How implementing a Product-Service System can improve a company's value proposition

A case study

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- A case study

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Daniel Gran
Abstract
Traditionally, many firms had to focus on the price of their products, as there was a constant threat that companies from low-cost labor countries would steal their work if not. Thus, there was a realization that services needed to be integrated with the products to enhance the value and become more competitive, which became known as a Product-Service System. This means that the customer finds value in the use of the product, rather than in the product itself. In this thesis, the purpose is to find out how a company can improve their value proposition by implementing a Product-Service System, but also what benefits they will receive from that, and what barriers are needed to overcome.

Gaining an understanding for the value proposition within the business model, and also the Product-Service System, helped facilitate the execution of this thesis. By studying theoretical information, along with conducting two case studies at a case company and a benchmarked company, data could be collected. The benchmarked company is Product-Service System oriented, and hence it added empirical evidence to the theoretical information. The theoretical information was gathered through books and articles, and therefore a deductive approach was used for that.

Findings in this thesis are that in order to improve the value proposition, but also gain and retain customers, a company needs to focus greatly on integrating services with products. This means offering more comprehensive product/service solutions, by getting to know the customers and find out how to satisfy their needs. This requires a closer relationship between the two parties, and is more time consuming. The organizational structure and culture will also need to change in order to accommodate the new offerings and way of doing business, along with coming up with a new pricing strategy since more value-added services are included with the products. This will, potentially, result in enhanced value for the customers, and the company can gain a sustainable competitive advantage.
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1 Introduction
This chapter includes a background of the topic in focus of this thesis, a problem discussion, a research problem, two research questions and the delimitations and disposition for this thesis.

1.1 Background
Many traditional manufacturing firms are being challenged by companies of developing countries with low-cost labor, leading to the fact that many firms are struggling to continue their operations. This has resulted in lost market shares for these firms, and in order to stay competitive they need to create more value for their customers (Yoon, Kim, & Rhee, 2012). Due to this, manufacturing firms has become more service-oriented in order to gain competitive advantages over these low-cost labor countries, which affects their value proposition (see 1.1.2 Value proposition for a more detailed description of a value proposition). They now try to provide customers with a bundle of services with their products in order to come closer to their underlying needs and wants. This is called ‘servitization’, and examples of world-famous firms that have adopted this way of doing business are IBM, General Electric and Hewlett-Packard (Zhen, 2012). Lockett, Johnson, Evans, and Bastl (2011) describes how seeking competitive advantages has shifted focus from improving processes and being innovative with products to be more servitizing, by integrating value-added services with their core offerings.

Yoon, Kim, and Rhee (2012) explains how this way of operating will result in less environmental impact, and the customers’ needs are still kept in focus. This way of operating, which means selling functions through a mix of products and services, can be defined as a Product-Service System (PSS) and can be implemented in a company’s business model (BM) (Yoon, Kim, & Rhee, 2012; Aurich, Wolf, Siener, & Schweitzer, 2009). Goedkoop et al. (1996) defined PSS as a “marketable set of products and services capable of jointly fulfilling a user’s need”, whereas services defined as only add-ons to products would create less value to the customers (Childe, 2007). The segment below will give a more detailed description of the PSS concept.

1.1.1 Product-Service Systems
Yoon, Kim, and Rhee (2012), Tukker (2004) and Cook, Bhamra, and Lemon (2006) explain how there are three different types of the PSS that means integrating tangible products with intangible services in different ways. Those are: product-oriented, use-oriented and result-oriented. Within the product-oriented PSS, the ownership of the product is transferred to the customer and a service is provided to the customer over a given period of time. Examples of services within a product-oriented PSS can include warranties and maintenance contracts (Cook Bhamra, & Lemon, 2006), which is mainly related to the product itself (Tukker, 2004). Another type of service described by Tukker (2004) was advice and consultancy, which implies that the provider gives advice on the products most efficient use.

Within the use-oriented PSS the products remain central but the service providers own them, and the services can come in different forms, but they are not add-ons and instead integrated with the product. The product can be leased, rented or pooled (Tukker, 2004). The result-oriented PSS aims to offer a result with the product instead of promoting the product itself. For example, a company may offer a ‘pleasant climate’ in the office rather than air conditioning (Yoon, Kim, & Rhee, 2012), or a copying machine can be leased
and paid by printed unit. This leads to the building of a relationship between the buyer/lessee and the seller/lessor, rather than just keeping it on a transactional basis (Tukker, 2004).

By embracing the PSS concept companies can increase their revenues, but if they do not understand the products lifecycle costs they will experience a decrease in profit. What needs to be understood is how to manage and deal with uncertainties, and thereby be more proactive when it comes to risk management and thereby keep the profits on an increasing note (Meier, Roy, & Seliger, 2010).

1.1.2 Value proposition within the business model
The value proposition that is being discussed in this thesis is also referred to as the value offered to customers. Osterwalder and Pigneur (2010) defines the value proposition as follows:

“The collection of products and services a business offers to meet the needs of its customers”

A company’s value proposition is what distinguishes itself from its competitors, and can provide value through various elements. These elements could be newness, customization, performance, “getting the job done”, design, price, cost reduction, risk reduction, usability and accessibility. Depending on how a company approaches its customers, the value proposition can vary. Furthermore, a value proposition is something that appeals to customers in terms of solving their problems and satisfying their needs, thus showing why a particular provider should be used (Osterwalder & Pigneur, 2010).

1.2 Problem discussion
The value of a product or service a company offers to its customers is considered to be an important aspect of creating good relationships. Customers or customer relationships have been considered examples of firms’ strategic assets and market-based assets (Grönroos & Helle, 2012). Myrna (2010) explains how sometimes a company unintentionally can hide the offered value by believing that pricing is the way of showing value to the customers. His philosophy is that profit generated by a product or service is the value a company create from their guidance of the resources consumed. Yoon, Kim, and Rhee (2012) agrees that price is not the way to show value to customers and also compete for market share with competing companies, but offering knowledge with the products and the service that comes with it. This is important in order to be able to gain competitive advantages over other deliverers of products and services.

Nowadays, manufacturers tend to focus less on producing their products (which should already be a core capability) and instead focus more on adding value to customers through services. Yoon, Kim, and Rhee (2012) argue for this because services can provide value with less environmental impact without overlooking customers’ needs. PSS is still, though, left out of many companies BMs. Mont (2001) defines a PSS as a system of products and services, but also a network of actors and a supporting infrastructure developed to be competitive, safer environmentally and that satisfies customers better than traditional BMs. One core purpose of PSS is to achieve sustainability with a product, and it is considered to be a useful and attractive approach since it fits well with the criteria of strategies for achieving sustainability for products, production and consumption. This view has been based on the fact that a key idea behind PSS rather seeks to utilize a product over demanding the product itself (Goedkoop et al. 1999), and
this is where many companies fall short on fulfilling customer needs (Yoon, Kim, & Rhee, 2012).

Returning to the BMs that are not utilizing the PSS, Clayton, Backhouse, and Dani (2012), and Childe (2007), state that manufacturers providing services are generally known to provide those in the shape of add-ons. Examples of these add-ons could be warranty and maintenance on products, and generally occur after a sale has taken place. This could be seen as a cost center in itself, because money would have to be spent on upholding those services (Clayton, Backhouse, & Dani, 2012). Although, however great PSS may seem, there is something that must be considered which could have substantial implications on the whole company. By adopting a PSS oriented BM, the organizational structure and culture will be affected along with external factors as well (Martinez et al, 2010), such as suppliers and customers. Another important factor when implementing a PSS is to align both the internal and the external factors with the concept. Moreover, many firms may believe that the way they are doing business right now is to some extent PSS-oriented and sufficient for satisfying customers, but that can be analyzed and further improved.

1.2.1 Research problem
As mentioned above, the value of a product or a service proposed to a customer is considered to be an important aspect of creating good relationships. Often products and services do not come in an integrated package, meaning that service could be considered as an add-on to the product. Instead it is the guidance that comes with the product that creates the value customers need, and from that derives profit. The research problem (RP) that will be studied in this thesis will therefore focus on how a company can improve its value proposition by implementing a PSS, and the question to be answered is presented below:

RP: How can a company improve their value proposition within the business model by implementing a Product-Service System?

That will be the main focus area of this thesis, and in order to answer that question it has been divided into two research questions (RQs), which will subsequently be answered in this thesis.

1.2.2 Research questions
The first RQ is important to answer in order to gain an understanding for the current value proposition in a company’s BM, which needs to be evaluated so that it can be analyzed and improved. RQ one is presented below:

RQ 1: How can the value proposition in a company’s current business model be characterized?

After answering that question it is time to get an understanding of how the value proposition in a PSS can be characterized. The reason for that is to show what competitive advantages can be gained by adopting that strategy, but also how a value proposition can be increased. RQ two is presented below:

RQ 2: How can the value proposition in a company that has implemented a Product-Service System be characterized?

These two RQs have been designed to visualize how adding more services, which are integrated with the products, can strengthen the value proposition. Following the RQs,
the next section will contain the delimitations of this thesis, and the reasons why they have not been considered.

1.3 Delimitations

The value proposition being discussed in this thesis is one out of nine building blocks in Osterwalder and Pigneur’s (2010) Business Model Canvas found in their book Business Model Generation. This thesis will focus on how the value proposition within a BM can be improved by implementing a PSS, and therefore it delimits itself from the other eight building blocks defined by Osterwalder and Pigneur (2010), namely customer segment, channels, customer relationship, key resources, key activities, revenue streams, cost structure, and key partnership. Yoon, Kim, and Rhee (2012) argues that the value proposition is important to consider when implementing a PSS since the key idea of the system is to add more value for the customers through the bundling of products and services, and that provides validity for the topic of this thesis. Moreover, this thesis will focus on the business-to-business sector (B2B), and thereby it will be delimited from the business-to-consumer (B2C) sector. The B2B sector is said to have fewer and larger buyers than the B2C sector, and therefore more trust is involved along with stronger relationships (Leek & Christodoulides, 2011). Since the PSS can create better relationships with customers, the B2B sector is considered to be an important area to study in this matter.

Further on, within the value proposition, as defined by Osterwalder and Pigneur (2010), there are eleven different elements. Those are performance, customization, “getting the job done”, cost reduction, risk reduction, usability, newness, brand/status, design, accessibility, and price. This thesis will be delimited from the last five elements, namely newness, brand/status, design, accessibility, and price. The reason for it is that they are less relevant and harder to generalize in regards to the PSS within manufacturing firms working in the B2B sector.

1.4 Disposition

Chapter 2 consists of theories that are relevant and useful in order to give the reader a better understanding for the topic of this thesis, and specifically theories presented by scholars and business professionals regarding the PSS and the value proposition in a B2B sector. Furthermore, it will form a basis for the data collection in chapter 5 and an interview guide to help answer the RQs.

Chapter 3 explains the methodological approach for answering each of the RQs. It will present a framework of how data will be collected and further analyzed in order to answer specific RQs.

In Chapter 4, the methodology conducted for this thesis will be described. More specifically, the methodology chapter will consist of a research purpose, approach, strategy, sample selection, data collection and analysis and any potential method problems that could appear throughout the research. Furthermore, the chapter will explain how theories presented in chapter 2 will be connected to reality and how the main RP will be solved.

In Chapter 5, the data gathered will be presented. It includes primary data, which is the result of semi-structured interviews.
Chapter 6 aims to analyze the data gathered in this thesis. The purpose of this chapter is to compare primary data gathered from semi-structured interviews with secondary data from articles and literature. By comparing these two data sources, the current situation for a case company that may be the subject of implementing a PSS can be identified.

Chapter 7 presents the findings and conclusions that surfaced whilst conducting this thesis. The answers to the RQs will be presented followed by the answer to the main research problem.

Chapter 8 consists of a discussion regarding the thesis and its focal points, and how the case company could improve their value proposition by implementing a PSS along with recommendations for further studies.
2 Literature overview

This chapter concludes a literature overview in the shape of a theoretical background that is related to the specified research problem and research questions. The overview contains information about the product-service system and factors related to that, along with theories regarding the value proposition within the business model.

2.1 Product-service system

One core purpose of PSS is to achieve sustainability with a product, and it is considered to be a useful and attractive approach since it fits well with the criteria of strategies for achieving sustainability for products, production and consumption. This view has been based on the fact that the key idea behind PSS rather seeks to utilize a product over demanding the product itself (Goedkoop et al., 1999), and this is where many companies fall short on fulfilling customer needs (Yoon, Kim, & Rhee, 2012). According to Tukker (2004), there are three categories of the PSS, as seen in the Figure 1 below.

![Figure 1: Main and subcategories of a PSS, adapted from Tukker (2004)](image)

The figure (or model) above can be explained by looking from left to right, where more and more focus is put on integrating service to the product as you move to the right in the model. Therefore, a product-oriented PSS would have fewer services integrated with the product than the result-oriented PSS does. Furthermore, a shift to the right in the model shows how value mainly appear in the service content, whereas staying on the left in the model the value for the customers would mainly appear in the product itself (Tukker, 2004). In the sections below, the different categories of the PSS will be further explained along with the sub-categories of them.

2.1.1 Product-oriented PSS

As can be seen in the model illustrated above, the product-oriented PSS involves two sub-categories. Those are *product related* and *advice and consultancy*. The use of these types of PSS comes with a value proposition within the BM that is mainly geared towards the sale of the value the product itself brings, and some extra services are added (Tukker, 2004). Childe (2007) defined a PSS that is product-oriented as having the services treated as
add-ons, and they are not, or just barely, integrated with the product. Examples of that can be maintenance contracts or warranties. However, besides the product related sub-category, Tukker (2004) explains how advice and consultancy can come with the sale of a product. This means that the proper and most efficient use of the product is being integrated with it, making the service more value adding, as it is not seen as an add-on. It can include offering solutions on how to use products used in a production unit. In order to be able to offer these types of solutions, a close relationship with the customer is needed.

2.1.2 Use-oriented PSS
According to Tukker (2004), there are three types of the use-oriented PSS: product lease, product renting/sharing and product pooling. In product lease, the provider remains the owner of the product but the lessee pays a fee to use it. The product can be produced internally with the provider, or bought from a supplier. When the ownership does not leave the hands of the leasing company, responsibilities such as maintenance, repair and control are also not transferred to the customer. In cases where product leasing occurs, the customer normally has unlimited and individual access to the leased product (Tukker, 2004).

Product renting/sharing means that the ownership of the product is not transferred to the customer, as with the product being leased. The difference is, though, the user does not have unlimited or individual access. Others can use the same product at other times, on a sequential basis and the users pay for the use of the product at different times. Product pooling, on the other hand, means that there is simultaneous use of the product (Tukker, 2004).

2.1.3 Result-oriented PSS
With the result-oriented PSS, the provider can choose to remain the owner of the product or not, depending on what type of agreement can be come to with the customers. Tukker (2004) describes three different types of the result-oriented PSS: activity management/outsourcing, pay per service unit and functional result. The activity management/outsourcing means that a part of a company’s activity is outsourced to a third party, and the quality of those need to be good result-oriented (Tukker, 2004).

A copier that is owned by the provider, where the user pays for the amount of pages being copied, can exemplify the pay per service unit. With this, the provider also holds the responsibility of making the copying machine available at all times along with providing maintenance, supplies and repairs. To simplify, only the output of the product is being paid for by the customer (Tukker, 2004).

A functional result means that, for example, an agreement exists that the provider can deliver a ‘pleasant climate’ in the office rather than air conditioning, or a minimum harvest loss rather than selling pesticides. An agreed output result is a focal point in this type of the result-oriented PSS (Tukker, 2004; Yoon, Kim, & Rhee, 2012).

As can be seen above, there are three different types of the PSS, and they all contain different sub-categories. To summarize, the overall purpose with these different types of PSS is to find the best solution for different businesses and customers in order to propose optimal value for both parts. A description of what benefits the PSS have been described to come with can be seen in the section below.
2.1.4 Benefits with embracing a PSS

When implementing a PSS, several benefits can come as a result of a successful implementation. These benefits have been described to affect not only the provider, but also the customers and the society (Mont, 2001). Table 1 below shows a summary of the different benefits, as seen by several authors.

Table 1: Benefits of a successfully implemented PSS

<table>
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<tr>
<td><strong>Enhanced revenues</strong></td>
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<td></td>
<td></td>
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<tr>
<td>- Gives additional sources of revenues</td>
<td>✓</td>
<td>✓</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>- More stable sources of revenue</td>
<td>✓</td>
<td>✓</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td><strong>Enhanced value</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Customers demand more services</td>
<td>✓</td>
<td>✓</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>- Allows better understanding of customer needs</td>
<td></td>
<td></td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>- Improved and more established customer relationships</td>
<td></td>
<td></td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>- More comprehensive solutions to customer needs</td>
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<tr>
<td><strong>Sustainable competitive advantage</strong></td>
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<td></td>
<td></td>
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<tr>
<td>- Services are more difficult to imitate</td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>- Finding more strategic opportunities</td>
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<td></td>
<td>✓</td>
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By studying different authors views on the benefits of a successfully implemented PSS, three categories of benefits have been identified. These are benefits of enhanced revenues, enhanced value and a sustainable competitive advantage. These three categories will be further described below, and the benefits belonging to them.

**Enhanced revenues**

By successfully implementing a PSS, the ways of making money increases. Not only can a company create revenues by selling a product, but also selling and promoting a service that comes with (Mont, 2001; Desmet, van Dierdonck, & van Looy, 1998). Tukker (2004) explained how products could be sold with agreements of usage, contracts of maintenance, and for periods of time. These types of contracts/agreements could provide a more stable source of revenue, given that the products that come with can be used for several customers at different times. Mont (2001) argues that revenues could come more from services than the product itself, which is an additional source of revenue differing from the traditional way of creating revenue from products merely. Also, customers who are more environmentally oriented do not have to spend too much money on just the products, but the usage of them. The provider can then take care of
the product after its full usage with a specific customer, only to get additional revenues by offering the same product, if possible, to a different customer instead of disposing of it (Mont, 2001; Oliva & Kallenberg, 2003).

**Enhanced value**

Customers nowadays seek to utilize a product rather than demanding the product itself (Goedkoop et al., 1999), as described in the beginning of this chapter. This leads one to believe that customers are looking for enhanced value with their purchases. Customers demand more services and better utilization, and the PSS aims to integrate the product with more services, which enhances the value of the product (Tukker, 2004; Oliva & Kallenberg, 2003; Mont, 2001; Desmet, van Dierdonck, & van Looy, 1998).

In today’s market it is also important to understand what the customer needs are, in order to fulfill them, and by implementing a PSS this can be accomplished. Tukker (2004) explains how, within a PSS, products and services can be designed in order to jointly fulfill a customer’s needs. This is because the system is flexible and different solutions can be designed for different customers. The ability of fulfilling a customer’s needs is often associated with changes in the ownership structure of products, and since ownership usually comes with responsibilities providers need to do whatever they can to add value to products during customers’ utilization of them (Mont, 2001).

The PSS allows understanding of customers’ needs, and to be able to do that, information about their preferences has to flow better through increased contact between the two. Without the service component with the products, the relationship that comes and continually grows by these contacts could not be improved (Mont, 2001). Tukker (2004) says that this type of relationship could hopefully create trust and loyalty, and the validity in customers’ preferences could grow stronger, leading to faster innovation and more needs-comprehensive products (Tukker, 2004; Mont, 2001; Desmet, van Dierdonck, & van Looy, 1998).

**Sustainable competitive advantage**

When getting a better understanding of customers, providers can create competitive advantages that are sustainable by making them difficult to imitate, which should be built upon current internal competencies since it is less time consuming and financially costly. A product can probably in most cases be imitated, whereas the services that are integrated with it cannot easily be imitated (Mont, 2001; Desmet, van Dierdonck, & van Looy, 1998). Furthermore, this is a way of safeguarding market shares and become powerful and attractive to customers. Strategic opportunities can be found within this, as close collaboration with customers can recognize new market trends and how offerings should be tailored (Mont, 2001).

Although successfully implementing a PSS can bring many benefits, there are some barriers that need to be considered and overcome before adopting the PSS. This will be described in the section below.

**2.1.5 Barriers to overcome when adopting a PSS**

When implementing and working with a PSS, a company needs to consider possible barriers to overcome in order to make the implementation successful. There are many significant cultural and corporate challenges involved, and these have to be fully understood in order to gain good conditions for the implementation itself. It is beneficial, from financial and time perspectives, to identify these barriers in a timely manner to be able to plan and prepare ahead of time (Baines et al., 2007). What also
needs to be considered, though, is that the barriers are in the form of general views of them and also situational. Below is a compilation of barriers that may need to be overcome in order to successfully adopt a PSS (see Table 2).

Table 2: Barriers to overcome when adopting a PSS

<table>
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<tbody>
<tr>
<td>Organizational structure and culture</td>
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<td>✔️</td>
<td>✔️</td>
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<tr>
<td>Risk absorption</td>
<td>✔️</td>
<td>✔️</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pricing strategy</td>
<td>✔️</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Closer relationships with customers</td>
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</table>

As can be seen in the table above, based on the four authors views on adopting a PSS, the four barriers most frequently mentioned in literature are organizational structure and culture, risk absorption, pricing strategy and closer relationships with customers. Following this section is a closer description of these five barriers.

**Organizational structure and culture**
When adopting a PSS, there is a need for a cultural shift since value is proposed as meeting customer needs instead of selling ownership of products to said customers (Baines et al., 2007). Meier, Roy, and Seliger (2010) argue that changing the organizational culture and structure is the main barrier to consider and overcome in order to implement a successful PSS. Mont (2001) explains how this cultural shift requires resources and time to make it possible to carry through the transition towards a PSS-oriented organization. There will also be a change in the market engagement, since selling services as oppose to just products implies leaving traditional marketing concepts behind, which often results in psychological barriers in companies (Mont, 2001). Trying to overcome these barriers of internal change can be hard, as individuals and groups usually show various degrees of resistance to such change (Balogun & Hope Hailey, 2008). Oliva and Kallenberg (2003) says that it can be hard for product-focused companies that are structured to design and deliver complex products to then try to have a positive outlook on having to repair, maintain, and dispose of said products.

**Risk absorption**
By changing the way of doing business with their customers to a more PSS-oriented way, companies will absorb more risk than they have had before. This is usually unknown from previous experiences and leads to fear within the organization and its actors (Baines et al., 2007). When the ownerships of products change from the provider to the customers, the customers will be responsible for the products. When implementing a PSS, the provider will hold more responsibilities, which involves a higher risk. This also means that the business approach towards the customers has become more relational than transactional (Meier, Roy, & Seliger, 2010). Examples of these responsibilities are take-back of products, maintenance (i.e. failure of equipment), materials recovery, re-use and refurbishments (Baines et al., 2007; Oliva & Kallenberg, 2003).

**Pricing strategy**
The implementation of the PSS leads to a change in a company's strategy of making a profit, which affects how the price of the integrated product-service solution is set. Depending on the experience within an organization of setting prices in a non-traditional product-focused way, the knowledge of how to do it in a correct and optimized manner
is limited (Baines et al., 2007). Oliva and Kallenberg (2003) advises that, for instance, agreement plans for certain periods of time a service is being used can be implemented. Meier, Roy, and Seliger (2010) claim that a profit can, most likely, only be made if the provider considers an integrated product-service solution’s entire life cycle when pricing it. Furthermore, a company needs to match up the costs that are involved with the entire life cycle and the profits that can be made from pricing correctly (Baines et al., 2007). The products become cost centers since the main responsibility usually stays with the provider, seeing how the ownership does not transfer over to the customer which is primarily the case with use- and result-oriented types of PSSs (Clayton, Backhouse, & Dani, 2012).

**Closer relationships with customers**

When offering these solutions to customers instead of just selling a product, the customers need an earlier involvement than they usually have. This is essential in order to design an offering that meets the customers’ wants and needs, which will add another obstacle to the barrier of changing the organizational culture (Baines et al., 2007). Mont (2001) argues that the provider needs to become more transparent and receptive to customers in order to give them what they want, because they have to work together to find the best possible solution to the customers’ needs based on current offerings from the provider.

**2.2 Value in use**

Value in use can be explained as simply as it sounds, it is about offering customers value while using the products. This can be considered a related theory to the PSS as Goedkopp et al. (1999) said that a key idea behind a PSS is that customers seeks to utilize a product over demanding the product itself.

For a long time, it has been challenging for manufacturing firms to understand what customers value most in the market offering, and it has been described by Anderson and Narus (1998) as “monumentally difficult” to do so. Ostrom et al. (2010) explains how it has been a key research priority to create and improve tools in order to capture value and communicate it to customers. As mentioned earlier, value can be created in different ways considering a PSS, namely by acting in a product-, use, or result-oriented way. Macdonald et al. (2011) argues that the way customers utilize a product or service determines the value in the use of that product, which leads to the conclusion that the customers are the ones who create value for themselves. This is truer when it comes to the use- and result-oriented PSSs. The customers need to be involved in a co-creational process with the provider, and the provider’s offers do not become valuable to the customers unless they co-create the value and receive benefits from it (Ng & Yip, 2009).

**2.3 Value proposition within the business model**

According to Osterwalder and Pigneur (2010), “a business model describes the rationale of how an organization creates, delivers, and captures value”, and together with almost 480 business professionals and scholars, Osterwalder and Pigneur (2010) developed a BM canvas consisting of nine building blocks. Out of those nine building blocks that help companies make money, the value proposition is considered a key factor in this thesis. The value proposition describes the products and services that together create value for specific customers, and this is achieved by offering services, bundles of products/services, and focus on solving customers’ problems along with satisfying their needs. The values can be quantitative (i.e. price/speed of service) or qualitative (i.e. design, customer experience).
As previously mentioned under 1.3. Delimitations, what can contribute to the value proposition within a PSS-oriented organization are elements such as performance, customization, “getting the job done”, cost reduction, risk reduction and usability, and they are further elaborated upon below.

2.3.1 Performance
For a very long time, increasing and delivering high performance products have been a common mean of creating value for customers. A pitfall with increasing performance could be that demands of performance can differ between customer segments, and price and utilization are key factors. Manufactures can also decide whether to increase performance of existing products, or release new products (Osterwalder & Pigneur, 2010).

2.3.2 Customization
By tailoring products and services, and integrating them, value can be created to meet specific needs of individual customers or customer segments. The concepts of mass customization and customer co-creation have in recent years gained importance. In order to create mutually beneficial transactions, provider to customer, a company needs to decide if this is the way to go or not by analyzing different factors (i.e. price, quality). By tailoring these products or services either to large masses or smaller masses, economies of scales can be taken advantage of (Osterwalder & Pigneur, 2010).

2.3.3 “Getting the job done”
By offering solutions that help customers get jobs done, value can be created in various ways. This means that a company offers a product or service to help facilitate the work of others. For instance, Rolls Royce is a good example of this way of creating value for airline customers with their jet engines. Their customers rely on them to manufacture and service the engines in order for the airlines to just worry about flying the aircrafts, which means they can focus more on serving their own customers. For this, the airlines pay Rolls Royce a fee for every hour an engine runs (Osterwalder & Pigneur, 2010). This can be related to the use-oriented PSS, where responsibilities for maintaining products and services in order for customers to run their businesses lie with the provider who usually holds the ownership (Baines et al., 2007; Tukker, 2004; Yoon, Kim, & Rhee, 2012; Cook et al., 2006; Clayton, Backhouse, & Dani, 2012, and others).

2.3.4 Cost reduction
Osterwalder and Pigneur (2010) talks about how helping customers reduce their costs is an important way of creating value. By showing customers this, they have proposed a value to them, which provides competitive advantages over competitors. Furthermore, Osterwalder and Pigneur (2010) exemplifies cost reduction by showing the case of Salesforce.com. This company hosts a Customer Relationship Management (CRM) application, which relieves customers of costs such as purchasing, installing, and managing the software themselves.

2.3.5 Risk reduction
By reducing risks for customers, the providers absorb more of the risk. Customers do value this since they gain more value from using products when most of the risk involved with the purchase is eliminated or next to nothing. An example is the used car business, where buyers can receive a one-year service guarantee can reduce risks such as breakdowns and repair after a purchase has taken place (Osterwalder & Pigneur, 2010).
2.3.6 Usability
The last element of the value proposition, as defined by Osterwalder and Pigneur (2010), is usability. It is about making sure products and services can easily be used. This is proven to create great value. One example is Apple Inc. who with their iPod and iTunes revolutionized the market by making searching, buying, download, and listening to digital music more convenient for the customers (Osterwalder & Pigneur, 2010).

2.4 Research questions and related theories
In this chapter, the literature that has been presented relates to the PSS and the value proposition within the BM. The theories can all be related to the RP, and its RQs. The objectives of the RQs and its related theories can be seen in Figure 2 below.

![Figure 2: RQs objectives and supporting theories](image)

The figure above explains how different theories regarding the value proposition within a business model, and theories regarding the PSS, help support the RQs along with empirical information. The next chapter will present the methodology in which this thesis has been carried out.
3 Frame of reference

The precious chapter described the methodology in which this thesis will be carried out, whereas this chapter will further investigate how to answer the two research questions in order to gain a deeper understanding of the research problem at hand.

3.1 Framework for RQ 1

The first RQ was designed so that it could characterize a company’s value proposition within the BM, which is one out of nine building blocks, as described by Osterwalder and Pigneur (2010). The literature regarding the value proposition was mainly gathered from Osterwalder and Pigneur’s (2010), and has previously in this thesis been deemed a reliable source of information due to its large amount of involved professionals in the business.

RQ 1: How can the value proposition in a company’s current business model be characterized?

As mentioned in the literature overview, there were eleven different elements that could characterize a value proposition. From those eleven, six of them were considered to be of importance in this thesis. Table 1 below is showing the different elements, the source of evidence, and the objective of identifying those elements within a case company. Only one source is used to define the value proposition, and that is justified considering Osterwalder and Pigneur (2010) used almost 480 business professionals when creating their BM canvas.

Table 3: Frame of reference for RQ 1

<table>
<thead>
<tr>
<th>Value proposition</th>
<th>Source</th>
<th>Empirical objective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Performance</td>
<td></td>
<td>Identifying elements of the value proposition that can be considered when transitioning into a PSS-oriented way of creating value to customers</td>
</tr>
<tr>
<td>Customization</td>
<td></td>
<td></td>
</tr>
<tr>
<td>“Getting the job done”</td>
<td>Osterwalder &amp; Pigneur (2010)</td>
<td></td>
</tr>
<tr>
<td>Cost reduction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Risk reduction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Usability</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

By conducting semi-structured interviews (see Appendix B) with appropriate personnel at a case company, elements of the value proposition will be identified after an in-depth analysis of that data. Probing questions will be used to strengthen the chance of getting correct interpretations of answers, so that the first RQ can be answered accordingly. Furthermore, by characterizing a company’s current value proposition within the BM first, it will create a foundation of knowledge in moving on analyzing data gathered to answer RQ two, so that the RP can be answered.
3.2 Framework for RQ 2

RQ two was designed so that it would facilitate the data collected in RQ one, and show examples of how a PSS approach to a current value proposition could look like.

RQ 2: *How can the value proposition in a company that has implemented a Product-Service System be characterized?*

An interview guide (see Appendix C) will be used to characterize a case company’s value proposition that is PSS-oriented. As mentioned in the methodology chapter, the interview guide will aid the semi-structured interviews. The data collected there will later be triangulated with literature found in articles from journals relating to the topic of this thesis. The literature gathered revolves around PSSs and the value proposition within a BM, and also theories considered to be connecting the PSS to the value proposition. By gathering the empirical data from real-life events and comparing that to the collected literature regarding the subject, evidence that it works can be proved. Previously it was mentioned how the findings could be validated and considered reliable (4.6 Method problems).

**Table 4: Frame of reference for RQ 2**

<table>
<thead>
<tr>
<th>Value proposition</th>
<th>Source</th>
<th>PSS and other theories</th>
<th>Sources</th>
<th>Empirical objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Getting the job done”</td>
<td>Osterwalder &amp; Pigneur (2010)</td>
<td>Benefits &amp; Barriers with a PSS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cost reduction</td>
<td></td>
<td></td>
<td>Anderson &amp; Narus (1998), Ostrom et al. (2010), Macdonald et al. (2011), Ng &amp; Yip (2009)</td>
<td>Identify empirical evidence of how value can be found in usage of products</td>
</tr>
<tr>
<td>Risk reduction</td>
<td></td>
<td>Value in use</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Usability</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A proper value proposition is what intrigues a customer when choosing a provider, and as a company you must have a clear idea of what to propose to the customers in terms of value added with the sale of a product (Yoon, Kim, & Rhee, 2012). As can be seen in the Table 4 above, the value proposition can consist of different elements, namely *performance, customization, “getting the job done”, cost reduction, risk reduction, and usability* (Osterwalder & Pigneur, 2010). These six elements were chosen out of eleven in total because they were considered to be relevant to examine in regards to PSS, as was described in 1.3 Delimitations. Moreover, RQ two aims to study the value proposition for a PSS-oriented
case company in order to see what improvements can be made to the case company’s value proposition described for RQ one.

The PSS can either be product-, use-, or result-oriented, and in order to determine what creates value for customers it needs to be identified if the approach is one of the three types of PSS, as value can be created in different ways depending of the type of PSS. Furthermore, the value proposition and PSS has both been defined in theories, but this thesis will find more sources of evidence by conducting semi-structured interviews with a case company (see Appendix C). Hence, the empirical objectives are to find out how the three types of PSS are used in a company’s current value proposition, and how they are designed to create value for customers, and how customers can find value in the use of products.

Customers have their specific wants and needs, and to be competitive it is of importance to meet their demands. If adding value through services is possible, chances are they can be hard to imitate, which leads to a competitive edge (Baines et al., 2007). When a company changes its organization to a focus on more value-added products, it also comes with barriers to overcome. With greater customer demands comes greater complexity, and emphasis must be put on dealing with those complex demands. This requires resources such as time and money, but also risks since there could be a change in responsibilities (i.e. ownership stays with the provider) (Mont, 2001).

As the frame of reference has been elaborated upon, it is time to present the methodology in which this thesis was carried out (see Chapter 4 on the next page).
4 Methodology
The previous chapter described the frame of reference in how the research questions will be answered, how data is gathered, and why. This chapter provides an explanation on how the theories presented in the previous chapters will be used and connected to reality, and also how the research will be conducted. The chapter covers sections such as research purpose, research approach, research strategy, sample selection, data collection methods and analysis, and method problems.

4.1 Research purpose
The research purpose can be divided into three different categories: exploratory, descriptive and explanatory. The purpose which to use will furthermore depend on how the research questions are formulated. However, the research purpose can change over time and in some occasions more than one purpose is necessary (Saunders, Lewis, & Thornhill, 2009). The exploratory purpose is most often used when there is little or no available information about the specific area, leading to a clarified understanding and deep insight of the problem at hand. The method is used in a way of finding out what is happening by, for instance, asking questions. Whilst researching with this purpose it is important to be flexible so that a change in direction can take place if new data appears. Initially though, the focus should be broad and progressively narrower as the research proceeds (Saunders, Lewis, & Thornhill, 2009).

A descriptive research is focusing on finding key phenomena in order to identify patterns and trends in a situation (Yin, 2003). The object with a descriptive research is to draw conclusions from the data you are describing. The explanatory research, on the other hand, focuses on how different variables in data relate and connect to each other. By doing so, causes and effect relations can be determined, and the method for it can be used statistically (Saunders, Lewis, & Thornhill, 2009).

Based on the descriptions of the three categories above and the formulated research questions, this thesis has adopted a partly descriptive but also exploratory research purpose. Descriptive in the way that the first research question aims to describe the current value proposition offered in the case company’s BM, and the trends and patterns within. This thesis is also exploratory in a sense that the second research question aims to explore the theories related to the PSS and how they correlate with the current value proposition of the benchmarked company. This thesis is exploring that connection, which is important in order to answer the main research problem. The research purpose has now been described, and the research approach will follow in the next section.

4.2 Research approach
There are two different areas to evaluate and consider when choosing a research approach. The first choice is between a deductive and inductive approach to the research, and the second choice is between making it quantitative or qualitative (Saunders, Lewis, & Thornhill, 2009). A further explanation of the different approaches can be found below.

4.2.1 Deductive versus inductive
The deductive approach means that existing theories are first used to design a method of testing the theory in real life, and it is often used for the purpose of developing new knowledge in the studied area. The inductive approach is about collecting data in order to develop a theory based on the data collected (Saunders, Lewis, & Thornhill, 2009).
In this research, the available theories and accessible studies composed a foundation for the thesis, which led it in the direction of a deductive approach. The idea of this thesis was mainly to gather information and theories regarding the PSS through a theoretical and an actual business perspective in order to better understand the case company’s situation. This has been proven important to identify connections and patterns for the further improvement of the case company’s value proposition.

4.2.2 Quantitative versus qualitative
To differentiate analysis procedures regarding data collection techniques and data analysis, the terms quantitative and qualitative data can be applied. Quantitative data refers to numerical data whilst qualitative refers to non-numerical data. How the analysis of the data is conducted depends on which type of data collected; with quantitative data, diagrams and statistics is often used and with qualitative data, conceptualization (Saunders, Lewis, & Thornhill, 2009).

With the formulation of the research questions as a basis point, this research has been qualitative in the sense that it has given a deep understanding and insight about the research problem. This research has not had a need to quantify data since the focus is on how different scholars and experienced business professionals view the concept of PSS, with a foundation of theories related to actual events. With that in mind, this thesis has had a qualitative approach mainly because it has sought connections between gathered data and theories. The next section will cover the choice of research strategy, which has been influenced by the fact that the approach is deductive and qualitative.

4.3 Research strategy
Usually, the types of research strategies are divided into five different categories: experimental, survey, archival analysis, historical, and case study. Each of these strategies can be used with the different research purposes that were mentioned previously. The choice of strategy can be difficult, but by evaluating the options through three different factors it gets easier. Those three factors are (1) type of RQs, (2) extent of control over behavioral events and (3) the degree of contemporary events (Yin, 2003). Below, these factors have been placed in Table 5 to evaluate the most suitable strategy for this thesis.

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Form of research question</th>
<th>Requires control over behavioral events?</th>
<th>Focuses on contemporary events?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experiment</td>
<td>How, why?</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Survey</td>
<td>Who, what, where, how many, how much?</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Archival</td>
<td>Who, what, where, how many, how much?</td>
<td>No</td>
<td>Yes/No</td>
</tr>
<tr>
<td>History</td>
<td>How, why?</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Case study</td>
<td>How, why?</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>

The RQs in this thesis primarily aim to answer “how-questions”, and therefore the types of strategies to choose have been narrowed down to three in total. That is based on the table above, as presented by Yin (2003). The three strategies are experiment, history, and case study, whereas the history and experiment strategies can be excluded since this study has focused on contemporary events and there was no control over behavioral events.
Given that reasoning, a case study was the most suitable strategy in order to carry out this thesis since all behavioral events cannot be manipulated and it focuses on contemporary events. A description of what a case study entails is presented below.

### 4.3.1 Case study
According to Yin (2003) there are two different areas of case studies to choose from, and those are single-case design versus multiple-case design and holistic case versus embedded case. The single-case design is where the one case is used to generalize the entire population, whereas the multiple-case design uses two or more cases. When doing a single case study it is of importance to give careful consideration, or misinterpretations of data collected can easily be made. By using two or more cases it becomes easier to generalize. Furthermore, a case study can be presented as holistic or embedded, and the number of units analyzed determines how the study is presented. One unit of analysis can be described as a holistic case design, but if there are two or more units it can be described as an embedded case (Yin, 2003).

As mentioned earlier, the RQs have focused “how-questions”, leading to the conclusion that a case study is the most suitable strategy to choose. RQ one was designed to answer how a company’s current value proposition within the BM can be characterized, so a single-case study was chosen. When using that design it was important to avoid any misinterpretation it could result in by thoroughly gather relevant data for this thesis. The same design goes for the second RQ, and it aimed to answer the question of how to characterize the value proposition with a company that has implemented a PSS. The case study has also been holistic since the study focused on how to characterize the value proposition in regards to the PSS. The next section will present the companies that were subjects of the case studies.

### 4.3.2 Single case studies
Found in this section is a presentation of two case companies, whereas one aims to describe the current value proposition within a BM that is no influenced by a PSS, and the other one aims to show how beneficial the use of a PSS can be. By describing the current value proposition, competencies can be identified and considered to form a basis for proposing more PSS-oriented value. This is important, since it is less time consuming and costly to use strengths currently possessed within the company.

**Case company: CPI**
The first case study was done at CPI, a manufacturing company mainly focusing on making and assembling transformer cores that goes into alternative power sources such as wind turbines. The making of the clamp parts holding the cores together is outsourced. They are located in southern Ontario, Canada. They are considering transitioning into becoming more involved with their customers after sales occur, but they are not quite sure whether the benefits received with implementing a PSS would exceed costs associated with it. By studying CPI’s current value proposition within the BM, RQ one could be answered.

**Benchmarked company: IR**
The second case study was done at IR, and it relates to RQ two. IR is a manufacturing company that mainly manufactures transformer core clamps and other parts in order for their customers to assemble a ready-to-use core. When needed, they also help their customers re-assemble and repair cores that have been shipped back from the customer’s customer. The reason for choosing IR as a benchmarking company for PSS is because its twenty years of precision engineering has come up with ways of creating value for
customers by forming trustful, and mutually beneficial, relationships. They also believe in co-creational value, as they aid their customers with advice and consultancy before, during, and after sales.

The two companies are both manufacturing products to be used by their customers within their own product assemblies, and they also serve several customers by customizing these products to meet demands. Even though they may not manufacture exactly the same product for the same market, they way of manufacturing could be seen as similar and worthy of comparison. This is based on the fact that they design and manufacture products in accordance with customer preference, but this will be presented more detailed later (see Chapter 5 Data presentation). Furthermore, the two companies can also be said to act in the same area of the product-service continuum, which was discovered during the initial pre-study (see Appendix A) when selecting companies to work with. This further proves that the two companies are worth studying and comparing. Figure 3 below shows the product-service continuum, and the two companies are mapped using a dark oval.

![Figure 3: Two case companies mapped in the product-service continuum](image)

By using two single-case studies to answer RQ one and RQ two, it has helped create a foundation for answering the RP. The method in which the data was collected for these two RQs will be presented next.

### 4.4 Data collection

When conducting a research, there are two types of data to use: primary and secondary data. The different kinds of data are defined based on the source from where it is derived. Primary data is gathered from first-hand experiences, and is collected by measurements and observations of specific events. Secondary data is gathered from past experiences and usually can be found in articles and books (Walliman, 2001). Yin (2003) names one negative aspect with using secondary data, namely it has could have been collected for other purposes and could be biased or invalid for the current research.

According to Yin (2003), there are six different ways to collect information from sources of evidence when conducting case studies, namely documentation, archival records, interviews, direct observation, participant observation, and physical artifacts. They all have their strengths and weaknesses, and no source of evidence has a complete advantage over another. Since this a case study, Yin (2003) recommends using interviews and documentation, which is further elaborated upon below.

#### 4.4.1 Primary data

The primary data in this thesis has been gathered through semi-structured interviews, and two interview guides were created in order to help answer the two RQs (one for each). When the interview guides were created, it was of importance to phrase and design the questions to ask the interviewees in accordance to the relevant topic of each RQ. The questions were also designed to leave room for probing, which helped gain a deeper understanding of situations than more “closed” questions could. Osterwalder and
Pigneur (2010) described how the value proposition could correlate to eleven different elements (whereas six of those were considered for this thesis), and the data was collected so that those elements could be identified. The interviewees were chosen by their roles in the company, and with consideration of their knowledge of the company’s value proposition. The fact that the interviewees had different roles in the company gave a broader understanding of their value proposition. All of the interviewees, and the RQs they help give answers to, are presented in Table 6 below.

<table>
<thead>
<tr>
<th>Interviewee</th>
<th>Duration</th>
<th>Related RQ</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value Stream Leader</td>
<td>1.5 hours</td>
<td>RQ 1</td>
<td>2013-04-04</td>
</tr>
<tr>
<td>Business Development Manager – Industrial Transformers</td>
<td>1 hour</td>
<td>RQ 1</td>
<td>2013-04-04</td>
</tr>
<tr>
<td>Business Development Manager – Power Applications</td>
<td>1.5 hours</td>
<td>RQ 1</td>
<td>2013-04-09</td>
</tr>
<tr>
<td>Head of Sales</td>
<td>1 hour</td>
<td>RQ 1</td>
<td>2013-04-09</td>
</tr>
<tr>
<td>President of IR</td>
<td>2 hours</td>
<td>RQ 2</td>
<td>2013-03-29</td>
</tr>
<tr>
<td>Sales Manager of IR</td>
<td>1.5 hours</td>
<td>RQ 2</td>
<td>2013-03-28</td>
</tr>
<tr>
<td>Project Manager of IR – Transformer Applications</td>
<td>1.5 hours</td>
<td>RQ 2</td>
<td>2013-03-28</td>
</tr>
</tbody>
</table>

4.4.2 Secondary data
Secondary data in this thesis has been gathered by using sources of evidence such as books and articles. For the two RQs, secondary data has been identified and presented for the purpose of elaborating upon it through interviews, and to triangulate theories with current events to give validity to results.

4.5 Data analysis
Yin (2003) describes four primary techniques of how to analyze data after having conducted a case study, which are pattern-matching, explanation building, time-series analysis, and logic models. In this thesis, empirical data showing a pattern was compared with a theoretical predicted one. For further explanation, data collected from real life events was gathered and compared with secondary data such as theories and models. To explain this in relation to the thesis, the theories regarding the value proposition within the BM has been connected with theories concerning PSSs, in order to create a foundation for discussion on how to integrate the two to increase value for customers. In the discussion section of this thesis, an analysis between the two cases studied was used to compare one to the other. This was done in order to draw further conclusions on how to improve the value proposition within the BM by implementing a PSS, thus provide an answer to the RP. As the methods in which the thesis was carried out have been described, next follows potential problems with selected methods.
4.6 Method problems

Validity and reliability are two particular phases in a research that must be considered in order to reduce method problems. In a literal sense, it can be difficult to ensure that research results are both valid and reliable. However, it is possible to reduce the risk regarding these factors (Saunders, Lewis, & Thornhill, 2009). When determining the quality of a research design in relation to reliability and validity, Yin (2003) proposes four tests; construct validity, internal validity, external validity, and reliability. These are presented in Table 7 below, along with suggested case study tactics and the phases of research in which the tactics occur.

Table 7: Case Study Tactics for Four Design Tests (Yin, 2003)

<table>
<thead>
<tr>
<th>Tests</th>
<th>Case study tactic</th>
<th>Phase of research in which tactic occurs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construct validity</td>
<td>- Use multiple sources of evidence</td>
<td>Data collection</td>
</tr>
<tr>
<td></td>
<td>- Establish chain of evidence</td>
<td>Data collection</td>
</tr>
<tr>
<td></td>
<td>- Have key informants review draft case study report</td>
<td>Composition</td>
</tr>
<tr>
<td>Internal validity</td>
<td>- Do pattern-matching</td>
<td>Data analysis</td>
</tr>
<tr>
<td></td>
<td>- Do explanation building</td>
<td>Data analysis</td>
</tr>
<tr>
<td></td>
<td>- Do time-series analyzing</td>
<td>Data analysis</td>
</tr>
<tr>
<td></td>
<td>- Use logic models</td>
<td>Data analysis</td>
</tr>
<tr>
<td>External validity</td>
<td>- Use theory in single case studies</td>
<td>Research design</td>
</tr>
<tr>
<td></td>
<td>- Use replication logic in multiple-case studies</td>
<td>Research design</td>
</tr>
<tr>
<td>Reliability</td>
<td>- Use case study protocol</td>
<td>Data collection</td>
</tr>
<tr>
<td></td>
<td>- Develop case study database</td>
<td>Data collection</td>
</tr>
</tbody>
</table>

4.6.1 Construct validity

As can be seen in the table above, tactics such as using multiple sources of evidence establish chain of evidence and have key informants review draft case study report. The multiple sources of evidence in this thesis consisted of interviewees with knowledge of its companies’ value proposition, along with using theories related to the research topic. Whenever possible, triangulation of sources where used to strengthen discussion points, findings, and conclusions. Also, key informants with both case companies where used in order to construct more validity.

4.6.2 Internal validity

Yin (2003) suggests tactics such as pattern-matching, explanation building, time-series analyzing, and using logic models. In this thesis, the tactic of pattern-matching was used by comparing empirical findings with related theories to support said findings. This helped strengthen the internal validity when characterizing a company’s current value proposition within the BM, in order to see how the implementation of a PSS could help improve the value proposition.

4.6.3 External validity

The table above shows two tactics available to use to strengthen the external validity of a research. Since this thesis studied two case companies in different situations and by different factors, it was hard to generalize findings by using replication logic. The two cases are different from each other, and therefore not analyzed from the same
standpoint. Instead, theories had to be used to analyze from. Moreover, by gaining a deep understanding of the study at hand, the RQs and the RP has been in focus and permeated the thesis. This can, for example, be found in how the interview guides were constructed, as they sprung from theories gathered to help facilitate this research, and did not stray from the intended scope. On top of that, as mentioned earlier, interviewees were thoroughly selected for their knowledge of the topic.

4.6.4 Reliability
In order to strengthen reliability, all documentation should be kept when conducting a case study. This is due to the reason that other people should have access to the documented data besides the written report, and that the data is considered to be the main source of evidence of a conducted research (Yin, 2003). According to Robson (2002), there are four different threats to consider when creating reliability related to interviews: (1) interviews should be held at a neutral time of day and week to standardize the interviewee’s mood, (2) the interviewee can be anonymous so that any pressure from higher authoritarian management is avoided, (3) questions should be constructed in a way to decrease the chance of misinterpretation, which means that the questions need to be well-structured, evaluated, and tested in beforehand, and (4) a standardized way to interpret the answers should be used.

In this thesis, interviews were held on a neutral day of the week, and the interviewer made sure that the interviewees’ schedules were lighter on that day of data collection. Furthermore, the interviews were held anonymously in a sense that only their roles in the company were presented. The questions were structured in a way to avoid the threat of potentially misinterpreting them, and the interviewer made sure to keep interviewees within the scope of the topic. The data collected in the case studies conducted in this thesis has been kept for post-reviews if needed, and all interviews have been recorded to further decrease the risk of misinterpretation.

As the method problems have been described, the following section will consider the method of answering the main research problem and thus fulfill the purpose for this thesis.

4.7 Course of action
The two RQs, and the RP they helped solve, formed in this thesis were based on the background and problem discussion presented prior to that. Theories and empirical data were later utilized for answering the RQs. Presented below is Figure 4 showing the course of action in answering those RQs, and how they help answer the RP.
By investigating how a company's current value proposition can be characterized, a starting point of improvement was founded. This was the purpose of RQ one. RQ two aimed to study the value proposition of a company that had embraced a PSS. By analyzing the data from the two case studies and further draw conclusions of findings, the RP could be answered in a structured and successful way. Chapter 5 which is presented below presents the data that was gathered through the semi-structured interviews in order to meet the empirical objectives for RQ one and two.
5 Data presentation

The previous chapter described the methodology in which this thesis will be carried out. This chapter will present the data collected from the semi-structured interviews held with business professionals from two case companies, and it will be presented according to the order of the research questions.

5.1 CPI’s current value proposition within the business model

The data presented below is related to answering the first RQ, which aims to characterize a company’s value proposition within the BM. The data is derived from semi-structured interviews with appropriate personnel from the case company (see 4.4.1 Primary data). The presentational structure is adapted from the interview questions (see Appendix B), which were based on the questions found within the value proposition in Osterwalder and Pigneur’s (2010) BM canvas.

5.1.1 Value delivered to customers

The value that CPI delivers to their customers varies depending on if the customers are large or small, or if they have enough technical expertise with the use of CPI’s products, for instance. With this said, CPI’s larger and more mature customers usually hold the technical expertise required to procure and use transformer cores for their wind turbines, but CPI is there to offer it if needed. The smaller and/or less experienced companies may need that technical expertise, but it does not come with a greater charge. CPI do a lot of the activities for customers concerning what types of cores to get in specific situations, and what capacity they need to come with in terms of power generation. After a sale has occurred, and a customer has accepted a product after its delivery, CPI is acquitted from all responsibilities. They do not offer maintenance service, but if need be they can provide spare parts.

Working closely with customers before sales occur, and spending the time to find out their wants and needs, the customers’ product specifications can be identified. This is something that CPI’s customers feel add value, as clear and precise information can be gathered and the right product be designed. Furthermore, CPI is placing much emphasis on decreasing the costs for their customers. They take a key interest in the total costs, and work closely with their customers to minimize said costs.

5.1.2 Solving customers’ problems

All customers are different to some extent, and as mentioned previously, they have different grades of technical expertise, demands, capacity requirements, and similar. Therefore, different problems to solve regarding those factors occur. For instance, in some cases customers can change their specifications on what is needed for the cores as they identify problems with the ones currently being built (or will be), and when this happens, CPI need to evaluate their processes to see what they can do for said customers. Usually, if there is a small change to a manufacturing process that does not result in relatively large costs for CPI, and the technical knowledge is there to support it, solving the customers’ problems is a given. If it means that the costs will be too great to change a current manufacturing process for a customer, or a way of solving problems cannot be identified, CPI could decline the inquiry unless the solution is based on a long-term, continuous, and profitable ground.
5.1.3 Bundles of product/service offered
As mentioned before, CPI primarily manufactures and sell transformer cores used for alternative power sources, such as wind turbines. Technical advice is there for the customers if needed. After assembly and deliver has taken place, CPI have got no further responsibilities with the cores, given that they meet the quality and performance specifications that is. Before designing and manufacturing a core for a customer, CPI initiate a performance evaluation of the customer’s needs when it comes to usage of the cores and what they should be able to produce, power wise. A part in a transformer core that is quite similar between different types is a leg (see Appendix A for pictures), which consists of thousands of thin steel sheets, allowing current to flow through. With that explained, CPI further grade their legs by the colors red, green, and yellow, whereas they have different levels of performance in each of them. By doing so, they can combine differently graded legs to result in the optimal performance for specific customers, which has been identified when consulting and closely collaborating with them before deciding on whether a transformer core should be manufactured or not. To create a consistency in the performance, each leg is tested pre-assembly to make sure it can perform as well as it is supposed to do. CPI claims that their performance evaluation is something that none of their competitors do, which differentiates their products.

5.1.4 Satisfying customers’ needs
CPI states that they care for their clients, and treasure collaborations with them. This is highly important in order to meet their wants and needs, and further excel to reach optimal satisfaction. The way of satisfying customers can vary tremendously, and it all narrows down to knowing who they are, to determine whether CPI as a company, and an ally, can identify them as relatable to a predetermined ideal client profile. CPI’s ideal client profile is a tool that holds the purpose of identifying whether a customer is suitable to initiate a relationship with or not. This can be used to decide if exchange of knowledge and products/services should be kept relational or transactional, or neither (i.e. “we cannot work with you/solve your problems”). The customers they end up with, whether they are customers on a relational or a transactional basis, will ultimately become reliable and credible, and their needs will be cared for. The purpose of this is to create a mutually beneficial and trusting relationship.

Again, customers are different, and there are different ways of satisfying their needs. For instance, at CPI, payment plans are worked out accordingly to best suit the customers’ needs (and partially CPI’s). This will all be elaborated upon and developed during the initial assessment of the customers, as this is when their abilities to make payments, how frequent the payments will be (cash flow related), and this will come together in a type of contract (official product orders, usually).

5.1.5 Summary of CPI’s value proposition
Something that has been mentioned over and over again in this data presentation for CPI is the technical expertise as a service that comes with the products, and the reason for that is that during the interviews this was a point the business professionals at CPI kept pressing as an important customer catcher, and retainer. Table 8 on the next page shows a summary of the presented data found above.
Table 8: Empirical findings for RQ 1

<table>
<thead>
<tr>
<th>Empirical findings derived from interviews at CPI</th>
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</thead>
<tbody>
<tr>
<td>Services</td>
</tr>
<tr>
<td>• Technical expertise</td>
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<tr>
<td>• Close collaboration</td>
</tr>
<tr>
<td>• Performance evaluation</td>
</tr>
<tr>
<td>• Cost solutions</td>
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<tr>
<td>Bundle of products/services</td>
</tr>
<tr>
<td>• Mainly products due to the transfer of responsibilities after sales</td>
</tr>
<tr>
<td>Problem solving</td>
</tr>
<tr>
<td>• Flexibility to meet changed customer demands</td>
</tr>
<tr>
<td>Satisfying needs</td>
</tr>
<tr>
<td>• Customized for each customer, depending on different variables</td>
</tr>
</tbody>
</table>

The table above is a summary of the presented data on the previous page, and hence it is a result of summarizing that data. The reason it is divided into four categories, namely services, bundle of products/services, problem solving, and satisfying needs, is that Osterwalder and Pigneur (2010) listed those as factors to evaluate when defining a value proposition. As the data regarding the case company, CPI, has been presented, the data for the benchmarked and PSS-oriented company, IR, will be presented below.

5.2 IR’s current value proposition within the business model
This section of this chapter covers the value proposition for a company that is PSS-oriented, namely IR. Empirical information was gathered from IR by conducting semi-structured interviews, and the presentational structure is somewhat structured according to the interview guide (see Appendix C) used during the interviews.

5.2.1 Value delivered to customers
The value IR offers their customers is also, like CPI, based on who the customers are. Technical expertise is a great way of incorporating value with the products (mainly transformer core clamps) that are sold, which are being used by the customers in order to build transformer cores. The technical expertise can, for instance, include suggestions on how to change the design in the clamps for easier transportation of the finished transformer cores or better accessibility and mobility.

After a sale has taken place, IR always keeps the dialogue going with their customers regarding the assembling of the cores. If initial designs were wrong, which could be the case with customized and seldom recurring products, and the clamps do not fit well with the actual core parts, IR will do re-work to help their customers out. This service is always done for free if a mistake was made during the manufacturing process at IR premises, but it will come with a cost if it was built correctly to actual drawings and design but an error in the design was discovered afterwards. IR is acquitted from all
responsibilities with the products they manufacture for the transformer cores, once they have left their customers’ house for the end user.

IR also works closely with their customers to decrease the costs, which is done by improving processes, suggesting material to use (i.e. thickness of steel) and identifying unnecessary, and time consuming, additions to products.

5.2.2 Solving customers’ problems
Customers may have problems in the area of technical expertise, and the technical knowledge varies between different customers. Some customers have problems with the design of the transformer core clamps, and IR can step in and suggest modifications to it to make it work and fit well with the actual core. IR is also very flexible in their production, and as customers may need rush projects to be initiated, IR can accommodate that. The customers rely on IR to do what is needed to manufacture good products, as designs are thoroughly inspected once received, making IR absorb some of the customers risks which could potentially reduce their stress.

At certain times, when production is busy for the customers, they can have problems with space for their products before shipping to customers (if assembled before delivery date). IR can then step in and, if there is enough space in-house that is, store the products. This allows the customers to carry on with production, as space is no longer a problem.

IR also tries to improve their customers operations, and after getting a deep enough insight of how they are run, IR tries to come up with suggestions that will make both parties’ work easier. One example is that for one customer, IR were delivering clamps on wooden skids, and as they got to the customers place they were transported around with fork trucks. Problem was, the customer did not have enough fork trucks, and waiting time could occur. What IR did was they designed rolling racks that would fit four transformer core clamps, and accompanying parts, making them more accessible and the customer could roll those racks to wherever needed.

5.2.3 Bundles of product/service offered
IR offers many services with the products, but the most prominent service is the technical expertise. The greatest result that comes out of this is that customers gain confidence in IR as a supplier, and they trust IR. Backing up ideas, and bringing ideas, are both examples of technical advice, but it can also come in other forms. This service helps reduce stress, and is integrated with the products. IR also, as mentioned previously, takes back products that need repair or modification, and will change their production schedule if possible to accommodate the customer’s demand. This allows the customer to do what is needed to later get the transformer cores out the door. An example of repairs can be if a part of a clamp was damaged during assembly, then IR will make (if not already made up) up a spare part and deliver fast. IR also gives advice on how the transformer cores are best assembled using the clamps that are provided, and also how to assemble in a way that reduces noise. For example, there are three legs on a core, meaning three spots where each clamp gets bolted and strapped to. One customer used to bolt and strap the two sides of the clamps first, and then they put rubber around the center spot and bolted that down. If they did not add rubber, they believed noise would occur when the cores were being used. IR gave advice on how rubber does not help at all, and to eliminate the noise they needed to bolt and strap the clamp at the center spot first, which would allow more evened-out pressure points against the legs. IR then came up with designs, and later built a jig that would help facilitate the new way of assembly.
Moreover, the rolling racks help facilitate the transportation around the production floor, so that they can be available and used for assembly with decreased waiting time. This example is a good way of portraying IR and the relationships they try to create. Sometimes it can be difficult to get in the door with a new customer, and a small project could be seen as a way in. By delivering that extra value added service that was not expected pre-order (i.e. technical expertise, risk absorption), customers are most likely choosing IR again given that those services are needed. If they feel that they are paying for something they do not need, mistrust can occur and it can be hard to form a relationship. IR then makes the choice of either continue with a more transactional relationship (if there is money to be made), or to go separate ways, as the chance of a good relationship could be gone.

5.2.4 Satisfying customers’ needs
IR strives when they have close collaborations with their customers. This is when they have the time to show why they are the best supplier of products and value added services. IR want to understand their customers, and this is the best way of solving problems, and to reach satisfaction by fulfilling needs. Depending on the customer, the type of product, and quality needed, the ways of satisfying the customers’ needs vary. Most of IR’s customers, especially their largest one, rely on IR to provide them with technical expertise, which has grown the trust between the provider and the customers over the years of working together. The customers do treasure the value added services, but they also want to get a good price on the products.

When the customers send through product orders, they come with a delivery date. They need to have the products in-house for that date in order to make their own scheduling work well. If not, their customers will suffer, and so will the relationship with them. This is one of the needs that is the most easy to explain, however the hardest to satisfy. IR uses a resource based typed of scheduling program that visualizes whether enough resources (i.e. man power, material) are available to meet the delivery date. In order to be flexible IR has learned to say no to delivery dates right away (if not able to meet them), and instead asking for those to be pushed forward so that there will be no surprises with late deliveries.

5.2.5 Summary of IR’s value proposition
On the next page, Table 9 illustrates what has been presented in the sections above, and it is derived from the semi-structured interviews held at IR.
Table 9: Empirical findings derived for RQ 2

<table>
<thead>
<tr>
<th></th>
<th>Empirical findings derived from interviews at IR</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Services</strong></td>
<td>• Technical expertise (engineering, design)</td>
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<td></td>
<td>• Close collaboration</td>
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<td></td>
<td>• Cost solutions</td>
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<td></td>
<td>• Transportation</td>
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<tr>
<td></td>
<td>• Repairs and modifications</td>
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<tr>
<td><strong>Bundle of products/services</strong></td>
<td>• Follow-up after sales</td>
</tr>
<tr>
<td></td>
<td>• Risk absorption</td>
</tr>
<tr>
<td></td>
<td>• Easy use of the products (rolling racks)</td>
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<tr>
<td></td>
<td>• Advice on daily operations</td>
</tr>
<tr>
<td><strong>Problem solving</strong></td>
<td>• Engineering expertise for design modifications</td>
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<tr>
<td></td>
<td>• Reducing stress</td>
</tr>
<tr>
<td></td>
<td>• Allowing customers to get easier operations</td>
</tr>
<tr>
<td><strong>Satisfying needs</strong></td>
<td>• Keeping the teeter-totter balanced</td>
</tr>
<tr>
<td></td>
<td>• Tailoring products for the customers, depending on different variables</td>
</tr>
</tbody>
</table>

The table above shows the value proposition for IR, which in Chapter 6 will be analyzed and further discussed. What is presented is a summary of the data gathered during semi-structured interviews with business professionals at IR. Presented below are the benefits that IR state to come directly from being PSS-oriented, followed by barriers they had to overcome.

5.2.6 Benefits and barriers experienced from being PSS-oriented

During the semi-structured interviews with business professionals at IR, they were asked what they considered to be the benefits of having a PSS-oriented value proposition. The benefits are as follows:

- Getting to know their customers
- Easier to fulfill customers’ needs
- Customers become loyal
- More ways to compete

One benefit that IR receives for adding value through services is that they get to know their customers. This is the best way of fulfilling their needs, by solving their problems, offering customized product/service solutions, and further deliver great value with the products. Customers also become loyal, and IR gets treated like an ally, someone to collaborate with in carrying both organizations forward through a mutually beneficial relationship. Customers do come back for more, and those who do not could either not see the value
in the services integrated, or they did not need it and looked for better prices when buying products elsewhere. The President of IR described their way of operating and satisfying customers as a teeter-totter, meaning there is a balance to maintain. For example, if competence and knowledge helped improve the products, or a problem was solved that took the stress away from the customers, IR can afford to be late on that product or the next, as they keep their ability to fulfill and/or further satisfy the needs balancing out mistakes or failure to deliver. By keeping it balanced, customer relationships do not take a toll from that. They stay, and they also come back for more. Once, a customer gave an order away to a competitor of IR, but they could only offer a good price, so the design and the engineering were not of IR’s standards and expertise and the customer went back to IR shortly after.

Furthermore, by offering these integrated services, and getting to know their customers, IR has constantly improved their services and more ways of competing has been found.

The interviewees at IR were also asked what barriers had to be overcome when adopting a PSS-oriented value proposition. The barriers were as follow:

- Harder to price products
- More time spent with customers
- Greater risk

When IR started out, it was a company that was built to make a change in how engineering was done. Services and the technical knowledge was how they would compete, and the structure within the organization was formed to accommodate this. Barriers were needed to overcome when embracing the PSS-concept (which was not the name for it back then), and IR struggled to get in their customers’ doors. The reason for this is that back then, price was the big selling point. So, by starting out small, and just adding value without bringing it up as “we will add this service and that service to the products”, and instead showing the customers during the process, a way in with the customers was found. Nowadays, there is still a barrier in creating trust with the customers’ purchasing departments, but easier with the engineering department. IR is currently looking into how to better please the purchasing department. The way of pricing products can be cumbersome, and only certain departments with the customers can appreciate the added value as they experience it first hand.

Moreover, when offering integrated services with the products, IR needed to spend more time with their customers. This is costly in both time and money, as they do not just get an order and produce, but they carry a constant dialogue with the customers to make sure all needs are satisfied. Also, when suggesting how designs should be changed the risk falls on IR, and if something turns out to be wrong with the design IR will be held responsible. IR do fee, though, that the benefits with this outweigh the increase in risk.
6 Data analysis

The previous chapter presented the data gathered from semi-structured interviews held with business professionals from two companies. The purpose of this chapter is to analyze said data in regards to previously presented theories considering the value proposition within a business model, and theories considering the product-service system.

6.1 Analysis of CPI’s current value proposition

Empirical findings in semi-structured interviews held with business professionals at CPI will in these coming sections of this chapter be analyzed in regards to theoretical information presented previously. This will help answer RQ one, and it will form a basis for discussion regarding improvements. This is illustrated in Table 10 below, namely how empirical findings and theories correlate will be further elaborated upon following the table.

<table>
<thead>
<tr>
<th>Empirical findings derived from interviews at CPI</th>
<th>Related value proposition elements</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Services</strong></td>
<td>• Technical expertise</td>
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<tr>
<td></td>
<td>• Close collaboration</td>
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<td></td>
<td>• Performance evaluation</td>
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<td></td>
<td>• Cost solutions</td>
</tr>
<tr>
<td><strong>Bundle of products/services</strong></td>
<td>• Mainly products due to the transfer of responsibilities after sales</td>
</tr>
<tr>
<td><strong>Problem solving</strong></td>
<td>• Flexibility to meet changed customer demands</td>
</tr>
<tr>
<td><strong>Satisfying needs</strong></td>
<td>• Customized for each customer, depending on different variables</td>
</tr>
</tbody>
</table>

In this thesis, six characteristics/elements have been explained and related theories have been presented, whereas only three of those could be found in CPI’s value proposition (see Table 10 above). The first characteristic, as defined by Osterwalder and Pigneur (2010), that can be found in CPI’s value proposition is cost reduction. Osterwalder and Pigneur (2010) described how helping customers reduce their costs is an important way of creating value. Since CPI are taking their time to get to know their customers, they can find ways of reducing the costs when providing, for instance, technical expertise, and determining what performance of a transformer core a customer really needs for its purpose. They help customers, thanks to great technical knowledge of cores and the usage of them, to not pay for more than what is needed. For this to work, as mentioned previously, the customer needs to be in a position to collaborate with CPI if they want to receive the best possible service in this area.
The second characteristic identified in CPI’s current value proposition within the BM is *performance*, which was defined by Osterwalder and Pigneur (2010) as a good way of creating value. They describe how many business professionals have learned that too much performance than what is needed is a pitfall. If they cannot utilize all of the performance, questions regarding why they are paying for it arises. As mentioned in the previous section, and also correlated to the cost reduction aspect of it, is how getting to know the customer, what performance they actually need, and deliver. At CPI, much emphasis is put on the combining of various performances in transformer core legs (red, green, and yellow graded), which helps make sure customers get what they need to a suitable price.

The third and final characteristic identified in CPI’s value proposition, by comparing empirical findings to theoretical information, is *customization*. Customization is when products and/or services are tailored to meet specific needs of individual customers or segments (Osterwalder & Pigneur, 2010). By assembling transformer cores in a way that is tailored to customers’ needs and wants according to factors such as performance, lowest cost, changing processes (if based on a profitable ground) for instance, great value can be delivered to customers. Initiating a performance evaluation, and matching the customer to an ideal client profile, enables CPI to achieve a high level of successful customization. It all boils down to ‘getting to know the customer’

These three characteristics, together, help solve customers’ problems. It is of importance to have identified these, as it helps recognizing what is not already proposed to the customers. The next section of this chapter will present the analysis of the benchmarked company, IR, and the purpose of that is to see how CPI’s current value proposition within the BM can be improved by exploring the possibilities of a more PSS-oriented approach.

**6.2 Analysis of IR’s current value proposition**
Empirical findings in semi-structured interviews held with business professionals at IR will in these coming sections of this chapter be analyzed in regards to theoretical information presented previously. This will help answer RQ two, which is illustrated in *Table 11* on the next page.
Table 11: Empirical findings compared to theoretical information for RQ 2

<table>
<thead>
<tr>
<th>Empirical findings derived from interviews at IR</th>
<th>Related value proposition elements</th>
<th>Related PSS and other theories</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Services</strong></td>
<td></td>
<td></td>
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<tr>
<td>• Technical expertise (engineering, design)</td>
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<td>• Transportation</td>
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<tr>
<td>• Repairs and modifications</td>
<td></td>
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<tr>
<td><strong>Bundle of products/services</strong></td>
<td>Cost reduction</td>
<td>Product-oriented PSS</td>
</tr>
<tr>
<td>• Follow-up after sales</td>
<td></td>
<td>o Advice and consultancy</td>
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<tr>
<td>• Risk absorption</td>
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<td>o Product-related</td>
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<td>• Easy use of the products (rolling racks)</td>
<td>Risk reduction</td>
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<tr>
<td>• Advice on daily operations</td>
<td>Customization</td>
<td>Value in use</td>
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<tr>
<td><strong>Problem solving</strong></td>
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<tr>
<td>• Engineering expertise for design modifications</td>
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<td>• Keeping the teeter-totter balanced</td>
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<tr>
<td>• Tailoring products for the customers, depending on different variables</td>
<td>Usability</td>
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In this thesis, six characteristics/elements have been explained and related theories have been presented, whereas only three of those could be found in CPI’s value proposition (see Table 10 above). Four elements that can characterize a value proposition were identified with IR after analyzing the data collected from semi-structured interviews. In the theory chapter (see Chapter 2 Literature overview), six elements were presented, but “getting the job done” and performance could not be found in IR’s value proposition.

IR works closely with customers to reduce costs by improving its processes, and to some extent also their customers’ processes. Osterwalder and Pigneur (2010) described this as a way of gaining a competitive edge, which IR has done. IR also reduces the risks for the customers, but this means that IR absorbs the risks itself. An example was how they find ways of modifying designs of transformer core clamps to make them work better with the actual cores, and IR is therefore held accountable for that. However, by working closely with the customers and having modification suggestions reviewed by others including the customers and the end users, the modifications should be deemed worthy of making. This could also mean that IR receives trust from customers.
Moreover, customization of products is being done since most product orders that come in are unlike the ones before that. Osterwalder and Pigneur (2010) described how value is created if one successfully meet the customers’ needs, and further satisfy them. IR closely collaborates with the customers to accommodate the tailoring of products, and services, and maintain flexibility in the production that can handle continuous customization. As most products are customized, they are clamps and they always come in a quantity of four (two bottoms and two tops, see Appendix A), which means that the way of transporting them to the customers on rolling racks and not skids is generally always an option. As mentioned previously, at the customers’ location, waiting time can occur when fork trucks are in use so the assembly laborers have to wait to pick up the clamps. The rolling racks are therefore a great way to roll clamps and other parts around on even though the fork trucks are occupied, which creates an easy usability for the products. Osterwalder and Pigneur (2010) agrees that this creates value for the customers, as products can easily be used, and the rolling racks make the products mobile despite their weight.

Furthermore, Tukker (2004) described the product-oriented PSS as the product being what is important, and services are generally there to create extra value. IR is a product-oriented company, and they offer advice and consultancy to their customers on the best use of the products, and also how to improve daily operations. This integrates the product with a service, and is therefore not seen as an add-on. Child (2007) argued that in the product-oriented PSS services are usually add-ons, but Tukker (2004) included the advice and consultancy as a subcategory in that in order to make the service more integrated and value adding. However, the products are still seen as the main facilitators for creating value, and product-related services such as repairs and modifications are still a great deal of the offered value.

IR lets their customers find value in use of the products, by helping out and giving suggestions on how to utilize them in the best way. Macdonald et al. (2011) explains that the way the customers utilize a product or a service determines how much value they receive. In IR’s case, this means that if the customers listen to and take into action the advice and consultancy IR contributes with, they can receive value from that. Although it may be time consuming, continuous dialogues between the two parties during their collaboration can create even more value. This is because if IR gives advice, it is of importance that it can get backed up by the receiver of the advice in order for it to be successful. Presented in Table 12 below are the benefits and barriers IR has experienced while being PSS-oriented, and how they correlate with theoretical information regarding the subject.
<table>
<thead>
<tr>
<th>Benefits with the PSS</th>
<th>Related PSS theories</th>
<th>Barriers with the PSS</th>
<th>Related PSS theories</th>
</tr>
</thead>
<tbody>
<tr>
<td>Getting to know their customers</td>
<td>Enhanced value</td>
<td>Harder to price products</td>
<td>Pricing strategy</td>
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<tr>
<td>Easier to fulfill customers’ needs</td>
<td>Sustainable competitive advantage</td>
<td>More time spent with customers</td>
<td>Closer relationships with customers</td>
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<tr>
<td>Customers become loyal</td>
<td>Greater risk</td>
<td>Greater risk</td>
<td>Risk absorption</td>
</tr>
<tr>
<td>More ways to compete</td>
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IR tries to get to know their customers, which allows a better understanding of their needs. Hence, it gets easier to fulfill the customers’ needs since more comprehensive solutions can be made to fit said needs. Furthermore, the relationships can be improved, and also more established. This makes it easier to gain loyal customers. Tukker (2004), Oliva and Kallenberg (2003), Mont (2001), and Desmet, van Dierdonck and van Looy (1998) describe this as enhancing the value within the value proposition for the customers.

Furthermore, Mont (2001), and Desmet, van Dierdonck and van Looy (1998), argue that a PSS can also lead to a sustainable competitive advantage. This can be related to that IR have found more ways of competing, whereas one example is making their products more usable, but also providing engineering and design expertise, which makes the customers come back for more.

IR is experiencing difficulties with pricing their products initially, which can be related to the pricing strategy (Meier, Roy, & Seliger, 2010; Baines et al., 2007). This is initially overcome by just selling products for a price, and then they integrate services that the customers were unaware of to begin with. This can help eliminate a fear of paying for more than needed, as free services are included as a proposed value increaser.

IR also spends more time with the customers nowadays, and this is due to the fact that IR has developed closer relationships with them (Mont, 2001; Oliva & Kallenberg, 2003). Since IR started out small, with only a few people, they basically formed their organizational culture and structure to accommodate this, and therefore the culture and the structure did not have to be changed, but merely formed.

When adopting a PSS, as mentioned before, the business approach towards the customer is more relational than transactional, and it involves a greater risk. Basically, risk absorption can, for example, mean repairs and take-back of products (Baines et al., 2007; Meier, Roy, & Seliger, 2010; Oliva & Kallenberg, 2003). IR has incurred a greater risk as they suggest design changes and new ways of engineering products, but also repairs if products were damaged during transportation or at the customers place. This can involve more cost for IR, but generally if the repairs are too costly, IR would charge for it. If smaller repair, IR will do it for free as a good-will service.
Now that the data has been analyzed, it is easier to identify findings and draw conclusions. On the next page, Chapter 7 will be present the findings and conclusions in this thesis, and they will be in accordance to the two RQs, followed by the RP.
7 Findings and conclusions

This chapter will present the findings and conclusions of this thesis, and that will answer the two research questions, and thus the research problem. The preceding analysis chapter, which was a result of previously presented empirical and theoretical information, forms a basis point of the findings and conclusions.

The findings and conclusions are presented through the RQs, and followed by the RP. Results for RQ one will be presented first, and secondly RQ two will be discussed. By comparing those two, conclusions can be drawn in order to answer the RP.

7.1 Findings and conclusions for RQ 1

RQ 1: How can the value proposition in a company’s current business model be characterized?

The first case study was done at CPI. That case study was conducted in order to give answer to the first RQ presented above. The purpose of characterizing CPI’s current value proposition within the BM was to have a foundation to build upon when finding ways of improvement. Figure 5 below illustrates CPI’s current value proposition within the BM, and it is derived from empirical evidence and theoretical information presented in the chapters preceding this one.

![Figure 5: CPI's current value proposition within the BM](image)

A value proposition can be said have a purpose of solving customers’ problems, along with satisfying their needs. This is what CPI is currently doing, they get to know their customers in order to identify what problems they have, what needs are said they have, but also needs currently beyond their awareness. CPI offers cost solutions to reduce costs to meet customer demands, and all this by closely collaborating with them and offering their technical expertise. A performance evaluation is conducted prior to selling products, leading to customers not paying for more than they need.

A high level of customization is key for CPI to meet their customers’ demands, both product wise but also in regards to the actual value proposition. CPI tailor their offerings depending on different variables with the customers, and those variables are identified and certified in order to make sure they have an ideal customer to nurture. With that said, after a sale has taken place and the product has reached the customer, CPI is no
longer there to take care of the customers needs for that product in particular. It was found that CPI does not follow up after sales to hear about the customers’ experiences, which could have a negative impact on the relationship. To end this characterization, the business professionals at CPI say that they do manage to catch and retain customers with their value proposition, but they need to find more ways to satisfy the customers to keep them coming back for more.

7.2 Findings and conclusions for RQ 2

RQ 2: How can the value proposition in a company that has implemented a Product-Service System be characterized?

The other case study was done at IR. This case study was conducted for benchmarking purposes, and is meant to result in insight of how CPI can improve their current value proposition within the BM. In Figure 6 below, IR’s current value proposition within the BM is illustrated, and it is derived from empirical evidence and theoretical information presented in the chapters preceding this one.

As CPI does, IR is also working on getting to know their customers in order to solve their problems and satisfy their needs. IR is offering services such as technical expertise, cost solutions, and after sales repairs and modifications. To be able to do this, they work closely with their customers, forming strong relationships. Furthermore, IR follows-up after sales to see if the customers encountered any problems while using the products,
which has the purpose of identifying areas of improvement. When looking into how nurturing relationships and constantly thriving to take advantage of the close collaborations, it was found that it allows IR to come up with ways of integrating products with value adding services. The research that was conducted also showed that being PSS-oriented means that more risks are absorbed, and this is something that needs to be taken into consideration.

Moreover, through analyzing the semi-structured interviews and theoretical information it was found that customers cherish it when their provider helps ease their operations and the products usability. One example is how IR found a way with their rolling racks to increase the mobility of products travelling over the production floor heading for assembly. Furthermore, IR has been able to integrate products and services whilst being product-oriented so that the services are not seen as just add-ons, and one example is how they provide advice and consultancy. Examples of add-ons in a product-oriented organization are warranty and maintenance.

The data, and also the analysis of said data, showed that a great benefit received when adding more value through services is that you have more means to balance your performance as a provider. To be realistic, nobody can keep up a continuously fault free performance during a relationship with a customer. This keeps the teeter-totter balanced, or heavy on the value side, but hopefully it will not drop to the ground weighed down by constant poor performance. The barriers that IR experienced were hard to identify, but one that was found is the barrier of absorbing much of the customers’ risks. This can be dealt with by finding ways of spreading the risk, and involve more people higher up in the supply chain.

As the value proposition within the BM for a PSS-oriented company has been characterized, the findings and conclusions for both RQs have been finished. This means that the RP can be answered.

7.3 Findings and conclusions for the research problem

**RP:** How can a company improve their value proposition within the business model by implementing a Product-Service System?

In this thesis it has been described how a company’s value proposition can be characterized, along with a description of how a value proposition of a PSS-oriented company can be characterized. By analyzing the empirical evidence derived from semi-structured interviews, and also theoretical information, a comparison can be made between the two cases.

It appears that close collaborations with customers are evident for both cases, but what is important is how that relationship is being used to gain valuable knowledge regarding how to offer more value. Both companies are product-oriented, but CPI has an opportunity to better integrate their products with services, instead of just offering them in the shape of add-ons. CPI should find ways of advising their customers on best use of the products, and a level of consultancy that exceeds the point of delivery. This would allow a greater deal of trust, as CPI moves on after delivery into being responsible and involved in the use of their products, at least until it reaches the end user (remember, CPI’s customers are not end users). CPI can gain benefits from this, as, for instance, the
needs of customers can better be satisfied, and services become more difficult to imitate. By embracing the PSS-concept, and more specifically the part where customers can find value in the use of the products, customers will become easier to retain, as it is hard for said customers to find similar providers. The outcome of providing value in the use of the products basically means that it makes their daily operations easier.

Furthermore, if CPI are not involved in the use of their products, it gets harder to defend themselves and work with the customers if a problem was to occur after sale. By continuous follow-up to make sure their products are doing their job, specific problems can easier be identified and eliminated. If there is frustration, CPI should be there to reduce it before it builds up to something worse.

If CPI chooses to adopt a PSS-oriented value proposition, they need to consider Figure 7, which is presented on the next page. In a simple way it illustrates the journey that CPI has to take in order to improve their value proposition.

![Figure 7: CPI's way to an improved value proposition](image-url)

If CPI decides to become PSS-oriented in regards to their value proposition, there are several barriers they would need to overcome. In theory, the organizational structure and culture needed to change in order to accommodate a transition towards a PSS-oriented business approach. This was not evident in the case of IR, as its organization was formed to provide integrated services and thus add more value with the products. CPI also needs to figure out how to price the new way of offering services, but they are recommended to just gradually work it in without a greater cost, as this was a way for IR not retain and gain customers without scaring them off. This also means that they need to build closer relationships with the customers, and that includes after the sales of products, and work closely to figure out way of improving the usability of those products. CPI will also have to figure out how, and to what extent, they are willing to absorb customers’ risk. By absorbing the risks, CPI can become more integrated and involved with their customers, which is important to create trust and become allies.

To add a final conclusion to this chapter, the following can be said: If you have a way of finding ideal customers, and a way of understanding them, you have a chance to walk alongside them for a long time by finding ways of creating product/service solutions to solve their problems and satisfy their needs. This will result in an experienced enhanced value for the customers, which ultimately leads to a competitive advantage, but sustaining it is a real challenge. By taking this journey to become more PSS-oriented, CPI's value proposition within the BM can be improved.

This chapter has answered the two RQs and further the RP, which was the main purpose of this thesis. Presented next is **Chapter 8**, which will discuss the execution of this thesis, and also how further research can be conducted and why it should be.
8 Discussion and further research

This chapter includes a discussion regarding the execution of this thesis, and also suggestions on further research and why it is necessary.

Conducting semi-structured interviews at two companies carried out this thesis, whereas at one company the interviews were held with the purpose of benchmarking for the other company. The fact that only one company was used to benchmark may have made the generalization of a PSS-oriented company less reliable compared to several, but the generalization of the empirical evidence was strengthened by the triangulation with theoretical information. Needless to say, time was limited as this thesis was conducted, and therefore it put a restraint to how well the generalization could be made.

Furthermore, when conducting the interviews at CPI, all respondents had somewhat different views on their own value proposition, which lead to the fact that the data gathered had to be summarized and few own conclusions had to be drawn. Thankfully, the theoretical information that was gathered from Osterwalder & Pigneur’s (2010) BM canvas was of great help during the analysis of the data.

I would like to add that the value proposition is merely one part of the whole BM canvas, and it includes several building blocks worth considering when transitioning into a PSS-oriented organization. All of these needs to be considered together to adopt this new business approach, but again, time was a limited factor when conducting this thesis. Therefore I recommend that further research be conducted on how a PSS can and should influence the whole organization and its building blocks. Also, more PSS-oriented companies should be subjects of generalization, which is important in creating more reliability and validity.
References

Literature


Articles


London.


Appendix A – Pre-study of CPI and IR

IR manufactures and distributes transformer core clamps in the greater Toronto area in Ontario, Canada, which have the purpose of holding transformer cores together. Their customers are not end users, meaning they use the products as a part of a bigger assembly. An initial look at the company and its products shows that they are quite product-oriented, and much focus is out on quality and low costs, and trying to create optimal performance with their products. IR is currently serving several customers, and the products they manufacture are generally always customized, unless a large order comes in. Basically, orders usually range from one unit up to 20 units.

CPI is also a manufacturer and distributor acting in the greater Toronto area, and they build transformer cores. They have several customers, also not end users, and unless big orders come in, products are generally customized and different from the other. Their customers build tanks for protection, and for oil flow, and assemble coils and similar to the transformer cores, and from there they get distributed to the end user who uses them in wind turbines. This company is also found to be quite product-oriented, and their focus is performance, quality, and lowering costs. Below is a picture of a transformer core, fully assembled at their customers’ end.

That picture shows an example of clamps that IR manufactures, and how the legs are covered by oil filled tanks. The legs are assembled with the clamps and other parts at CPI, and then sent to a customer who assembles it with the tanks and also coils. The
picture seen below is a simpler transformer core, showing the clamps and the legs before the tanks and more parts get assembled with them.

Even though they may not manufacture exactly the same product for the same market, they way of manufacturing could be seen as similar and worthy of comparison. This is based on the fact that they design and manufacture products in accordance with customer preference, and they are product-oriented.
Appendix B – Interview guide for CPI

1. What is your annual turnover? What are your annual total revenues?

2. What does your product/service portfolio look like and how is that divided according to customer segment?

3. In your product/service portfolio, what value do you deliver to your customers?

4. Which of the customer’s problems are you trying to solve?

5. What is the bundle of products and services offered to each customer?

6. What need/needs are you satisfying for your customers?

Characteristics for the interviewer to look for

‘Getting the job done’
Risk reduction
Cost reduction
Performance
Customization
Usability
Appendix C – Interview guide for IR

1. What is your annual turnover? What are your annual total revenues?

2. What does your product/service portfolio look like and how is that divided according to customer segment?

3. In your product/service portfolio, what value do you deliver to your customers?

4. Which of the customer’s problems are you trying to solve?

5. What is the bundle of products and services offered to each customer?

6. What need/needs are you satisfying for your customers?

Characteristics for the interviewer to look for
‘Getting the job done’
Risk reduction
Cost reduction
Performance
Customization
Usability

Directly related to the PSS

1. In your value proposition, how do you integrate services with products?

2. In the value proposition, where can you identify Product-, Use-, and Result-oriented PSSs and how are they being used?

3. What benefits can you see from offering more value to customers through the integration of products and services?

4. What barriers had to be overcome in order to successfully implement your PSS?

5. What benefits can you identify as directly derived from your PSS?

6. How would you describe your ability to compete by offering these integrated product/service solutions?