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Selecting the Right Strategy:
How are user innovations linked to the product life cycle for mature industries?

By

Mikael Cordes and Marko Stugbäck

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Abstract

Companies are dependent on continuously provide the market with new products to keep its market position and profitability level. The companies examined in this thesis are two bigger Swedish enterprises that have a long history in a mature business-to-business context providing industrial goods to the market. This work examines how users are involved in the different innovation and product development activities.

The problem is to understand how business-to-business companies co-operate with stakeholder and users, when in the product life cycle that is done, and who are the ones doing the actual innovation.

The methodological approach for the work was deductive, building a theory including innovation, strategy and user theories that was empirically tested and followed by an analysis and conclusion of the found evidence.

Key findings: Most if not all innovations in mature market are routine ones. There is lack of strategic focus due to micromanagement that shifts focus rapidly. Innovations are often found in the beginning and in the end of the product life cycle. Mature markets tend to utilize a more closed innovation model as opposite to an open model. Users are not heavily involved in the actual innovation process. Stickiness and tacit knowledge is quite big in large corporation event though there is said to be a strategic focus on the customers.

Implications: More involvement of users, especially lead users, will lead to more innovations. Utilising strategic buckets of different sizes for spreading the resources on different innovation types (routine/disruptive/discontinuous) to become successful.

Key words: Product strategy, user innovation, lead user, mature firms, Business-to-Business, Product Development Process

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1   Introduction

This thesis looks at two large international enterprises and how they work with innovations. Innovations are studied in the context of when, how and who. When is discussed with regards to what phase in the product life cycle where there are more or less innovations and if there are some kind of correlations of the type of innovations in the different phases. How is presented as a discussion regarding the different strategies that the companies are deploying to fulfil the goals of the companies. Finally, who are the users and other stakeholders that are doing the actual innovation.

1.1   Background

Companies are heavily dependent on continuously bringing new products and solutions to the market (Cooper, 2012) to keep the market position, and to be able to compete and gain market shares and profitability. Without continuous evaluation and active management of the product portfolio, companies do not continue to grow and evolve, and will in the long-term likely be replaced by other more successful companies on the market. This is where the innovations and the actual handling of the innovations needs to be defined and the deployment of a suitable strategy.

As companies have a desire to be profitable, successful and earn money to the owners (Keat, et al., 2013) it is necessary to focus on the customers. It is important to focus both on the very satisfied and on the very dissatisfied ones (Best, 2014). The profitability is higher on the customers who are very satisfied and it is thus necessary to both involve these customers (users) to a higher extent and let them, as early adopters, leading the way for other users.

The un-linearity of the Kano model (Tontini, 2007) is another way at looking at the desire to exceed expectations and thus satisfying the customers to greater extent. This model relates to the definition of the lead user concept/model that is presented in more detail in chapter 2.3.

1.2   Problem Discussion

As Kyle (2016) describes, a product is more than just the product itself. She points out the importance of carefully combining many factors to become successful. Supplier needs to take many decisions and set up a long term-plan to make whole organization focus on solving this complex task, this is defined as a strategy (Johnson, et al., 2015). A product is the connecting point between a customer and the producing company (Kyle, 2016). Not all customers want the same things, as there are different needs and usage of the same product. Some customers innovate more than others depending on their actual needs. Figure 1.1 presents the relationship between products, suppliers and consumers.
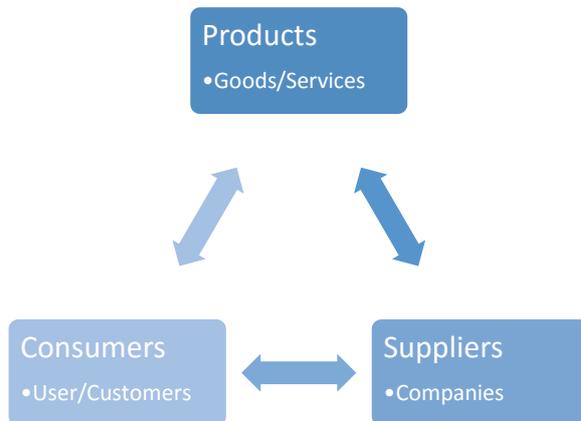
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Figure 1.1 Relationship between Products, Consumers and Suppliers

Meanwhile, we are facing a paradigm shift; from manufacturers which are suppliers of products that create value to the customer towards to manufacturers which have a value creation process together with customers and users (Dawar, 2013). Literature has put a lot of light on user innovations during the last decades and what the user's characteristics are and how to select and incorporated them in the product development process (Takeuchi & Nonaka, 1986) in order to be successful (von Hippel, 2001; Eisenberg, 2011). Innovations can be created both from the suppliers and from the consumers (von Hippel, 2005). The suppliers/manufacturers can be seen as rather imperfect agents (Keat, et al., 2013) as they (most) likely have different needs and objectives than the actual users of a good or service.

The innovation value chain (Hansen & Birkinshaw, 2007) consists of different phases. The first phase, *Idea generation*, is where the ideas are generated. These ideas can be found in-house (within a division), through cross-pollination (from other division within the same company) or externally (external influence from outside the firm). The second phase, *Conversion*, consists of selection (selection and funding of the ideas) and development (transforming the idea to a prototype or similar). Lastly, there is the phase of *Diffusion*, which is where information regarding the new product is spread, both internally within the company and externally to the customers. Figure 1.2 presents these phases and their relation.
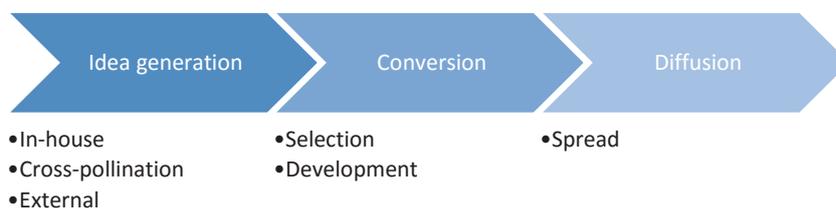
Figure 1.2 Different phases in the innovation value chain (Hansen & Birkinshaw, 2007)

Another definition of the innovation value chain can be found in a report from (Jain, 2015). This model uses five different phases instead. The phases are a little bit more detailed than the ones defined by (Hansen & Birkinshaw, 2007). Basically this is the same as the one presented in (Hansen & Birkinshaw, 2007). It does not matter what the phases are called it is just a matter of putting the ideas and innovations in boxes spread out chronologically (Gassmann, et al., 2010). When moving on

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in the timescale fewer and fewer innovations are deployed as there is some kind of tollgates on how to select between the innovations.

The aim with this thesis is to strengthen some findings from previous research related to user involvement (Al-Zu'bi & Tsinopoulos, 2012) and additionally more discuss how to select and incorporate users (Fuchs & Schreier, 2011; Hienerth, et al., 2014; Mahr, et al., 2014) into different phases of the product development process life cycle (Best, 2014). Figure 1.3 defines the product life cycle. A user is defined as an individual customer, a group or a company using products (Eisenberg, 2011). This thesis will focus on users that are of the type Business-to-Business (B2B) and not Business-to-Customer (B2C).
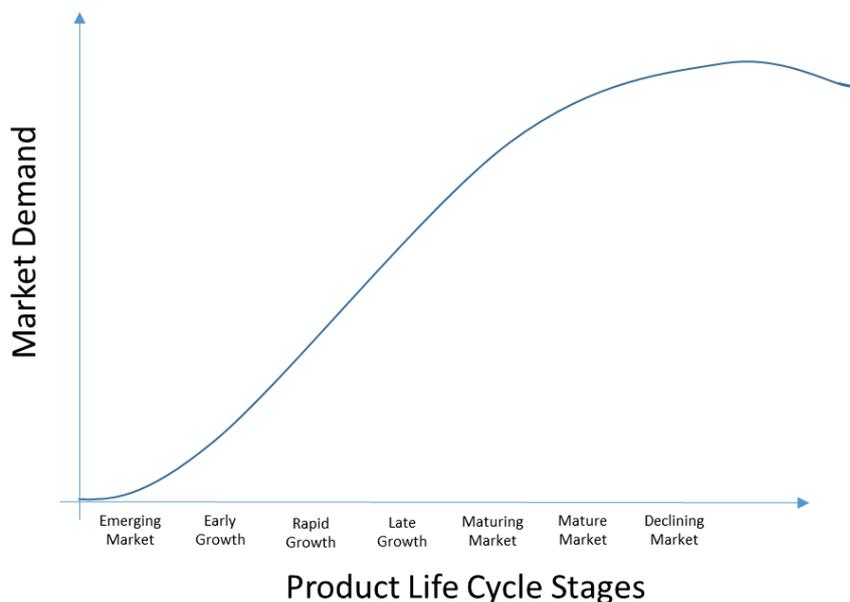
Figure 1.3 Product life cycles (Best, 2014)

The unique product itself that can be a physical or service based product and combined with other elements it becomes successful. The product and the other elements can be referred as a marketing-mix (Best, 2014), an easy and understandable marketing mix (aka 4P) is presented below:

- Product – the actual product that is made to satisfy the demands of the consumer.
- Price – the price that the customer is willing to pay for the product, depending on strategy it can change over time, an equilibrium price (Keat, et al., 2013) is defined as the price where there is no surplus of goods.
- Promotion – marketing and promotion to sell the product.
- Distribution (Place) – where is the product available, where the customers can access the product.

All of these different elements of the marketing mix can be innovated on, it is not only the actual product that is innovated on. This means that there can be innovations on price models, the actual product but also how the promotion is performed and where the distribution is made.

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Literature suggests that a supplier of products basically needs to investigate and understand who the customers are, who the competitors are, what the customers value and want most, and how that should be materialized (Best, 2014; Porter, 2008). There are several actions needed when creating an attractive product positioning to compete within the markets and gain the desired shares of it. There are several activities needed to be done by the product management, how to differentiate from others (product-, service- and brand differentiation), what brand identity the product should signal and how the product line should look like (Best, 2014).

Therefore, the first viewpoint of this thesis focuses more on **how** businesses collaborate with its surroundings and how they enable to incorporate innovations into their product development activities. It will present the open innovation model (Chesbrough, 2003) and the five innovations vectors (Cooper, 2012) and discuss how businesses can use those regarding user involvement and innovations.

Secondly, the thesis will discuss the topic in the context of product life cycles (Best, 2014) and looking at different strategies (competitive advantages and offensive/defensive) with regards to **when** user involvement and user innovation is beneficial and not. It is interesting to see if B2B business have a clear strategic direction (Sull & Eisenhardt, 2012) in how to involve users and other stakeholders in the innovation and product development.

Finally, a discussion of **who** is innovating. The idea of lead users (von Hippel, 2005; Eisenberg, 2011) and the development of toolkits will be presented and discussed. Discussions of how user and customer co-creation can create value and knowledge in the innovation and product development process (Mahr, et al., 2014) and what effect user involvement have on the actual product variety and its implications (Al-Zu'bi & Tsinopoulos, 2012). To gain more understanding about the user-producer ecosystem concept (Heinerth et al., 2014) a presentation will be done and discuss how businesses explore and exploit business opportunities.

1.3   Problem Formulation and Purpose

This thesis will focus on the first part of innovation value chain (Hansen & Birkinshaw, 2007) which is the actual handling of generated ideas and innovations. It will discuss how companies are involving internal resources, different collaboration forms, customers and other stakeholders (mainly regulatory bodies and universities) to maintain the overall goals and perspective of the business. This to increase the understanding around how B2B companies work with their customers and how customers are empowered (Fuchs & Schreier, 2011) in the product development. The problem is to know when and how B2B companies involve users in the innovation and product development process, and which strategies to select to be successful when linking the innovations to the product life cycle (Best, 2014).

The purpose is to empirically identify how companies are involving users in different innovation and product development activities (Sjödin & Eriksson, 2010) for mature industries. Built on literature and previous research within the field of product strategies, the evaluation is being based on who is innovating and how the theoretical models match what the companies really are doing (strategies) when working with innovation in the different phases of the product life cycle. This is important to study as there are more and more old corporations that needs develop a strategic focus regarding innovations. This leads to the following research question that will be in focus for the thesis:

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1.4   De-limitations

The field of innovation and how different companies are working with them is a broad field. There are differences in-between industries and also inside different enterprises. This thesis focuses on large international mature B2B enterprises. The customers to these companies are either in a regulated environment or rather traditional with long life cycle of the products (> 20 years). Thus the result of the study will most likely be different if other businesses were examined.

An additional viewpoint regarding user innovation would also be to study how the actual products are being developed (Takeuchi & Nonaka, 1986) and benefits/disadvantages with different methods dependent on what type of product it is. Although user innovation also concerns the actual development process, part of the conversion phase according to Figure 1.2, this thesis does not discuss it since it is more regarding the actual development of the products and not part of the innovation value chain part of idea generation which is the scope of this thesis.

Some rudimentary industry analysis with basis in the five forces (Porter, 2008) could also have been made and analysed to see how it fits with the different product strategies for the different companies and if possible to see if there are some patterns when user innovations have been successful. This has been omitted as the examined companies are of similar type and thus this is of lesser interest since the result would be the same.

Disruptive technologies are usually inferior in the beginning but when shall a company start to utilize them and how to involve the users (Tellis, 2006) to maximize the gain. It is also interesting to look at disruptive innovations (Christensen, 1997) and how these will influence the companies both in a historical way but also in the present and in the future and finally how user innovations are materialized into products from manufacturers and how they are incorporated into traditional product development activities (von Hippel, 2005). Disruptive technologies are typically characterised by the following:

- Early on in the life cycle, the disruptive technology is often underperforming the current technology
- The disruptive technology typically has features that are out of reach for the currently used technology and can be one or many of; cheaper, smaller, simpler or more convenient
- The most profitable customers and the leading firms are often not interested in the disruptive technologies which leads the way for new producers to increase their market share when the technology is mature enough
- There are continuous improvements of the disruptive technology and at some point in time the technology meets and even exceeds the standards of the existing technology
- At a breakpoint the disruptive technology displaces the existing technology

User innovations can be part of disruptive technologies and it is crucial for companies to search for them and incorporate them in the products. As these disruptive technologies are typical game changers it is of high importance for companies to have a strategy and a plan on how to handle them. The topic of user innovations related to disruptive technologies is a topic of its own and only discussed with a reference in the different innovation types; continuous, disruptive and discontinuous (Best, 2014).

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Although the thesis presents and discusses the who aspect and the characteristic of the actual innovators there is not any further discussion regarding on how a corporation can and should staff the departments to be successful in the innovations. The staffing can be made in different ways and some key things are noted by Amabilie (1997).

1.5   Thesis' Structure

The introduction containing the background, problem formulation and thesis de-limitations is followed by theory which summarise previous research relevant to the problem formulation. Chosen research method is presented in chapter three. The findings/results are presented in chapter four and chapter five present the analysis. The sixth and concluding chapter presents conclusions drawn from the research on user involvement in the innovation value chain and overall conclusions as well as suggestions for future research. At the end of this thesis are the appendices, presenting additional material that may be of interest to readers.

2   Theory

This chapter starts with a presentation of different innovation theories. First definitions and classification of different innovation types are made. Following the actual definition there are different theories which are suitable for mature markets/industries. These are the five innovation vector (Cooper, 2012) and the concept of open/closed innovations (Chesbrough, 2003). These theories can be deployed and used both for mature/declining markets (Sjödin & Eriksson, 2010) but also earlier in the product life cycle, see Figure 1.3. Further, they discuss the different aspects and elements (in-house, cross pollination and external) of the idea generation phase of the innovation value chain (Hansen & Birkinshaw, 2007).

Following the framework defined by the innovation types, the innovation value chain and the innovation theories different strategies are presented. These strategies are of the type of marketing strategies but also more regarding the actual strategy for how innovations are generated both internally and from external sources.

The last part of the theory section defines and presents the role and usage of lead users, advanced analogues, toolkits and stickiness. The first part of the theory section is used to present a framework, the second is aimed at discuss which active selections (strategy) that needs to be done and how the innovations can be made. Part three is the definition of who is doing the actual innovation and the different traits and characteristics of the users that are part of the innovation process.

2.1   Innovation Theory

This chapter defines different innovation types, presents the five innovation vectors and the open/closed innovation model as these are suitable theories for how more mature enterprises can innovate and continue being successful. The selection between innovations is key to the strategic direction that the corporation is heading. A faulty selection can lead to disastrous consequences and there are numerous historic examples of where the strategic decision has forced companies to more or less disappear (examples Nokia – mobile phones, Ronex – quartz watches, Facit – calculators).

2.1.1   Types of Innovations

There are different definitions of the different types of innovations. Best (2014) discusses innovation types as continuous, disruptive and discontinuous (see Table 2.1).

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Type	Description	Example
Continuous	Expected improvement of existing products, continuous evaluation within the already established product lines	Increasing amount of performance in a computer according to Moore's law is a continuous innovation as it has been the case from 1965 and is expected by the community
Disruptive	More game changing improvements of products that leads to a broader and wider market. Innovations of the type with lower cost or improved ease of usage.	The electrical car industry is in the middle of this as the batteries get better and better thus improved usage and lower cost.
Discontinuous	Creation of whole new markets for new types of products	The usage of clever algorithms for searching of the Internet as this did not exist before and a complete new market with advertisement have been created

Table 2.1 Different classification of innovation types

This is not the only definition of different innovation types. The definition found in Pisano (Pisano, 2015) utilises the terms routine, disruptive, radical and architectural instead but that is basically the same as Best (2014) is using. These models defined the same amounts of containers but the definitions differ. Pisano also added the matrix concept in the innovation landscape of looking at business model and technical competence and plotting the innovation types with reference to these categories.
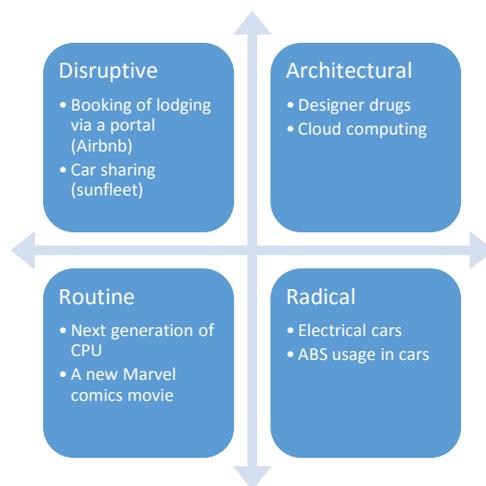
Figure 2.1 The innovation landscape (x - axis is technology competence, y - axis is business model) (Pisano, 2015)

Another take and definition of the different innovation types are presented by Cooper (2012). Here the diverse types are called new-to-the world, new product lines, additions to existing product line and improvements & modifications to existing products. All of the different types and definitions (Best, 2014; Pisano, 2015; Cooper, 2012) of innovations lead to one conclusion and that is that there is a need to categorise them. Thus, categorization is key to define them in different containers or buckets (Cooper, 2012) and be able to use and deploy different strategies in order to be successful. The usage of these buckets can then be used to define how much of the resources that should be

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used on each of the types. Depending on what type of business the corporation is involved with these buckets can look like the ones presented in Figure 2.2.
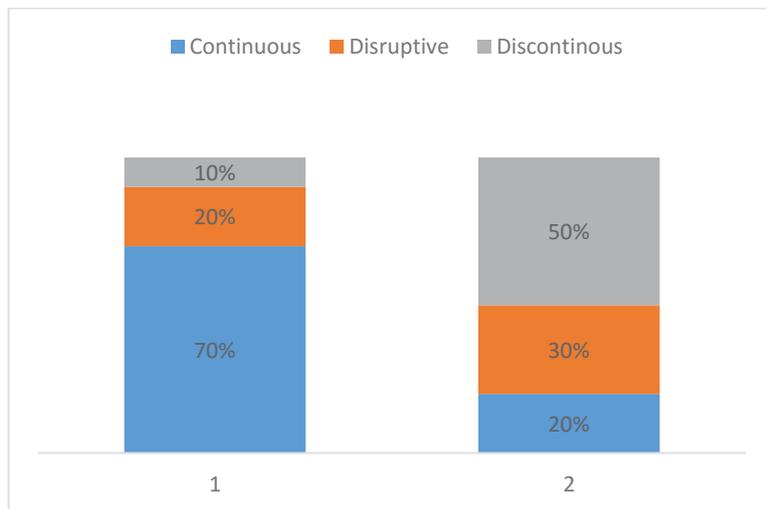
Figure 2.2 Different innovation 'buckets' on how resources strategically shall be utilized. Bar 1 is for a more mature market than Bar 2 which is riskier and can be used for markets that are moving more rapidly

Figure 2.2 presents an example of two different bucket distributions (Cooper, 2012). Depending on which part of the organization and what customers, there are these distribution curves can differ. By utilising some kind of model and a categorization within the corporation, it would enable and help the actual strategic decisions on how to select between innovations when knowing the size of the buckets.

2.1.2   Five Innovation Vectors

When working with mature markets there are some problems on how to be able to make the next breakthrough product (Cooper, 2011). The next breakthrough product is necessary to be able to meet the goals and objectives of the financial stakeholders in the company. Only deploying routine innovations can in some cases lead to a more commoditized market. An example is the home computer market which can be defined as commoditized for most of the producers since the actual branding is irrelevant. In addition, when looking at the mature markets where there is an installed base of already functional products it can be stated that the actual market is not increasing, instead it can actually be decreasing. One solution to this is to make bolder innovations. These bold innovations (Cooper, 2012) are defined as breakthrough products which are used as engines for the corporation now and in the future. There are some similarities with bold innovation and the creation of blue oceans (Kim & Mauborgne, 2004) regarding that a new scene is created. It does not solely depend on technical or technological innovation but can also stem from innovations regarding the business model. Studies have shown that projects concerning more radical improvements as new to world and new product lines have been decreasing (Cooper, 2011) since the 90's. This is quite alarming for the corporations working in a mature environment as this means that the innovations are mostly routine. Dependent of what kind of work force there is this can be highly de-motivational (Drucker, 1999; Amabilie, 1997).

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One theory that is explored for more mature markets (see mature and declining market in Figure 1.3) by Cooper (2012) where innovations are discussed and the definition of the five innovation vector is made, see Figure 2.3.
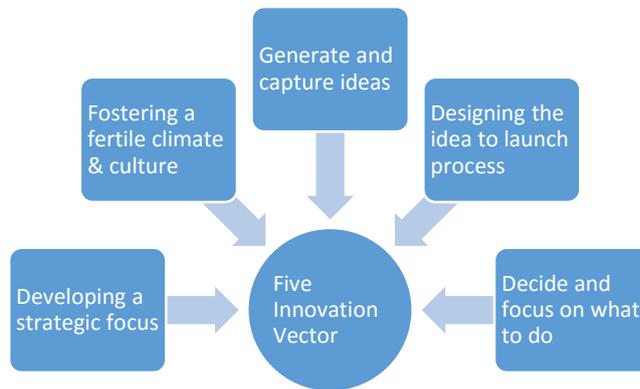
Figure 2.3 The Five Innovation Vector (Cooper, 2012)

These different parts are all necessary to be a successful innovative company. By using the vectors, it is possible to define and maintain an innovation strategy that helps the company both in the short run but also in the long perspective.

A short description of each of the vectors is presented in Table 2.2.

Vector	Description
Developing a strategic focus	First of all, there must be a direction and focus on what to actually do in order to streamline the organization
Fostering a fertile climate & culture	As it is the organization that is doing the actual work it is necessary to be in an environment that lets the resources do this.
Generate and capture ideas	When there is a strategic focus and a good environment/climate it is crucial to have the possibility to generate and capture the ideas that stem from this
Designing the idea to launch process	The ideas that are generated needs most likely to be handled in a different way than ordinary development projects.
Decide and focus on what to do	Lastly, by defining and communicating how much of the resources should be working on different things as maintenance, new products or innovations it will be more or less obvious what the organization shall focus on

Table 2.2 Description of the five innovation vectors (Cooper, 2012)

A reference and link between the five innovation vectors and the defensive market strategies (Best, 2014) which operate in the latter product life cycle stages is made. This means that user innovation can also be present in these stages but it is highly dependent on how the company is maintaining the products. When studying some products which appears to be innovative it can be concluded that it in some cases just is a matter of putting different technologies together and make a nice package of

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them, similar to some disruptive (Christensen, 1997) ideas. Thus innovation is not only a matter of inventing different stuff but also a matter on how to connect the dots and make different products work together for other things than maybe the intended use. For major companies and enterprises this is important as there could be a new market and the tricky part is how to innovate in order to find it. One of the keys to being successful is to create and capture the new demand and this can be done by utilising the users and letting them innovate.

Related to the five innovation vector is also the stage-gate process (Cooper, 2014) which is basically a chevron process with no or very little concurrency of the phases, similar to the lifecycle for process equipment (Sjödin & Eriksson, 2010). Lately (Cooper, 2014) there have been development of more agile methodologies for the actual innovation process. But it does not matter what kind of process that is used, may it be stage-gate (Cooper, 2014), trial & error (Gassmann, et al., 2010), waterfall (Tonnquist, 2012) or something more agile, adaptive and accelerated (Cooper, 2014) there still is needs for the five innovation vector to be able to generate innovations as this is the basis for creation of bolder innovation.

2.1.3   Open and Closed Innovation Model

Different industries have different obstacles that can prohibit suppliers from entering the market. Thus also reduce further development and innovation of the actual product due to the high barriers (such as cost and knowledge) that are surrounding a specific industry segment. Previously internal R&D was seen as a really valuable asset and which also helped to enforce the barriers (Porter, 2008) for companies (Gassmann, et al., 2010) trying to enter the market. This is however changing as the concept of open innovation (Chesbrough, 2003) is defined. A definition (Chesbrough, et al., 2006) of 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'. Initially the concept of open innovation was merely a R&D matter and thus more from a technical point of view. Later research has looked into different perspectives (Gassmann, et al., 2010) for the future of open innovation.

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Thus in the past with large research centres and more centralized knowledge, innovation was more
closed where there during the research phase was a lot of ideas and innovation. But later when
transforming the concepts to products into development project the amount decreased and finally
when reaching the market, the innovations are very few. The closed innovation model is presented in
Figure 2.4.
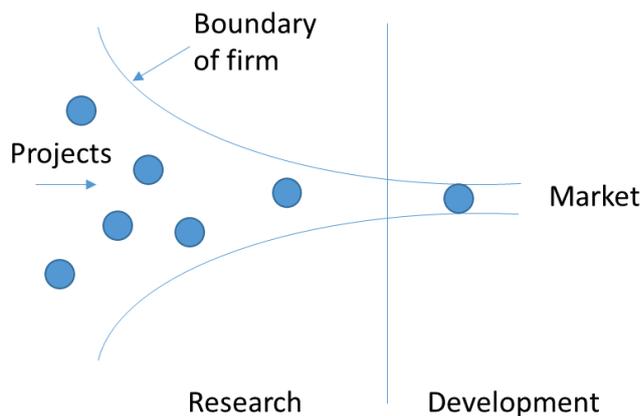
Figure 2.4 Closed Innovation Model (Chesbrough, 2003)

In the closed innovation model the companies are innovating by themselves and it is from their own
ideas and concepts that the products are finally being brought to the market. The rather negative
rally about not invented here stems from this model as everything that does not originate from the
company itself is not coming to the market. One reason for a shift towards an open innovation model
is the mobility and different traits of the knowledge workers (Drucker, 1999). The following issues are
important for knowledge workers:

- Task – the task is the important question as opposite to manual workers where it was how to
  do it
- Autonomy – the knowledge workers have to manage themselves
- Continuing innovation – there has to be innovation within the task
- Continuous learning/teaching – learning and teaching continuously is important
- Quality output – apart from the produced quantity, the quality is probably more important
- Asset vs Cost – knowledge workers shall be seen as an asset and that they want to work for
  the organization

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In the open innovation model, see Figure 2.5, companies use innovation both from within but also innovation and projects developed by other companies to become more successful. In this model the boundaries of the firm are porous and some of the innovation and ideas are 'released' to other companies for development of other products.
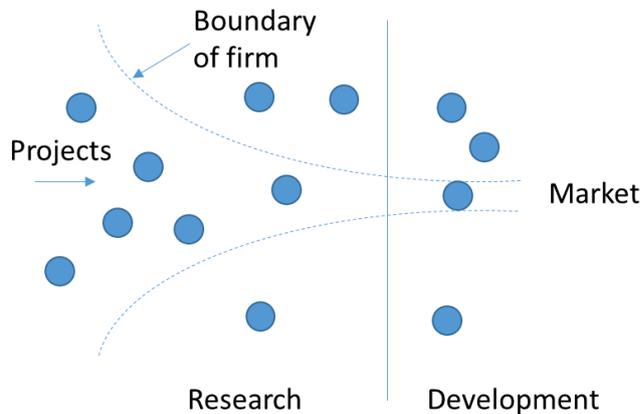
Figure 2.5 Open Innovation Model (Chesbrough, 2003)

With the introduction of the open innovation model (Chesbrough, 2003), companies have decided to focus their activities on three different areas. The first area is the *actual funding*. When looking at this activity there are two types of innovators; investors and benefactors. The investors were originally the internal funds for corporate R&D but have emerged towards venture capital and other investors. Benefactors are active in the earlier phases of innovation and can be funded by state or different philanthropy initiatives. Secondly there is the *generation* of the innovation. Different types of generation are present; explorers, merchants, architects and missionaries. The explorers are the idea/innovation generation that is made by the firms internal R&D departments. Merchants uses intellectual property to sell innovation to other companies. A more holistic view is made by the architects which puts a complete product together like a Lego system. An example of the missionaries is the open source software commodity where there is a higher cause than own financial wealth is driving the innovation. Finally, there is the *commercialization* of the innovation. This can be achieved by one of the organizations; marketers and one-stop centres. The marketers focus on developing a deep and thorough understanding of the needs of the customers. This understanding will lead to a competitive advantage of the company and thus maintaining or even increasing the market position (Best, 2014). Further due to the superior understanding the product can be customised to suit the needs of the users. One-stop centres is more or less only to the take the best ideas and make them to an attractive package for the customers which then will be satisfied.

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The perspectives (Gassmann, et al., 2010) of the open innovation concept are one way of categorization of the different future streams within the concept of open innovation. There exist nine different perspectives as presented in Table 2.3.

Perspective	Description
Spatial	Regarding the globalization of the innovation there is an increased internationalization and decentralization of the innovation and research centres.
Structural	This perspective is of that the type of work has been divided. The division of work leads to more specialists and closer interaction to with the users
User	As described in (von Hippel, 2005) this is the part of how users can get involved and which benefits and pitfalls there is.
Supplier	When innovations shall be made it is also necessary to utilize the knowledge and experience of the suppliers. Dependent on where the company is heading regarding a downstream advantage there is increased collaboration with the actual suppliers.
Leverage	It is necessary to raise the sight to be able to see and deploy new markets and thus aiming to find new markets with less competition.
Process	Innovations are generated either from outside-in, inside-out or coupled. Domination within the field of innovation is outside-in which means that innovations come from the outside and is then incorporated in the products
Tool	By utilising tools and toolkits (von Hippel, 2001) users can more freely innovate as there can be help and support from external sources.
Institutional	Previous there were some institutional perspective of the innovations but nowadays innovations tend to flow more easily and there are less barriers when distributing them.
Cultural	The mind-set of letting others help and utilizing knowledge and ideas from other sources is a cultural perspective

Table 2.3 Open innovation perspectives (Gassmann, et al., 2010)

2.2   Strategies

The word *strategy* comes from Greek and means the art or science of how to conduct *war*. One fundamental part with a strategy is to align the troops striving for the same goal, how to win the *war*. It is equally important for a company to align the organization to strive to win the *war* at the market place. How well do all functions such as product development, production, marketing and sales force etc. need to know about the product strategies to be as successful as possible in their roles (Collis & Rukstad, 2008)?

As mentioned a strategy is to align the organization to certain objectives or a vision to strive for. Different core offensive and defensive strategies exist (Best, 2014) and can be deployed depending on what the company want to do. Cooper (2012) emphasises also the importance of having a strategic focus that is one of the vectors in his innovation model.

Different offensive and defensive product strategies can be deployed dependent on what phase the market is in that is going to be penetrated (Best, 2014).

By using the users and their innovations the company can invest to grow in markets where they were not present before. Further when looking at the idea to broaden the customer base by doing business with several different markets as a consequence of more user involvement it is a strategy to

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enter new markets. Example of both the defensive strategy protect position and optimize position is to involve users as these will be more positive if they have contributed to the actual end-product.

There are limitations in the resources and thus it is necessary to adhere to a well-known strategy to get the most out of the scarce resources used for marketing. This strategy shall comply with the overall goals and objectives of the company. Typically, a company's objective contains something regarding increasing the wealth of the shareholders and owners and the primary goal according to economists is to maximize the company's profits (Keat, et al., 2013). When looking at the offensive strategies they are typically utilized more in the earlier product life cycles than in the latter. The opposite is valid for defensive strategies which basically start at late growth. The lead user concept (von Hippel, 2005) is basically early adopters in the *Emerging Market* and *Early Growth* phases. User innovations are needs from customers and thus there can be rationales from the customers to innovate further on in the lifecycle of a product. The recommended strategies (Best, 2014) are presented in Figure 2.6 for Market Demand versus Product Life Cycle Stages. A portfolio is basically each of the products placed in the different phases in the product life cycle.
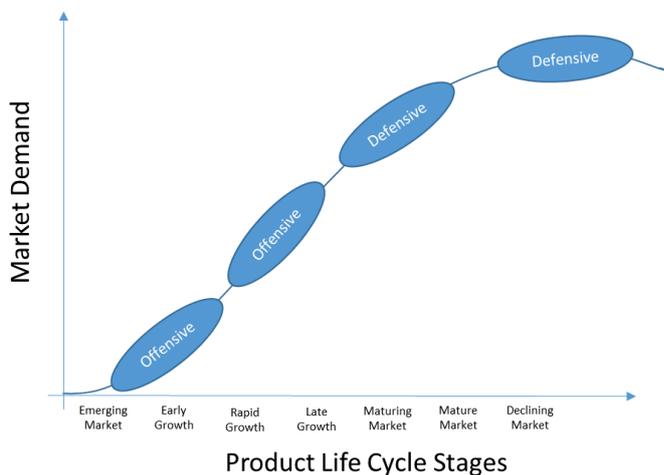
Figure 2.6 Market growth and core strategies for product life cycles (Best, 2014)

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Dependent on market attractiveness and competitive position (Best, 2014) different strategies are recommended for different portfolios/products as presented in Figure 2.7. This figure shows which strategy that should be deployed depending on the market attractiveness versus the competitive position. If the market attractiveness is good and the competitive position is neutral, it is recommended to use an offensive strategy.

Market Attractiveness			
	Offensive	Offensive	Offensive Or Defensive
	Offensive Or Defensive	Offensive Or Defensive	Offensive Or Defensive
	Defensive	Defensive	Defensive

Competitive Position

Figure 2.7 Core strategy dependent on product in the portfolio (Best, 2014)

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2.2.1   Offensive StrategiesThere are basically three different offensive core strategies (Best, 2014) as presented in Table 2.4 below.

Core Strategy	Description
Invest to Grow	Marketing resources are spent with the goal to achieve increased market demand and thus increasing the market share or customer revenue
Improve Position	Increased customer loyalty, higher margins and a better proposition is achieved when the marketing resources are spent on improving the position
New Market Entry	Development of new products or marketing towards markets that not have been in sight for the products before. Leads to increased robustness against market cycles if deployed correctly.

Table 2.4 Offensive strategies (Best, 2014)

When looking at user innovation it is easily to be lead to think that it is only New Market Entry that is interesting regarding this topic. Improve position is also interesting for user innovation as it is not always that user innovations are disruptive, they can also be more of refinement of an already excellent product. But, to have users to innovate on the products it is necessary to have built a bond and connection which leads to trust and loyalty between the users and the company (Dawar, 2013). Thus without using the strategy of improving the position it can be tricky to get users to innovate as they might not perceive that the company is working for them. Hopefully, a consequence of invest to grow is that the actual market share is increased. The result of this is that there will be more users and more need for customisation as the customer base is increased.

Studies on lead users (von Hippel, 2005) have defined that they are in the *Emerging Markets* and *Early Growth* phases, see Figure 1.3. This means that offensive market strategies shall be used.

2.2.2   Defensive Strategies

As opposite and as complement to the offensive strategies there are also three different defensive core strategies (Best, 2014) as presented in Table 2.5.

Core Strategy	Description
Protect Position	Marketing resources are spent with the goal to protect the position and to maintain the market share. Also tighter bonds can be built to existing customers thus increasing the loyalty.
Optimize Position	The idea is to maximize the profit by optimizing the position. That can be done by maximize the net marketing contribution or reducing the market focus.
Monetize, Harvest, Divest	Dependent on where the product is in the life-cycle it can be necessary to focus on short term profits. Dependent on the situation it can be rapidly or slower.

Table 2.5 Defensive strategies (Best, 2014)

Selection of defensive strategies can be beneficial as the products not are the main focus of the company and thus leaving room for improvements from users on the existing products. Defensive strategies can also aid user innovation as for example if the price is raised the users can be forced to innovate to get the same performance as before. The same can be said if a company selects to divest a product and thus enabling more resources to work on other things. In this case the products can be further developed and innovated on by someone else. By stating that, it can be concluded that defensive strategies not shall be seen as negative for user innovation.

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2.2.3   Downstream Advantage

More and more companies have tried to make the switch from working with upstream activities as production, sourcing and logistics as these are more or less being commoditized. Instead focus is on being closer to the customer & the users of the actual product (Gassmann, et al., 2010). This means that the actual production part of the process of developing a good or service is less and less interesting. Today (Dawar, 2013), more and more companies are having a strategy of moving towards an increased focus on the downstream activities as delivery of a certain product to fulfill the needs and requirements of the customers. This shift leads to a different way of thinking as instead of what to deliver it is more what can be done for the customers. The focus is more outwards to the customers than inwards within the corporation. The main competitive advantage for the corporation is when there is sufficient trust between the company and the customer. This trust is achieved when the customer feels that the corporation is trying to reduce risks and costs for its customers. Thus by having an outspoken strategy (NNEPharmaplan, 2015) that focuses on the customers (NNEPharmaplan, 2015) a focus shift towards downstream advantage can be obtained. Different companies have different strategies (Dawar, 2013) depending on what the intended perception and the performance of the products for the company should be. This corporate image can range from always being the cheapest or having the most ecological products, it does not matter as long as the corporation is consistent in the innovations and development within the specific field.

The strategy, that being closer with the customer is a shift to more downstream advantages (Dawar, 2013) which will be beneficial in the future. Dependent of what type of company it is obviously not the best idea to outsource the upstream activities. The different activities are presented Figure 2.8.
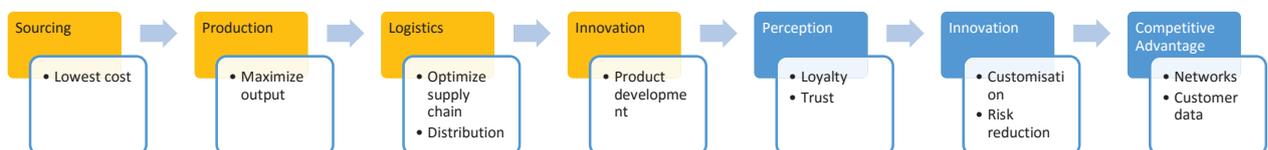
Figure 2.8 Upstream (orange) and Downstream (blue) activities (Dawar, 2013)

Being loyal (even if there are better or equivalent products) to a brand is a form of stickiness (von Hippel, 2005) that is important for most companies. This means that establishment of a trusted relationship between customer and supplier leads to an unwillingness for change and is a real competitive advantage for the producer. The innovation part in this is to design and tailor the products to suit the customers and their consumption patterns. This lead to an increased interest in user innovation as this is necessary to maintain and accumulate the competitive advantage of the firms and the products.

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A few examples of companies where there basically are no upstream activities are presented in Table 2.6.

Company	Product	Upstream (product or content)	Downstream (Service to customers)
Uber	Transport	Cars and drivers	Booking of transport
Tripadvisor	Guidebook	Content from travellers	Compilation of reviews
Airbnb	Lodging	Beds and rooms	Booking of lodging

Table 2.6 Companies without upstream activities

These companies are close to the customers and have limited control and also perhaps a lack of interest of the upstream activities. Further there is a loop from user to user with ranking and reviews that are made by one user and then read by another user. This does also mean that the system is self-regulated as a bad review will lead to lower scores and thus moving down in the ranking which leads to fewer customers. They utilise customer data to build a relationship with trust and loyalty for other users.

The Innovation and Competitive Advantage boxes of Figure 2.8 is what companies shall be aiming for in order to maximize the users and their innovations to maintain a healthy competitive advantage if they want to work more with downstream activities. To increase the Perception and brand value of a company it is necessary to focus on the downstream activities (Dawar, 2013). By default, it is still necessary to have quality assurance of the upstream activities to be able to deliver the products that are requested by the customers and regulations. An example is the VW emission scandal where 'VW production' modified the product in the upstream activity Innovation and then handed over to the 'VW marketing' which leads to disaster. The (downstream activity) Perception is that the customers have lost their faith and thus loss of loyalty and trust as the company basically is betraying its customers which resulted in less sale of its products.

2.2.4   Mass customization

Mass customization is a strategy that companies can employ focusing on providing customers with customized products or services. To succeed with this approach, the company need to have flexible and integrated production system into the design (Fogliatto, 2012) (Reynolds, 2014) i.e. the company need to have both upstream and downstream focus. This approach combines the mass production and production customization capabilities. In general, this means that with mass customization one should be able to pass a product specification directly to the workshop or assembly floor without any extra engineering efforts involved. This is also discussed in section 2.3.2.

However, this engineering effort has already been invested in one or another way to be able to have this flexible production system. One approach to succeed with mass customization is to have rules-driven product development consisting of three basic components. (1) The product architecture is broken down into modules. The modules can then be arranged in different ways to create the finished goods that meet the unique customer needs. (2) Some artificial intelligence needs to be leveraged that know how these modules can be arranged. (3) An interface needs to be implemented that allows one to configure the product by selecting, arranging, specifying dimensions and feature to meet their specific customer needs. Mass customization is identified as a driver of competitive advantage by companies in different markets. By defining clear rationales and a strategy is important for companies when selecting between modular models for mass customization and when not (Reynolds, 2014).

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If companies have this flexible and advanced systems in place, it would not be that long way to go taking the next step to provide customers and or users with tools to start innovating (von Hippel, 2001; von Hippel, 2005; von Hipple & Katz, 2002; Thomke & von Hippel, 2002). Companies have during decades developed libraries of tested and debugged computer-based modules that can be plugged into different designs. Like the suppliers of semiconductor circuit boards, they have these CAD/CAM modules of sophisticatedly packaged information that is tested and correct. These modules can be used directly by people. This information and knowledge has traditionally been in engineers' minds and is now in a format that could directly be employed in different design activities. Some companies provide these modules to customers in a do-it-yourself format. This has resulted in a win-win situation where both customers and suppliers benefitted from. It resulted in that customers could get what they wanted and the suppliers could manufacture the product and revenue from it.

2.2.5   Simple Rules

Collis & Rukstad (2008) reports that companies that can express their strategy statement with 35 words are the ones most successful in their industry. Companies that do not have clear and simple statement of strategy are likely to fail with its strategy execution. It is common that employees in different organizations and companies are frustrated because of the lack of a clear strategy. A strategy is usually emerged from the annual budgeting or strategic-planning process that should ensure competative success. Leaders of organization and companies are puzzled when their carefully created strategy was not implemented. They undestimate the power having a simple and clear strategy statement that all can employ and use as guidance when making decisions.

If all, employees and functions, in a company do not know what the strategy is all decisions taken will be scattered and the result will be confusion. As Collis & Rukstad (2008) exemplify some typical confusions are; R&D engineer department developing a product with features that will not response to customer needs, which the sales and marketing departments could have told them; the sales force is selling customized offerings even though the manufacturing group has invested in high volume production equipment, etc. A clear and straightforward strategy statement will align the decisions taken within the organization and it will become exponentially more efficient.

To be able to define a good, clear and simple strategy one need to define three basic elements; (1) objective with the strategy, where it ends, (2) scope, the domain where to operate and (3) advantage, the means with the strategy.

Usage of the different simple rules (Sull & Eisenhardt, 2012) on when and how to utilize user innovation will gain a clearer and more unambiguous way of deciding on what to do. Are companies using these or is it guts feeling and or luck that selects and decides what really is done.

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2.2.6   Segmentation Strategy

Due to the nature of the industry there can be different strategies dependent on the actual segment, see Figure 2.9, of the products (Best, 2014). The easiest strategy to select is the *mass-market* strategy. This strategy means that the customer needs are more or less the same and a generic value proposition is used, thus basically no particular segment focus. The most detailed level of strategy is the *niche-segment* where there are few customers but where the product is highly specialized to suit their specific needs and desires.

Mass-Market	Large-Segment	Adjacent-Segment	Multi-Segment	Small-Segment	Niche-Segment
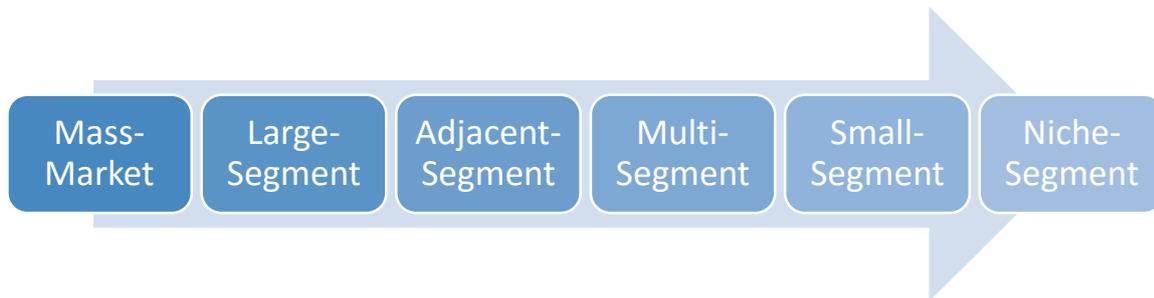
Figure 2.9 Different Market segmentation strategies (Best, 2014)

The selection of how to do the segmentation is dependent on the actual business and where the customers are, how much they are willing to pay and the quality level that they are expecting. When looking at user innovation, it can be applied to the different segmentations but are perhaps most likely to occur when there is a mass-market segmentation. The reason for this is that there are fewer products which will be of the type one size fits. A contradiction with this is that since the customers are more involved and feels that the company is more interested with increased market segmentation it can be that it is more or less the same user innovation in the different segments. Further when the different market segmentation is studied with regards to the customers it will on the more divided strategies (small and niche segment) be more of a customer relationship (Best, 2014) marketing focus. This means that the users will be more part of which products to develop and fulfilling the needs of the customers. When looking at customer relationship management different steps can be made to develop and deploy a successful customer relationship program, these are presented in Figure 2.10.

Qualification (Who)	Understanding (What)	Solution (How)
• For each of the customers make a judgment of the potential present and future business value	• When the customers are selected it is necessary to understand the needs, behaviours and preferences	• Develop different unique solutions for the customers which suits their needs and preferences
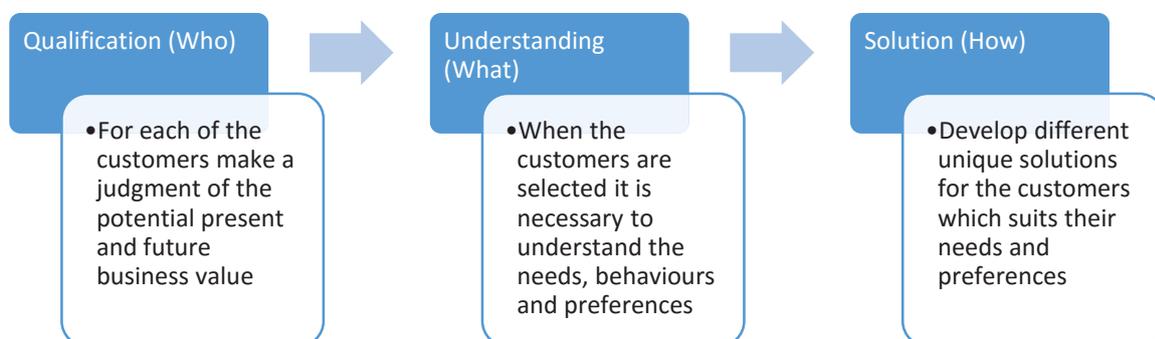
Figure 2.10 Steps in customer relationship management

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2.2.7   Mass Collaboration

Users can be involved in different ways; mass collaboration (Best, 2014) is one of the ways to involve different users. The idea of using strategy with mass collaboration is to involve a large group of people when trying to solve an issue. The company uses a collaborative website or similar to present the issue to a group of people. The group of people shall, if possible, be heterogeneous and have expertise and different perspectives (which adds knowledge) than the organization within the company. Different categorise that are used for groups are; *specialists* or *professionals*, *prosumers*, and *employees*. Depending on the need of the company it is possible to select one or more of these different groups for a certain and specific issue to be solved. They match the definitions made in the innovation value chain (Hansen & Birkinshaw, 2007) very well.

Specialists or *professionals* outside of the company can be utilized when the issue is highly specific and requires a lot of domain knowledge to be solved. It can also be necessary to involve suppliers to a higher extend when developing new products, a higher involvement of suppliers can lead to that different solutions can be utilized and manufactured. Further as different suppliers typically work for several different customers both within the same industry but also in diverse industries it can lead to increased knowledge transfer and also that new techniques and technologies are deployed for a specific customer. Consumers that are product inventors are called *prosumers*. These users can refine and develop the product to a higher level. Increased benefits for the customers can be had when the *prosumers* are used as input as this group of people have different needs and they invent and develop the product according to their own desires. This means that the intended use of a product can be changed to make it fit to a specific user and complete changing the capabilities and way of working for a product. Lastly, *employees* can be part of the mass collaboration to increase customer value. Typically, within an enterprise there are different persons working with different specialized things, the boundaries between division and sections within a company can be hard to break down thus less innovative development will be made. By mixing different competences and people from different departments a higher level of innovation can be achieved.

Another way to involve users to innovate and be part of the actual product development is to use crowdsourcing (Best, 2014). The concept is to use the actual customers to solve a specific issue or problem for a certain purpose. Input from the users leads to new products. This method is more focused than mass collaboration with innovation from a wider perspective. Chapter 2.3.4 also discuss the topic on how to involve users in different stages and ways. It is a matter of deciding on how to involve users and what one want to get out of it.

2.3   User Innovation

Through examination of lead users one can understand future needs and find what their innovations mean for the business and in particular for oneself. The lead user concept (von Hippel, 2005) where users invent, transform and develop the refine products will be examined. Users in this context are not only single customer or individual using products, but a user can be an individual, a group, or a company (Eisenberg, 2011).

Companies invest a lot of their resources in communication processes that may facilitate customer co-creation and ultimately companies' future success. Literature (Christensen & Bower, 1996; Knudsen, 2007; Magnusson, 2009) also argue that involving users may have negative effect on innovative success. Findings (Knudsen, 2007) that when combining customers with both universities

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and competitors have had negative impact on innovation performance. The answers lay in that (1) these average users lack the ability to specify needs for future advanced technology-based products and (2) these average users may not be able to imagine and find ideas beyond the context of their own experience.

Consequently, literature suggests that it is important to find the right users to interact with to not waste resources. The users who can imagine and articulate and who transform existing products to a superior level are the once to involve in new product development activities.

2.3.1   Innovators characteristics

The book democratizing innovation by von Hipple (2005) depicts a typical innovator as a user seeking for a solution to its problem that he or she cannot find at the market place. It is typically a lead user stretching boundaries and challenging traditional ways of doing things to get improved performance or capabilities.

These (lead) users have strong needs which mean that they are more or less obligated to innovate in order to use the product to its full potential. They may modify the product in unforeseen ways to meet their needs. Further, they are in some way specialized and are capable of developing their own tweaks and innovations to suit the specific needs. The evolution of mountain bikes is one example where users developed own solutions to fit the specific context of use. I.e. they developed specific bikes for downhill or cross-country usage. The users could not compromise with any solution that was not perfect for its purpose. Like NASA would never compromise and be satisfied with an average performing software or similar equipment (von Hipple, 2005).

Lead users typically exist at the leading edges of target markets or at the leading edge of the advanced analogue field (von Hippel, 2005) and they are not early adopters and they are often not existing customers. Von Hippel reports (2007) that the most radical and profitable innovations often come from users in *advanced analogue* fields. An example is the development of the antilock braking systems (ABS) that was first developed for aircrafts to be able to stop the aircraft on slippery and icy runways. The context where the innovation was developed can be considered the advanced analogue field which differs from the automobile market that in this case can be seen as the target market. The advanced analogue field is usually extreme compared to the target market settings as in this case, the aircraft is much heavier than an automobile and other constrains makes it even more extreme. The runway cannot be salted or sanded as a remedy to the ice because of the salt and sand would damage the aircrafts body and or engines. With these constrains users were forced to innovate and find a solution to be able to stop the aircraft despite the ice on the runway and the user innovation was the ABS-system. Auto firm engineers were able to learn from the users in the advanced analogue field and adopt the solution to fit into the target market. This ABS innovation is a common feature in automobiles today.

Studies show that collaboration with different actors increase the new product development performance (von Hippel, 2005). User innovation or co-creation with customers is an evolving research field and it is more often depict as a network or an ecosystem (Al-Zu'bi & Tsinopoulos, 2012; Mahr, et al., 2014) involving many different actors in the innovation and product development process. Companies could involve internal and external resources to the early product development process to generate ideas to new products. Internal resources could be research and development

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staff and other divisions within the same company. External resources could be suppliers, customers, competitors and universities.

Suppliers and lead users are considered as the two main key stakeholders to increase the performance of the new product development process (von Hippel, 2005; Al-Zu'bi & Tsinopoulos, 2012; Mahr, et al., 2014). Technical knowledge for improvements to products can be provided from key suppliers and with close cooperation in the early phases in the product development process they can provide a forum for evaluation and improvement of ideas. Key suppliers are those who will not be in direct conflict with the buyer's objectives. And they possess capabilities that are similar or superior to the buyer and they can consequently provide the technical expertise to evaluate the feasibility of new products ideas in the early phase of the development.

However, research conducted by Al-Zu'bi & Tsinopoulos (2012) shows that when including suppliers or lead users to the product development process the product variety will increase. And when involving lead users in the product development process it would lead to even higher product variety and increase the possibilities for that product to respond to customer needs. Lead users have new product and new market ideas. They have also the technical expertise as the key suppliers would have and with accurate and early knowledge of new trends along customers. So when collaborating with lead users would result in new products with higher variety. One limitation with their study is that the findings are collected from companies based in the United Kingdom. It would be interesting to test their findings on Swedish companies to provide support for them.

Who is innovating? Studies have shown that it is not only lead users that innovate (von Hippel, 2005). Many users innovate, and they do it because they get stimulated and enjoy doing so. And when providing them toolkits it helps them innovate even more. User of products innovates and they often also reveal the innovations freely as they are more motivated to solve his or her problem instead of trying to commercialise its newly innovated product or service (Eisenberg, 2011; von Hippel, 2005). A strategic decision that manufacturers of products can take is providing users with toolkits and platforms for them to innovate in an efficient way, and at the same time manufacturers could get knowledge of (lead) user innovations that can be incorporated into new products that may fit many users.

2.3.2   Toolkits and platforms for user innovation

If new products or services are to be successful they must response to user needs. In order to be able to develop successful products manufacturers must understand user needs. As user needs and preferences are changing more rapidly makes the manufacturers task finding user needs more difficult resulting in a costlier procedure to investigate and understand user needs.

To understand a user's problem that needs to be solved requires information and problem-solving capabilities. This information needs to be brought together to a single locus and requires transfer of information from one point to another. If this transfer of information is costly it is *sticky* (von Hipple & Katz, 2002) (von Hippel, 2005). The incremental cost of transferring a given unit of information is the *stickiness* of that information. If the information to be transferred can be done to a low cost, the information stickiness is low.

Researchers have argued and showed that technical information needed by information seekers, such as problem solvers, is costly to transfer (von Hipple & Katz, 2002). Hench, the information

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stickiness is high. This high stickiness can be a result from that information seekers lack complementary information or tools to acquire the information needed to solve the particular problem. In the product development process, sticky information is generated by manufacturers, product developers and the users at their sites. A manufacturer and a product developer have generally information regarding the solution possibilities and know its production process while the problem owner, the user, has the information of its needs and its context of use. As already mentioned, to transfer this information to a common locus is costly. Moreover, if the product development process is considered, that in its basic form is a trial and error process, will suffer and be ineffective because of this information transfer process. For example, one user may not mention any demands that are obvious to him or her maybe because something has traditionally always been like that and he or she do not bother mention it. Since the manufacture does not know about this tradition or circumstance, it will provide a product or solution that will not fit. This will cause more time to develop another product or solution to solve that was failing and that information that was left unsaid or unspecified.

Manufacturers have traditionally performed the product development work. This has resulted in costly and time-consuming iterations between the manufacturer and customer to reach a solution responding to the customer or user needs. When the product is responding to the needs, the manufacturer can collect revenue for the work done. This development risk that manufacturers traditionally have been taking could be lowered by pushing the development activities to users or customers (Thomke & von Hippel, 2002), find Figure 2.11 and Figure 2.12.
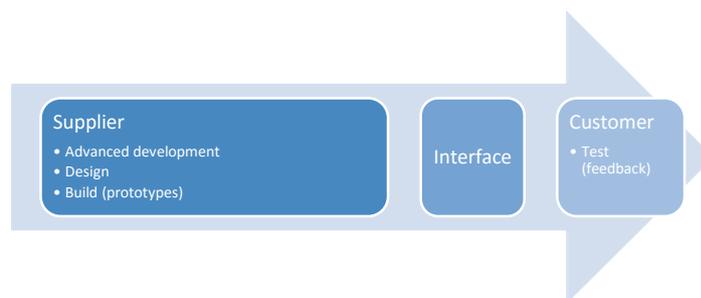

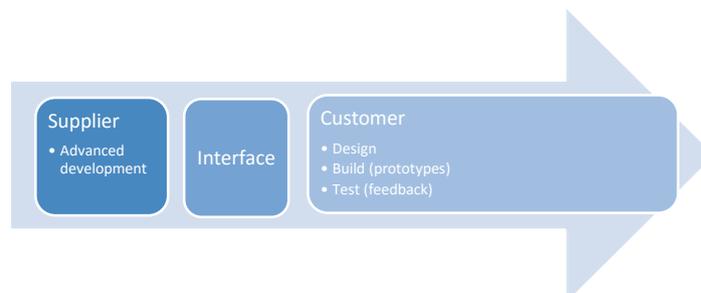*Figure 2.11 Traditional product development*

Figure 2.12 Customer-as-innovator approach

Von Hipple (2001) present a whole new approach that transfer design capability to users by providing users with toolkits, a customer-as-innovators approach. A manufacturer has information about the product development and production process and the user have information about its needs and

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preferences and the real-world use case of the product. A toolkit facilitates to bring their information around the product to a single locus. The toolkits are supposed getting customers and stakeholders more involved in the innovation process by providing them the tools needed to be the ones innovating. One toolkit example is when a manufacturer who provided a toolkit with different components (tastes and ingredients) to be combined to a product (sauce), and the manufacturer in this case know how to produce the *components* and how to package them resulting into the *product* while the user tested and combined the *components* to match their own preferences and tastes. When this testing and iteration process is finished and the user or customer is satisfied with the result the manufacturer take on and produce the final product.

For manufacturers to succeed with this toolkit approach, they need to modularize their information and knowledge. In general, this requires a similar approach as for the mass customization strategy described in chapter 2.2.4. Theoreticians (von Hipple & Katz, 2002) argue that manufacturers producing conventional and customized products need to apply this new toolkit approach if they want to continue producing products and services in future that respond to their users' needs.

2.3.3   Values and costs of user innovation and co-creation

Yet we are facing a paradigm shift from *value creation to customers* to *value creation with customers*. Companies shift from considering customers as passive receivers of their contributions to become an active part who can contribute to the value creation process.

Managers need better understanding of what co-creation relations that leads to successful innovation since companies invest many resources in communication processes that may facilitate customer co-creation activities. Mahr et al (2014) discuss the value of customer co-created knowledge during the innovation process. They provide managerial recommendations on how to match customer selection criteria with innovation outcomes, which this chapter discuss.

Knowledge has been a source of advantage for a long time, if not always. The Chinese general Sun Tzu wrote a book called *The Art of War* where he concluded that complete destruction of an enemy resulted in more losses than gains (Best, 2014). Instead he presented strategies of how to develop knowledge advantage about the terrain (customers) and the enemy (competitor) to be used when obliquely, not directly, striking the enemy. It should almost be done unnoticeable so the enemy almost follow you without knowing that. Having partial knowledge of the terrain (customers) or the enemy (competitor) would likely result in reactive strategies. When a business has great knowledge of the customer but no competitor knowledge it will probably overreact to customer demands and vice versa.

There are four different outcomes depending on what knowledge that is available about the customers and competitors. (1) Inside-the-box strategy, lack of market knowledge both about the customers and competitors, (2) customer reactive strategy, partial or limited knowledge about the competitor, (3) competitor reactive strategy, partial or limited knowledge about the customer and (4) oblique strategy, requires excellent knowledge about both customer and competitor so be able to develop a competitive market-based strategy. With a knowledge advantage, a business can compile a strategy to generate the desired market shares and cut unnecessary losses in the marketplace.

As in all competitive environments, knowledge is a source of advantage. Customer co-creation can generate relevant and novel knowledge that companies can use in product development and affect

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both the company and the customer in different ways. Relevant knowledge is knowledge that could fit in the particular context while the novel knowledge and insights generated is for more disruptive approaches and products. Customer co-creation also increases the acceptance, learning and the understanding of different needs are uncovered, and new insights are gained. Customers have likely also knowledge of what competitor are heading. Nevertheless, when co-operating with customers with lead user characteristics the novelty of knowledge created increase and the cost of doing so is dependent on what type of communication that is used (Mahr, et al., 2014).

Magnusson (2009) add important aspect to this discussion that involving ordinary users should not be seen as contributors to new ideas that should be considered in new product development. However, companies should involve these users to understand and learn more about their needs and get inspired to innovate. These ordinary users could help company's reviewing their business strategies.

Involving customers with lead user characteristics significantly increase the knowledge that is relevant for the particular product development context and also the novelty of knowledge increase but not the costs of customer co-created knowledge (Mahr, et al., 2014). Therefore, it means that involving lead users is beneficial from the cost point of view. However, closeness in the company-customer relationship increases the relevant knowledge at low cost but not the knowledge novelty. Companies and customers that have intimae co-operation has at some point got into incremental product development activities resulting in incremental product refinements when the customers (users) have come to that point that they may not be the ones leading the development anymore. It means that companies must actively seek and select customer and users with lead user characteristics.

Since advanced customers possess complex and tacit knowledge of the future trends, a face-to-face co-operation is increasing the novelty of knowledge generated in that process. Face-to-face communication is the most efficient communication level that allows the innovators to access knowledge and quickly gets clarity in ambiguous issues. When the complexity is high it is always more efficient to communicate face-to-face and it does not increase cost (Mahr, et al., 2014).

Phone calls are an example of voice-to-voice communication that is in practice often used to obtain clarity in specific details that complement and increase the existing company knowledge. Voice-to-voice channels allow innovators to access knowledge in a relative quick manner. This type of communication is the less rich way of communicating than face-to-face but anyhow efficient as a complementary information channel.

Bit-to-bit communication i.e. digital communication such as email will increase the knowledge cost generated in co-creation activities since the level of richness is moderate or low compared to other ways of communicating.

2.3.4 Accessing customer and user innovations

The literature is expanding on how to support user innovation and attention has put on exploring ways to access and collect customer and user innovations. First step would be to know how and when to involve customers and users in the product development process. Fuchs and Schreier (Fuchs & Schreier, 2011) explores this particular area and found that involving user in idea generation and selecting what the manufacturer should produce increased the manufacturers perceived customer

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orientation and favourable attitudes compared to the traditional approach when manufacturer creates and selects. Empowerment strategies can improve the manufacturer's relations to the broad mass of potential customers. Involving users give the manufacturer credits for doing so, since it is listening to the customer, and will enhance the customer orientation. When adding the discussion from what Magnusson (2009) suggest that average users are not to be involved in new product development activities. The average users input to manufacturers can instead be a source of inspiration to innovate. Further on, Best (2014) also suggest that listening to customers give the manufacturer a better perception at the market. Ultimately, the manufacturer must be selective when deciding on what to provide to the market and users.

The toy manufacturer Lego with their main product that is providing bricks so people can play and assemble own creations. Lego had a traditional innovation strategy with only own internal product development and research resources generating innovation. Lego introduced a new advanced product called Mindstorm in 1998 (Hienerth, et al., 2014) which was a robot tool-kit built on bricks and with some software and integrated electronic such as sensors, motors and lights. After a while on the market a student hacked this product and posted his findings from this reverse-engineering project for the public. Lookalike products started to show up on the market, but with enhanced functionality and features. The market was filled with these new robots, but Lego had a silent period without any communication. Normally, a manufacturer who faces this type of copyright attack would have charged the ones doing this type of damage.

Lego was paralyzed for over a year but suddenly they took a strategic decision and let the hackers flourish by adding "Right to hack" text into the software license agreement on Mindstorm. This was a natural step for Lego to extent their efforts to connect customers to the company. By democratizing the development of Mindstorms customers and other hardware suppliers started to design and develop robots that no one at Lego would have ever thought of. These development teams which are a symbiosis of suppliers and customers have become complex and quite unique ecosystem that not many companies manage besides Lego.

2.4 Theoretical Framework

By definition of the innovation types and different suitable innovation theories (chapter 2.1) there is a framework and basis regarding in which context the actual innovations can be discussed, characterized and presented. Following these overall conceptual models and classification, a walkthrough is made of miscellaneous strategies (chapter 2.2) which can be deployed for these different types of innovations. Lastly (chapter 2.3), when the foundation is defined and how different strategies can be implemented the actual users and their characteristics are presented.

3   Method

This section will describe and explain the methods used for this thesis, what type of study, how the data was collection, analysed and verified.

3.1   Plan and design

Conducting research is generally an iterative process, which is also the case in this thesis. However, following chapters will describe how the thesis preceded, what and why different approaches were selected. The approach for this thesis has a top down approach what Yin (2014) describes as

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deductive. It means that a problem description is defined followed by a theoretical model of interest that can be tested. This approach is more suitable than an inductive approach, which start from bottom up and ending up with a theoretical model. A pure inductive approach can be hard to accomplish since we are usually using current theory and literature from the beginning in the research.

In this thesis, the first step is to build different theories about company strategies on how to involve users in product development activities and later in discussion connecting the findings from the tests.

3.2   Data collection

The data collection method is based on multiple sources of evidence (Yin, 2014) where a data triangulation process should increase convergent and validity to the evidence and better conditions for the data analysis. The data was gathered during 2016Q1-Q2 from the two Swedish B2B companies by: (1) interviewing persons at different locations in the companies and with product management experience with different subject matter competences, (2) collect answers from a questionnaire (Appendix A: Questionnaire), (3) using the authors own experience which Yin (2014) refers to as participating observations.

Interviews were completed as in-depth interviews (Yin, 2014) allowing the respondents to answer with facts as well as giving his or her own opinions to a matter. An interview guide contained 14 different open questions (Appendix B: Interview Questions) were used mainly to stay within the topic (Yin, 2014). This would allow the respondent to describe the user involvement and strategies employed from its own perspective. Each interview was held with both authors together via phone to be able to take notes of what was said by the respondents during the interviews. The total number of persons interviewed was five. The aim was to hold each interview during one hour to have enough time to get the valuable data. The interviewers' role was mainly to keep the interview on going in a smooth way letting the respondent telling his or her story. This type of interview is similar to a semi-structured interview (Yin, 2014). An open setup as this one will get more information that may be shown to be useful in later in stages of the study or the interview. Follow-up questions were sometimes posed, all depending on how the respondents answered. It might be a problem to repeat this type of approach. Nevertheless, with a well-prepared set of main question the repetition problem can be minimized.

All interviews started with an introduction session describing the background to the interview. It also let the respondent tell more about his experience within the company and professional life. The introduction also contained what type of questions and why the interview was going to take place to put the respondent in as good mood as possible to be able to give us the valuable answer. The introduction presented the innovation value chain and in which context the interview questions should be put. After transcribing the interview, the respondents got a copy of the summary session to confirm and to approve that anything there was misunderstood or misinterpreted.

A survey was another source of data for this thesis (according to section 8.1 Appendix A: Questionnaire). This survey was distributed via easyresearch electronically. All interviewees answered the survey too. The survey did in addition include another six individuals that mainly work in product management on different level with global and regional responsibility. The survey was built up with four different possibilities for the respondent to take side, to strongly agree, agree,

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disagree or strongly disagree. To make the analysis of the results possible the different options got a weighed value, 1, 2, 3 respectively 4 with the meaning according to Table 3.1.

Weighed value	Meaning
1	Strongly disagree
2	Disagree
3	Agree
4	Strongly agree

Table 3.1 Weighed value and meaning for the survey

This means that a value of 3.5 means in-between Agree and Strongly agree, a value of 1.5 means in-between Strongly disagree and Disagree.

By also adding the authors own experience or personal observations, that Yin (2014) suggest to call it, to be a part to corroborate any information gained from the interviews and be a part to uncover aspects and issues interview respondents simple have not reflected upon, forgot to mention or perhaps intentionally left unsaid. For this thesis there is no documented information available from any of the authors own experience of personal observations (since it may have happened several months or years ago), the documentation needs to be created and rely on the authors memories.

3.3   Data analysis

All data from the interviews will go through three steps. (1) Cleaning and organizing the data for the analysis. We need to develop a database, as suggested by Yin (2014), where we can document the findings from the interviews. (2) The data need to be interpreted; we need to understand what the data itself is telling us. (3) When the data is understood, it will be mapped to the different theories and models that are used to describe when it is beneficial to involve users or not. The above was done as part of the actual data analysis.

The data analysis consisted of displaying the data in different ways by examining, categorizing, tabulating or recombining the evidence to find promising patterns, insights and concepts (Yin, 2014) to confirm or develop the theoretical model defined. As earlier mentioned this was done by using the triangulation method of data collected (Yin, 2014). By triangulating different points, one can predict its *position* fairly accurate as in navigation where this technique stems from. The responses to the questions from the interview and survey are set up in a table for comparison and to be used for searching for patterns to find the *position*. When doing this correlation between each source of data one can generalize any findings even more, this will also create validity and reliability since several sources of data is used. The analysis will be the base for the empirical findings and a base for the conclusions and discussions.

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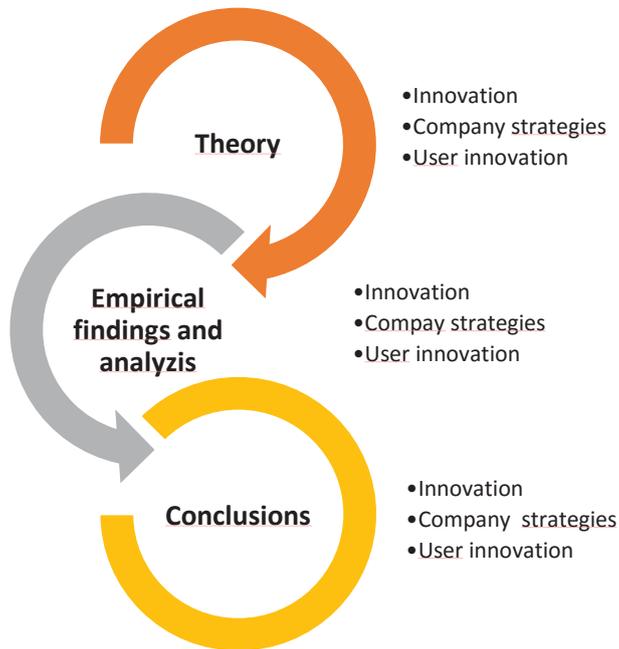
Figure 3.1 Methodological approach

The methodological approach for this thesis can be summarized as a study of previous research that was followed by a test of it and an analysis with cross reference of data that resulted in an understanding of theories studied to be able to state conclusions and suggest further research.

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4   Empirical Findings

The examined companies are active in the industrials sector where the market is most cases is very mature. Both companies are each more than 100 years old, have more than 30 000 employees and are working in a global market with the customer base spread around the world. The companies are present on the stock exchange market and thus not privately owned or with one single majority owner.

4.1   Innovation Theory

The companies have worked with innovations for long time and some of these old innovations are the corner stones for the business today. Both of the companies want to have the public image of being innovative and working with cutting edge research & development activities. One of the main issues is that some of the innovations have been created long time ago and only a few disruptive/discontinuous innovations have been developed lately. When looking at the different types of innovations they are typically of the type improvements on already existing products, no examples were presented on either disruptive or discontinuous innovations.

When looking at usage of the innovation model with open/closed innovation there were some unambiguous information of whether this was used or not. As the group of persons in the survey have different roles and different products to work with it was expected that the answers would differ. The answers on these contradictory survey question ranged from Strongly Agree to Strongly Disagree in the survey. The persons answered one of the questions with agree or strongly agree answered the other question with disagree or strongly disagree thus indicating that the question was understood in a correct way.
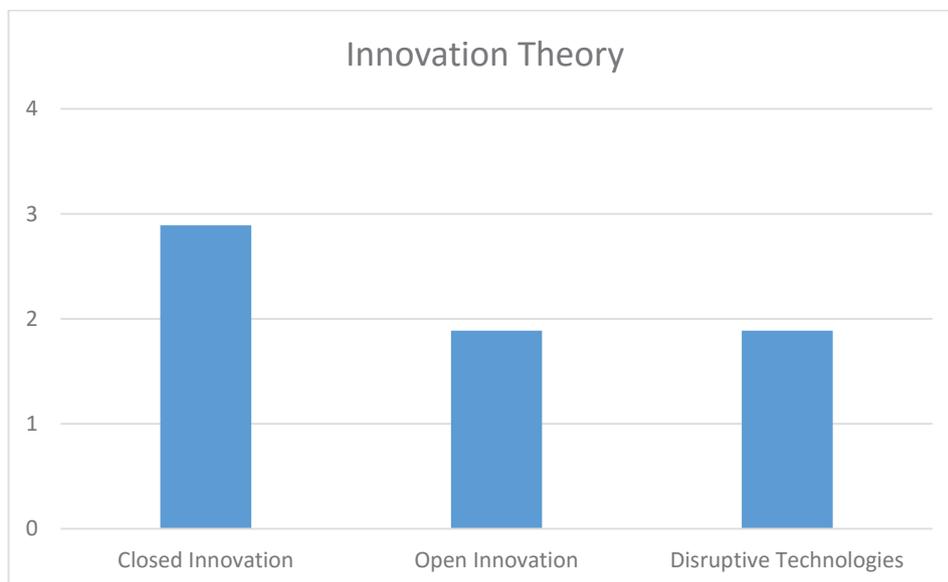
Figure 4.1 Statistics of survey questions regarding innovation theory

The role and power of the internal corporate research function mentioned in the interviews is reflected in the rather high figures for closed innovation. These high figures indicate that the actual innovation is performed mainly inside the company and quite few innovations stem from other sources than internal research. There was mentioned a few examples of more innovations that can

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be defined as open innovations during the interviews but these are mainly from regulatory bodies that 'force' the actual innovation. One reason for these kind of regulatory 'innovations' could be strategic handling within the industry of one of Porters (Porter, 2008) forces; threat of new entrants. This force will be low if there is a rather high barrier for new entrants to enter since the amount of time/money to be spent on fulfilling regulatory requirements. Thus by influencing the regulatory bodies from the companies within the industry there will not be any new producers since the barrier is too high.

Further on, during the interviews it was discussed that there are several external collaboration initiatives with different external research centres (mainly universities) but also with companies both within the same industry and from other industries. The collaboration with the companies within the same industry is handled with contracts and different legislations to control the actual usage of technology and innovations. Depending of what type of product, it is within the product portfolio there exists brand labelling of some of the products. When looking at the time horizon it was mentioned that short term more open innovation concepts were used but in the longer term the internal research centres/departments were more utilized.

The companies have a fixed development process for the creation of new products, trial and error was if used at all very seldom deployed.

4.2   Strategies

Different strategies were discussed in the context of the product lifecycle and offensive/defensive strategies. The offensive strategies were discussed in the interviews as deployed more often. There was no clear definition or examples of any innovations coming from an offensive market strategy, one person called it running around with cymbals and yelling to gain recognition. It was discussed that more resources are available when deploying offensive than defensive strategies. There are some examples of where customers have innovated with the help of advanced analogues from the IT business. This was done for a product in the declining phase of the life cycle and the company utilised the defensive strategy of monetize. When looking at advanced analogues and adjacent industries, there are innovations mainly from the IT/IS community where the life cycles are shorter and these traditional companies can select and do cherry picking (Hindle, 2008) of the innovations that the need. Examples are IoT (Internet of Things) and virtualization. Virtualization is the usage of one or several computers within the same physical hardware. By deploying virtualization techniques/software it is possible to use less energy and also to decrease maintenance of computers thus leading to a less risky environment and more environmental friendly/less costs. IoT is the (rather scary) idea of connecting everything together in an enormous network where devices are communicating to each other and to servers handling the data. When looking at the survey and the question regarding if offensive/defensive strategies were used, both of these were scored (offensive: 1.78, defensive: 1.33) with figures indicating that both strategies are not deployed.

Product life cycles may be long, several decades, and sometimes shorter. Anyhow support is found that user input and innovations are taken into consideration in innovation and product development activities. As the companies are working with long product life cycles there are a lot of discussion regarding how to maintain and satisfy existing customers. But, it appears to be just discussions as only a bare minimum of resources is used for innovations of products which are present in the installed base.

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Innovations were typically mostly found and deployed in the beginning of the product life cycle. Some innovations were also present in the latter stages but these were less frequent than the innovations which could be traced to the earlier stages of the product life cycle. The latter stages of the product life cycle innovations are not that frequent if any. One can compare with Apple iPad that is an established product, there may be some improvements for next generation, while iPod is on a mature or declining phase of its product life cycle and iWatch is on an emerging market. Most of the innovations is made on existing products and quite few really new products are being developed. But this is depending on the actual maturity of the business, the more immature a specific business is the more innovations and new usages of the products are made.

The survey respondents indicate that more users are involved when developing and innovating on products that are in the introduction or emerging market phase (3.22) and the growth phase (3.22). Users are also involved in the later growth phase (2.89) while the result indicate that the users are lest involved in the maturity phase (2.44) and finally users are slightly more involved in the declining phase (2.56) compared to the previous phase.
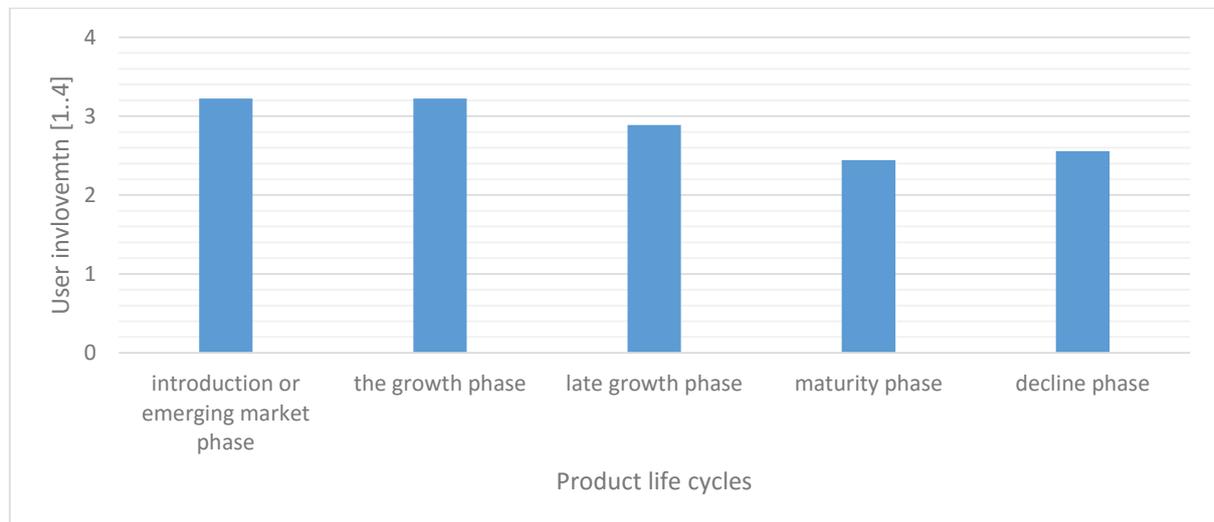
Figure 4.2 User involvement vs Product life cycles

It seems that more innovations are also produced in niche markets since the solutions and products needs to fit a specific application or use case. If they are not really fitting the users may be innovating by themselves to be more efficient. We found that manufacturers learn a lot from niche markets. Sometimes adjacent fields as used which is a reference to advanced analogues.

There were several examples of innovations that have been made when the customers have been active in niche markets. A tight connection and good relationship with the actual user helps and aids the customers to create a blue ocean with the help of minor changes on existing products. The customers are typically active in a niched environment even though some of the products are produced for a mass-market. The usage of toolkits and libraries makes the products more focused and suitable for the usage of certain niches.

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Several notations were made regarding the role of the users and how important they are to innovations. Information regarding the involvement and collaboration with users and customers is presented in Figure 4.3.
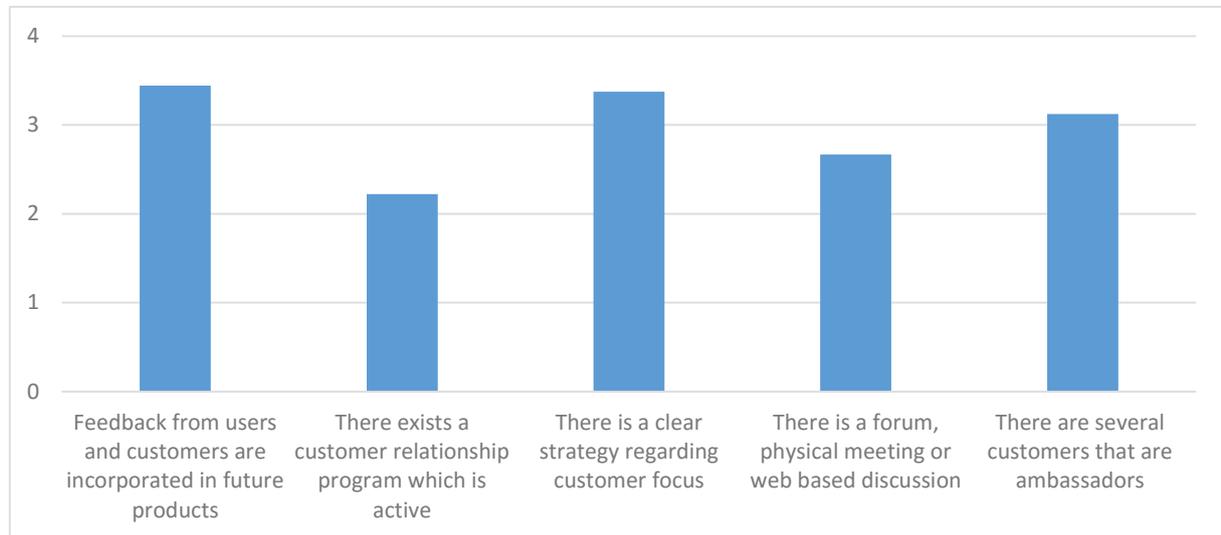
Figure 4.3 Presentation of user involvement/interaction survey questions

All respondents answered that feedback from users and customers is more or less (3.44) considered and incorporated into future products. Answers indicate that it is not that clear if there exists a customer relationship program or not (2.22). 67% of the respondents answer that there exists a program while 22% are unsure or do not know and the rest (11%) disagree that there exists customer relationship program. A strategic decision to focus on the customer exist as this is scored more than 3, no person disagreed on this issue. To aid collaboration there exists a forum or physical meeting or web based platform where customer and users can discuss and provide feedback both regarding the products but also for future development activities. Regarding ambassadors there exist several ambassadors to the corporation, only one person was uncertain if there were ambassadors or not the rest at least agreed on it.

4.3   User innovation

Following chapter will summarize the findings from the interviews and surveys responses regarding users' innovation.

4.3.1   Innovators characteristics

Users that see and know the whole process of its production or use case are the once that are able to innovate to get more efficient. They see and find solutions to become more efficient. Usually they are smaller or mid-size organizations. Also bigger enterprises with their own research and development organizations seem to be those who innovate more than others. They try for example to find how to refine their product even more and develop their own solutions to the specific problems. Additionally, the survey results show that it is not that easy to involve users in product development activities, 33% of the respondents agree or strongly agree that it is easy to get users involved in product or service development activities while 67% disagree.

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The customers that have long relationship to the B2B manufacturers are the once that are influencing the product development the most. The B2B market is very conservative and big customers are selected on historical co-operation. New customers are found when new opportunities arise. Sales people are fast signing contracts with different customers and entrepreneurs to be able to connect these to their sales.

When involving operators (users) the product flora will increase. If involving user who are handling the purchasing economy and logistic the variety will decrease, since they are focusing on money and size of their item stocks. If one is operating in a niche markets the customers and users desire more specific solutions and products that increase the variety. Customers and users are excellent in defining exactly what a product should do and they generate a product specification. What they do not specify is what the problem is and what they want to solve.

Findings in this thesis say that innovations and new variants relates strongly to the monetary earnings, if a company can earn money on something that a customer specifies or would like to have solved depends much on what the predicted benefits are for the manufacturer.

The amount of innovations that stem from advanced analogues seems to be little, since the manufacturers are already operating in quite tough environments. However, one innovation that comes from space industry, the microcontroller. This innovation can be considered as one that steams from advanced analogue field. Anyhow, the trends are that virtual, internet based and smart solutions are developed within the B2B companies. Smart solutions are those products that can tell the environment about its status; where I am and how I feel. The companies tend to be moving from a production focus to a more service oriented way of doing business.

4.3.2   Toolkits and platforms for user innovation

Users are involved in one or another direct or indirect way, but the end users or customers are not that often involved in the innovation process. In general, there is no structured way of handling and collecting customer or user requirements. Instead, customers are involved through sales and product management at bigger structured regularly or annual meetings. At these meetings, sales and product management meet and discuss requirements and demands from different segments. The respondents tell that these type of cross-functional meetings and forums aid innovation. In addition, technical sales specialists collect demands and requirements from customers and end users through their face-to-face meetings. Customers and internal users like engineers and other working groups that see or have found a demand or requirement starts the innovation or product development process. If the idea is feasible and in those cases where the business opportunity is strong enough, i.e. when the company finds it economically relevant to start up and develop the innovation or product. The interviews show that different trends that are written and highlighted in different media affect customer's behaviour and preferences, which is what they ask for.

The communication and collaboration performed with users and customers are done through dialog during regular meetings. At field tests and exhibitions, the dialog is more spontaneously. There is no real structure for how the contacts or dialogs occur and how the collaboration with the customers should be performed.

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No specific social media platform is used that supports innovations and collaboration with customers and other users. Anyhow, some database exists where different customer information is shared between different units within the companies.

The concept of mass collaboration that involves many users to solve an issue is used, 56% agree while 44% disagree or strongly disagree. Recall from earlier chapters that a user can be an individual, a group or organization using products.

There are a lot of stickiness and tacit information that can sometimes be different to overcome. Although there are really good relationships with the customers but occasionally it is not clear what the customers want and thus hard to deliver. The general knowledge and understanding how the products shall be deployed are present at the producers. The customer has more knowledge regarding the specific niche that they are working in. Further, they deploy the products in sometimes a not recommended ways. Some cases were discussed were the was deliberately a certain amount of stickiness due to customer relationships and legal matters.

Result from the interviews and surveys in this investigation show that manufacturers in B2B environment have toolkits available for users to innovate. They may look like templates or libraries of how to set up information in best way and other applications that enable users to configure different solutions for the specific purpose. However, there was not that much support found for toolkits that customers were able to use directly to be able to innovate by themselves.

4.3.3   Values and costs of user innovation and co-creation

The knowledge and its novelty increase when involving users and customers. Sometimes it is even priceless since they know the entire system and application, how it should work to be efficient. Manufacturers need many hours at and together with users and customers if they should poses/gain/build same knowledge of the products use.

We found that the manufacturers develop a product that they think they know how to use. In real world usage of the product manufacturers find them many other applications, both good and other that may be not that good. The better applications of the product have generated new insights and resulted in innovations in new products and or services.

Citation "A lot of stuff can be learned by using users on how they use and innovate on the products".

Sometimes the macro trends drive what customers' demands, in those cases manufacturers has already done or will do research and looked into the specific topic.

These B2B manufacturers have internal research and development resources and they usually know more than the users about the technology involved in the products. Nevertheless, when involving users or customers they may generate insights that result in novel knowledge about the products usage and the problems the users face when using the products or services.

4.3.1   Accessing customer and user innovations

When new products or innovations are developed, thanks to the input or demands from users, they are not only sold to the users that were involved. Instead, the new products are sold to many customers. One example could be when a specific coating of a product was applied but the users could not see what parts of it that were used or not and they did not know when to replace it. With

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this insight, the manufacturer needed to change its production method to incorporate this user innovation to its product to be more convenient and it fitted many users. This information was gathered at the field when visiting the customer.

Relations to the users or customers are important if manufacturers are able to find and discuss innovations or solutions made.

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5   Analysis

The intention with this thesis is to investigate how B2B enterprises utilize and incorporate user innovations into their innovation and product development process in different product life cycle stages (Best, 2014). In doing so we also wanted to understand if there is any correlation to what strategy that is used i.e. offensive or defensive. Additionally, understand if there are more user innovations in an emerging, growing, mature or declining market (Best, 2014). The research question(s) was formulated and discussed during the literature review and has served as base for this study. Although the interviews in some cases led to different discussions the focus was on the external, cross-pollination, and in-house idea generations in the innovation value chain (Hansen & Birkinshaw, 2007).

5.1   Innovation Theory

This section presents an analysis of the empirical findings regarding the innovation theories as presented in chapter 2.1.

When looking at the different elements of the five innovation vector (Cooper, 2012) there are some conclusions that can be drawn from the survey and the interviews. Table 5.1 presents the most popular methods for generation of breakthrough ideas and how these are utilized in the examined companies.

Method	Comment
Customer visit teams	Few development teams are connected to the customers, this connection is instead handled by sales and product management. A tight and good relationship with the customer aids innovation.
Focus groups	There is usage of focus groups both with and without customers. Different collaboration meetings within a specific industry segment have led to several innovations.
Lead user analysis	An active selection of users is made to be part of the innovation of the products/projects. This selection is made on the basis of history and old relationships, thus newer and perhaps more innovative users might be omitted from this.

Table 5.1 Effective methods for idea generation (Cooper, 2012)

The meaning of this is that there is collaboration with the customers but there is a barrier between the product development and the actual users. This barrier can lead to that there is less innovation as the information is filtered both ways.

Regarding the types of innovations (Best, 2014; Pisano, 2015; Cooper, 2012) most if not all of the innovation were of the type continuous or routine. These types of innovations are 'just' an improvement/correction of an already existing product. The lack of bolder innovations (Cooper, 2012) of the types disruptive/discontinuous/radical/architectural appears to be missing. As the industries where the companies are active in is quite mature it can be said it is as expected. In some cases, and depending on what kind of industry it is, the industry is quite commoditized. But nothing was mentioned regarding bolder innovations, one reason for this could be that no one from the research centres were interviewed. If these corporate research centres were part of the study they will most likely have a different opinion regarding bolder innovations even though the actual products on the market is the same.

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The usage of a fixed development process and stage gates can in some way be counter proactive for innovations as these are typically more agile and should use proof of concept methodology instead of adhering to a fixed process (Cooper, 2014).

5.1.1   Developing a Strategic focus

The companies use a corporate research centre which look for disruptive technologies (Christensen, 1997) and also have the possibility to look at adjacent technologies from advanced analogues (von Hippel, 2005). The output from the corporate research centre was not clear and it could not be any references to where there has been a successful product that has been evolved from the corporate research centre. This is a clear lack of a strategic focus (Collis & Rukstad, 2008) as the focus shall be well known (Cooper, 2012). During the discussion regarding the usage of outsourcing or not it appeared that the core products (Keat, et al., 2013) are not really known or being focused on, this is a lack of strategic focus. One of the product managers commented that it would be beneficial to get some rule of thumbs or key performance indicators on how much of the portfolio budget should be spent on different types of products/projects. Deploying these strategic buckets (Cooper, 2011) is beneficial to define and use the resources in an optimum way. The type of product/project can be defined as disruptive, additions to existing product line and improvements/maintenance of existing products. This implies that there could be a clear lack of strategic focus (Collis & Rukstad, 2008) if it not unambiguous and no goals are set on how much of the total budget that should be spent on different type of elements in the development portfolio. The citation from (Cooper, 2012) 'Sadly, most firms lack a clearly defined, robust and well-communicated innovation strategy.' makes unfortunately a lot of sense as it appears that there is no clearly defined nor well-communicated innovation strategy.

5.1.2   Fostering a Fertile Climate and Culture

It is hard to develop and establish a climate and culture (Amabilie, 1997) which aid continuous innovation. But, it is even harder to maintain it. Most of the development and innovations of the products in the portfolios have been made as additions and improvements on the existing products. The reason for this can be traditional or heavy regulated industries which do not require completely new disruptive innovations. It was noted several times that it is mostly the customers that innovate and presents the problem to the companies, then the companies select actively if and how to solve the actual problem. Particular during the latter stages of the product life cycle (mature and declining phases (Best, 2014)) there was a clear shift of focus from development of the product to the more defensive market strategy of harvest (Best, 2014) which leads to customer funded projects. These customer funded projects are made together with the customers which provide the funding for the corporations to develop standard products incorporating the requirements and innovations of the users. As much time and effort is spent on handling and maintaining existing products there is perhaps not enough time to nurture new ideas and concepts. There is internal business development work that is ongoing but as soon as there is something else with a potentially higher priority the work is laid down due to management decisions. Thus, there is a severe lack of fertile climate/culture (Cooper, 2012) as not many innovations stem from in-house which can be devastating in the future. This lack of internal innovations is not beneficial to meet the needs of knowledge workers (Drucker, 1999) nor regarding the motivation and drivers for these kind of employees (DuBrin, 2013). Instead most of the innovations originate from external sources as the actual customers of the products. This means that the innovations in some cases are really focused on niche-markets (Best, 2014).

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5.1.3   Generating, Capturing & Handling Ideas

A lot of ideas and innovations are generated by users (von Hippel, 2005). It is necessary to visit them to be able to transfer the needs and desires to profitable products (Cooper, 2012). There are structured, cyclical meetings that are used to generate and capture new ideas. It is maybe not the actual meeting that generated the idea but some seed was set to grow during this brainstorming activities which later lead to innovations. One source (Ny Teknik) of literature were quoted numerous times as a source of external inspiration. Influences to innovations are different trends and development in adjacent fields. Some of these ideas were handed over to the corporate research centre and some for dismissed directly but there is an openness for capture new ideas in adjacent fields. The quote 'A lot of stuff can be learned by using users on how they use and innovate on the products' clearly states that it is necessary to listen to the customer (Cooper, 2012). There is an interesting comparison between the survey and the interviews. In the survey 67% state that it is hard to get the users involved but then according to the interviews most of the innovation in the latter product life cycle stages are created and initiated by users. The consequence of this is that there most likely is a set of customers that not are completely satisfied with the performance but have learned to use the product with its different flaws. A recommendation would be to further push the customers to be able to see the environment in where the products are being used.

5.1.4   Designing a Next-generation, Idea-to-Launch process

There exists a fixed development process (Tonnquist, 2012) with fixed gates/milestones (Cooper, 2014), a modified variant is available for smaller projects. Unfortunately, this model is quite rigid which can be counteractive for development of new products. A rigid process increases the amounts of documentation and bureaucracy which is exactly what not should be to be the focus when working with next generation ideas. It could be due to the persons (mostly Product and Project Managers within R&D) involved in the study, that it appeared to be missing a quicker and more streamlined agile approach (Cooper, 2014) for the idea to launch process. Anyway, it would be expected that the companies would have a well-known process for handling of innovative projects/products, this was missing for the companies in the study (Cooper, 2012).

5.1.5   Deciding the Right Investments, Picking the Winners

Keeping and maintaining a good relationship with the customers (Cooper, 2011) is crucial to aid innovation and cooperation. More than one interviewee commented on that the relationship with the customer is key for being successful in bringing new products to be market. Thus having a good connection with the customers is needed. As stated before there is unfortunately not any clear definition or strategic decision of the size of the different 'strategic buckets' where to allocate the resources (Cooper, 2012). It appears that there is no fixed allocation of resources to different types of projects which can lead to micro management and thus losing the overview and control of the product/project portfolio. Due to the nature of the relationship and knowledge base between the customer (in depth knowledge of the process) and the producer (in depth knowledge of the product) there is a rather large difference regarding which innovations that needs and are required to be done. Some innovations have been performed by smaller subsidiaries within the corporations which are closer and more connected to the end-customer which is like the idea of smaller units within a larger corporation (Gassmann, et al., 2010). Then when there is proof that it is working the innovation is incorporated in the actual product and distributed to other customers. The close

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relationship with end-customers appears to be one of the major source of innovations as opposite to active and strategic product management.

5.1.6   Open and Closed Innovation Model

The open innovation model (Chesbrough, 2003) can be a successful way of innovating and develop new products when the external sources are utilized in a correct way. When looking at the survey the conclusion can be made that the open innovation model is not used. But, according to the interviews there were presented different examples of open innovation principles (Chesbrough, et al., 2006). Examples are joint ventures and collaboration with universities and companies that work in different areas (advanced analogues). The principles (Chesbrough, et al., 2006) of the open innovation model are presented in Table 5.2.

Principle	Comment
Smartness of employees	As not all smart persons are employed by the companies there is an openness towards working together with selected customers. There are different more or less structured collaboration forms that the companies are working with. This collaboration with customers are beneficial for both parties (Chesbrough, 2003) as the company is innovating and the customer get what they need and desire.
R&D	Usage of external R&D is made as there are collaboration forms for this within the companies. From the input from the external R&D there are corporate research centres which continue the development and exploration of ideas before making it a new product/project.
Originator	There are some tendencies to have an elitist internal view of the companies as the phrase 'not invented here' was mentioned. But, as there is a willingness and also an open mind towards customer involvement it seems that the companies are open towards innovations which stem from someone else. It felt that it did not matter where the origin of the innovation came from, to some extend it is decided by global trends both in the same industry and adjacent industries (Gassmann, et al., 2010).
Business model	When looking at the transformation from a production company to a service company it is also necessary to look at the business model (Dawar, 2013). This shift leads to increased collaboration with the customers since instead of 'just' producing a product a solution is made to suit the customers and more focus on the actual niches (Best, 2014). Evolvement of the business model is also an innovation as these are traditional companies with a certain way of doing business, but as the customers is changing it is also needed for the company to do the same (Gassmann, et al., 2010).
Idea conversion	Ideas are not only generated from the company itself but also from customers and other sources according to the innovation value chain (Hansen & Birkinshaw, 2007). This concept of working together with the users of the products aid and help innovation as there is a gap between the internal knowledge and how the users are using the products. The example with the nozzle is an idea/innovation that is generated from customers and then later on incorporated in the standard product. Also as the customers are using the products in a system there are invaluable insights that are made when working together with the customers (Cooper, 2012). On the other hand, there are some laissez faire attitude of waiting for the customers to make contact and suggest improvements and innovation (Amabilie, 1997).

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Principle	Comment
IP (Intellectual Property)	The industries where the companies work in are traditional old almost commoditized industries which lead to few discussions/comments regarding IP issues. Thus nothing can be said regarding this principle

Table 5.2 Principles of the open innovation model

A major issue is the funding as the companies are moving towards more services and customer funded development. There is a shift of focus to be developing what the customers really want instead of what the company thinks that the customers want. By being responsive and doing this there will be more satisfied customers (Tontini, 2007) and also most likely more money is earned. This, because a more satisfied customer is willing to pay more than a not so satisfied customer (Best, 2014).

Further on when the areas (modes) (Chesbrough, 2003) are studied in the open innovation it can be concluded that it both types of *funding* innovations are used as there are projects/products which have funding from internal R&D and from different customer. There is also a more abstract model of corporate research that is funded by benefactors as this research is performed with a more prolonged time horizon. As the modes for *generation* of the innovations are mapped with the answers/comments there can be seen some patterns. The innovation explorers still exist and are part of the R&D departments, when looking at the merchants it appears that they are non-existing in these traditional industry segments with long product cycles. Some traces of missionaries are found with the usage of toolkits and libraries as the output of these can be made freely available, similar to open source software. The same can be said regarding the architects, since if a user have selected to develop a certain set of modules from the toolkits they have adapted a certain way of thinking and structure the system to be according to the producer of that system. The last mode is the one regarding *commercialization* of the innovation. As the products are specialized it is hard to discuss the one-stop centres since they do not exist thus only leaving the innovation marketer. There are in some cases hard requirements that a specific product shall be used and thus there is no way around it. Thus the funding (Chesbrough, 2003) of innovations/products come both from internal and external sources, generation is made by explorers and missionaries/architects. Finally regarding commercialization there is a desire and strategy to be both innovation marketers and one stop centres with close contact to the end-user but this is depending on the customers; it can be the end-user or in the case when the corporation is acting through a channel partner it is more like a one-stop centre but unfortunately not with all necessary products for the customers. Different acquisitions have in some cases enabled the corporation to be defined as a one stop centre, with the distinction that not all required products are available.

By looking at the principles above and the survey/interviews it can be stated that the companies are somewhere in-between an open and a closed innovation model (Chesbrough, et al., 2006). Everything depends on how you see it, but unfortunately a lot of the innovation and development are generated from internal sources. It would be beneficial to have a broader view of the external sources as well with cross-pollination from other fields/businesses (Gassmann, et al., 2010). One reason for the companies being stuck in a closed innovation model is because they are active in businesses that are traditional and have long product life cycles.

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5.2   Strategies

This section presents different marketing strategies (Best, 2014) and how these are used in the examined companies.

5.2.1   Offensive/Defensive Strategies

There was nothing clear in the interviews which could lead to any conclusion that either offensive or defensive strategies (Best, 2014) were utilized most for innovations. In general, it can be said that the suggested approach in Figure 2.6 with more offensive strategies in the beginning of the product life cycle (Best, 2014) followed by more defensive ones in the end was used by the companies. This was also dependent on the actual potential in the product, where the matrix in Figure 2.7 was more or less exactly what the companies are doing regarding marketing strategy.

The gut feeling was that there is more innovation in the beginning in the product life cycle. It was also stated that there are more innovations early on in the product life cycle (von Hippel, 2005). One of the reasons for this is that the customers are more frequently visited and there is a tighter connection and collaboration forms during this phase (Cooper, 2012). Another reason could be that since the market potential is greater there is the possibility to innovate more and thus being riskier without influencing a lot of existing customers. Instead since there are fewer existing customers in the earlier phases of the product life cycle there are less customers that can complain early on.

The role of mass collaboration was explored. The companies were not really using this with the exception of really small focused collaboration of specialists.

But, there are also other examples of user innovations late in the product life cycle (declining phase) which have led to implementation and productizing of these innovations. Thus by using a defensive strategy of harvest/monetize can still lead to innovations if and when the customers and users really need the products.

5.2.2   Segmentation, Mass Collaboration and Downstream Advantage

There is a desire in the companies to be more focused on service than traditional producer of goods, which means moving away from upstream activities and more like one stop centres (Chesbrough, 2003). Basically what this means is a switch of focus from only delivering parts of a system to broaden the view and deliver everything. Thus, there is less strategic focus on the upstream activities (Dawar, 2013) and more effort is utilized for the downstream activities. This is also a link to one of the modes in the open innovation model where there is a strategic switch towards 'Innovation one-stop centres' (Chesbrough, 2003). As it is necessary to have more focus and also to be more profitable there have been a change of direction towards the smaller markets of small/niche segments (Best, 2014).

The desire to be more profitable is the biggest reason why the companies are focusing on increased segmentation as these customers are willing to pay more for exactly the product that is requested. Satisfaction of a product that exceeds the expectations (Tontini, 2007) is also part of the strategy of working in a more niched environment.

Also, by moving down the up/downstream activities, see Figure 2.8, there will be an increased focus on the customers. Otherwise the risk that the products will be part of a commodity is quite high and then there will be increased pressure with price dumping and other similarities.

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Regarding CRM (Customer Relationship Management) (Best, 2014), in the survey it was clear that the companies had a CRM and used it. According to (Cooper, 2012) the greatest effectiveness of innovation is the one of 'Customer visit teams'. But, the actual visits to customers were not that frequent and a lot of promotion was made internally within the companies and not directly to the end-customers. There appears to be a gap between what is meant with a customer in these companies. The most innovations came from actually visiting the end-customer and see how the product worked in the environment where it is deployed. In some cases, not even close to the intended usage of the product.

5.2.3   Blue Ocean Strategy

One thing that was discussed during the interviews was the conceptual taught of strategies with blue and red oceans (Kim & Mauborgne, 2004). A blue ocean strategy is defined as an uncontested market place where the competition is irrelevant, new demand is created and captured, focus is alignment of the company's activities towards differentiation and low cost. A red ocean is basically the opposite. When the products are on a red ocean it means that the competition is fierce and it is mainly price differentiation that is the competitive advantage. On a blue ocean there is basically no competition and the buyer's expectations regarding cost is well met, similar to the Kano model (Tontini, 2007). One example of blue oceans creations is smaller, reliable and more fuel efficient cars during the 70's. This was created by using existing technologies a putting them together in a different way. A more modern disruptive innovation example is the one with electrical cars, in these there is more new technology but it is still a blue ocean for manufacturers as Tesla. Blue oceans can also be created by different innovation regarding the business model (Pisano, 2015) and if these are deployed well they can be extremely successful.

The companies have both a strategy with products that are on a red ocean. Examples are low cost high volume where the market is more or less commoditized. Blue ocean on the other hand appears to be present but this can also depend on that the products are aimed at a small niche which basically creates a blue ocean within the red oceans. With the combined strategy focus of moving towards a downstream advantage (Dawar, 2013) and more niche-segment (Best, 2014) products it seems that the companies have a goal to create blue oceans (Kim & Mauborgne, 2004).

5.3   Customer and User Involvement

This section presents the analysis regarding customer and user involvement at the examined companies.

5.3.1   Innovators characteristics

Recalling lead user definition from chapter 2.3.1 Innovators characteristics, a user modifies and change the product so the user can benefit more from its use (von Hippel, 2005). They need to make these changes on the product for reasons like there are no products that fit their purpose and needs.

In this thesis, findings show that users that innovate most or have the ability are the smaller to mid-size firms or part of the organizations that have the holistic view of the whole process. Moreover, bigger organizations or enterprises that have the resources innovate themselves. Their users or customers that have the whole view of the complete process innovate the most. This may be so because they are in the leading edge and cannot find any other solution to their problems, so they need to put resources in finding a solution for themselves. Lead user concept is support by the

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findings in that sense that the more advanced and entrepreneurial users in the leading edge are the once innovating more often to become more efficient in their operations.

The findings show that there was little amount of innovations that steamed from advanced analogue fields (von Hipple, 2007). The sizes of the studied companies are significant and they have own advanced fields within the company represented by division operating in different fields. One reason to why interview respondents could not give example of innovations that steamed from these fields may lay in the low co-operating level between divisions. The interviews show that there are no structured ways of handling this type of co-operation to find innovations that could be used in other areas or divisions of the company. When considering what literature say that the product development performance increases when involving lead users in that process (von Hippel, 2005; Al-Zu'bi & Tsinopoulos, 2012; Mahr, et al., 2014). Hench if considering the different divisions as users the companies would benefit from involving them since they are operating and finding solutions and generate insights that may fit other or the whole company.

Al-Zu'bi & Tsinopoulos (2012) research shows also that the product variety increase when involving users with lead user characteristics (von Hipple, 2005). It is important to understand the difference between lead user and the average user. Lead users have insights and knows and have tacit information about the trends and future demands. As literature (Christensen & Bower, 1996; Knudsen, 2007; Magnusson, 2009) say that average users can actually harm company's performance if involving them into innovation and product development activities. As the results show in this case, that is not a problem in these companies since they find it hard to involve user. The problem might be to find the right (lead) users that they want to collaborate with and it is reflecting the findings in this thesis accordingly. However, there is some support to what Al-Zu'bi & Tsinopoulos (2012) found about increased product variety. When involving users responsible for the actual operation the product variety will increase, but if involving other users responsible for logistics the variety will decrease. When involving advanced users who have the holistic view of its entire operation, typically a small or mid-size firm, they are able to provide a product specification of what they need. This specification will be a variant that will increase the variety if considered.

Additionally, niche markets users demand more specific solutions and products. Interviews tell that customers and users are good in finding solutions to problems and defining exactly what a product should do, they generate a product specification. Far from all specifications or demands are considered to start a new product development activity, not even from advanced users. The companies in this study evaluate the opportunities based on the monetary earnings they can make since they have an overall objective to profitable (Keat, et al., 2013). As Magnusson (2009) also argue that (average) users' product demands, suggestions and improvements should be used as inspiration and insights to new innovation and product initiatives.

5.3.2   Toolkits and platforms

Toolkits (von Hippel, 2001; von Hipple & Katz, 2002; Thomke & von Hippel, 2002) as earlier described in this thesis ease the tacit information flow between the user and manufacturer. This tacit information is interesting, since if one holds the tacit information one may predict together with trends and other factors what may be the future needs and demands. The findings show that it is hard to get users involved in product development activities and they are willing to provide specifications of products but they are not willing or maybe they do forget to describe the actual

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problem. This is the so-called sticky information (von Hipple & Katz, 2002). There are other findings in this thesis also where this sticky information may be stuck on its way towards product development activities. One example is the collection of customer demands by sales personnel. That information is further transferred to product managers via annual meetings and finally reach product development team when decided to start up a project. This probably have effect on the specification of the new product. It is important for companies having a good relationship with customers and users so they can access and get the customer to speak out what they really need. If one does not have this relationship with its customers, users or suppliers of goods, the product development will suffer and the solutions and products will not be that successful. The studied companies do have toolkits that may facilitate and ease the information stickiness by providing internal users with templates and configurators. However, these are mainly used to develop new solutions not to transfer information between the producer and user which is the problem in many cases. Sometimes out in the field representatives get surprised of how the products really are used in the real-world context and this precious information and insights are incorporated and considered into next generation of products. Hench it is mainly demands from customers or an internal user that is the starting point of a product or innovation activity if they are predicted to be enough profitable.

5.3.3   Values and costs of user innovation and co-creation

When involving users in the product development the knowledge and its novelty increase (Mahr, et al., 2014). New knowledge would lead to new ideas of innovations and product that may facilitate the success of the company. The interviews show that knowledge gained is priceless when involving or just discussing with users and especially customers with lead user characteristics. Because the enterprises studied get new insights and inspiration to new innovations (Magnusson, 2009). As earlier discussed there was indications on that it is hard to involve users. Analogue to earlier, it might be that it is hard to find and get access to advanced users and get them the telling their problems. There are many users to involve, but there are not enough users that may have the right capabilities, lead users (von Hippel, 2005), that the businesses want to involve.

The examined companies have good relationship to some customers, both big and some more important. This could be cultural or tradition. Mahr, et al. (2014) points out some interesting things about the knowledge generated in proper relationships. When the co-operation closeness increase the relevant knowledge will increase. The knowledge and the understanding of a problem will increase. And the knowledge of how solve the problem or increase the efficiency in that particular circumstance or situation will increase, but the knowledge novelty will not increase in these proper relationships. This means that in good relationships the firms may not be stimulated find bolder way of solving the problem instead of incrementally increase the performance of the product or solve the problem in a traditional manner.

5.3.4   Accessing customer and user innovations

The results show that these enterprises innovate by themselves, not involving that many customers into the process. Thus, they must involve other parts in the organization that has the knowledge of what customers' desire and want most. These larger companies have an own ecosystem (Al-Zu'bi & Tsinopoulos, 2012; Hienerth, et al., 2014; Mahr, et al., 2014) with different actors working together with different knowledge of different parts of the value chain.

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Fuchs and Schreier (2011) talk about that customers perceives companies more customer-centric if they are involved in the idea generation. Within the enterprises examined in this study they are mainly relying on their own ability to generate new product ideas but anyhow they say that customer's voice is considered. As the result shows, they listen to the customers and develop the products that are predicted to generate profits to the company and at the same time pleasing the customer with the product that respond to their needs. However, as discussed earlier, one product may fit many people but not all. Hence, the B2B companies are not that good in Fuchs and Schreiers (2011) perspective involving customers and pleasing them with selected product ideas, but anyhow they manage to become successful and survive the competition at the market place.

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6 Conclusions and Implications

Recall that this thesis looked at user innovations with the perspective of when in the product life cycle they are made, how they are deployed/selected and who is doing the actual innovations for corporations being active in a mature environment.

Most, if not all, of the types of innovations are of the routine type which is additions or error corrections on already existing products. This lack of bolder and more disruptive/discontinuous innovations leads to that it will be harder and harder to reach the goals of the company since the innovations will be less and less necessary for the customers. Due to the size and position of the companies it would have been expected that there at least should be a significant amount of the resources working with innovations that not are of the routine type.

At a first glance when looking at where in the product lifecycle the innovations are made there is nothing unambiguous to say, the innovations are spread in the whole product lifecycle. The main thing is that it is dependent on the customers as these are the key drivers for the innovations. When the customers are involved they encourage the companies to incorporate the innovations in the products. Thus, interaction with the customers is crucial for the success of the corporations. Some of the product are quite commoditized and there is a strategy of being close to the actual users of the products to prohibit the commoditization of the products and not losing the competitive advantage.

When looking at the open innovation vs closed innovation there is a large corporate research centre which handles the ideas in an open innovation way of working. There are influences from other companies both regarding competition and collaboration partners. However, internally from a R&D perspective this is more or less adherence to the closed innovation model since it is the corporate research centre that is controlling which innovations to deploy and continue work on. The continuum between open and closed innovation is depending on which kind of industry it is. More mature markets/industries which are highly regulated tend to be more on the closed innovation side of the spectrum. The examined companies are active in a sector that is mature and with rather long product life cycles which means that they should lean towards more a closed innovation model. The usage of advanced analogues and external ideas are open innovation principles that are deployed at the corporations. As stated before, depending on the needs of the customers and users there is deployed both a closed innovation model and an open innovation model, it is used differently depending on the situation and the actual requirements from the end-users. The long product life cycles favours closed innovation but since there is a shift towards services and downstream advantages there is also usage of open innovation principles which is beneficial for the corporations. Thus it is a matter of the future direction of the corporations where they would like to be placed in the innovation spectrum.

The five vectors are something that connects a lot of things (strategic focus, fertile climate, capturing, process and proactive decisions) regarding innovations. There is a strategic customer focus which is necessary for innovations. Lack of actual decisions on how much that should be spent on different types of innovation leads to that most resources are spent on routine innovations as these are the easiest to do. Regarding the climate and actual environment the strategy appears to be more reactive than proactive. This reactive way of working is a sign of lack of strategic focus which can lead to demotivated employees. Deployment of buckets with a certain size for different types of innovations is missing. Using this would help the development of other types of innovation than mostly routine ones.

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Some core strategies are deployed and these effects the amount of innovation. Simplified there are two types of innovations; early on in the product life cycle when offensive strategies are used, really late in the product life cycle. The common denominator for both these types of innovations is that they are initiated by the customers and end-users of the products, only minor initiatives came from in-house sources. Thus, by increasing the contact with the actual users more innovations can be generated in the different product life cycles.

The beneficial shift towards more customer focus is linked to the strategy of moving towards more downstream activities. When more effort is spent with the actual customers the market segmentation will also be increased and a more niche market will be present. Since the companies are doing this it leads to more satisfied customers which is necessary for not being part of the commodity and instead a tighter connection to the customers.

Thus the amount of innovations is increased when the interaction with customers is increased no matter what phase in the product life cycle that the actual product is in.

Another conclusion that can be drawn from this study is that B2B companies do not involve users (customers) much in product development activities. If customers are involved they are involved in the beginning of the product life cycle to be able to provide feedback to be used for refinements of the product. So if customers are involved into the product development activities in a B2B environment they are mainly involved when the products are being introduced or in the emerging market and early growth phase. Users have not that much involvement when it comes to the idea generation phase in the product development process. To involve them more will give the companies increased customer perception.

B2B enterprises they mainly relying on their own ability to generate new product ideas but anyhow they say that the customer's voice is considered. As the result shows, they listen to the customers and develop the products that are predicted to generate profits to the company and at the same time pleasing the customer with the product. They collect demands and requirements from customers that they are confident with and maintain their long relationship. This may give consequences on the innovations generated. As previously described, it may give the companies continues or incremental innovations on existing products. The products on the market are replaced with next generation products with better performance but quite similar innovations. All this due to the knowledge novelty generated in these relationships are low. If the users or customers are leading their businesses, then they are lead users and the novelty in the knowledge generated is high. Otherwise, they need to consider searching and finding advanced users that are leading their industry to maintain the stream of novel knowledge to the innovation process.

Further, there are long information chains to be able to get the complete picture of customer needs. This chain may failure on its way due to stickiness in the information. The toolkits that are used mainly provide support to internal users to become more efficient not to support or get better understanding of what the actual customers prefer and need.

Sometimes out in the field representatives get surprised of how the products are really used in the real-world context. And this precious information and insights are incorporated and considered into next generation of products. Hence it is mainly demands from customers or an internal user that is the starting point of a product or innovation activity if they are predicted to be enough profitable.

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6.1   Further Work

This thesis has focused on B2B companies producing industrial goods, thus this work has limitations in the examined companies and the mature environment that they are active in. One suggestion to further work is to find out how other types and sizes of businesses involve user in innovation and product development activities. Also bring more insight and to find out how and if there are any strategies describing when and how to do so. As there are several communication layers between end-users and the producers it would be interesting to study the role of loss of tacit information.

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8 Appendices

8.1 Appendix A: Questionnaire

As part of the interviews there will be a questionnaire using a Likert scale.

Role:

Function:

ID	Question	Strongly agree	Agree	Disagree	Strongly disagree	Unsure Don't know
Background	The product life cycle can be divided into several stages that generally starts with an *emerging market* followed by *market growth* and moving on becoming a *mature market* and finally ending with a *declining market* phase. One user can be an individual or organisation using the product or service. A toolkit brings the information together to a single locus that the manufacturer has about the product development and production process and the user's information about its needs and preferences and the real-world use case of the product. Disruptive technology is usually inferior in the beginning but after a while it may perform even better than traditional technology.					
1.	Users are involved when developing products that are in the:					
a.	introduction or emerging market phase					
b.	the growth phase					
c.	late growth phase					
d.	maturity phase					

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e.	decline phase				
2.	Feedback from users and customers are incorporated in future products				
3.	There exists a customer relationship program which is active				
4.	It is easy to get users involved in product or service development				
5.	The concept of mass collaboration, which involves many users to solve an issue, is used within the organization				
6.	Toolkit are supplied to the users to enable them to innovate				
7.	There is a forum, physical meeting or web based discussion, for users and customers to give feedback				
8.	There are several customers that are ambassadors of the company or organisation				
9.	There is a clear strategy regarding customer focus				
10.	Offensive strategies aid user innovation				
11.	Defensive strategies aid user innovation				
12.	There is a fixed development process				
13.	The closed innovation model is practised, where research and development is mainly done within the organization				
14.	The open innovation model is practised, where research and development is done both inside and outside the organizations boundaries				
15.	Handling of disruptive technologies are part of the innovation and product development process				

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8.2 Appendix B: Interview Questions

Introduction of interviewer background and short presentation of study and purpose

1. Background information
    a. Years within the company
    b. Position
    c. Function
    d. Experience with product management
    e. Previous experience
2. How are users involved in the innovation process?
3. How are these users selected?
4. How is the communication (collaboration) performed with these users?
5. What can you say about the product variety when involving users?
6. What can you say about the knowledge novelty generated by involving users?
7. Are there any specific characteristics on the users that innovate the most?
8. Are there any differences regarding innovations dependant on where in the product life cycle the actual product is?
9. How does the amount of innovation depend on what kind of market segmentation is done?
10. Which toolkits are available for the users to enable and enhance innovation?
11. Regarding collaboration, how much innovation are reused from competition and other collaboration forms?
12. What are the experiences with disruptive technologies and how they are handled?
13. How many and what type of innovations stems from advanced analogues?
14. How does the information stickiness affect the amount of innovations?
15. What can be said regarding innovation and which product strategies that are used?