tool when engaging in new competence areas where Tetra Pak lacks key knowledge and when searching for breakthrough innovation outside of current core business. However, OI can serve a purpose at different departments in Tetra Pak and it is up to the managers to decide whether to utilize OI or not in their projects. This means that, the recommendation is the same as for When; a pull-based system where the suitability of OI for a project is the key factor, not which department to project is located in.

How

No coherent implementation framework exists in literature; however, it gives some recommendations what one might consider when implementing OI. For example, the implementation of OI champions who employees can turn to for information and help. OI Champions have also been brought up during both internal and external interviews. For instance, with SCA, that are using them in their OI practice. During the interviews the need for a Tetra Pak success story was also stressed, since an internal success story would make it easier to show the advantages of OI at Tetra Pak. There have also been recommendations that Tetra Pak should run several smaller OI challenges to get used to working with it and increase the chance of finding a success story.

Based on this, four recommendations on How Tetra Pak should work with OI are presented. Firstly, they should run several smaller OI challenges to find a success story and learn. Before having their own success story, they should put together a presentation of success stories from companies Tetra Pak can relate to, which can suffice as an internal marketing item. Secondly, one or more OI champions should be appointed, to act as the focal point for OI activities and for people to turn to for questions. Thirdly, knowledge should be spread about the concept and how it can be utilized at Tetra Pak, with the help of informative documents and a video on OI. Several interviewees suggested that the initiatives and information should mainly come from the line managers, or middle management, to reach those who
work with the potential OI projects first hand. Lastly, in the beginning, innomediaries should be used to learn from them and to gain access to their networks and expertise.

Conclusion and Suggestion for Further Research

To conclude, the recommendation for Tetra Pak is to agree on a definition for open innovation. The suggested definition is: “Open innovation is when a company seeks specific solutions, technologies or competencies outside one's current network. Which is done by exposing one’s need for, not in advance chosen recipients”. Tetra Pak should also introduce a person or network as a focal point for open innovation and run several smaller open innovation challenges to find a success story within the organization. Furthermore, they should spread knowledge about the concept. The main barriers for adopting OI were: legal aspects, resources, governance, cultural aspects and corporate strategy. In order to determine the value of OI, it has to be measurable. Therefore, the next research area for Tetra Pak should address the issue of OI metrics.

With the addition of “not in advance chosen recipients”, the definition of OI for Tetra Pak distinguishes itself from previous definitions found in literature. This contributes to a new way of defining OI for MNCs. The definition aims to separate OI from related concepts of external innovations and could lead to a start of an interesting academic discussion. Another contribution is how OI fits in a MNC and how to overcome identified barriers. Barriers are identified in literature, but there is a lack of discussions on how to overcome them. Lastly, seeing that the usage of OI oftentimes is investigated at firm level, it would be interesting to investigate if there is a general department at firms, such as marketing or services, where OI is especially suited.
References


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