Service Orientation in Manufacturing Firms

Understanding Challenges with Service Business Logic

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Business Administration

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To Mikael

Abstract

Globalisation and competition from low-cost countries has pushed manufacturing firms towards offering services to remain competitive. However, increasing the service orientation of a manufacturing firm to find new ways of value (co-)creation has presented several challenges, such as the fact that services do not provide the expected revenues, and resistance from both the sales force and from customers towards services.

The aim of this thesis is to understand challenges linked to increasing service orientation in manufacturing firms, by means of goods and service business logics. The thesis emphasises the three dimensions of business logics – value perspective, service business strategy, and service offering – and studies them empirically in service divisions in the pulp and paper industry and in the automotive industry.

The findings show that firms with inconsistency between the three dimensions face certain challenges. Most often, the firms have a value perspective of goods business logic, but a service business strategy and a service offering of service business logic. Therefore, the most important and most difficult challenge to overcome in order to increase a manufacturing firm's service orientation is the employees' value perspective.

Three service manoeuvres were key to overcoming this challenge: changing employees' mind-sets, starting to value services, and separating products and services. Although separating products and services could be assessed as a service manoeuvre consistent with goods business logic, it facilitated an increased service orientation. The fact that goods business logic manoeuvres led to a higher degree of service orientation, whereas service business logic manoeuvres did not always do so, is discussed as a service orientation paradox.

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Karlstad, April 2014,

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1 Introduction

> "Then we have service, or after-sales services, we use both words actually. It depends on the context. It is a big part, it generates much of the firm's profits. It's growing, it is.… A service is when you perform a job. That is a service. But sometimes it also includes replacing parts. When we talk about products we mean a component that needs to be replaced. So it is. But a service is really when we do a study." (Service division manager in the pulp and paper industry)

It is obvious that the manager of this service division in a large pulp and paper manufacturing firm distinguishes between products and services, although at the same time suggesting that a product could be part of a service. This was further explained by one of his employees working with rebuilding the installed base:

> "Either the customer calls to say that 'we have a problem, can you come?' We go there to discuss what the problem is about and then we go home to figure out a solution for the customer. Or, the customer calls to say 'we want this and that' and they ask for something specific that they want. But the procedure is the same, we go there, discuss with them to be sure that what they ordered is really what they need." (Service division employee in the pulp and paper industry)

Together, these quotes show the complexity of services in a manufacturing firm with a long product-orientation tradition. In this firm, the traditional after-sales services, such as spare parts and repair, have been complemented with other services, such as efficiency optimisation (called studies by the service division manager). Traditionally, this product-oriented firm has focused on economies of scale, but, through the new services, the firm also competes through economies of skill (c.f. Auguste et al. 2006). This was specifically evident in the second quote, which emphasised finding a solution to a customer problem. As the service division manager expressed, after-sales services might be sold separately or included in another service as part of a solution to a customer problem. Also "the situation" (for example, the view of service by sales people or customers) adds to the service business complexity. However, whatever the division manager decides to call it, the service business is growing.

Volvo, Rolls-Royce, SKF and Metso are all examples of manufacturing firms that continuously increase their service business. However, firms approach this

in different ways. IBM, for example, originally dominated the market on mainframe computers, but they were not innovative enough to stay competitive. The firm managed to become profitable again by changing focus and becoming a service organisation (Berggren & Bergkvist 2006; Gerstner & Herrmann 2002). However, manufacturers might increase their focus on services without becoming a service organisation. At Scania, for example, low margins increased the need for developing the service business, leading the firm to extend services throughout their products' entire lifecycles. By a strong customer focus, the firm increased their service business, although the products were still central (Berggren & Bergkvist 2006). These examples show that firms can increase their service business in different ways and to different extents.

Depending on the research field, different terms are used to refer to the increased focus on services in manufacturing, such as service infusion (Nilsson et al. 2001), servitisation (Vandermerwe & Rada 1989), service orientation (Bowen et al. 1989), transition to services (Oliva & Kallenberg 2003) and product-service systems (Mont 2002). In this thesis, service orientation will be used to address this phenomenon: that is, a manufacturer's increased focus on services will be referred to as an increased service orientation. This reasoning implies a continuum with product orientation at one end and service orientation at the other, which also reflects the different service focus levels illustrated by the examples above.

Increasing a manufacturing firm's service orientation can create challenges (see e.g. Brax 2005; Mathieu 2001b; Reinartz & Ulaga 2008; Ulaga & Loveland 2013). There might be challenges such as managers or sales force not being convinced of the potential of services and do not actively promote them (Brax 2005; Reinartz & Ulaga 2008; Ulaga & Loveland 2013), or services are given away for free since the firm fails to create profitable business models for them (Matthyssens & Vandenbempt 2008; Oliva & Kallenberg 2003; Witell & Löfgren 2013). The challenges described are linked to increasing service orientation[1]. How service orientation can be increased will be studied in terms of goods and service logic (Grönroos 2006; Grönroos 2008).

[1] I do not argue that service orientation per se is challenging, but that many product-oriented manufacturing firms might encounter challenges linked to an increased focus on services.

1.1 Service logic and manufacturing

During the last decade, *service-dominant logic* (Vargo & Lusch 2004; Lusch & Vargo 2006; Vargo & Lusch 2008b; Vargo & Lusch 2008a) has been frequently discussed in service research. It is based on a concept within classic economic theory in which service is fundamental to exchange (Vargo & Lusch 2004). Service is seen as a process, as opposed to the traditional goods-dominant logic where goods are central and services are seen as an output of production (Vargo & Lusch 2004; Vargo & Lusch 2008a). A similar idea has been developed within the Nordic School of marketing using the concept *service logic* (as opposed to *goods logic*), and is based on manufacturers increasing their service orientation and the resulting change in needed marketing skills (Grönroos 2006; for a comparison between service logic and service dominant logic, see Grönroos & Gummerus 2014).

The research on service logic[2] has been given much attention during the last decade, especially within consumer markets. However, it has been argued that this perspective on value creation is applicable for all types of firms, even manufacturing firms (Grönroos 2008; Grönroos & Helle 2010; Ng et al. 2012; Vargo & Lusch 2008a). Vargo and Lusch (2008a), for example, argued that manufacturing is a form of service provision and shifting from goods to service logic would correspond to the shift from manufacturing to a service economy in developed countries. Grönroos' ((2006:330) argument for a service logic in manufacturing firms is empirically founded; services in manufacturing are increasing and, "goods are one of several types of resources functioning in a service-like process, and it is this *process* that is the service that customers consume". Based on many manufacturers increasing their focus on service, applying service logic in practice will be discussed.

1.2 Service logic as a business logic

How manufacturers could apply service logic in practice has been discussed by Grönroos (2008) in terms of business logic. It is, "a perspective on how, by adopting a service approach, firms can adjust their business strategies and marketing to customers' service consumption-based value creation" (Grönroos 2008:302). This definition could be interpreted as the customer's value creation

[2] This thesis builds mainly on research from the Nordic School and therefore the term "service logic" will be used. However, when referring to literature specifically based on Vargo and Lusch's perspective, the term "service-dominant logic" will be used.

process being central; moreover, the firm's business strategies and marketing (studied herein in terms of service offering) should be adjusted to this value perspective. Therefore, service business logic will be addressed according to three dimensions: the firm's (1) value creation perspective, (2) service business strategy, and (3) service offering.

The value creation perspective is based on value-in-use, that is, value being created first as customers use the products they have bought (Normann & Ramírez 1993; Ravald & Grönroos 1996; Wikström 1996; Vargo & Lusch 2004; Grönroos 2006; Grönroos 2008). According to this perspective, a firm can either facilitate the customer's value-creating process, or co-create value with the customer (Grönroos 2008). In goods business logic, value-in-use implies that firms can offer different kinds of resources (for example, goods, services or information) that facilitate the customers' value creation processes (Grönroos 2008). In service business logic, value-in-use implies that the firm also becomes a co-creator of value through directly interacting with customers (Grönroos 2008; Heinonen et al. 2010). Practically, firms with service business logic focus on their customers' value generating processes and how they can be involved in them (Grönroos 2008).

The next dimension within service business logic is service business strategy. While several researchers have classified service business strategies in manufacturing (see e.g. Mathieu 2001b; Penttinen & Palmer 2007; Raddats & Easingwood 2010), this thesis builds on the four strategies identified by Gebauer (2008): after-sale service providers, customer support service providers, development partners, and outsourcing partners, which later have been complemented with a fifth, that is, customer service strategy (Gebauer et al. 2010b). Gebauer (2008) focused on strategy-environment fit and included both external and internal factors .

The service offering is an important part of marketing according to the service logic perspective since it enables direct firm-customer interactions and, consequently, value co-creation (Grönroos 2008). The service offerings have been the main focus of this thesis' empirical studies regarding marketing and will be classified in terms of customer services (for example, basic services such as information or billing), after-sale services (for example, spare parts and repair), customer support services (for example, process optimisation services), development services (for example, new products are developed together with customers), and outsourcing services (for example, taking over the customers' operations). This classification is chosen among many others (see e.g. Homburg

& Garbe 1999; Mathieu 2001a; Ulaga & Reinartz 2011), since they clarify the relations to the service business strategies already presented (Gebauer 2008; Gebauer et al. 2010b).

1.3 Why do manufacturing firms increase their service orientation?

Grönroos (2006) argued that service business logic is also applicable to manufacturing firms. But why do manufacturers increase their service orientation? As an example, there are opportunities to profit over the entire product lifecycle (Ealey & Troyano-Bermüdez 1996; Potts 1988); indeed, manufacturers might realise that other firms profit from their products in the after-sales market by offering services that they themselves could have performed (Auguste et al. 2006). Furthermore, Homburg et al. (2003) found that a service-oriented business strategy led to stronger customer relationships and, as a consequence, increased overall firm profitability. Also, Gebauer and Friedli (2005) argued that services offer the potentially highest margins for manufacturers.

Furthermore, offering services is a way of protecting the product business (Auguste et al. 2006), that is, differentiating a commoditised product offering from the competitors'. Due to increased globalisation, development of new technologies, and competition from low cost countries, many manufacturers consider themselves to be in commodity businesses (Matthyssens et al. 2006; Anderson et al. 2007). Matthyssens et al. (2006) argued that when there is not much difference between the firm's core offering compared to the second-best supplier's, costs could be reduced or value could be created in a new way. Competing by reducing costs is difficult for many manufacturers; in addition, Ulaga and Eggert (2006) demonstrated that product and price nowadays are poor differentiating factors. From the value-in-use perspective, for a product-oriented manufacturing firm, creating value in a new way would be equal to finding new ways of facilitating the customer's value creation, or changing the business logic and starting to co-create value with customers.

1.4 Problem discussion

Despite the increased focus in service management and business marketing literature on manufacturing firms' service orientation, more research is necessary to find out what drives its success or failure. Current research has showed that service offerings do not automatically lead to a positive effect on the manufacturers' sales and revenues (Fang et al. 2008) or the firm's profit (Eggert et al. 2011). Previous research has also shown that manufacturers encounter challenges related to other areas, for example marketing-related challenges, resistance from employees (Brax 2005; Mathieu 2001b; Reinartz & Ulaga 2008; Ulaga & Loveland 2013), design of the offering (Brax 2005), customer relationships challenges (Brax 2005; Martin & Horne 1992; Matthyssens & Vandenbempt 2008) and development of new services (Martin & Horne 1992).

The term "challenge" is often used in the services-in-manufacturing literature without being clearly defined. An exception is Brax (2005), who studied challenges in terms of optimization problems of the offering. Other researchers focused on an empirical managerial dimension (see e.g. Gebauer et al. 2005; Martinez et al. 2010). Martin and Horne (1992) referred to strategic hurdles, which are argued to be difficulties in achieving the objective of becoming more service-oriented. This is in line with how the concept is used empirically in this thesis, that is, a difficulty that hampers service orientation in manufacturing firms.

Although the challenges linked to increasing service orientation to some extent have been identified, little research has focused on understanding their appearance or how they can be addressed. Previous academic literature suggests that changing the mindset within the organisation to create a service culture is an important challenge as manufacturing firms increase their service orientation (see e.g. Bowen et al. 1989; Brax 2005; Gebauer et al. 2005; Martinez et al. 2010). Grönroos and Helle (2010) as well as Vargo and Lusch (2008a) argued that the entire organisation needs to apply service logic to become a true service provider. However, manufacturing firms that still focus mainly on their physical products might not have any intention of becoming pure service providers (Bowen et al. 1989; Gebauer et al. 2005; Windahl & Lakemond 2010). In practice, changing the perspective on value creation is not easily done. Normally, this is a process performed gradually (Oliva & Kallenberg 2003; Kowalkowski 2010) and the question is when service business logic is preferable and when it is not. Brax (2005) criticised the gradual increase of

service orientation and argued that adding services to the product offering could be risky, and advocated a more revolutionary approach.

Although the service business strategies and the service offerings are fundamentally consistent with a certain perspective on value creation, this is not automatically shared throughout those organisations in which the strategies are applied. Therefore, it will be argued that there are two different ways of increasing service orientation. Kowalkowski (2010) explained that one way of increasing the service orientation would be to go from products to services, that is, add new services to the core offering, whereas another way would be to go from goods-dominant logic to service-dominant logic. Vargo and Lusch (2008a) expressed a similar view, although referred to a change from goods to service according to goods- or service-dominant logic. The former would mean, in terms of the concepts used in this thesis, that firms change their service offering and perhaps their service business strategy. The latter implies that firms also change the mindset from value facilitation to value co-creation. Kowalkowski (2010) argued that there may or may not be parallel shifts as regards both ways, implying, for example, that service firms may also have a goods business logic. Although different ways of increasing the service orientation have been studied for example in terms of service business strategy and organisational design (Gebauer et al. 2010b), more knowledge is needed to thoroughly understand the challenges that inconsistency between the different business logic dimensions may cause.

Based on this reasoning, it could be argued that current research does not fully address the complexity of whether manufacturers with goods business logics should change their view on value creation. Most research focuses on one or two of the dimensions included in service business logic: the perspective on value creation, service business strategy, or service offering. The five appended papers are all based on literature within the services in manufacturing field and include the different dimensions in various contexts. In this framework, the findings will be analysed together and all three dimensions will be considered. By doing so, they will not only be combined with the services-in-manufacturing literature, but will also be analysed through the theoretical perspective of service logic. As a result, a knowledge gap encompassing empirical studies within service logic and its applicability to manufacturing firms (e.g. Beverland 2012b; Heinonen et al. 2010; Ng et al. 2012) will be addressed.

1.5 Aim

The aim of the thesis is to understand challenges linked to increasing service orientation in manufacturing firms, by means of goods and service business logics. The aim could be divided into three research questions:

1. What challenges linked to increasing service orientation could be identified in manufacturing firms?
2. Based on goods or service business logics, how could the appearance of these challenges be understood?
3. Based on goods or service business logics, how could these challenges be addressed?

By identifying the empirical challenges encountered by manufacturing firms that tried to increase their service orientation, and analyse it according to the theoretical perspectives of goods and service logic (Grönroos 2006; Grönroos 2008), this thesis attempts to understand not only the appearance of the challenges but also how they could be addressed. It is important to notice that the firms studied are manufacturers with long traditions of product orientation that still offer services mainly to protect or enhance their product business. Moreover, focus is on the service orientation of the service division or among service employees, and not on the entire firm.

Although not being pure service providers, the manufacturing firms studied could be argued to have increased their service orientation in different ways, that is, according to goods or service business logic (c.f. Kowalkowski 2010; Vargo & Lusch 2008a). The intention of the thesis is therefore not to study how manufacturers could become service firms or adopt a service business logic, but to understand challenges linked to increasing service orientation by means of this perspective.

The aim and the research questions were developed during the writing of the appended papers (I-V) along with, for example, my view on service business logic and my perspective on value creation. The challenges linked to increasing service orientation, how they could be understood as well as how they could be addressed, were found to be common denominators between the papers of this thesis. The theoretical perspective of goods and business logic in relation to these questions is mainly the contribution of this framework, although it has been present to different extent and in different forms in all the papers.

Paper I discusses the degree of service orientation within the pulp and paper industry and identifies key themes for firms that are increasing their service

orientation. Further, it identifies challenges and relates them to service orientation. Paper II presents three service innovations in different manufacturing firms and relates to the dimension of service offering. Moreover, it discusses the impact of an increased service orientation. In Paper III, service business strategies are specifically studied. Paper IV and V apply a service logic perspective and relate mainly to the value perspective and service business strategy factors. Papers I-IV relate to research questions 1, 2 and 3, whereas Paper V relates mainly to research question 3. A summary of the appended papers and their contributions is presented in chapter 4.

1.6 Structure of the thesis

Chapter 1 introduces service business logic, discusses knowledge gaps and why this theoretical perspective is interesting to study in a manufacturing context. The aim and the research questions are also presented.

Chapter 2 presents the theoretical framework of the thesis. Focus is on previous research on service business logic and how it could be combined with relevant research areas from the services-in-manufacturing literature.

Chapter 3 describes the research design of the empirical studies. The chapter is concluded with a trustworthiness discussion.

Chapter 4 contains a summary of the five appended papers stemming from the empirical studies. Focus is on the findings related to the research questions.

Chapter 5 presents a discussion of the results of the thesis. The challenges identified are presented, and how they could be understood and addressed are discussed based on goods and service business logics.

Chapter 6 summarises the contributions and suggestions for future research are presented.

2 Theoretical framework

As a result of industry trends, marketing research has changed its focus toward relationships, networks, and value creation (e.g. Achrol & Kotler 1999; Grönroos 1994; Beverland 2012a; Lindgreen & Wynstra 2005). As a response to this new way of doing business, service logic as a perspective on value creation has been developed (see e.g. Grönroos 2006; Grönroos 2007; Grönroos & Gummerus 2014; Vargo & Lusch 2004; Lusch et al. 2010). Nevertheless, empirical research on practical service logic is lacking (Ng et al. 2012). This thesis addresses this gap by combining services-in-manufacturing literature with research on service logic as business logic.

In order to understand challenges linked to increasing service orientation in manufacturing firms, this chapter starts by presenting previous research on service business logic. It discusses its central dimensions in terms of value creation perspectives, service business strategies, and service offering. The importance of the customer's business logic is discussed in terms of a value network context. Then, the view on service orientation taken in this thesis is presented. This is followed by a presentation of internal and external challenges linked to increasing service orientation. Finally, a concluding comment summarises the theoretical framework.

2.1 Service business logic

The fundamental service logic view is that customers buy goods and services for the services they render (Gummesson 1995; Vargo & Lusch 2004; Vargo & Lusch 2008b). Service should therefore be seen as the application of competences or a perspective on value creation rather than an activity or production output (Edvardsson et al. 2005; Grönroos 2006; Vargo & Lusch 2004; Vargo & Lusch 2008a). From the view of the customer, it would then be a perspective on the customer's value creation. From the view of the provider, it would be a perspective on its activities, or in other words, its business logic (Grönroos 2008). This thesis takes the perspective of the manufacturer, that is, the provider. However, the two perspectives are closely related; to understand service business logic, the customer's value creation needs to be clarified. Therefore, alternative views on value creation will be discussed next.

2.1.1 The customer as the value creator

Alternative views on value date back to at least Aristotle, who distinguished between use value and exchange value (Vargo et al. 2008). Although use value, or utility value, has been discussed for a very long time, the traditional view of exchange value, or *value-in-exchange,* has been predominant during the 20th century (see e.g. Kotler & Levy 1969; Kotler 1972; Hunt 1976; Houston & Gassenheimer 1987). According to this view, manufacturers create value during the production process that is transferred to the customers for their use in the form of goods or services. The value is embedded in the product and the marketer will try to make customers buy the already-made value (Grönroos 2007). Producers were considered creators of value, value that was destroyed by customers (Ramírez 1999).

Another point of view, and the perspective central to service logic, is that a good or service that is just exchanged, normally for money, would be useless if not used. Therefore, use value, or *value-in-use,* implies that value is created first as customers use the products they have bought (Normann & Ramírez 1993; Ravald & Grönroos 1996; Wikström 1996; Vargo & Lusch 2004; Grönroos 2006; Grönroos 2008). According to this view, value is created in the customers' value-generating processes (Grönroos 2008; Vargo & Lusch 2006). The role of the suppliers in these processes varies, depending on the business logic adopted.

2.1.2 The firm's role in the customer's value-creating process

From the perspective of goods logic, value-in-use implies that the role of the firm is to facilitate the customer's value creation process by offering resources (for example, products, services or information) consistent with the customer's goals (Grönroos 2008; Payne et al. 2008). As customers use the resources bought, they will create value in isolation from the suppliers, who are only value facilitators (Grönroos 2008). Therefore, firms can only make value propositions (Grönroos 2008).

In service logic, value-in-use implies that firms not only offer resources that facilitate the customers' value creation processes, but also actively engage in customers' value creation and therefore become co-creators of value (Grönroos 2008; Heinonen et al. 2010), that is, influence the customer's processes so that available resources could be more efficiently and effectively used (Payne et al.

2008). To do that, manufacturers need to know their customers' activities and processes well (Heinonen et al. 2010; Reinartz & Ulaga 2008).

Researchers have argued that customers are co-creators of value (e.g. Prahalad & Ramaswamy 2000; Vargo & Lusch 2004; Vargo & Lusch 2008b). This view has been criticised by Grönroos (2008) and Grönroos and Voima (2013), since they point out the contradiction of value as both being created by the firm and the customer together in an all-encompassing process, *and* by customers in use. Logically, since it is the customer that creates value in use, it is the firm that can become involved as a co-creator in the customer's value-creating process (Grönroos & Ravald 2011; Heinonen et al. 2010). If the manufacturer interacts directly with the customer's practices and processes, it can influence them (Grönroos & Helle 2010). Conversely, if the customer engages in the supplier's production process of goods or services, it becomes a co-producer. In practice, co-creation and co-production are closely related and occur simultaneously (Grönroos & Ravald 2011).

Grönroos and Ravald (2011) argued that product suppliers have few chances to interact with customers, whereas manufacturers that also offer services increase their interaction possibilities. Grönroos and Voima (2013) discussed this in terms of indirect (value facilitation) and direct (value co-creation) interactions. Indirect interaction occurs when the customer only interacts with the resources or outputs of the firm's processes (Grönroos & Voima 2013). Direct interaction is, "a process by which the customer's and firm's resources (for example, personnel, system) interact through an active and ongoing coordinated, dialogical process" (Grönroos & Voima 2013:142). For manufacturers, production and delivery are central activities; according to Grönroos and Voima, direct interaction takes place as soon as there is a dialogical manner in the interaction. It could also be seen as a mutual learning process (Ballantyne 2004). For example, if a manufacturer develops and sells a gear box to a customer, indirect interaction occurs since the customer interacts with an outcome of the firm's processes. The firm becomes a value facilitator. On the other hand, if the customer requests a new type of gear box and the manufacturer and the customer develop it together by having a continuous dialogue, the interaction is direct and the firm becomes a co-creator of value.

2.2 Applying service business logic

Applying service business logic in practice would imply, "a perspective on how, by adopting a service approach, firms can adjust their business strategies and marketing to customers' service consumption-based value creation" (Grönroos 2008:302). Therefore, as already discussed, firms need to think about value as co-created and on assisting the customers' everyday practices (Vargo & Lusch 2008a; Grönroos 2008). To do that, opportunities for direct firm-customer interaction need to be created through the firm's service business strategy and service offering (Grönroos 2008; Grönroos & Voima 2013).

However, co-creating value implies close collaboration with customers (and other actors in the value network) and requires that the business logic be shared (Grönroos 2008). Different mindsets within a network might cause problems (Brax 2005; Matthyssens & Vandenbempt 2008) and product-oriented customers might be better met with a goods business logic approach (Grönroos 2008). Kowalkowski (2011) studied value creation from a service-dominant logic perspective and argued that different customers might need to be addressed in different ways.

Applying service business logic in a product-oriented manufacturing firm, therefore, could be concluded to influence the perspective on value creation shared among people within the organisation and how this perspective is translated into service business strategy and service offering. Moreover, service business logic will itself be influenced by how it is received within the value network. Having discussed the perspectives on value creation according to goods and service business logics already, service business strategy and service offering will be discussed next, followed by a brief presentation of the value network perspective in the thesis.

2.2.1 Service business strategies

Since different business units might have different strategies (Govindarajan 1989), this thesis studies service business units, or, in the smaller firms, the people working with services, via the service *business* strategy concept. A business strategy determines the choice of offerings and markets of that unit (Andrews 1971). Therefore, a service business strategy will in this thesis be determined by how the manufacturer competes on the service market. In order to identify service strategies, the main focus was on manufacturing firms' realised, rather than intended, strategies (Mintzberg & Quinn 1988).

Typologies of service business strategies

Several service business strategy typologies have been identified in previous research. For example, Mathieu (2001b) identified strategies that vary depending on the offering specificity (customer service, product service, service as a product) and the organisational intensity (tactical, strategic, or cultural). The implication is that more specific and intense service business strategies bring higher benefits, but also higher costs. Penttinen and Palmer (2007) identified four strategic positions that a manufacturing firm can hold depending on the completeness of their offering and the nature of the buyer-seller relationship. They distinguished between more- and less-complete offerings, and between transactional and relational relationships with customers. Auguste et al. (2006) argued that to design its service business, a firm must decide what the competitive advantage should be, that is, economies of scale or economies of skill, and what the strategic intent is, that is, to offer services to protect or enhance the product business or to expand the service business independently.

As all the examples show, how a manufacturer competes is closely related to its service offerings; sometimes service business strategy and categories of service offerings are used more or less synonymously (e.g. Matthyssens & Vandenbempt 2010; Penttinen & Palmer 2007; Raddats & Easingwood 2010). This has been criticised by Raddats and Kowalkowski (2014) who argued that many manufacturers offer a wide range of services that can be hard to fit into a certain service category. However, the service business strategies applied in this thesis are related to the dominant service offering through which the manufacturing firm creates market differentiation. Focusing to a large extent on the dominant service offering when determining a manufacturer's service business strategy, shows how the firm intends to create value co-creation opportunities since different kinds of service offerings are more or less likely to create direct firm-customer interactions (Grönroos & Ravald 2011). However, the firm can still offer a wide range of services. Therefore, there is a difference between the service strategy and the service offerings per se, which will be discussed independently in section 2.2.2, referring to the tactical level rather than the strategic level, of the organisation.

The empirical studies of this thesis draw on the service business strategies identified by Gebauer (2008) and Gebauer et al. (2010b); customer service strategy, after-sale service providers, customer support service providers, development partners, and outsourcing partners. Gebauer (2008) focused on strategy-environment fit and therefore included both external and internal

factors in order to identify the different service business strategies. The external factors were: competitive intensity in the product and service fields, price sensitivity of customers, strategic choices of customers (what type of services they demand), and market growth. The internal factors included the actual service offering and the competitive positioning in terms of cost leadership and differentiation advantages. The latter includes product differentiation, service differentiation, and service marketing differentiation (that is, the emphasis placed on services within the organisation).

These strategies are similar to those of Raddats and Easingwood (2010), as will be shown next. Their typology builds on the services' focus on product or customer's operational activities (in other words, value-creating process), and whether the service is performed on the firm's own products only or also on third-party products. They call their services strategies services engagement, services extension, services penetration and services transformation.

Manufacturers with a *customer service strategy* (Gebauer et al. 2010b) offer services related to the sale of their products, for example, information services or billing services. The services are offered to increase customer satisfaction and to strengthen the manufacturing firm's credibility. *After-sale service providers* (Gebauer 2008; Gebauer et al. 2010b) offer products at attractive prices and ensure their functioning through, for example, spare parts, repair services or basic training. Services are performed when a product breaks down; since cost leadership is important to these firms, after-sales services are standardised. The services are charged for separately and were not included in the price of the product. Gebauer (2008) found that firms applying this strategy competed through economies of scale and their customers that are price-sensitive only expected a functioning product.

Both strategies are similar to the services engagement strategy identified by Raddats and Easingwood (2010), which implies that the firm offers services closely linked to its own products. Another service business strategy identified by Raddats and Easingwood (2010) could be argued to be consistent with an after-sale service provider strategy, namely their services extension strategy. Firms with this strategy offer services closely linked to products, but perform them also on third-party products. This was confirmed by Raddats and Kowalkowski (2014), who found that firms with a services engagement strategy and a services extension strategy were part of the same group, that is, many manufacturers that performed services on their own products, could also perform services on competitors' products if requested by the customer.

Customer support service providers (Gebauer 2008, Gebauer et al. 2010b) offer a strong product and service differentiation through process-oriented services. As opposed to after-sales services that are performed as a reaction to breakdowns, customer support services are performed to prevent breakdowns. The offerings are customised and the services are charged for separately. This is similar to a services penetration strategy identified by Raddats and Easingwood (2010), implying that services are performed on own products, but focus on the customer's activities.

Development partners (Gebauer 2008, Gebauer et al. 2010b) offer research and development services to support their customers in the pre-purchase phase. These services are often co-produced with the customer to create products and systems for outstanding customer performance. The customer can benefit from the firm's development competencies and the close cooperation makes it harder for competitors to win the customer. Often manufacturers with this strategy offer a wide range of after-sales services and process-oriented services, since this is how customers were found to evaluate and chose development partners for new innovations.

Outsourcing partners (Gebauer 2008, Gebauer et al. 2010b) refers to service firms that take over the customers' operations. Firms take over customer risk by reducing the capital employed. The services offered are standardised and focus on efficiency and economies of scale. This is consistent with the service strategy called services transformation by Raddats and Easingwood (2010), since it is about offering services related to the customer's activities also on third-party products.

Firms with a customer service strategy, or an after-sale service providers' strategy (Gebauer 2008, Gebauer et al. 2010b), could be argued to facilitate their customers' value creation processes only. These firms intend to create a competitive advantage through economies of scale (c.f. Auguste et al. 2006) and therefore standardisation. Although it could be argued that after-sales services as well as other services increase interaction possibilities (Grönroos & Ravald 2011), firms with these service business strategies focus on their products rather than on the customers' activities (Gebauer 2008, Raddats & Easingwood 2010). Since their customers are price-sensitive and expect only a functioning product (Gebauer 2008), the mutual learning process through direct interaction (c.f. Ballantyne 2001, Grönroos & Voima 2013) is less obvious than in firms with, for example, a customer support service provider strategy.

Firms with customer support service strategies or development partner strategies could be argued to co-create value with their customers in terms of being actively involved in the customers' value creation processes (Grönroos & Ravald 2011; Heinonen et al. 2010). Firms with these strategies, offer customised services that are highly focused on the customers' activities, and often co-created with the customer (Gebauer 2008, Gebauer et al. 2010b). Focus is on economies of skill (Auguste et al. 2006).

Firms with outsourcing partner strategies could offer standardised services and focus on economies of scale (Gebauer 2008), and could therefore be argued to facilitate the customers' value creation process. However, since these firms take over the customers' operations, the services imply that the manufacturer could be involved in the customers' value generating processes to different degrees depending on the services provided, and therefore it could be argued that value is co-created.

Transition from goods to service= a change of service business strategies?

Service business strategies are sometimes discussed in terms of a transition process, where firms move from a position of basic services to more advanced ones (e.g. Mathieu 2001b; Oliva & Kallenberg 2003; Raddats & Easingwood 2010; Wise & Baumgartner 1999). However, I prefer to talk about service strategies since transition implies that firms strive toward becoming service providers, leaving basic services for more advanced ones step by step (Oliva & Kallenberg 2003). In this sense, the term "transition" can be confusing since it implies a move on a continuum from goods to service provider, even though some firms have no intention of taking the next step. Many firms just strive to find a suitable strategy to stay competitive and offer a wide range of services. Moreover, the manufacturing firms studied in this thesis did want to increase their service orientation in some way (and this is sometimes referred to in the appended papers as being in a transition process), but no transition over time has been studied.

2.2.2 Service offering

The service offering highly influences whether value is to be facilitated or co-created (Grönroos 2008). These two perspectives are also evident in recent research when classifying services in manufacturing. Traditionally, a distinction

between services related to different purchasing stages has been used. Two examples are Samli, Jacobs and Wills' (1992) classification of pre-sale and post-sale services, and Homburg and Garbe's (1999) classification of pre-purchase, at-purchase, and after-sales services. However, as the interest in services in manufacturing has increased, so has the number of service offering classifications.

Mathieu (2001a) proposed a classification that distinguishes services supporting the product (SSP) from services supporting the client's action in relation to the product (SSC). SSP ensures the functioning of the product and are often referred to as after-sale services. SSC is related to customer activities and advance the mission of the customer organisation (Mathieu 2001a). This dichotomy has explicitly or implicitly been used by several researchers (Gebauer 2007; Kowalkowski et al. 2011; e.g. Oliva & Kallenberg 2003). Ulaga and Reinartz (2011) built on a similar idea with their classification scheme of industrial services, using both service recipient, that is, supplier's good or customer's process as well as the nature of the value proposition, that is, to perform a deed (input-based) or to achieve performance (output-based). However, this classification scheme cannot be directly compared to the SSP-SSC dichotomy, since the service recipient is defined in different ways. Mathieu defined SSC as services supporting the client's action *in relation to the product*, which implies that asset efficiency services belong to a category of services directed at the customers' processes. In the classification made by Reinartz and Ulaga, service offerings directed at the customers' processes are independent of the product, making asset efficiency services those directed at the supplier's good.

Some researchers classify service offerings by distinguishing between individual services and bundling or integrated solutions. Bundling is when groups of products and/or services are offered as a package (e.g. Eppen et al. 1991; Guiltinan 1987; Stremersch et al. 2001). Solutions could be described (although simplified) as goods and services integrated into customised offerings (e.g. Davies 2003; Galbraith 2002; Nordin & Kowalkowski 2010; Windahl et al. 2004). Others draw on distinctions between standardised and customised offerings (e.g. Lightfoot & Gebauer 2011; Matthyssens & Vandenbempt 2010; Penttinen & Palmer 2007), and, as already mentioned, between input-based and output-based (e.g. Raddats 2011; Ulaga & Reinartz 2011). Sometimes transactional versus relational services are discussed (e.g. Oliva & Kallenberg 2003; Penttinen & Palmer 2007). As pointed out by Raddats and Kowalkowski (2014), all these classifications of services are interrelated, as a shift from one

type of offering within a certain typology is likely to indicate a shift within another. For example, a shift from SSP to SSC probably implies a shift also from individual services to bundles or solutions, or from standardised to customised service offerings. Moreover, the typologies could be argued to reflect the value creation perspectives of goods and service business logic respectively, that is, value facilitation and value co-creation.

Finally, there are interrelated classifications based on the service's product connection: services offered to protect or enhance the product versus services offered independently (e.g. Auguste et al. 2006), and services on own products versus services on multi-vendor products (e.g. Raddats & Easingwood 2010). These are also closely related since firms offering services to protect or enhance their product probably focus on their own products and not on competitors'. When services are offered independently, firms are probably more willing to perform services also on multi-vendor products (Raddats & Kowalkowski 2014).

Often, classifications of services and service business strategies appear in the same studies since they are closely related (e.g. Gebauer 2008; Raddats & Easingwood 2010). To clarify this connection, the different service offerings in this framework will draw on the classification by Gebauer (2008) and Gebauer et al. (2010b). It implies that for basic services such as information or billing, the general term "customer services" will be used. "After-sales services" will refer to offering spare parts, repair, etc. "Customer support services" refer to process-oriented services directed at customers' activities. Services related to new product development will be generally referred to as "development services". "Outsourcing services" will be the general term used as customers' operations are taken over by the firm. These services could, of course, be classified as, for example, transactional or relational, or standardised or customised, according to the dichotomies presented above. However, by defining the service offerings more precisely, differences in the findings become clearer.

2.2.3 A value network context

When applying service business logic, the firm's perspective on value creation, its service business strategy, and its service offering have been discussed. However, since the customer is the value creator through value-in-use and has to be adaptive to value co-creation, it could be argued that the customer's value

perspective is also critical. Although having a goods logic approach to services, Martin and Horne (1992) early on identified customers as an important hurdle for manufacturing firms wanting to increase their service orientation. Brax (2005) argued that both the firm and its customers must understand the concept of service. Moreover, both are connected to other actors in a wider context. Matthyssens and Vandenbempt (2008) emphasised the importance of value network actors sharing the same business logic, since they found that different mindsets blocked cooperative efforts. However, many value networks have traditions of mistrust and customers could be unwilling to share information.

This is consistent with the traditional, production-based economy, in which value is created through the value chain (Porter 1980; Porter 1985). Focused on the production of goods, this is a view of value facilitation where goods and services are outputs of production. However, researchers argued that this traditional view ignored the fact that firms' activities were not performed in isolation, but were dependent on inter-firm relationships (Håkansson & Snehota 1989). This view was addressed differently in different research fields and implied new theoretical concepts, such as cooperation throughout the supply chain (Hoyt and Huq 2000), partnerships (Cox 1999), and value constellations (Normann and Ramírez 1993). Industrial networks, as a broader context of relationships and interdependences, have been thoroughly studied within the Industrial Marketing and Purchasing (IMP) group (e.g. Anderson et al. 1994; Håkansson 1982; Hakansson & Snehota 1995; for a comparison between IMP and Service Dominant Logic see Ford 2011). Based on dissatisfaction with existing literature, the IMP group turned its focus to relationships, the interaction between individual buying and selling firms, the stability and heterogeneity of industrial markets, and the similarities of buyers and sellers in a relationship (Håkansson 1982).

In service logic, the term "value network" has been used to emphasise the central role of value (co-)creation. Within this perspective, a value network consists of multiple supply chains, hence being a more comprehensive concept (Lusch et al. 2010). "A value network is a spontaneously sensing and responding spatial and temporal structure of largely loosely coupled value proposing social and economic actors interacting through institutions and technology, to: (1) co-produce service offerings, (2) exchange service offerings, and (3) co-create value" (Lusch et al. 2010:20). This implies a view on network firms integrating resources in order to co-create value.

In the services-in-manufacturing literature, the firm's role in the value network is argued to be important (see e.g. Neu & Brown 2008). Different roles imply different kinds of customers, but also possibilities to arrange different types of value constellations through partnerships with other actors in order to deliver service (Kowalkowski et al. 2013). Previous research suggests that for a manufacturing firm to become profitable in services, internal factors, such as strategy and processes, need to support, rather than conflict with, each other. Moreover, they have to be consistent with external factors in the firm's environment, such as heterogeneity among customers' wants and needs (Gebauer 2008; Neu & Brown 2005; Neu & Brown 2008).

Since this thesis focuses on service business logic, the term "value network" will be used in the following parts of the framework, including supply chains as part of the concept. However, complexities and interactions in value networks are not studied per se. Rather, it is a context used to study service orientation of firms with different value network roles.

2.3 Service orientation

The concept "service orientation" comes from the marketing literature before the perspective of service as a logic was developed. According to a traditional definition, service orientation is, "an organization-wide embracement of a basic set of relatively enduring organizational policies, practices and procedures intended to support and reward service-giving behaviours that create and deliver service excellence." (Lytle et al. 1998). According to this definition, firms with a service orientation focus on offering superior service for their customers with servant leadership, service vision, customer treatment, and service technology as central dimensions (Lytle & Timmerman 2006).

This definition was based on goods logic, since an increased focus on the service offering (as opposed to the product offering) meant an increased service orientation, where services just as products were considered outputs of production. Moreover, from a goods logic perspective, the firm can only facilitate the customer's value creation processes (Grönroos 2006; 2008). The focus on value facilitation is evident in how studies based on this view focus not only on how employees treat customers in service encounters, service recovery and service training (see e.g. Lytle et al. 1998), but also on how service orientation is measured in terms of number of services offered, how many

customers that are offered services and the emphasis on service when meeting customers (see e.g Homburg et al. 2002; Homburg et al. 2003).

Martin and Horne (1992), building on Kotler's (1984) idea about offerings as bundles of products and services, described a service-oriented organisation as one that puts, "more emphasis on the service component in the offering and less on the product". They explain the change from being product-oriented to become service-oriented as moving across a line, a process associated with a number of challenges. Their definition has subsequently been used in research on how manufacturing firms develop their service business (see e.g. Gebauer 2009). The definition builds on a traditional view that services are different from goods and that the dominant part of the offering decides whether a firm is product- or service-oriented (Martin & Horne 1992). Early on, Bowen, Siehl, and Schneider (1989) discussed service orientation in manufacturing firms and predicted its increased importance. They emphasised what they call a service culture or the participation of customers in the manufacturer's design, production, and delivery processes.

Karpen et al. (2012) introduced the concept of "service dominant orientation" to bridge service dominant logic and practice. They define a service dominant orientation as a portfolio of capabilities that facilitates interaction on a strategic level. In empirical research, for example, Gebauer et al. (2010a) adopted more of a value co-creation perspective and broadened the traditional view of service orientation by including questions in their empirical study about, for example, long-term customer relationships, problem-solving and being a trusted advisor to the customers.

Despite the frequent use of the concept, little research has explicitly focused on service orientation in manufacturing (for some exceptions see e.g Bowen et al. 1989; Gebauer 2009; Gebauer et al. 2010a) and the concept is often used without being defined. From the perspective of goods and service logic the concept could be argued to be used in different ways. In this thesis, "service orientation" will be used as a general term to refer to the focus on services within a firm, according to both goods and service business logic.

Previous research has argued that there are two different ways of increasing a firm's service orientation; increasing the focus on service offerings or changing the mindset toward service as a perspective (Kowalkowski 2010; Vargo & Lusch 2008a). The former could be explained as a change from goods to services where services are seen as output of production. The latter could be explained as a change from goods business logic to service business logic,

where service is seen as a perspective on value creation (Vargo & Lusch 2008a). The two ways may or may not be followed at the same time (Kowalkowski 2010).

Based on the former discussion of goods and service business logics, it could be argued that firms changing their service offering and perhaps their service business strategy will increase their service orientation according to goods business logic, whereas firms also changing the mindset from value facilitation to value co-creation will increase their service orientation according to service business logic. Brax (2005) found that increasing the service orientation by broadening the service offering turned out to be challenging since service requires a different mindset. Therefore, firms following a service business logic could be argued to reach a higher degree of service orientation than firms following a goods business logic.

2.4 Challenges linked to increasing service orientation

The literature on services in manufacturing has identified challenges linked to increasing service orientation. Challenges have been found within organisations, and in relations to other firms in the value network. Internal challenges will be discussed first, followed by a presentation of external challenges.

2.4.1 Internal challenges

Creating a service culture has been argued as important to succeed in services (Bowen et al. 1989; Brax 2005; Gebauer et al. 2005; Martinez et al. 2010). It could be argued that the absence of a service culture is evident through different challenges.

An empirical investigation of over 300 manufacturing firms in Sweden (Brown et al. 2009) revealed readiness as the most significant challenge to increasing service orientation. Unpreparedness is manifested through the following selected examples: managers not knowing which activities to perform or not having the right organisational arrangements in place (Brown et al. 2009); appropriate skills being absent and new management capabilities needing to be developed (Sawhney 2006); and managers and, often, sales forces needing to be convinced of the potential for enhancing services offerings (Brax 2005; Reinartz & Ulaga 2008; Ulaga & Loveland 2013).

For the sales force, equipment sold once for a large amount of money may represent a more enticing sale than a yearly service contract negotiated for a lesser sum, even if the profit margins are higher and the contract generates income over a longer period. Management may also push the sales force to sell services without knowing how they could benefit customers, which could, in turn, limit their active promotion (Brax 2005).

Martin and Horne (1992) argued that service innovation was an important challenge for firms wanting to increase their service orientation, since there was no organised process and new service developments were found to "just happen". Designing a strategic service that also works at an operational level can be a serious challenge (Brax 2005). Services are often considered from a strategic point of view and common operational processes and activities are overlooked (Legnani et al. 2009). The research of Macdonald et al. (2011) showed that firms sometimes miss service-selling opportunities as customers ask for service innovation modifications or upgrades, partly because the service was developed on a managerial level and communication was taken over by operational employees.

2.4.2 External challenges

There are also external challenges related to the manufacturer's value network. When a firm's service orientation increases, the value network relationships increase in importance since value co-creation and interaction become central. As already mentioned, mistrust and unwillingness to share information can be a challenge for firms wanting to co-create value (Matthyssens & Vandenbempt 2008). Another related challenge concerns establishing suitable means of communication to facilitate information sharing and processing (Brax 2005).

Moreover, service offerings are not always positive for the manufacturer's sales and revenues (Fang et al. 2008) or profit (Eggert et al. 2011). Neely (2008) found that although the revenues for manufacturers offering services were higher than those of traditional manufacturers, their profits were lower. There is a tradition in the manufacturing industry of giving away services for free, or even customising a service offering to sell products (Matthyssens & Vandenbempt 2008; Oliva & Kallenberg 2003). Hence, finding a profitable business model can be difficult for a product-oriented manufacturing firm that wants to offer services (Witell & Löfgren 2013).

2.5 Final comments on the theoretical framework

The theoretical framework mainly builds on the manufacturing firm's business logic dimensions and how they influence, and become influenced by, identified challenges. However, the aim of this thesis is also to understand them based on these dimensions of goods and service business logics, and also the customer 's business logic could be argued to generate challenges for the manufacturing firm. Selling a service or competing through a service business strategy that requires value co-creation and direct interaction implies customer willingness. This is closely linked to the roles in the value network, due to power and traditions of each firm wanting to maximise their own profits rather than the profit of the entire value network. Therefore, it could be argued that the manufacturer's business logic and its customer's business logic influence not only each other, but also what challenges that they will encounter (Figure 1).

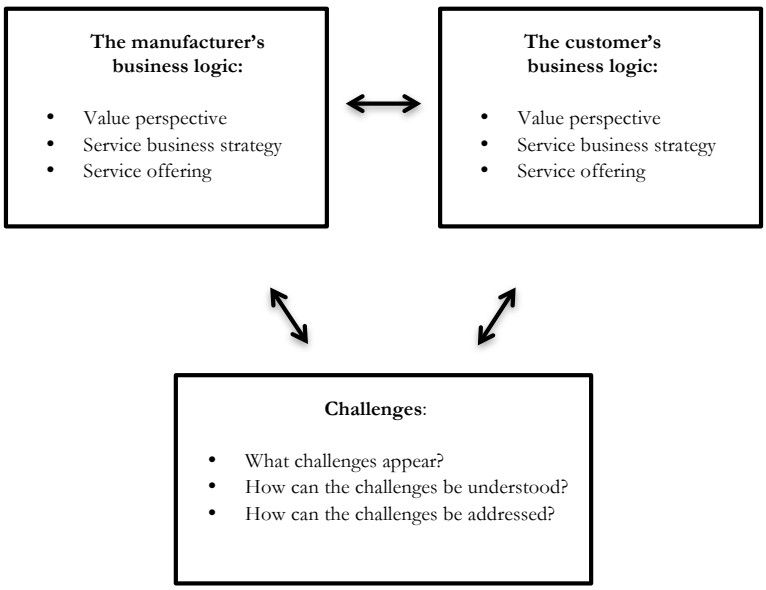

Figure 1. Links between the business logic of the manufacturer, the business logic of its customer, and challenges.

3 Research design

In this thesis, a qualitative case study approach is used. This choice and my research process will be described in this chapter, followed by a discussion about the trustworthiness of the research presented in the thesis.

3.1 A qualitative case study approach

A qualitative approach was chosen for this thesis based on its aim: to understand challenges linked to increasing service orientation in manufacturing firms, by means of goods and service business logics. There are already a number of challenges identified in previous research (see e.g. Brax 2005; Martin & Horne 1992; Mathieu 2001b; Matthyssens & Vandenbempt 2008; Reinartz & Ulaga 2008; Ulaga & Loveland 2013), but empirical findings on how they could be understood or addressed are sparse and a qualitative research approach will contribute to in-depth understanding and hence bring research in this area forward.

As discussed in the introduction, many manufacturing firms face a rapid development of new technologies, increased globalisation and increased competition (Matthyssens et al. 2006; Anderson et al. 2007). As a consequence, value creation becomes central (Matthyssens et al. 2006). Matthyssens and Vandembempt (2003:597) argued that "given the dynamic nature of business-to-business markets, value becomes a dynamic and 'moving' concept"; therefore, qualitative research is needed in this field.

Drawing conclusions about the studied firms' business logics would be difficult without the studies detailing how the firms' (or managers') intentions were not always consistent with their actual service activities or the mindset among other employees. This was also emphasised by Woodside and Wilson (2003), who argued that qualitative case study research is necessary for an understanding of what they call "thinking-doing processes in industrial marketing". This reasoning could be related to the contexts in which phenomena occur, as stressed by researchers of case study methods (Dubé & Paré 2003; Yin 2003).

The studied cases were not unique or specifically interesting per se, but had a supporting role in understanding something else (Stake 1994), that is, how manufacturing firms work with services. The firms studied had long traditions of producing goods. For all the firms, the products were still central and none had become a pure service provider. Although several of the firms wanted to

increase their service orientation, they had no intentions of becoming pure service providers in the near future. Services were managed within a service division, or, if the firm does not have one, by a limited number of employees. In the small firms studied, there could be only one person working with services, or managers dealing with services part-time. These service divisions, groups of service employees, or individuals in different manufacturing firms constituted the cases, except for one study which dealt only with people involved in service innovation development and implementation. These case definitions make the boundaries of what is studied clear, which has been argued to be the most defining characteristic of case study research (Merriam 1998). Miles and Huberman (1994:28), for example, defined a case as "a phenomenon of some sort occurring in a bounded context. The case is, in effect, your unit of analysis." Dubois and Gadde (2002; 2014) argued that there are no natural boundaries in the empirical world, and agreed with Halinen and Törnroos (2005) that the researcher must choose the boundaries of the study.

To even better understand the phenomenon of services in manufacturing firms, multiple cases were included and compared (Stake 1994). Some researchers argue that multiple case studies are preferable to single cases since theory building becomes stronger (Yin 2003) and results are more generalisable (Eisenhardt 1991). However, these arguments have been criticised as neglecting important theoretical contributions from single-case studies and that important contexts are missed (see e.g. Dubois & Gadde 2014; Dyer & Wilkins 1991; Siggelkow 2007). The intention of including multiple cases in this thesis was not to generalise the results, but to identify different challenges linked to increasing service orientation and to better understand them in different contexts. This seemed especially necessary since in some of the firms only one or very few persons were involved in the service business.

3.2 The research process

My research process started in 2006 with an intention of studying services in manufacturing firms. Over the years, this first intention has been developed and specified until the final aim of the thesis evolved. This process has consisted of four empirical studies (resulting in five different papers and some additional publications), which continually increased my knowledge in the area as empirical findings were combined with existing literature, and vice versa.
This process is described by Dubois and Gadde (2002:555; 2014) and referred to as systematic combining;

> "The preliminary analytical framework consists of articulated 'preconceptions'. Over time, it is developed according to what is discovered through the empirical fieldwork, as well as through analysis and interpretation.…The evolving framework directs the search for empirical data. Empirical observations might result in identification of unanticipated yet related issues that may be further explored in interviews or by other means of data collection. This might bring about a further need to redirect the current theoretical framework through expansion or change of the theoretical model."

Similar iterative processes have also been discussed by other researchers. For example, Orton (1997) argued that the inductive grounded theory developed by Glaser and Strauss (1967) should be redefined to iterative grounded theory to reflect how organisational researchers really conduct their studies. Building on Orton's iterative grounded theory and also referring to what Danneels (2002) called an extended case method, Matthyssens and Vandembempt (2003) described an iterative data collection and analysis process that, unlike grounded theory, combines existing theory and empirical data. Their description is similar both to systematic combining, and to my research process.

Adopting a systematic combining method implied that the cases evolved over time (Dubois & Gadde 2002). It means that by going back and forth between previous research, data gathering, and analysis, efforts were made to match theory and reality. This implied that the studies were redirected as new information occured. This was especially the case regarding the final product of the studies, that is, the framework of this thesis, which was complemented with the theoretical perspective of goods and service business logic. The research process is illustrated in Figure 2.

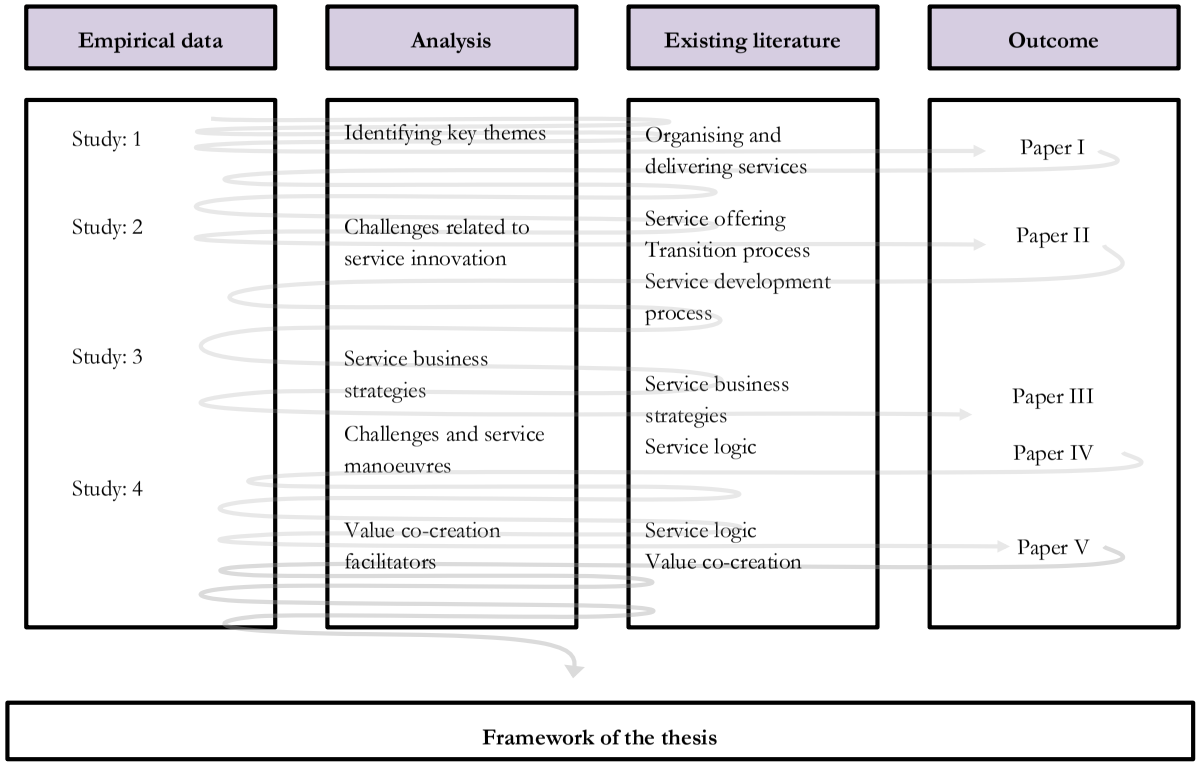

Figure 2. The research process (inspired by Aarikka-Stenroos & Jaakkola 2012).

3.2.1 An explorative study of services in manufacturing

Study 1. The first study was exploratory. Research on services in manufacturing was at an early stage with few academic publications each year (Valtakoski & Reynoso 2014) and the subject was new to me. The empirical point of departure for this initial study was the results of a survey already conducted by two of my advisors, Professor Lars Witell and Professor Anders Gustafsson. They had surveyed 364 Swedish manufacturing firms in various industries, for example, pulp and paper, chemicals, machinery and equipment, electrical and optical equipment, and plastic products, with results showing, among other things, that the focus on services in the manufacturing firms increased.

For the purpose of understanding services in manufacturing and to identify areas for further research, a supplier of paper machines and equipment for pulping, board making and tissue production was studied in 2007. This firm was chosen since services was considered an important part of its business, and it had a separate service division that it had been working actively for almost ten years to develop.

At this firm, I conducted three in-depth interviews with one manager and two salesmen. The informants were selected through a purposeful sampling (Merriam 1998; Miles & Huberman 1994); that is, they were believed to suit the research area. After each interview the informant recommended colleagues who could give further information and who were contacted for interviews (most of them later in study 4). According to Merriam (1998), this is the most common method of purposeful sampling and is called chain sampling. By selecting informants systematically within the organisation, the findings can be more reliable than if the sampling was random (Maxwell 1998).

The interviews were analysed by me and then compared to analyses performed on data gathered and analysed by my colleagues before I started my PhD studies. Altogether, 27 interviews were included in this first empirical study of the pulp and paper industry, covering three equipment suppliers and four paper mills. Except for open, general questions about services, the areas included were marketing, new service development, pricing, customer relationships, information technology, quality and organisation.

The study, together with the survey, resulted in Paper I, which presents five themes central to managing services in the pulp and paper industry. According to our empirical study, these are all areas that manufacturing firms struggle with when offering services, but the literature review showed that the theories

concerning them was rather sparse. This study contributes to research questions 1, 2, and 3, and the authors contributed equally to the writing of the paper. This paper also inspired a book chapter, "Servitization of capital equipment providers in the pulp and paper industry" (Lars Witell, Per Myhrén, Bo Edvardsson, Anders Gustafsson and Nina Löfberg (forthcoming). In Lay, G. (ed.) *Servitization in Industry*. Zug, Switzerland: Springer), not included in this thesis.

3.2.2 Deepening the understanding of services in manufacturing

Study 2. Based on the results from the first study, the second study focused on the areas of service transition, service offering, and development projects. This study was part of a research project called LEKA and was conducted during 2008 and 2009. Development of new services proved challenging for the manufacturing firms in study 1, and, together with three participating firms in study 2, a service innovation in each was identified. The idea was to identify a service innovation that was (I) innovative, that is, the role of the customer had changed and (II) was possible to trace through interviews with key personnel. The three service innovations were Asset Efficiency Optimization (AEO) at SKF, Parts-on-line at Volvo Buses and Fuelwatch at Volvo Trucks.

This study resulted in paper II and the three authors were responsible for the data collection at one firm each (Nina Löfberg at Volvo Trucks, Ida Gremyr at SKF, and Lars Witell at Volvo Buses). I conducted three interviews at Volvo Trucks, whereas my co-authors conducted six interviews at SKF, one at one of their customers' sites, and six interviews at Volvo Buses. Altogether, there was a total of 16 interviews in this study. Though some more interviews at Volvo Trucks would have been desirable to get information from people with different development project roles, it was not possible since the project had been finished and there were problems getting access to the right people to interview. The informants were innovation originators, service development personnel, sales managers, service managers and customers. Specifically, the interviews sought to obtain information in the following areas: service innovation, service development and its organisation, the service's relationship to the product, its sale and delivery, and reasons for the service innovation's success or non-success.

The person responsible for each firm also completed the first data analysis. At a second stage, the three firms were compared and discussed by all three authors. In that sense, the data collection as well as the data analysis was carried out in a research team as a means of having complementary insights and enhancing confidence (Eisenhardt 1989). The study contributes to research questions 1, 2 and 3. The authors contributed equally to the writing of the paper. In addition to Paper II, study 2 resulted in an article not included in this thesis: Understanding New Service Development and Service Innovation through Innovation Modes (Gremyr Ida, Lars Witell, Nina Löfberg, Bo Edvardsson, Anders Fundin, *Journal of Business & Industrial Marketing* 29.2 (2014): 123-131)

Study 3. The third study was performed in parallel with the second study in 2008 and 2009, also within the automotive industry. The intention was to broaden the context from large manufacturers, which are often studied in the services-in-manufacturing literature (see e.g Neu & Brown 2005; Oliva & Kallenberg 2003), to smaller firms without direct access to the end customer, such as suppliers and consultants. Potential suppliers were identified by Steel & Engineering in Värmland (Stål & Verkstad), since the firms were all members of that organisation.

The study included three OEMs (a truck provider, a bus provider, and a construction equipment provider), along with a set of eight suppliers and two consultant firms. The firms were selected through purposeful sampling (Merriam 1998; Miles & Huberman 1994) and short telephone interviews were conducted with 26 OEMs and suppliers in the automotive industry. A total of 13 organisations were selected for site visits and interviews were conducted with one or more persons in charge of the firm's services. Most of the interviews, as well as the initial telephone interviews, were conducted by Malin Hoff and Ziba Zarei, two students writing their master's thesis within our project. I conducted two interviews in this study, one at the truck provider, and one at the construction equipment provider. A total of 19 semi-structured interviews were conducted with employees such as service managers, production managers, marketing managers, and CEOs. I analysed the data from all cases.

This study resulted in two different papers (III and IV), one using the perspective of a supply chain, and one using the perspective of a value network. Paper III investigated manufacturing firms' service business strategies at different positions in a supply chain. The identification of service business

strategies, involved investigating the type of service offerings through the number of services offered, how many customers these services were sold to, and the importance of these services to the organisation. In addition, the share of service revenue, organisational design and the available resources for service development and delivery were investigated. The interviews sought to trace these dimensions, which were then used to classify the service strategy of each firm (Gebauer 2008; Gebauer et al. 2010b). Moreover, challenges related to the organisations' service business strategy level, and to some extent how these challenges could be addressed, were described. Therefore, the paper contributes to research questions 1, 2 and 3. I did the main part of the writing of the paper.

Paper IV investigated the various challenges linked to increasing service orientation within and between value network firms, and the service manoeuvres they use to solve them. Therefore, this paper contributes to research questions 1, 2, and 3 and I did the main part of the writing of the paper. In addition to these two papers, study 3 resulted in a Swedish report called Tjänster i fordonsindustrin (Services in the automotive industry) (Witell Lars, Nina Löfberg, Anders Gustafsson, Bo Edvardsson, 2009, Research report, University Press, Karlstad).

3.2.3 An in-depth case study of a single firm

Study 4. The fourth study was performed by me alone for a deeper understanding of service orientation and value creation in a specific organisation. As in the other studies, the case was selected through purposeful sampling (Merriam 1998; Miles & Huberman 1994) and was one of the cases from the first study, that is, the service division of a supplier of paper machines and equipment for pulping, board making and tissue production. The firm was chosen since its service department was assessed to apply a service business logic.

This assessment was based on the firm's value creation perspective, service business strategy, and service offering. For example, service was explained as something that solves a customer problem. In fulfilment of this, the firm offered service agreements to prevent break downs and to create long-term customer relationships, as well as customer support services, and they tried to work as an advisory board to their customers and co-created offerings and new services with their customers.

The three interviews already conducted in the first study were complemented with nine more at the end of 2008 and beginning of 2009. Employees at various positions, for example, general manager, sales manager, product manager, salesmen and service staff were interviewed. The interviews were semi-structured with a broad focus on service. Examples of areas included were marketing, new service development, pricing, customer relationships, information technology, quality and organisation.

There was a risk of choosing managers who did not describe how things really worked in the organisation, but rather how they wanted or even believed them to work. To avoid this, there was a careful consideration of whom to interview and also the number of informants. By including people at different organisation levels (managers, salesmen, etc.), a wider perspective of the phenomenon could be captured. In this study, the informants were often cogent in their answers; however, there were few employees with different mindsets regarding the firm's services. For example, the firm in this study was assessed to apply a service business logic. Although this was the dominant view among the informants, there was also someone with a clear product focus. This could be related to the person's responsibility for a certain spare part and was reflected in papers I and V as my assessment of the organisation's service orientation developed along with a deeper understanding of the firm (and also related theories).

This study resulted in paper V, of which I am a single author. The analysis of the empirical data showed how a manufacturing firm could apply service business logic. The results of this paper contribute to research question 3 by discussing how challenges linked to increasing service orientation can be addressed. An overview of the data gathering in each study is presented in Table 1.

Table 1. An overview of the data gathering.

Study	Empirical context	Number of cases	Number of interviews	Data gathered by	Data gathered in	Data analysed by	Resulting paper(s)
1	Pulp and paper	7	27	Helen Beckman Bo Edvardsson Nina Löfberg Lars Witell	2005 2007	Nina Löfberg Lars Witell Helen Beckman	I
2	Automotive	3	16	Ida Gremyr Nina Löfberg Lars Witell	2008 2009	Ida Gremyr Nina Löfberg Lars Witell	II
3	Automotive	13	19	Malin Hoff & Ziba Zarei Nina Löfberg Lars Witell Katarina Elmsäter	2008 2009	Nina Löfberg	III IV
4	Pulp and paper	1	9 (+3 conducted in study one)	Nina Löfberg	2008 2009 (2007)	Nina Löfberg	V

3.3 Data interpretation

Data was analysed similarly in the four studies. The different (although they contained many similar questions) interview guides used were all semi-structured and initially based on a literature review of the specific study area. Early in the process, the results of the survey already conducted by my advisors were also influencing the interview guide. Issues that emerged during the interviews were further investigated through literature studies. Based on that new information, the interview guide was modified and further developed. This iterative approach (Dubois & Gadde 2002; Matthyssens & Vandenbempt 2003) was also the result of a close connection between the data and the theoretical concepts in existing literature, for example, the service business strategies identified by Gebauer (2008) and Gebauer et al. (2010b).

After an interview was conducted, it was transcribed and analysed as soon as possible. This method of early analysis not only generated strategies for collecting new data (Matthyssens & Vandenbempt 2003), but also made me think about the collected data at an early stage (Miles & Huberman 1994). According to Maxwell (1998), early analysis not only focuses the following interviews, but also tests emerging conclusions drawn from them. First each interview was analysed separately, then all interviews in the same case and finally, in the studies with more than one case, a comparison between cases was made. The approach of studying each single case to see the patterns within it before comparing it to others is advocated by Eisenhardt (1989). When comparing the cases, the focus was on similarities as well as differences.

To identify patterns and systematically perform the cross-case comparison, categories and codes (see e.g. Miles & Huberman 1994) were used. At an early analytical stage, the coding of the material had similarities with the open coding advocated in grounded theory (Strauss 1987). Although I did a literature review before starting doing interviews and got more knowledge about the subject as my research process proceeded, I tried to have an open mind and let the categories develop based on the empirical data. There is a risk that the researcher becomes "blind" and does not see alternative ways of understanding the data using categories and coding (Maxwell 1998). I have tried to be aware of this risk, but believe that what the researcher already knows about the subject always will influence the results of the study. Also, the iterative nature of the research process (Dubois & Gadde 2002; Matthyssens & Vandenbempt 2003) influenced some categories that were based on prior studies or previous

literature. For studies 2 and 3, I analysed the data using Nvivo 8. In studies 1 and 4, I printed and coded the interviews manually. An example from study 4 follows in Table 2, showing how the keywords or phrases from the interviews were organised in an Excel document, and then coded and categorised. Except for categories and codes, memos (Miles & Huberman 1994) were used in order to remember ideas that occurred during early analysis and to identify patterns in the coding.

Table 2. Examples of the coding and categorisation of the empirical data in study 4.

Keyword/Phrase	**Code**	**Category**
A service is when a customer problem is solved.	Problem solving What is a service?	The concept of service
The sales of service agreements are increasing.	Service agreements	Works proactively
Different sales force for goods and services.	Separated sales	Acknowledges services

Taken together, the different studies and the entire research process are summarised in this framework. This time, I focused on the results of the individual papers, but in some cases also returned to the analyses of the empirical data earlier in the research process. The common denominators between the individual papers were sought, and the challenges linked to increasing service orientation and how they could be addressed were discussed explicitly or implicitly in all papers. Although service logic and its focus on value creation had been part of the individual studies, it was when the results of the papers were analysed all together that I really understood its importance for the challenges linked to increasing service orientation. The interpretation of employees' value perspective in the firms not only relied on the interviewees' individual perspective, but was also assessed based on how the firms worked with services in different ways. Together with the challenges explained, the dominating value perspective among the firms' employees was interpreted. When combining the results of the different studies, a broader research picture emerged, and a new phase of iterative research took place. Its purpose was not to create new theories, but to integrate and extend existing literature (Dubois &

Gadde 2002; Matthyssens & Vandenbempt 2003) on services in manufacturing and service business logic.

3.4 The trustworthiness of the research

An important task is to explain the research design, the theoretical framework, etc., to make it possible for others to evaluate the study (Merriam 1998). Lincoln and Guba (1985) presented four qualitative indices of study trustworthiness: credibility, transferability, dependability and conformability. Based on these terms, the trustworthiness of this thesis will be discussed.

Credibility is about the researchers' confidence in the truth of the findings of the study (Lincoln & Guba 1985). In the studies of this thesis, this has been dealt with in different ways. In study 4, I visited the organisation at different times during a period of three years, which made it possible to follow up previous interviews and learn about the progress in increasing service orientation. Furthermore, all interviews were conducted at the service division of the firm, that is, within the informants' own surroundings, and they were rather relaxed, one-to-one conversations (Carson et al. 2001). The interviews in the other studies were conducted in the same way; however, those organisations were only visited once or twice. Since there were few people, and sometimes only one person, working with services among, for example, the suppliers in the automotive industry, the data relied on only one interview from each firm. Taken together, the suppliers' service orientation challenges could be identified and proved to be similar in the studied firms. The few people interviewed in some firms was, however, a limitation when assessing the employees' value perspective.

Another credibility criterion is triangulation (Lincoln & Guba 1985). Except for the survey used in study 1, only interviews constitute the empirical data. Hence, the triangulation of data methods is a limitation of this study. However, data source triangulation was used in the pulp and paper studies (1 and 4) as employees holding different positions in the organisation were interviewed. In the automotive industry (study 3), firms with different roles in the value network were included. Also, triangulation of investigators was used, especially in studies 1 and 2, where different people analysed different parts of the data and then discussed and compared the findings. Although most of the data in this thesis was analysed by me, others contributed and were even more involved in the data gathering. This might be problematic since much of the

analysis is done as data is gathered (Mathison 1988), and important inputs for the following studies might have been missed. The resulting papers were sent to the informants before submission, allowing them to correct misunderstandings. This is what Lincoln and Guba (1985) called "members check".

The study's transferability reflects its applicability in other contexts and settings. According to Lincoln and Guba (1985), it is the person wanting to transfer the results that should determine the fit between the findings and another context. In that sense, transferability is here dealt with by describing the research process transparently. Dependability relates to the research process, for example, how the data is documented or why certain methods were chosen, whereas conformability relates to how decisions were made and how conclusions were drawn during the research process (Lincoln & Guba 1985). The different cases and the research process have been described generally in this chapter and specifically in the appended papers. During the research, I have used memos (Miles & Huberman 1994) to document my thoughts and findings. The papers have also been reviewed in the submission processes (except for paper V), which could be explained in terms of peer examination (Lincoln & Guba 1985). As with credibility, the dependability and conformability could have been further enhanced by triangulation of data methods, which has not been used in this thesis.

4 Summary of appended papers

In this chapter, summaries of the appended papers will be presented (see Table 3). The concepts used in the summaries are the same as those used in the papers, though they differ from some of the concepts in the other parts of this framework. This is due to two reasons: first, my perspective on some of the concepts evolved during the research process, for example, the perspective on value; second, the concepts of the papers were adapted to the journals they were submitted to for publication.

Table 3. An overview of the appended papers, contributions and links to research questions.

Paper	Title	Contribution	The authors' contributions
I	Degree of service-orientation in the pulp and paper industry	Five central themes were identified as key when managing services in manufacturing. This paper contributed to a rather immature research field, and was among the first to identify challenges with, for example, profitable business models for service.	Co-authored with Prof. Edvardsson, Prof. Gustafsson and Prof. Witell. All authors contributed equally to the writing of the paper. My contribution was mainly to the introduction, some parts of the results and the discussion.
II	Service innovations in manufacturing firms	Identifies and describes critical dimensions for the development of SSC innovations in manufacturing firms. The contribution of this paper was mainly combining these research fields.	Co-authored with Ass. Prof. Gremyr and Prof. Witell. The authors contributed equally to the writing of the paper. My contributions were mainly to the introduction, the theory, and the presentation of the empirical data of Volvo Trucks.
III	Service strategies in a supply chain	Identifying service strategies among firms at different positions in the supply chain. The contribution of the paper was mainly the broadening from one firm to a supply chain.	This paper was co-authored with Prof. Witell and Prof. Gustafsson. I did the main part of the writing and contributed to all parts of the paper.
IV	Service manoeuvres to solve the challenges of servitization in a value network	This paper investigated challenges that different actors face due to servitisation in a value network. It broadened the research perspective, but also deepened it by studying challenges more specifically.	This paper was co-authored with Prof. Witell and Prof. Gustafsson. I did the main part of the writing and contributed to all parts of the paper.
V	Tracing a service business logic in manufacturing firms	This paper describes how service business logic could be applied in a manufacturing firm, and the resulting value generation for the firm. This paper contributes to the practical empirical knowledge on applying a service business logic.	I am a single author.

4.1 Paper I

Degree of service-orientation in the pulp and paper industry

Davidsson [3], N., Edvardsson, B., Gustafsson, A., & Witell, L. (2009). *International Journal of Services Technology and Management,* 11 (1), 24–41.

The purpose of this paper was to study service activities at firms within the pulp and paper industry. The paper contributed to a rather immature research field and was among the first to identify and discuss some of the challenges linked to increasing service orientation.

The investigation was based on a survey of manufacturing firms as well as case studies of equipment suppliers and their customers. Five central themes were identified as key when managing services:

- finding the right mix of physical products and services
- the concept of service
- business models
- technology-based services
- organising service delivery

Based on the themes, it was evident that firms within the pulp and paper industry could be classified as product-oriented. The study revealed that there was a lack of maturity among the manufacturing firms concerning offering and delivering services.

The shift from focusing on products to also provide services constituted a major managerial challenge. Theoretically, it had been argued that a shift from tangibles to intangibles, from separate transactions to long-term relationships, and from value embedded in products to value co-created with customers was needed (Vargo & Lusch 2004).

Despite knowing their customers' processes very well, the studied firms failed to exploit these insights and their product orientation became obvious as well as their lack of understanding of the concept of service. New services were developed based on the firm's technology, meaning value was embedded into the offering and not co-created with the customer. Furthermore, services were offered in terms of products and tangibles, using for example, reports. In a

[3] Now Löfberg.

service-oriented firm, customer orientation and value creation through intangibles such as, for example, knowledge and skills, would have been central.

To initiate the reorientation toward service (Bowen et al. 1989), the case firms all built separate organisational units. The study further showed that stability and patience was needed to give the units time to develop a strong service culture. In line with the opinions of Oliva and Kallenberg (2003) and Hildenbrand et al. (2004), the reorientation toward service was conducted gradually.

4.2 Paper II

Service innovations in manufacturing firms

Gremyr, I., Löfberg, N. & Witell, L. (2010). *Managing Service Quality,* 20 (2), 161-175. An earlier version of the paper was presented at QUIS 11 Symposium on Service Excellence in Management 2009.

This paper identified and described critical dimensions for developing SSC innovations in manufacturing firms. It was argued that successful development of service innovation could not be studied in isolation from the offering, the development project or, in an even wider context, the firms' service transition processes. The contribution of this paper was mainly the combination of these research fields. The investigation examined three specific SSC innovations, developed at SKF, Volvo Buses, and Volvo Trucks.

The study showed that the firms' service orientation transition influenced the development of individual service innovations. A low service orientation caused problems in terms of selling services and funding development projects. In the long run, to continuously deliver successful service innovations, the firm must have a sufficient service orientation and a culture that supports SSC. The innovations studied herein were found to be connected to activities throughout the organisation, and an enhanced service orientation seems to contribute to a culture that is supportive of SSC innovations. However, the studied firms found it challenging to implement a service orientation outside the service division or the service team.

Neither the technological solutions nor the service components in the studied SSC innovations were, in themselves, particularly innovative. Two of the three case firms were forced to find new business SSC models, for example, performance-based contracts. Furthermore, what was innovative was the

bundling of technology and service, which led to greater value for customers than if they had been offered separately. Each of the innovations can potentially be bundled differently and sold in different packages to fit individual customer needs. Such a strategy makes it possible to balance standardization and customization and, consequently, to reap the benefits of both (Davies et al. 2007). In a manufacturing firm with a tradition of selling products, offerings combining tangible and intangible components can be a natural step. Combined with a business model that charges for services, a sales organisation with limited experience in selling intangible services might be offered a smooth way to eventually sell "pure" services.

Innovative SSC based on bundled products and services is linked to a service orientation transition (Gebauer 2007) and implies a change from a transactional customer relationship to a relational one (Penttinen & Palmer 2007). Strong customer relationships and close proximity are considered critical for service innovations (Mathieu 2001a). The studied innovations, however, were driven more by technological solutions than by customer orientation. That was problematic as the firms failed to exploit them before adding a customer focus and repackaging them to attract buyers. However, at SKF, the separated service division and the dedicated sales teams provided the basis for customer relationships and for creating more complete offerings.

The study showed that the case firms had service development processes that were simplified versions of their goods development processes. However, none of the SSC studied were developed according to these processes. IT solutions had been developed according to standard procedures, but the service processes and the intangible parts had been developed on a more ad hoc basis.

4.3 Paper III

Service strategies in a supply chain

Löfberg, N., Witell, L. & Gustafsson, A. (2010). *Journal of Service Management,* 21 (4), 427-440. An earlier version of the paper was presented at QUIS 11 Symposium on Service Excellence in Management 2009 and was awarded Best Paper.

This study investigated manufacturing firm service strategies at different positions in a supply chain. The contribution of the paper was mainly the broadening from one firm to a supply chain, which showed that the firms were

affected at different positions by an increased service orientation, however in different ways reflected in different strategies.

Based on a multiple case study of three OEMs and eight of their suppliers in the automotive industry, the study investigated five specific service strategies (see Gebauer et al. 2010b; Gebauer 2008). There were three service strategies that had been adopted throughout the investigated supply chain. All OEMs in the study followed an after-sales service provider strategy, unlike the suppliers, which either had a development partner strategy or a customer service strategy.

The OEMs were all after-sales service providers since their focus was on offering products and ensuring their functionality. They received the main part of the service turnover from offerings related to spare parts and repair. It was evident, however, that the OEMs all focused on building and maintaining relationships rather than purely on transactions and that they were striving for a customer support service strategy. However, many firms found this to be challenging because their customers might not wish to replace personal contact with technical solutions. Customers may also be unconvinced of the financial benefits of the new service. This means that, while the OEMs have the range needed for a customer support service strategy, the turnover from these services remained limited and they have the organisational arrangements to pursue an after-sales service provider strategy.

The analysis revealed two different service strategies for suppliers: development partners and customer service strategy. The OEM relied on their suppliers' competence to develop their product. The increased demand for services related to product development was not always connected to a payment increase. This study showed that most suppliers had difficulty finding a profitable business model for their services. For the two suppliers that applied customer service strategies, the only function of their services was to ensure delivery and customer product access. One found no increased demand for services, probably due to their specialised working process, that is, their competence in a production method that is hard for competitors to copy.

The investigation highlighted several reasons why service strategies differed among firms at different supply chain positions. First, because different positions have different customers, the service demand varied. Second, all services were closely connected to the fact that the type of product differs at different supply chain positions. Finally, the choice of service business strategy seemed to be influenced by the size of the firm, or, more specifically, the resources available to manage the increased service demand. Several suppliers

argued that smaller suppliers have gone out of business because they cannot afford to offer the services demanded by the OEMs. One of the success factors for complex services identified in a study of IT manufacturing firms is inter-firm collaboration (Neu & Brown 2008). Similarly, in the automotive industry, small suppliers were able to stay in business with the OEMs by cooperating with other firms. The cooperation was also used in order to manage the combination of a service strategy and a profitable business model. The analysis shows that all the studied firms have difficulty pricing their services, although the suppliers experienced this to a greater degree than the OEMs, which is probably a result of the suppliers' position of dependence.

4.4 Paper IV

Service maneuvers to solve the challenges of servitization in a value network

Löfberg, N., Witell, L. & Gustafsson, A. (2014). Submitted for publication and in the second round of review.

This paper investigated the challenges, here identified as challenges, that different actors face due to servitisation in a value network. Specifically, the paper identified the various challenges that exist within and between value network firms, and the service manoeuvres used to solve them. It thus, contributes with a broadened research perspective, but also deepened it by studying challenges more specifically.

The research was built on a study of an automotive industry value network that consists of 13 firms ranging from suppliers and OEMs to consultants. As services became more important to the network actors, the different service orientation levels created challenges. All of the challenges that were identified within the manufacturing firms (suppliers and OEMs) were related to an overall challenge, which could be summarised as product-oriented firms wanting to increase their service focus. That is, even if services were added to the offering, the firms mainly acted individually, and followed a goods-dominant logic. Although a product orientation probably is needed within certain areas, the study showed that the servitisation challenges were better addressed by service-oriented service manoeuvres.

With the exception of one supplier, challenges were addressed *within* organisations in a product-oriented way. For example, most firms added tangible attributes to their services. Most firms had not solved the challenges,

leading to the conclusion that resolving internal challenges successfully was difficult with an existing product orientation. Hence, on a basic service level, a product orientation might suffice, but the firm could probably not offer more advanced services or solutions with this mindset because of the challenges thus created.

The challenges related to the *relationships* between the value network actors were solved with a service orientation, an approach that adheres to a service-dominant logic. Services were created through different value constellations as actors combined internal and external resources to co-create value (Lusch et al. 2010). As services increased, cooperation took on new forms, while resources such as knowledge and skills were increasingly integrated. In the study, establishing new value constellations with other actors in the value network was the key to solving the challenges present in business relationships.

Evidently, OEMs were powerful and influenced the servitisation of the entire value network. They put demands on suppliers to become solution providers, shifting the focus from competition to cooperation, which, in turn, increased suppliers' service orientation. However, the OEMs themselves stayed product-oriented and demanded the inclusion of services in the offering. In line with the research by Matthyssens and Vandembempt (2008), customers remaining product-oriented would influence the entire value network and the servitisation would probably be impeded.

4.5 Paper V

Tracing a service business logic in manufacturing firms

Löfberg, N. (2014). Working paper.

The purpose of this paper was to describe how service business logic could be applied in a manufacturing firm by studying actions on the cultural, strategic, and tactical marketing levels. The service action results (and the co-creation of value with the customer) in terms of value created for the firm were also discussed. By studying the application of service business logic in a manufacturing firm, the associated knowledge gap of related empirical research was addressed.

Paper V is the result of an in-depth case study of a manufacturing firm in the pulp and paper industry. The three conceptual dimensions previously noted as

central for a manufacturing firm to apply a service business logic, that is, knowing the customers' activities and processes (Heinonen et al. 2010; Reinartz & Ulaga 2008; Grönroos & Helle 2010), creating platforms for direct firm-customer interactions (Grönroos & Ravald 2011; Grönroos & Voima 2013) and knowledge and skills focus (Grönroos & Gummerus 2014; Vargo & Lusch 2008a) were reflected in six empirical dimensions for an applied service business logic:

- a common understanding of service
- close customer relationships
- effective dialogue
- a proactive mindset
- an acknowledgement of service
- continuous service development

The traditional view of value facilitation that used to dominate the service division, did not lead to the expected value for the firm regarding advanced service. For example, it was difficult profiting from service and new service developments did not attract customers. The service actions presented here in terms of applied dimensions of service business logic were found to support the customer's value creating process and also lead to value for the firm itself.

A common understanding of service could be seen as fundamental to the other applied applied dimensions of service business logic. This view that service is when a customer problem is solved was reflected on all marketing levels of the firm and was considered a prerequisite to service success. On the other hand, the value co-creation perspective has led to challenges as customers had a goods business logic. According to Grönroos (2008), the manufacturing firm needs to adapt its offering to the customer's view on value creation. This study shows that only the tactical level needed to adapt to the customer's goods business logic, which was done, for example, through providing a physical outcome of a service, such as a report. By basically applying a service business logic and then adapting its tactical service actions to the business logic of its customer, the firm managed to generate value from the service. The value generated for the firm itself by the applied service business logic was shown in three different ways: new business knowledge, additional sales, and profit on the service.

5 Discussion

In the appended papers, different challenges linked to increasing service orientation were identified and discussed in different contexts. In this chapter, they are presented and discussed in a more holistic manner. The identified challenges are presented and a model is developed, building on a new perspective on how these challenges could be understood according to goods and service business logics. The chapter ends with a discussion on service manoeuvres to address the identified challenges.

5.1 Identified challenges

The identified challenges have all been presented explicitly or implicitly in the appended papers. Some challenges were identified in only one firm, whereas others were evident in several of the cases. Some were also challenges that firms had previously, but had managed to address with certain service manoeuvres. The challenges are summarised in Table 4.

5.1.1 Identified internal challenges

Five internal challenges were identified in the empirical studies: employees' value perspective, managerial challenges, sales force resistance, goals without strategies and continuous service innovation. The most important and common challenge identified was the employees' value perspective. Changing mindsets has been identified in previous research as a challenge to manufacturers increasing their service orientation (see e.g. Bowen et al. 1989; Martinez et al. 2010). The empirical examples of this challenge were several, both within the pulp and paper studies, as well as in the automotive studies. Study 1, for example, identified the lack of understanding of the concept of service. One firm in this study especially had difficulties defining service in an appropriate way since different employees had different views on service, or whether value should be facilitated or co-created. This thesis also shows that it is a fundamental challenge underlying many other challenges, as revealed mainly in study 3.

Managerial challenges identified in study 3 included managers not knowing which activities to perform or not having the right organisational arrangements in place. An example from this paper is an automotive industry supplier, a small firm in which employees had unclear roles and multiple tasks that required very

different and sometimes conflicting competencies and skills. For example, the production manager was also responsible for marketing. This challenge has been referred to as manufacturing firm management "unpreparedness" regarding service (Brown et al. 2009).

Sales force resistance was a challenge identified in study 2 and study 3. Salespeople did not see the added value of selling services and thus did not actively promote them. Moreover, despite being familiar with the customers' processes, the sales force missed selling opportunities as customers asked for upgrades or modifications. This is in line with previous research arguing that this is a risk when services are developed on a managerial level and then communication is taken over by product-oriented employees (Macdonald et al. 2011). Not only managers, but also the sales force, needs to be convinced of services' potential (Brax 2005; Mathieu 2001b; Reinartz & Ulaga 2008; Ulaga & Loveland 2013).

Having goals without strategies for an increased service orientation proved to be a challenge for several of the firms, although it has not been discussed explicitly in previous related literature. The goal was to increase the service part of the turnover, but how it should be done in terms of competences, resources, or operational activities was unclear. This was particularly evident among the OEMs in the automotive industry in study 3. The firms had difficulties developing and selling services, which is in line with the research of Legnani, Cavalieri and Ierace (2009), who found that there was an absence of operational structure of service processes and activities in their studied firms.

Finally, continuous service innovation proved to be a challenge for firms wanting to increase their service orientation (see e.g. Gebauer et al. 2006; Martin & Horne 1992; Wise & Baumgartner 1999). This was evident in study 1, and particularly in study 2, where service innovations in the automotive industry were studied. First, funding of new development projects proved challenging since goods were always prioritised. According to previous research, investing resources in services might lead to a more uncertain outcome than investing in hardware or products (Gebauer & Friedli 2005). Second, there was no organised service development process, something that has been identified as important for new service development (Gebauer 2007). The product development process was often adapted to services, but seldom used. Finally, continuous service innovation proved challenging since the studied firms had difficulties exploiting their new services. Despite

technological advantages, customers were not convinced of the benefits of new services.

5.1.2 Identified external challenges

Organisations' identified external challenges included the following: customer resistance, role in the value network, and finding profitable business models. Customer resistance proved to be a common challenge (see e.g. Matthyssens & Vandenbempt 2008). Customers were not ready to adopt new services and they did not see the financial benefits of offered services. This challenge was evident in a study 1 pulp and paper firm, where there was resistance, for example, when technical solutions were to replace personal contact. Moreover, it was evident in study 3, where the perspective was broadened from individual firms to firms with different roles in a value network.

Due to this broader perspective, study 3 also identified a challenge that were rather new to this research area, that is, the manufacturing firms' role in the value network. For example, the OEMs in the automotive industry wanted to offer services, but did not have access to the final customers and did not want to compete with their own customers. In other cases, the suppliers in the automotive industry felt forced to offer certain kinds of services although they did not have the necessary control to do so. OEMs make decisions, such as on the suppliers' choice of components and from which firm to buy them. Despite this apparent lack of control, several of the studied suppliers strived to increase their service orientation.

Closely related to the challenge of the firm's role in the value network, was the challenge of finding profitable business models for services. This was a challenge to most of the firms and was discussed explicitly or implicitly in all the appended papers and in previous research (see e.g. Witell & Löfgren 2013; Oliva & Kallenberg 2003; Matthyssens & Vandenbempt 2008). Many of the studied firms had traditions of giving away services for free in order to sell their products. This was particularly true for the automotive industry suppliers due to the OEMs' power. Some service was demanded by the OEMs for free; if not delivered, the sale was lost. Moreover, the service sometimes implied a cheaper product, leading to an even bigger loss for the firm. For example, as a consequence of some development services, less material is needed in components and not only does the firm offer a service that was not paid for, but also lose income as it gets to sell less material.

It was obvious in the empirical studies that the firms did not see themselves and the other actors as a value network in which value is co-created for the benefit of all parties. Although the firms wanted to offer services, customer resistance or powerful OEMs made this challenging. Different mindsets have been found to block cooperation (Matthyssens & Vandenbempt 2008). It could therefore be concluded that these external challenges relate to a goods business logic among the manufacturer's customers.

Table 4. Challenges identified in the appended papers.

Internal challenge	**Empirical examples**
Employees' value perspective	Different definitions of service
Managerial challenges	Not knowing what activities to perform Organisational arrangements, for example, employees have unclear roles
Sales force resistance	No active promotion of services Missed service selling opportunities
Goals without strategies	Unclear how service business should be increased Lack of operational structures
Continuous service innovation	Difficult getting funding No organised development process Difficulties exploiting new services
External challenge	**Empirical examples**
Customer resistance	Customers did not see the benefits of services Resistance to new services
Role in the value network	No access to end customer Become competitor to own customer Forced to offer services but lacked necessary control
Finding profitable business models	Services are given away for free

5.2 Understanding challenges by business logic

The identified challenges have been argued to be related to the manufacturer's business logic as well as the business logic of its customers (Figure 3). However, the challenges varied between firms and they tried to increase their service orientation in different ways. Applying a business logic means that the firm's value perspective should be reflected in its service business strategy and service offering (Grönroos 2008). In the studied firms, this was not always the case.

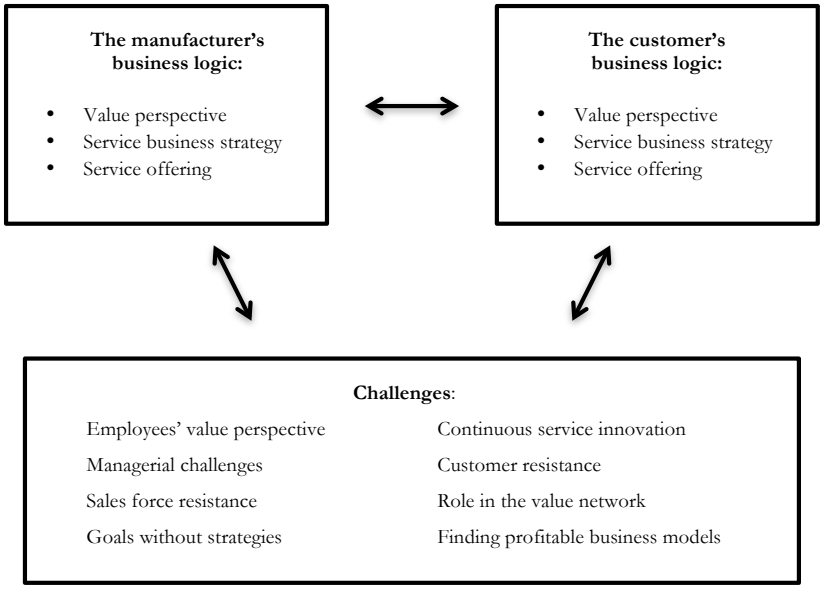

Figure 3. Relation between the identified challenges, the manufacturer's business logic, and the customer's business logic.

5.2.1 Constellations of business logic dimensions

When analysing the empirical findings from the perspective of goods and service business logic, five different constellations between the dimensions of business logics were identified (some in one firm only, some in several). They turned out to lead to different (and sometimes the same) challenges, as summarised in Table 5.

The first constellation was value facilitation, after-sales service provider, and customer support services. This was rather common for the manufacturing firms studied, all of which had long traditions of product orientation. The constellation was particularly typical for the large OEMs in the automotive industry in studies 2 and 3, which competed through an after-sale service strategy, but wanted to offer customer support services. The internal challenges (see e.g. Brax 2005; Brown et al. 2009; Reinartz & Ulaga 2008; Ulaga & Loveland 2013) that they encountered were: employees' value perspective, managerial challenges, sales force resistance, goals without strategies and continuous service innovation. There were also external challenges (see e.g. Witell & Löfgren 2013) of customer resistance, the role in the value network, and finding profitable business models.

The second constellation was value facilitation, development partner, and development services. This was particularly evident among suppliers in the automotive industry in study 3, which encountered most of the internal challenges that the firms with the first constellation did, that is, employees' value perspective, managerial challenges, sales force resistance, and goals without strategies. As opposed to firms selling customer support services, the development services were often initiated by a request or a demand from the customer, and the firm was forced to offer the services to sell goods. Therefore, there was an external challenge of the firm's role in the value network. However, these firms had particular difficulties in finding profitable business models for services (c.f. Witell & Löfgren 2013).

The third constellation, that is, value facilitation, customer service strategy and customer services was found in two of the suppliers in the automotive industry. This constellation did not lead to any of the identified challenges. Due to the suppliers' unique production process, there was no need for differentiation; consequently, these two firms had no intention of increasing their service orientation (c.f. Matthyssens et al. 2006). Study 3 shows that, traditionally, most of the suppliers followed a customer service strategy due to their competitive advantage being built on technical expertise in the production process.

However, increasing demand from OEMs often forced suppliers to provide more advanced services, such as the development of new parts or materials for a vehicle.

The fourth constellation was value co-creation, customer support service strategy, and customer support services. This was found in one of the firms in the pulp and paper industry in study 1, which was studied more specifically in study 4. This firm relied both on after-sales services, and on customer support services. This was found to have complicated the introduction of a customer support service strategy, and the value perspective of co-creation. However, the firm had managed to overcome the identified challenges, although it was still struggling with the external challenge of customer resistance.

The fifth constellation was value co-creation, development partner strategy, and development services. This was found in one of the suppliers in the automotive industry in study 3. The firm had overcome most of the challenges linked to increasing service orientation. It had managed to create a co-creation perspective on value among employees, although sales force resistance was the major internal challenge to overcome. However, overcoming this challenge resulted in other challenges being addressed more or less automatically. Externally, also this firm still tried to address the challenge of customer resistance.

Table 5. Constellations of business logic dimensions and empirical examples of related challenges.

Constellation	1	2	3	4	5
Value perspective	Value facilitation	Value facilitation	Value facilitation	Value co-creation	Value co-creation
Service business strategy	After-sales service provider	Development partner	Customer service strategy	Customer support services strategy	Development partner strategy
Service offering	Customer support services	Development service offerings	Customer service offering	Customer support service offering	Development services
Empirical examples of challenges related to constellation	Employees' value perspective Managerial challenges Sales force resistance Goals without strategies Continuous service innovation Customer resistance Role in the value network Finding profitable business models	Employees' value perspective Managerial challenges Sales force resistance Goals without strategies Continuous service innovation Customer resistance Role in the value network Finding profitable business models	No challenges. Due to a unique production process, they did not want to increase their service orientation.	Overcame most of the challenges. Still struggles with customer resistance.	Overcame most of the challenges. Still struggles with customer resistance.

5.2.2 Understanding challenges by a business logic model

Based on the theoretical framework and the findings of the empirical studies, internal challenges could be understood to appear when there is an inconsistency between the different dimensions of the firm's business logic. According to Grönroos (2008), a firm's value perspective should be reflected in its service business strategy and service offering. It was specifically evident that firms with a value facilitation perspective encountered challenges when intending to compete through a development partner strategy (and development services), or an after-sales strategy and customer support services offerings. These types of offerings obviously required a different value creation perspective than the after-sales services that the firms were used to offering.

Table 6 shows how the business logics of goods and service could be implemented in terms of value perspective, service business strategy and service offering, when there is consistency between the dimensions. Consistent with goods business logic is a value facilitation perspective (Grönroos 2008), a service business strategy based on economies of scale (Auguste et al. 2006), that is, a customer service strategy, an after-sales service strategy, or possibly an outsourcing partner strategy (Gebauer 2008; Gebauer et al. 2010b), and a service offering based on indirect interaction with customers (Grönroos & Voima 2013), that is, customer services, after-sales services, or some types of outsourcing services. Consistent with a service business logic is a value co-creation perspective (Grönroos 2008), a service business strategy based on economies of skill (Auguste et al. 2006), that is, a customer support service strategy, a development partner strategy, or an outsourcing partner strategy (Gebauer 2008; Gebauer et al. 2010b), and a service offering based on direct interaction with customers (Grönroos & Voima 2013), that is, customer support services, development services, or outsourcing services. None of the studied firms applied an outsourcing partner strategy, although outsourcing services were offered. Depending on their focus on enonomies of scale or economies of skill, outsourcing partners are argued to be consistent with either goods business logic or service business logic.

Analysing the four studies shows that all three dimensions need to be consistent to avoid the identified challenges, since firms that increased their service orientation by changing their service offering, or their service offering *and* their service business strategy, still encountered the same challenges. The analysis also shows that changing the business logic is a gradual process (c.f. Oliva & Kallenberg 2003; Kowalkowski 2010). All firms started by changing

their service offering, then their service business strategy, and, finally, the value perspective among employees. This is in line with the research of Kowalkowski (2010), who argued that manufacturing firms with no service offerings are unlikely to apply a service business logic.

The studies showed that firms with both consistency and inconsistency between the business logic dimensions encountered customer resistance. This challenge could be understood as inconsistency between the manufacturer's business logic and the customer's. In the studied firms, there were examples of customers that had goods business logics and were reluctant to buy customer support services, or made the manufacturer offer development services, but were unwilling to pay for them. Whether the customer had a facilitation or co-creation perspective on value seemed to be critical to the manufacturer's external challenges (see e.g Matthyssens & Vandenbempt 2008). However, as has just been discussed, the value perspective is highly influenced by the other dimensions of a firm's business logic.

Table 6. Goods business logic and service business logic and their consistent value perspectives, service business strategy, and service offering.

	Goods business logic	**Service business logic**
Value perspective	• Value facilitation - Firm makes value propositions only	• Value co-creation - Firm makes value propositions *and* interacts with customers in their value-creating processes
Service business strategy	• Economies of scale - Customer service strategy - After-sales service provider - Outsourcing partners	• Economies of skill - Customer support service strategy - Development partners - Outsourcing partners
Service offering	• Service offering: Indirect interactions - Customer services - After-sales services - Outsourcing services	• Service offering: Direct interactions - Customer support services - Development services - Outsourcing services

5.3 Addressing the challenges

Since the findings show that the product-oriented manufacturing firms increasing their service orientation starts by offering services consistent with a value co-creation perspective, organisations where that is absent are most likely to encounter challenges. To address these challenges through different service manoeuvres will therefore be an important part in increasing the firms' service orientation. Service manoeuvres are defined as different avenues, such as offering or organisational changes, that firms undertake to increase their service orientation (Mathieu 2001).

All challenges, except for that of having "goals without strategies" for service, were addressed by one or more service manoeuvres, in one or more firms. How the challenges are addressed will decide whether the service orientation is increased according to goods or service business logic, i.e. whether the service offering and perhaps the service business strategy will be changed, or also employees' value creation perspective. Consequently, it will also influence the degree of service orientation reached. Accordingly, all four empirical studies revealed service manoeuvres that could be argued to follow goods or service business logics and that addressed the different challenges identified (Table 7).

5.3.1 Service manoeuvres according to goods business logic

Three service manoeuvres could be argued to follow goods business logic, since they focus on value facilitation and services as an output of production (Grönroos 2006; Grönroos 2008; Vargo & Lusch 2008a). These were: customer relationships acquisitions, productisation, and separation of products and services.

Customer relationships acquisitions was identified in study 3 and performed by an automotive industry OEM with the result of bringing dealers closer to its end customers. By doing so, it avoided direct competition to its customers, but still it did not focus on co-creating value with other network firms.

Productisation of services was specifically found in two studied firms, one in study 1 and one in study 3. In one case, in an automotive industry OEM with a goods business logic and few people working with services in a large product-oriented organisation, the offerings were adapted to the mindset of the sales force and tangible attributes were added. At the time, the manoeuvre was considered the only way to start selling services. In the other case, a firm in the pulp and paper industry with service business logic, productisation was evident

in the same way, although the reason was mainly the business logic of their customers. Without the tangible attributes of services, the customers were unwilling to make purchases.

The separation of products and services relates both to separating product and service offerings, as well as creating a separate service division and was evident in three of the studies (1, 3 and 4). By separating the goods and service offerings, some of the studied firms charged for the services separately, and the customer was then free to buy the measures and products needed from any manufacturer they wanted. In this was, the firms managed to charge for services. While creating separate service divisions is in line with previous research (Oliva & Kallenberg 2003; Gebauer et al. 2005; Oliva et al. 2012) suggesting that this increases the service orientation of a firm, there is contradictory research arguing that managers need to integrate business unit responsibilities and foster intra-firm collaboration in order to achieve service orientation (Gebauer & Kowalkowski 2012; Neu & Brown 2005). Although the separation service manoeuvre is consistent with goods business logic, the separation was described as an important factor that facilitated charging for service, and also the changing of mindsets among employees in the firms that had managed to increase their service orientation and now applied service business logics.

5.3.2 Service manoeuvres according to service business logic

There were five service manoeuvres identified that could be argued to follow service business logic since they focus on value co-creation and/or service as a process: changing the mindset of the employees, starting to value services, creating partnerships, offering long-term or value-based contracts, and increasing customer focus. These are argued to be service business logic manoeuvres since they focus on value co-creation and/or service as a process (Grönroos 2006). The focus is on knowledge and skills as well as cooperation within the value network to create service offerings. These service manoeuvres were identified both within the organisations that applied service business logics, but also among firms that applied goods business logic and wanted to increase their service orientation.

For example in study 3, the supplier within the automotive industry that applied service business logic managed to change the mindset of its employees by starting to value and acknowledge the competences and skills present within the

organisation. This was closely related to the strategic service manoeuvre of starting to value services. Instead of giving services away for free, they were charged for and consequently not given a subordinate role any more. By valuing services, the employees' competences were emphasised more than before; and when it became evident that customers were willing to pay for their knowledge, the employees' confidence increased.

Partnerships were a service manoeuvre found in studies 3 and 4 that helped the firms finding profitable business models for services, since they motivated the cost for the customer and, therefore, also addressed the challenge of customer resistance. Moreover, a partnership with a service firm brought new competences to the service offering that would have been impossible to obtain without it. Except for the two firms with service business logics, partnerships to offer service was a manoeuvre found among the OEMs in the automotive industry.

Another service manoeuvre that addressed the challenge of finding profitable business models for services was identified in all four studies, whose firms offered long-term or value-based contracts for services, thereby taking responsibility and creating security for their customers. One firm emphasised the importance of maintenance service agreements rather than repair as a reaction to break downs, since not only the customer benefits from avoiding a breakdown, but also the manufacturer itself in that it can plan for their staff in a better way and also secure income over a longer period of time. This manoeuvre, however, was to some extent hampered by the business logics of their customers (see e.g. Brax 2005; Matthyssens & Vandenbempt 2008).

Finally, study 1 and study 2 revealed that, to address the challenge of continuous service innovation, and specifically the difficulties to commercialise new services, firms both within the pulp and paper industry and within the automotive industry had increased their customer focus. Traditionally, the firms' service innovations were driven by technological solutions that proved hard to exploit. First, as the firms added customer focus and repackaged their offerings according to customer demands they were able to sell them.

Table 7. Service manoeuvres that could be argued to follow goods or service business logics and that address different challenges linked to increasing service orientation.

Service manoeuvre	**Business logic**	**Empirical example**	**Addressed challenge**
Customer relationships acquisitions	Goods	Bought dealers to become closer to its end customers.	Role in the value network
Productisation of services	Goods	Tangible attributes were added to the service offerings.	Sales force resistance Customer resistance
Separation of products and services	Goods	Separated the product and service offerings and charged for them individually. Created a separate service division.	Employees' value perspective Finding profitable business models
Changing the mindset of the employees	Service	Value and acknowledge employees' competences and skills.	Employees' value perspective Managerial challenges Sales force resistance Finding profitable business models
Starting to value services	Service	Started to charge for service.	Employees' value perspective Sales force resistance Finding profitable business models
Creating partnerships	Service	Created service offering together with service firm.	Customer resistance Finding profitable business models
Offering long-term or value-based contracts	Service	Service agreements for a longer period of time (several years).	Finding profitable business models
Increasing customer focus	Service	Based service innovations on customer demand rather than technological solutions.	Continuous innovation

6 Contributions and future research

The aim of this thesis was to understand challenges linked to increasing service orientation in manufacturing firms, by means of goods and service business logics. The theoretical point of departure was the service business logic dimensions of value perspective, service business strategy and service offering (Grönroos 2008). The service logic literature has been combined with the services-in-manufacturing literature, specifically regarding service business strategy and service offering (Gebauer 2008; Gebauer et al. 2010b). By doing so, the appearance of the challenges identified in the empirical studies 1, 2 and 3, and also in previous literature (see e.g. Brax 2005; Mathieu 2001b; Reinartz & Ulaga 2008; Ulaga & Loveland 2013), could be better understood and contextualised.

6.1 Challenges as a result of business logic inconsistency

The identified challenges could be understood by the business logic dimensions in terms of inconsistency. A model (Table 6) was presented to understand the appearence of challenges linked to increasing service orientation. Theoretically, it provides an elaboration of Grönroos' (2008) definition of service business logic. By emphasising the three dimensions of business logics and the importance of consistency between them, a new interpretation of how challenges linked to increasing service orientation in manufacturing can be understood has been presented. Challenges are avoided or addressed when there is consistency between business logic dimensions. A goods logic consistency implies a value facilitation perspective (see e.g. Grönroos 2008; Payne et al. 2008), a service business strategy based on economies of scale (see e.g. Auguste et al. 2006; Gebauer 2008; Gebauer et al. 2010b) and a service offering that creates opportunities for indirect firm-customer interaction (Grönroos & Voima 2013). A service business logic consistency implies a value co-creation perspective (Grönroos 2008; Heinonen et al. 2010), a service business strategy based on economies of skill (see e.g. Auguste et al. 2006; Gebauer 2008; Gebauer et al. 2010b) and a service offering that creates opportunities for direct firm-customer interaction (Grönroos & Voima 2013).

The results of studies 1, 2 and 3 were considered when the model was created. As an example, study 2 showed that a product orientation within the firms created challenges according to customer support services (see Gremyr et al. 2010). In study 3, service business strategy analysis justified the positions of the

strategies in the model (see Löfberg et al. 2010). Moreover, studies 1, 2 and 3 showed that the studied firms all started to increase their service orientation in the same way, that is according to a goods business logic (see Davidsson et al. 2009, Gremyr et al. 2010, Löfberg et al. 2010). The service offering was complemented and in some cases also the service business strategy was changed, but the value perspective of employees was still one of facilitation, that is, goods business logic. This was common among the studied firms and as a consequence, they encountered a number of challenges. Based on these findings, the model shows that challenges appear when there is an inconsistency between the three dimensions of business logics.

6.2 A key challenge and related service manoeuvres

In all studies, the inconsistency between the dimensions of value perspective, service business strategy, and service offering, was a result of a service offering and, occasionally, a service business strategy consistent with service business logic, whereas having a value perspective that was consistent with goods business logic. The value facilitation perspective was not only evident in how employees' described what a service was, but also reflected in, for example, how new service was developed based on technological competence only to realise that when offered on the market there was no customer demand (see Davidsson et al. 2009). Another example is the packaging of service as products, presented in a product catalogue, and, in one studied firm, even stored in physical boxes with item numbers.

As these examples show, the employees' value perspective proved to be closely related to other challenges, for example continuous service innovation (Martin & Horne 1992), sales force resistance (Brax 2005; Mathieu 2001b; Reinartz & Ulaga 2008; Ulaga & Loveland 2013) or finding profitable business models for services (Witell & Löfgren 2013). Employees with a value facilitation perspective will act accordingly; therefore, other challenges could be argued to appear as a consequence. Based on this reasoning, the employees' value perspective becomes a key challenge. Previous research has discussed the importance of a service culture among employees as an important part of service orientation among others (see e.g. Bowen et al. 1989; Brax 2005; Gebauer et al. 2005; Martinez et al. 2010). Brax (2005) for example, argued that most challenges stemmed from a manufacturing-oriented way of doing business. The results of this thesis specifies the different ways of doing business in terms of goods and service business logics and, more specifically, discusses

what they imply. Moreover, a service culture in terms of a value co-creation perspective proved to be the most important part of an increased service orientation.

The employees' value perspective is both the most difficult and the most important challenge to overcome in order to reach consistency between the dimensions of business logic. Based on the previous discussion, it is obvious that only when this challenge is overcome, can the related challenges be overcome. This thesis identifies service manoeuvres important to addressing challenges and consequently to increasing service orientation. Service manoeuvres are avenues, such as offering or organisational changes, which firms undertake to increase their service orientation (Mathieu 2001). In the studies, three service manoeuvres were identified as key to overcome the challenge of the employees' value perspective:

- Changing the mindset of employees
- Starting to value services
- Separation of products and services

Two of the studied firms (one in study 3 and one in study 4) managed to overcome the challenge of the employees' value perspective successfully, and, thereby, also more or less automatically overcame other related challenges.

The service manoeuvres are argued to follow goods and service business logic. Goods business logic manoeuvres focus on value facilitation and services as an output of production (Grönroos 2006; Grönroos 2008; Vargo & Lusch 2008a), whereas service business logic manoeuvres focus on value co-creation and/or service as a process (Grönroos 2006). The focus is on knowledge and skills as well as cooperation within the value network to create service offerings. Therefore, service manoeuvres consistent with goods business logic could be assumed not to change the employees' value perspective from facilitation to co-creation, whereas service manoeuvres consistent with service business logic could be assumed to facilitate a new value co-creation perspective within the studied firms.

However, separation of products and services is a service manoeuvre consistent with a goods business logic, which actually facilitated the change of value perspectives among employees. At the same time, some of the firms that addressed challenges with manoeuvres consistent with service business logic, such as offering long-term or value-based contracts, found that, due to

customer resistance, they were hard to sell. Again, the central role of the employees' value perspective is evident, since the firms' value facilitation perspective made them create an offer of a contract that few customers wanted to buy, rather than co-creating the offering together with the customer from the beginning.

Based on this reasoning, it could be argued that employees' value perspective is a key challenge for manufacturing firms that want to increase their service orientation. If the value perspective is changed, that is a co-creation perspective is applied within the firm, other related challenges will consequently be addressed and possibly overcome. The key service manoeuvres identified to address the challenge of employees' value perspective turned out to be consistent with both goods and service business logic.

6.3 A trial-and-error approach to services

The manufacturing firms did not have predetermined service manoeuvres that they would apply in order to reach a service orientation goal (compare the earlier discussion of the challenge "goals without strategies"). Rather, the manoeuvres performed by the studied firms were used to overcome challenges, which indicates a trial-and-error approach to services in manufacturing firms. This makes the outcome of the service business for many firms insecure.

The insecurity of services in manufacturing firms has been studied from different perspectives. For example, Mathieu (2001b) argued that becoming more service-oriented in terms of changing the service offering and also the organisational culture, would lead to higher benefits for the manufacturing firm but also to higher costs. Gebauer, Fleisch, and Friedli (2005) found empirically that the efforts and costs related to an extended service business did not result in the corresponding returns, which they call the service paradox. Brax (2005) argued that adding services to the product offering is considered secure, but since service per se is in conflict with the focus on transactions consistent with a product orientation, a radical transition to become a service provider is necessary. However, many firms to not intend to become pure service providers, but want to incorporate services based on economies of skill, and continue with services based on economies of scale (c.f. Auguste et al. 2006).

As was discussed in the theoretical framework, describing an increased service orientation in terms of a goods-to-service transition process (see e.g. Mathieu 2001b; Oliva & Kallenberg 2003; Raddats & Easingwood 2010; Wise &

Baumgartner 1999) seems to simplify this phenomenon. A transition process implies a move on a continuum, i.e. from goods to service provider (Oliva & Kallenberg 2003), but some firms do not have any intention of taking the next step. Also, most firms offer a wide range of services (Raddats & Kowalkowski 2014), integrating the steps rather than leaving one for the other.

The goods and service logic (Grönroos 2006; Grönroos 2008) is a rather unexplored perspective in this context. Consequently, this thesis contributes to a new perspective on how challenges linked to increasing service orientation could be understood and addressed by means of goods and service business logics. The trial-and-error approach to services in manufacturing firms is argued to be better understood and possibly avoided by a model that includes different dimensions of the business logic perspective, since it shows the importance of service manoeuvres addressing the employees' value perspective to reach consistency between the dimensions.

6.4 A service orientation paradox

Firms changing their service offering and perhaps their service business strategy has in this thesis been argued to increase service orientation according to goods business logic, whereas firms also changing the mindset from value facilitation to value co-creation has been argued to increase service orientation according to service business logic (Kowalkowski 2010; Vargo & Lusch 2008a). Kowalkowski (2010) suggested that there may or may not be parallel shifts as regards the two ways, although he argues that manufacturing firms with no service offering will most likely not apply a service business logic. In line with this reasoning, this thesis shows that all manufacturing firms studied started to increase their service orientation following goods business logic. Two of them managed to change the employees' value perspective and therefore also followed service business logic.

Although the result is an increased service orientation that, based on the previous discussion, is according to service business logic, the service manoeuvres applied to reach this result are paradoxically not always consistent with service business logic. An example is the separation of products and services that was found to be a key to overcoming the challenge of the employees' value perspective (see Davidsson et al. 2009). This service manoeuvre is consistent with goods business logic, but the result (a change of value perspectives) implies that service orientation is increased according to

service business logic since the value perspective dimension is included (see Löfberg 2014). At the same time, other firms addressed challenges by service manoeuvres consistent with service business logic, although they did not manage to change the employees' value perspective. For example, the service manoeuvre of creating partnerships was used to find profitable business models for service and also to overcome customer resistance. This was argued to be a service business logic manoeuvre, since it focuses on cooperation within the value network. However, employees in the firms with this service manoeuvre still had a value facilitation perspective. Therefore, it alone does only lead to an increased service orientation according to goods business logic, since it only affects the dimensions of service offering and perhaps service business strategy.

The service orientation paradox therefore implies that service manoeuvres that seem to be consistent with goods or service business logic might not necessarily lead to an increased service orientation following the same logic. Rather, the two ways of increasing the service orientation are highly intertwined (c.f. Kowalkowski 2010; Vargo & Lusch 2008a).

Ultimately, service orientation would be about co-creating value with customers and, hence, having a value perspective, a service business strategy, and a service offering that enabled it (c.f. Grönroos 2008). Such a view suggests a modern concept consistent with service business logic, as compared to traditional definitions consistent with goods business logic (in e.g. Lytle et al. 1998). Moreover, it is in line with the research of Karpen et al. (2012) who combined the research of service dominant logic and service orientation to bridge theory and practice. The difference is that they discussed service orientation in terms of strategic capabilities, whereas in this thesis a broader perspective is taken, including the three dimensions of service business logic where the value perspective is emphasised.

6.5 Summary of the contributions

To conclude, this thesis contributes a new perspective on how challenges linked to increasing service orientation in manufacturing can be understood by combining the service logic literature (e.g. Grönroos 2008) and the services-in-manufacturing literature (e.g. Gebauer 2008; Gebauer et al. 2010b). To the research field of service logic, the contribution is the application of the conceptual perspective for empirical studies. It has been done by an emphasis on the three dimensions of value perspective, service business strategy and service offering. Challenges linked to increasing service orientation were found in firms with inconsistency between the dimensions.

The research field of services in manufacturing was enhanced by the identification of a key challenge and its related service manoeuvres. The importance of the employees' value perspective was emphasised and the three service manoeuvres of changing the mindset of employees, starting to value services, and the separation of products and services were found to be most important to overcoming this challenge. Previous research has argued that the service culture is important (see e.g. Bowen et al. 1989; Brax 2005; Gebauer et al. 2005; Martinez et al. 2010); however, this analysis shows that the employees' value perspective is the most important challenge to overcome.

Finally, the thesis shows the complexity of services in manufacturing firms and describes a trial-and-error approach to services that was found to be common. It resulted in a service orientation paradox, since the service manoeuvres used to address different challenges in order to increase the service orientation further, not always followed a service business logic. However, the importance of the value perspective should be emphasised and a modern view of the service orientation concept according to a service business logic was suggested, where service orientation would be about co-creating value with customers and, hence, having a value perspective, a service business strategy, and a service offering that enables it (c.f. Grönroos 2008).

6.6 Future research

Previous research suggests that manufacturing firms need to create a service culture to succeed in services (see e.g. Bowen et al. 1989; Gebauer et al. 2005). In line with this, the findings of this thesis show that addressing the challenges linked to increasing service orientation requires applying a value co-creation perspective among employees. However, more research is needed on how such a change of mindsets could be addressed, which makes a combination of the services-in-manufacturing literature to organisational theories an interesting approach for future research. In this thesis, only the service divisions, or the people working with services, have been studied. There is research arguing that the entire firms need to change their business logics to become true service providers (Grönroos & Helle 2010; Vargo & Lusch 2008a) however, empirical research is missing.

This leads to another interesting future research area. Most of the manufacturing firms in this study have no intention of becoming true service providers, but want to offer profitable services without abandoning their focus on their products. The research field of services in manufacturing needs to be more specific, since the intentions of increasing the service orientation varies between firms. Some researchers have argued that different business logics within an organisation could be an advantage (Gebauer et al. 2005; Windahl & Lakemond 2010), and this study shows that co-existing logics is a pragmatic way of managing services in a firm with a long tradition of product orientation; however, this resulted in a service orientation paradox that has to be addressed.

In this thesis, individual firms and how they experience their relationships with customers in a value network has been studied. The importance of sharing the mindset has been mentioned, and the empirical findings show that the value network influences the individual firms when increasing their service orientation. Not only did the customers' business logic influence the firm's ability to increase its service orientation, but also the creation of partnerships with other network actors. Therefore, studying service orientation in manufacturing within a network perspective would profit from combining the literature on services in manufacturing with the research of the IMP group, which argues that the industrial network perspective is essential to understanding a business context (e.g. Anderson et al. 1994; Håkansson 1982; Hakansson & Snehota 1995).

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Service Orientation in Manufacturing Firms

Increased globalisation and competition from low-cost countries has led manufacturing firms to offer services to remain competitive. However, increasing the service orientation of a manufacturing firm in order to find new ways to (co-) create value presents certain challenges, including lower-than-expected revenues, and resistance from sales forces and customers to sell and buy services, respectively. The aim of this thesis is to understand challenges linked to increasing service orientation in manufacturing firms, by means of goods and service business logics. By using this theoretical perspective and study it empirically, this thesis contributes with an understanding of the challenges of service orientation and how these challenges can be addressed.

The study found that the most important and most difficult challenge to overcome with regard to increasing a manufacturing firm's service orientation was the employees' value perspective. Three service manoeuvres were identified as the keys to overcoming this challenge. However, it became evident that the service business logic manoeuvres did not always lead to an increased service orientation, whereas the goods business logic manoeuvres sometimes did. This is discussed in terms of a service orientation paradox.

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