



# AFTER-SALES SERVICES AND CUSTOMER RELATIONSHIP MARKETING: - A MULTIPLE CASE STUDY WITHIN THE SWEDISH HEAVY EQUIPMENT MACHINERY INDUSTRY

---

*Authors:* Erika Egonsson

*Marketing Program*

Khulan Bayarsaikhan

*Marketing Program*

Ting Ting Ly

*Marketing Program*

*Tutor:* Mosad Zineldin

*Examiner:* Rana Mostaghel

*Subject:* Relationship and service marketing

*Level and Semester:* Bachelor Thesis

Spring 2013



## ABSTRACT

Due to growing complexities in business-to-business products, the relationship between a seller and a buyer usually never ends after the purchase transaction. Customers buy augmented products, expecting bundle of values that come with the product which will satisfy the buyer. Thus, integrating services into the core offerings in manufacturing industries has taken crucial importance. Especially, after-sales service is considered a tool for enhancing a valuable advantage for the customer as well as it is a business opportunity for the company.

After-sales services have proven to be of importance, and a strategic after-sales framework is necessary. Three major activities that play a crucial role within the after-sales services in the manufacturing industry are field technical assistance, spare parts distribution and customer care. However, intensive studies regarding after-sales in a specific industry are lacking. This thesis focuses on the Swedish heavy equipment machinery industry organizations of different sizes and thus, the purpose of this study is to investigate the major activities of after-sales service focusing on customer relationship among three classified sizes of after-sales service providers.

A multiple case study has been carried out in the form of semi-structured interviews with three organizations; one small, one medium and one large size after-sales service providers.

The study reveals that customer care is the most focused activity of after-sales services in the heavy equipment machinery industry in Sweden. Simultaneously, it shows the most significant differences of offers depending on the size of the company, in relation to the remaining activities. Field technical assistance appears to be the part of after-sales that produces least profit in the industry. Thus, it might be the reason that small organizations would rather tend to outsource it, in order to avoid high costs. Spare parts distribution can be considered as the most profitable activity of after-sales. The warehouses and repair centers of companies naturally varied according to firm sizes. Although the organizations do not state formal goals for providing after-sales service to its customers, they are aware of its importance and aim for satisfying customer demands. All organizations are convinced that if after-sales services are not handled properly, they face the risk of losing the customer. Finally, this research indicates that organizations in the heavy equipment machinery industry have a lot of room for improvements to its after-sales activities with respect to their relationship with customers, which can be accomplished in strategic and systematic ways.

**Keywords:** After-sales service, Field technical assistance, Spare parts distribution, Customer care, Customer relationship marketing, Firm size



## ACKNOWLEDGEMENT

This study was conducted as our bachelor thesis during our last semester at the International Marketing Program in spring 2013. Within our bachelor thesis we have had the chance to, within a time frame, show our independency in applying our knowledge obtained during our years in the program to the independent degree project. It has surely been an improving and valuable experience. Furthermore, a deeper knowledge in after-sales and its area have been achieved, and the qualitative research approach has given us the opportunity to approach and gain an insight into organizations in real life. This project was manageable due to a number of people that we would like to thank.

Firstly, we would like to show our gratitude by specifically thanking our tutor Dr. Mosad Zineldin and examiner Dr. Rana Mostaghel for surpassing our expectations about the time and qualitative feedback devoted to us. We would also like to thank Dr. Magnus Hultman for his valuable feedback and comments. Lastly, we would like to thank the time and support of the three organizations which participated in this research.



Linnaeus University

May 2013

Erika Egonsson, Khulan Bayarsaikhan and Ting Ting Ly



# TABLE OF CONTENTS

1. Introduction .....	1
1.1 Background .....	1
1.2 Problem discussion.....	2
1.3 Delimitations .....	3
1.4 Outline of the thesis.....	4
2. Literature review .....	5
2.1 Relationship after the sale .....	5
2.2 Relationship and customer services .....	5
2.3 Relationship strategies.....	6
2.3.1 Good relationship .....	7
2.3.2 Bad relationship.....	8
2.4 After-sales in business-to-business environment .....	8
2.5 Activities in After-sales service .....	9
2.5.1 Customer Care.....	9
2.5.2 Field Technical Assistance.....	10
2.5.3 Spare parts distribution.....	11
2.6 Manufacturing industry and firm size .....	12
2.7 Need for further investigation .....	13
3. Research model and research questions .....	16
3.1 Proposed research model.....	16
3.2 Research questions .....	17
4. Methodology .....	18
4.1 Research approach.....	18
4.1.1 Inductive vs. deductive research .....	18
4.1.2 Qualitative vs. quantitative research .....	19
4.2 Research design.....	19
4.3 Data sources .....	20
4.4 Research strategy.....	21

4.5 Data collection method.....	23
4.6 Data collection instrument .....	25
4.6.1 Operationalization and measurement of variables .....	25
4.6.2 Interview guide.....	29
4.6.3 Pretesting .....	30
4.7 Sampling.....	30
4.7.1 Sampling frame .....	31
4.7.2 Sample selection.....	32
4.7.3 The sample .....	33
4.8 Data analysis method .....	33
4.9 Quality criteria.....	35
4.9.1 Content validity .....	35
4.9.2 Construct validity .....	35
4.9.3 External validity .....	36
4.9.4 Reliability .....	37
5. Empirical data .....	38
5.1 Case A – Small size organization.....	39
5.1.1 Customer care.....	39
5.1.2 Field technical assistance .....	40
5.1.3 Spare parts distribution.....	41
5.1.4 Customer relationship marketing .....	41
5.2 Case B – Medium size organization.....	42
5.2.1 Customer care.....	42
5.2.2 Field technical assistance .....	43
5.2.3 Spare parts distribution.....	44
5.2.4 Customer relationship marketing .....	45
5.3 Case C – Large size organization .....	45
5.3.1 Customer care.....	46
5.3.2 Field technical assistance .....	47
5.3.3 Spare parts distribution.....	48
5.3.4 Customer relationship marketing .....	49
6. Data analysis .....	51



6.1 Customer care.....	51
6.1.1 Information provision.....	51
6.1.2 Complaint management.....	53
6.1.3 Warranty extension .....	54
6.2 Field technical assistance .....	55
6.2.1 Check-ups.....	56
6.2.2 During and after warranty assistance .....	57
6.2.3 Product disposal .....	58
6.3 Spare parts distribution.....	58
6.3.1 Inventory management.....	59
6.3.2 Delivery of spare parts .....	60
6.4 Customer relationship marketing .....	60
6.4.1 Service quality.....	61
6.4.2 Customer relationship profitability .....	62
7. Conclusions and implications.....	66
7.1 Discussions.....	66
7.1.1 Customer care.....	66
7.1.2 Field technical assistance .....	67
7.1.3 Spare parts distribution.....	68
7.1.4 Customer relationship marketing .....	68
7.2 Theoretical and managerial implications .....	69
7.3 Limitations .....	71
7.4 Suggestions for future research .....	72
Reference list.....	73
Appendix A – Interview guide .....	85

# LIST OF TABLES

Table 1: Literature review overview ..... 15

Table 2: Research strategies ..... 22

Table 3: Operationalization of After-sales ..... 27

Table 4: Operationalization of Customer relationship marketing ..... 28

Table 5: Business categorization in Sweden ..... 32

Table 6: Research methodology summary ..... 37

Table 7: General information about the cases ..... 38

Table 8: Information provision ..... 52

Table 9: Complaint management ..... 54

Table 10: Warranty extension ..... 55

Table 11: Check-ups..... 56

Table 12: During and after warranty assistance ..... 57

Table 13: Product disposal ..... 58

Table 14: Inventory management..... 59

Table 15: Delivery of spare parts ..... 60

Table 16: Service quality..... 62

Table 17: Customer relationship profitability ..... 64

# LIST OF FIGURES

Figure 1: Service revenue in manufacturing companies ..... 12

Figure 2: Proposed research model ..... 16



# 1. INTRODUCTION

*This chapter presents an introductory discussion of relationship marketing, after-sales services and the Swedish heavy equipment machinery industry, along with identification of the research gap which lead to the purpose of this thesis. Finally, delimitations, and overview of the thesis outline are elaborated.*

## 1.1 BACKGROUND

A relationship between a company and a customer has previously been based on a product-centric view; however, today relationship between the two parties has taken a shift and customers are the main focus in maintaining relationships (Gaiardelli et al., 2007). Creating a good relationship is to generate value for both ends: seller and buyer (Cannon & Perreault, 1999; Palmatier et al., 2006). A crucial element in differentiating a company's offer and excelling in meeting customers' needs is by providing services (Anderson & Narus, 1995). Services can influence the costs and profits for both buyer and seller, and can positively affect how customers do business with their suppliers (ibid). Moreover, after-sales service is considered as a tool for enhancing a valuable advantage for the customer as well as it is a business opportunity for the company (Saccani et al., 2007).

After-sales service is commonly acknowledged as a potential source of revenue, profit and competitive advantage in most manufacturing industries (Bundschuh & Dezvane, 2003; Gaiardelli et al., 2007). Research has shown that after-sales in automotive industries contribute to more than three times bigger turnover than the original purchase of a product (Wise & Baumgartner, 1999). Within the automotive industry, there are significant heavy equipment machinery manufacturing companies in Sweden which are considerable contributors to the Swedish export as well as national sales (Statistics Sweden<sup>1</sup>, 2013).

Three major activities, critical to after-sales' success in the manufacturing industry, have been identified according to Saccani et al. (2007); these are: field technical assistance, spare parts distribution and customer care. It is necessary to align all three main activities with the aim of having a successful and comprehensive after-sales offer (Saccani et al., 2007).

## 1.2 PROBLEM DISCUSSION

Various business researches have highlighted the importance of integrating services into the core offerings in manufacturing industries, especially in the automotive industry (Gadiesh & Gilbert, 1998; Oliva & Kallenberg, 2003). Although, after-sales strategy is sometimes a necessary evil – a time and cost consuming strategy, it is yet a way of staying competitive and a prospect to expand business (Lele, 1997). Ehinlanwo and Zairi (1996) indicated that organizations are dedicating more and more recourses to after-sales and large number of firms have after-sales department with employees focusing only on providing after-sales services and developing after-sales offers. Furthermore, Levitt (1983) described the link of after-sales services to customer relationship marketing.

Relationship marketing is an old idea but yet a relevant and developing concept (Berry, 1995). A later focus of this concept is shifting towards a service marketing practice and academic research with the emphasis on quality (ibid). Furthermore, Berry (1995) states that marketing initially was to focus on how to acquire customers, and little attention was paid on how to market to existing customers to secure the relationship. Perspectives of relationship marketing can be described as targeting profitable customers using strongest possible strategies for customer bonding, and building trust as a marketing tool (Berry, 1995). There are various activities which are dedicated towards enhancing relationship with customers (Pendapudi & Berry, 1997) and after-sales service lengthens interactions with customers and provides basis for influencing and developing the relationship (Brax, 2005). In addition, the size of a company can be considered as a useful and manageable approximation of a company's operation and resources (Bonaccorsi, 1992). However, it is still debatable to what extent and to which functions it could impact (Orlitzky, 2001; Pagano & Schivardi, 2003; Garcia-Quevedo et al., 2013).

Studies about after-sales services have proven the importance of having a strategic after-sales framework (Lele, 1997; Gaiardelli et al., 2007; Zackariasson & Wilson, 2004); however, there exists the research gap on intensive after-sales study within a specific industry (Gaiardelli et al., 2007). Although, the automotive industry has been researched before, not all of its areas were investigated (ibid). Moreover, limited studies refer to the after-sales services of automotive products. Presently there is no study made for the Swedish heavy equipment machinery industry, although it belongs to one of the three main exporting areas of Sweden (Statistics Sweden<sup>2</sup>, 2013). Thus, it would be theoretically as well as empirically interesting to investigate whether and how after-sales service activities differ depending on the size of the

company and further on affect the relationship with customers. Such investigation could deepen knowledge regarding academic researches linking after-sales services with customer relationship marketing as well as the after-sales activities in different automotive industries. Practically, after-sales service providers could be aware of the balance among the main after-sales activities and employ the services with regards to customer relationship.

To gain deeper understanding of the elaborated problem, the purpose of this thesis is to:

Investigate the major activities of after-sales service focusing on customer relationship among three classified sizes of after-sales service providers.

### 1.3 DELIMITATIONS

Three activities of after-sales services claimed by Saccani et al. (2007) are focused in this study, as they have presented a solid basis for after-sales features. It was also considered to be more structured and understandable to focus on specific activities of after-sales when investigating the subject; hence, the above mentioned activities by Saccani et al. (2007) were chosen.

Although Saccani et al. (2007) refer to the three main activities as drivers; the authors of this study has deliberately chosen to use the term activities. Observing the established meaning of the term provided by multiple researches, “after-sales services for manufactured goods encompass the set of activities taking place after the purchase of the product, devoted to supporting customers in the usage and disposal of goods” (Saccani et al., 2007, p.54). The authors deduce that the three drivers; namely field technical assistance, spare parts distribution and customer care, are sets of activities devoted to support customers after the purchase.

The research is done in a single industry namely, heavy equipment machinery industry, in order to make consistent comparison. The industry was chosen due to its importance to the Swedish national sales and exports, the automotive industry together with the wood and metal industry, contributes to the main export products for Sweden (Statistics Sweden<sup>2</sup>, 2013). The industry was also chosen as a consequence of the scarce research done in the industry from service perspective. Thus, the authors aimed to contribute with the result of this research. The investigated companies are Sweden-headquartered, with facilities in Sweden and have the Swedish market as one of its operating markets; thus, it is a study of a Swedish industry.

When researching relationship, only the seller was investigated on its opinion about after-sales and its impact on customer relationship. The buyers' side was not researched in this thesis due to time and resource limit. Furthermore, since the research takes a company side perspective, the term customer relationship marketing is commonly used to separate the actual customer relationship and the desired customer relationship in result of providing after-sales services.

#### 1.4 OUTLINE OF THE THESIS

The chapters of this thesis are structured as described below:

Chapter 1. The first chapter discusses the importance of after-sales services and the three main activities within after-sales services. It describes a research gap that has led to the purpose of this thesis followed by delimitations.

Chapter 2. The second chapter further discusses the three main activities in detail and gives a more detailed and broad overview over after-sales services as well as its link with customer relationship. This chapter ends with discussion of the detailed theoretical research gap.

Chapter 3. This chapter presents the proposed research model framing this study and research questions answered as a result of the empirical investigation.

Chapter 4. The research purpose, approach and method are presented and explained along with analysis method and quality criteria.

Chapter 5. The empirical data gathered from research are presented in this chapter.

Chapter 6. This chapter presents the analysis of the gathered data in relation to previous academic researches.

Chapter 7. The last chapter concludes the research and discusses contributions on theoretical and managerial levels as well as the limitations of the study. Suggestions for future research conclude the thesis.

## 2. LITERATURE REVIEW

*This chapter presents existing academic literature on the chosen subject. It provides definition and elaboration on the main concepts of customer relationship, services and relationship, after-sales services, after-sales activities and size of firm in business-to-business environment. Finally, the identified research gap is explained in detail.*

### 2.1 RELATIONSHIP AFTER THE SALE

Relationships between buyers and sellers can be seen as the one between husbands and wives (Levitt, 1983; Dwyer et al., 1987; Morgan & Hunt, 1994; Wilson, 1995; Zineldin, 2002; Celuch et al., 2006; Kandampully, 2010). The relationship linking a buyer and a seller seldom ends after a purchase transaction; the outline of the relationship affects the decision of the buyer on the next round of purchase (Levitt, 1983). This can typically be connected with the dynamics of services and products dealt in a transaction between the buyer and the seller (ibid). Due to the growing complexity of products, companies must offer greater assurances (Ettorre, 1994). With greater assurance the buyer decides to not only buy an item (to have a casual affair), but is intending to buy an augmented product where the product represents a bundle of values that satisfies the buyer, and the buyer intend to enter a bonded relationship (to get married) (Levitt, 1983). The success of returning customers is inevitably dependent on creating relationships (Guttek et al., 2002); thus, the selling company needs to understand and plan a strategy to manage the ‘partner’ prior to the “wedding” (Levitt, 1983).

### 2.2 RELATIONSHIP AND CUSTOMER SERVICES

An essential strategy for success and survival in competitive business environment are quality assurance and extended service programs; these attempts are driving the customer’s perception of a company’s products in the right direction (Takeuchi & Quelch, 1983; Reichheld & Sasser 1990; Zeithaml et al., 1990). For a company to offer customer service is, according to Asugman et al. (1997), a means for tailoring a company’s offerings to the needs and desires of its customers. By offering good service, it shows the customers that the company stands behind and supports the quality of the offered products (Asugman et al., 1997).



To ensure the advertising claims, companies must build quality into their products (Takeuchi & Quelch, 1983). This means that the company should be aware that product performance and customer service are closely linked (ibid). Additionally, customer service can act as an early warning system to detect product quality problems (Gaiardelli et al., 2007). The quality of the customer service cannot make significant difference if the product itself has disappointing quality; whereas, poor customer service can quickly contradict the advantages associated with a product offer of superior quality. Responsibility for quality cannot rest entirely with the production division; marketers must also be an active part of contributing to perception of quality. Successful businesses use marketing techniques to plan, design, and implement quality strategies that stretch beyond the factory floor (ibid). Good customer service is crucial when aiming to guarantee the assurance of quality in the offered products (Cohen & Lee, 1990). Service quality has relevance in both transactional and relational nature (Crosby et al., 1990); it can be regarded as necessary condition for relationship quality, although not entirely sufficient (Crosby, 1989).

Rust and Zahorik (1993) have, among others, identified a chain of impacts regarding services. Service quality impacts on satisfaction, satisfaction on customer retention (customer loyalty), and customer retention has impact on profitability (Rust & Zahorik, 1993). Storbacka et al. (1994) have investigated this chain of impacts from the firm's point of view in relation to the economical outcome of a customer relationship through service quality improvements. With the focus on profit, the research concludes that service management and its concept of perceived service quality are tied together with relationship marketing. Successful relationship marketing depends on a large degree on the competency of firms to add value by various types of services on top of the core solutions offered to customers and clients. It is essential to have thorough understanding of service management before a relationship marketing strategy can successfully be implemented (Storbacka et al., 1994).

### 2.3 RELATIONSHIP STRATEGIES

Previous studies have identified changes in the competitive environment as the basis for the adoption of relationship marketing (Beverland & Lindgreen, 2004). Customer retention is estimated to be five times less costly than gaining new customers (Rosenberg & Czepiel, 1984; Kandampully & Duddy, 1999). Hence, relationship marketers encourage firms to create long-term relationships as well as mutually beneficial, interactive, and interdependent relationships with key stakeholders (Christopher et al., 2002). Relationship strategy is a

means of improving performance metrics comprising of customer satisfaction, retention and loyalty (Christopher et al., 2000).

Quality relationship with customers should be maintained to achieve superior value for the customers (Grönroos, 2000). Managing a relationship with quality is essential to reach corporate success (Zinkhan, 2002). Yang & Peterson (2004) claims that maintaining customer relationship through a long-term perspective results in satisfied and loyal customers, which thus, develops a firm's financial and competitive position in its markets.

Through relationship marketing, customers are offered with individualized services, customized goods and other benefits (Berry, 1999, 2000; Gwinner et al., 1998). One study shows that the foundations of relationship marketing lie in the combination of trust (satisfaction) and commitment (loyalty) (Alvarez et al., 2011). These concepts can be identified in factors such as dependence between the parties, satisfaction, complaint management, communication, or investment in specific assets (Brashear et al., 2003). Moreover, reliability of the service providers is crucial for the customers to feel confident and build trust (Parasuraman et al., 1985). It enhances the customers' loyalty, and firms build a secure customer portfolio that decreases the risk of ending ongoing relationships (ibid). Within marketing customer satisfaction has always been one of the most interesting areas (Rust & Zahorik, 1993). Studies have shown a direct relationship concerning customer satisfaction and loyalty to a provider (ibid).

Colgate and Danaher (2000) conducted a research with the aim of examining the result of implementing relationship strategies and identify the effect it would have on the customer satisfaction and loyalty. The research showed that a relationship strategy implementation affects the factors positively and negatively. If the relationship strategy program is successful it increases the satisfaction and loyalty, however, an unsuccessful relationship strategy program causes the satisfaction and loyalty to become even lower than those who do not use these kinds of strategy programs. Furthermore, a firm's resources should be considered before implementing such program that can either harm or improve satisfaction and loyalty of the customers (ibid).

### 2.3.1 GOOD RELATIONSHIP

The importance of having relationship with customers is a topic that is relatively unquestioned (Sweeney & Webb, 2002). Having good relationships is not just a dominant trend but it results in significant benefits for both parties in the business-to-business

environment (Gummesson, 1998, 2002; Walter et al., 2001). According to Kelly and Scott (2012) the benefits generated by relationship marketing to business-to-business companies are cost benefits such as improved systems and procedures, service benefits such as enhanced service delivery, image benefits such as superior brand name and reputation and flexibility benefits such as enhanced responsiveness to customers and competitors (Kelly & Scott, 2012). Building relationship is a critical process in which firms aim to take advantage of the potential benefits (ibid). However, their efforts can also impact negatively and result in bad or no relationship (Colgate & Danaher, 2000).

### 2.3.2 BAD RELATIONSHIP

There exist bonds which tie customers to a company in negative sense (Bendapudi & Berry, 1997; Liljander & Strandvik, 1995). This does not immediately stop the interactions between the seller and buyer in case of buyers with low affective commitment 'locked in' by factors such as warranty insurance (Liljander & Roos, 2002; Bendapudi & Berry, 1997; Sheaves & Bernes, 1996; Liljander & Strandvik, 1995). However, negative experiences cause negative word-of-mouth and damage customers' commitment to the buyer and further on, the relationship between the parties (Liljander & Roos, 2002). Negative incidents such as badly handled complaints, inadequate communication with customers may lead to lack of trust which again impacts the relationship (Bejou & Palmer, 1998).

### 2.4 AFTER-SALES IN BUSINESS-TO-BUSINESS ENVIRONMENT

Saccani et al. (2007, p. 54) define after-sales services in business-to-business manufacturing industries as a "set of activities taking place after the purchase of the product devoted to supporting customers in the usage and disposal of goods". This definition is built on a number of previous definitions formulated by Cohen and Lee (1990), Ehinlanwo and Zairi (1996), Loomba (1996), Asugman et al. (1997), Boyt and Harvey (1997), Patelli et al. (2004), Cavalieri et al. (2007) and Johansson and Olhager (2004). After-sales service is often referred to as an intangible product component (Asugman et al., 1997). It is distinct as those activities in which a firm engages after the transaction of its product that minimize potential problems related to product use, and maximizes the value of the consumption experience (ibid). Companies aim to provide product offers comprising after-sales as it adds up and enhances the product value (Levitt, 1983).

Industrial after-sales service is the combination of goods and services since it includes both tangibles such as spare parts as well as consumables related with customer care and assistance

(Johansson, 2006). In business-to-business manufacturing industry, it is difficult to draw the line between manufacturing and service (Schmenner, 1995). It is even claimed that manufacturing industries have turned into service focused industries (Bryson & Daniels, 2007). This can be related to the advantages provided by added services to the manufacturers as well as the industrial customers' demand for service and customer-specific packages (Davies, 2003). Thus, bundling the often tangible core offering with services has become a crucial interest of manufacturers, along with the benefits of facilitating sales of goods, creating growth opportunities, balancing cash-flows, differentiation of competitors and lengthening customer relationships (Brax, 2005).

## 2.5 ACTIVITIES IN AFTER-SALES SERVICE

According to Levitt (1983), the sale of a product is only the beginning of a seller-buyer relationship where the long-term bond between the two parties is the key for long-term profitability enhancing the fact that after-sales services are crucial in a company to stay competitive and to collect profits. There are several classifications of activities within after-sales services; to mention few: customer support, product support, technical support and service (Goffin & New, 2001). After-sales has many times been classified as a business network process, due to the fact that it has a direct impact on the overall business performance and the competitive advantage (Earl & Kahn, 1994). The activities within a business can be provided through alternative channels and actors, or through multiple channels and actors concurrent. The services could be complementary, like field assistance and customer care, or they could be competing services, such as field assistance provided through repair centers or by authorized assistance networks. Internet has also provided at after-sales service channel which has made it possible for companies to have more touch points with its customer, therefore made it easier to perform the activity of customer care (ibid). According to Saccani, et al. (2007), after-sales could be seen as a business, consisting of multiple activities. Further on, there are three major activities critical to after-sales' success, these are: field technical assistance, spare parts distribution and customer care (Saccani et al., 2007).

### 2.5.1 CUSTOMER CARE

Customer care is usually described as an activity which provides technical and commercial information and services; typically, warranty extension and complaint management to customers (Saccani et al., 2007). There are different types of customer care and it is distributed on different levels; it can be distributed through a national centralized call center,

through the manufacturer's website and through the local repair centers that provide technical information to customers. There are also differences in the variety of personalization when offering the service (ibid). The customer care activity has shifted from being primarily providing simple tasks, such as providing information and handling orders, to now, being more complex and handling tasks such as giving advice in financial affairs or strengthening and managing the relationship with key accounts (Kantsperger & Kunz, 2005). This has led to understanding the importance in customer care as an operative tool towards a strategic role in terms of customer relationship (ibid).

Most of the organizations are aware that it is the customers' opinion that matters and that the high competition among organizations have enhanced the focus on customer (Kahn, 1995). Products are today developed in a high speed and their product life cycle has shortened. This has led to that companies have to improve themselves continuously to survive aggressive markets. Especially, automotive and kitchen appliances industries are industries known for their high technical quality. These industries cannot compete with their technical quality only since all products in those industries are relatively equally advanced and technological. Instead the companies have to compete with their functional service quality, which comprises their service provision characteristics such as friendliness, availability and trustworthiness (ibid).

#### 2.5.2 FIELD TECHNICAL ASSISTANCE

Field technical assistance is the assistance provided from seller to buyer where the buyer can receive encompassing installation, warranty work as well as out-of-warranty repairs, product disposal and check-ups (Saccani, et al., 2007). Bryce and Useem (1998) have identified a rapid growth in outsourcing and the main reason for it was to be able to stay profitable and survive in the market; companies had to outsource to stay competitive. From 1990's and onwards, outsourcing has been popular, and especially regarding the activity of field technical assistance (Russell, 2008). The reason behind this is due to the fact that continuously carrying out this activity is very costly and time consuming (ibid). Armistead and Clark (1991) also suggest that outsourcing is mostly favored by firms which need to serve large and geographically dispersed service volumes.

Business-to-business customers expect a high level of availability from the sellers' side due to possible technical issues that can cause serious difficulties for the customers (Russell, 2008).

This is partly provided by warranties offered to the customers from the manufacturers' side (Chien, 2007). The main purpose of warranty is to provide an after sale remedy for customer when a product fails to meet its intended achievement during the warranty period (ibid). Warranty has also been defined as a contractual obligation made by a manufacturer, in connection with the sale of a product, where the manufacturer is obligated to ensure orderly functioning of the product (Blischke & Murthy, 1992). Warranties are known for being very costly for manufacturers; the warranty programs must be estimated precisely in order to provide warranty for the customer in the long run (Chien, 2007). Hence, to be able to provide warranty work manufacturers must calculate if they can afford it for those years they are required to provide their customers with warranty work (ibid).

### 2.5.3 SPARE PARTS DISTRIBUTION

Spare parts distribution is responsible for inventory management, customer order management and delivery of spare parts (Saccani et al., 2007). Important to know is that spare parts are not intermediate or final products to be sold to a customer (Kennedy et al., 2002). Spare parts distribution provides crucial functions for the customers throughout consumption of the product (Gopalakrishnan & Banerji, 2004). The provider usually aims to reach a particular turnover ratio and at the same time meet the demand of many customers with different and large number of spare parts. The management has to decide on what kind of level they want to distribute their spare parts, central warehouse, stockiest, regional warehouses, field warehouses, retail outlets and dealers. It is said that pricing spare parts is one of the most complex problems when it comes to industrial goods. The main purpose with spare parts distribution is to ensure the right availability of spare parts at the right time for the buyer's needs, meanwhile with lowest possible investments from the sellers' side. The purpose is also the reach maximum level of satisfaction; this can be accomplished by stable and steady spare parts distribution (ibid).

An additional purpose for holding spare parts inventory is to provide timely repairs to customers' equipment (Hopp et al., 1999). Furthermore, spare parts inventory are held as protection against extended equipment down-time (Kennedy et al., 2002). Obsolescence can be a problem as the machines for which the spare parts were designed for become obsolete or replaced. It is difficult to determine how many units of a spare part for an obsolescent machine to stock, and it may be difficult to replace a part that is not in stock any longer. There are also consequences of unplanned repairs, these consequences are production loss with significant costs, it is suggested that a kind of safety stock policy is crucial (ibid). The

automobile manufacturer is an industry where delivering spare parts quickly is a key aspect of their after-sales services (Cohen & Lee, 1990).

### 2.6 MANUFACTURING INDUSTRY AND FIRM SIZE

Modern markets have become increasingly complex, dynamic and hostile, and are constantly changing (Neu & Brown, 2005). The manufacturing industry is described through its intense global competition, rapid technology changes and product variety proliferation (Pun, 2004). Machinery and equipment manufacturing companies are facing increasingly intense and aggressive market competition confronting them with new and demanding challenges (Belz et al., 1997). Thus, manufacturers in those industries commonly aim to extend service business in order to generate additional revenue and profit (Gebauer et al., 2005). However, firms employ different approaches towards offering additional services to customers and some fail to meet the intended objectives (Gebauer et al., 2005). As shown on Figure 1, based on the empirical study of Gebauer et al. (2005) 11.1% of the investigated manufacturing companies have earned more than 40% of their total revenue through services. While, 38.7% of manufacturing companies have generated less than 10%; indicating the differences in service offers of manufacturers (ibid).

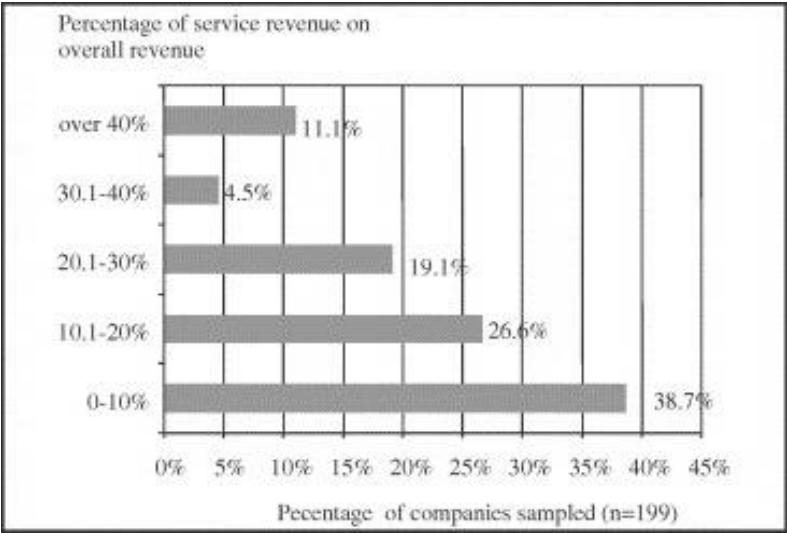


FIGURE 1: SERVICE REVENUE IN MANUFACTURING COMPANIES

(GEBAUER ET AL., 2005)

In business-to-business environment, having lead in resources can yield a considerable advantage in the marketplace (Day & Wensley 1988; Hunt & Morgan 1995, 1996). However, this advantage does not necessarily result in competitive advantage; the resources must be combined with other resources to create core capabilities and superior relative value (Prahalad

& Hamel, 1990). Since services are the co-created value by both the company and the customer (Matthyssens et al., 2006; Vargo & Lusch, 2008), it results in resources that are unique and hard to imitate (Wernerfelt, 1984). Thus, services can be considered as a sustainable source of competitive advantage (Heskett et al., 1997).

The internal functions of a company and its response to the marketplace are immensely impacted by the size of the company (Kimberly, 1976). The nature of small to large manufacturers can vary in relation to their investments into new technologies and equipment, providing world-class skills, training of workforce and innovation (Laforet & Tann, 2006; Laforet, 2009). Although, large firms benefit from more easily absorbed risks, corporate resources and systems (White et al., 1988; Crawford, 1993), smaller firms have the possibility to gain from more spontaneous and individualistic company environment i.e. behavioral advantage (White et al., 1988; Nooteboom, 1993). Small sized companies often suffer from the disadvantage in respect to costs in scale, scope, experience and learning (Nooteboom, 1993). Different size manufacturers also respond differently to challenges regarding developing and marketing services (de Brentani, 1995).

## 2.7 NEED FOR FURTHER INVESTIGATION

First of all, after-sales service is an important feature in business-to-business industries offering potential benefits such as facilitating sales of goods, creating growth opportunities, balancing cash flows, differentiation, and meeting customer demand (Brax, 2005; Davies, 2003). The literature review on after-sales stated that there is a research gap identified in the area of investigating the three major activities in after-sales which are customer care, spare parts distribution and field technical assistance (Saccani et al., 2007). Sacanni et al. (2007) suggested in its research that more empirical investigation should be conducted with these three activities in mind.

Due to the complexity of industrial products the interaction between buyer and seller is seldom ended at the sale transaction (Levitt, 1983). After-sales service provides the chance for a relationship between buyer and seller to last longer after the sale is over (ibid). Further research should relate after-sales and customer relationship marketing more in detail. As the literature review indicated, very few researches have intensively researched this topic. Even though, there are numerous investigations within the area of relationship, little focused on the impact after-sales services have on relationships; thus, pinpointing the need for filling this knowledge gap.



Another factor that is crucial to further investigate is the differentiation that comes along with company sizes. Since researches confirm that different sizes of companies operate distinctively (Laforet, 2009; Kimberly, 1976; de Brentani, 1995), they may provide different after-sales services. However, there have been limited researches focusing on the effect size of firm might have upon after-sales service offers (ibid).

Scarce empirical investigation was found within the area of business-to-business industry of heavy equipment machinery when conducting this literature review, although the industry is a significant industry contributing to the overall economy in Sweden (Statistics Sweden<sup>1</sup>, 2013). Seemingly, no extensive research has been performed within this area with regards to after-sales yet. Therefore, it indicates the meaning to investigate this industry.

Throughout this literature review chapter, a deeper and more extensive understanding about after-sales, after-sales activities and customer relationship is provided. From the literature review, it can be derived that there is a research gap prevailed in the area of the three major activities in after-sales and further on its effect on relationship marketing of manufacturers. Moreover, the industry studied, namely Swedish heavy equipment machinery industry, adds a fresh aspect to the concept along with comparison among different firm sizes.

The research gap is visual on table 1 which presents major previous studies that have investigated the main concepts of this thesis.

TABLE 1: LITERATURE REVIEW OVERVIEW

Articles	Factors						
	Customer care	Field technical assistance	Spare parts distribution	After-sales service	Services	Customer relationship marketing	Firm sizes
Saccani et al. (2007)	✓	✓	✓	✓			
Levitt (1983)				✓	✓	✓	
Takeuchi and Quelch (1983)					✓	✓	
Asugman et al. (1997)				✓	✓	✓	
Grönroos (2000)						✓	
Gummesson (1998)						✓	
Johansson (2006)				✓	✓		
de Brentani (1995)					✓		✓
White et al. (1988)							✓
Liljander and Roos (2002)				✓	✓	✓	
Kimberly (1976)							✓
Kantsperger and Kunz (2005)	✓				✓		
Armistead and Clark (1991)		✓		✓			
Bryce and Useem (1998)		✓					
Gopalakrishnan and Banerji (2004)			✓	✓			
Storbacka et al. (1994)					✓	✓	

### 3. RESEARCH MODEL AND RESEARCH QUESTIONS

As the previous chapter showed the need for further investigation; this chapter presents the proposed research model and research questions as a basis to fill the research gap and fulfill the purpose of this thesis.

#### 3.1 PROPOSED RESEARCH MODEL

The purpose of this thesis is to gain deeper understanding of the major activities of after-sales service focusing on customer relationship among after-sales providers with different sizes. The major activities as well as the focus of customer relationship were reviewed in the previous chapter.

A research model is developed for this thesis which can be found on Figure 2. The research model shows the major activities of after-sales according to the literature which are *customer care* providing technical and commercial information and services such as complaint management and warranty extension; *field technical assistance* responsible for installation, check-ups, warranty work, out-of-warranty repairs and product disposal; *spare parts distribution* comprising inventory management and delivery of spare parts. Furthermore, while the major activities contribute to successful and comprehensive after-sales, after-sales services are affecting the customer relationship of the organization.

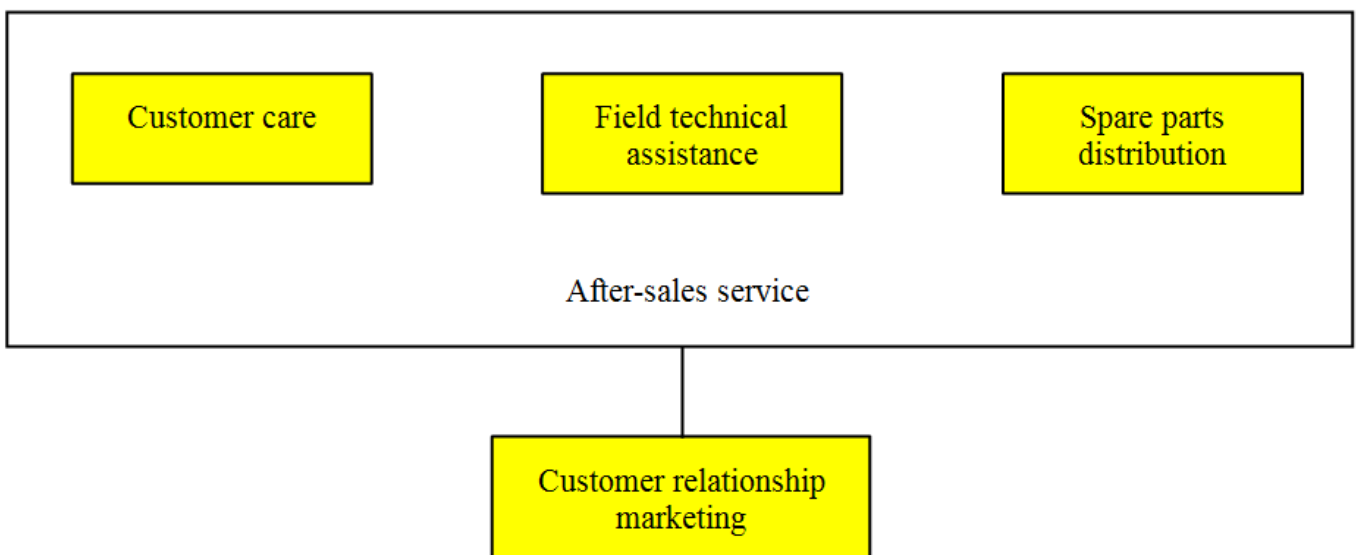


FIGURE 2: PROPOSED RESEARCH MODEL

## 3.2 RESEARCH QUESTIONS

Derived from the purpose of this thesis and literature review of previous academic studies, the proposed research model combines the concept of major after-sales activities and customer relationship. Research question for each activity of the model has been formulated with the objective of organizations' size and industry in consideration.

The first three research questions are derived from the need to further investigate the after-sales services activities in the Swedish heavy equipment machinery industry. The three after-sales service activities: customer care, field technical assistance and spare parts distribution are the main building blocks of after-sales service. An investigation will be executed by taking these three activities where they will be put in the context of Swedish heavy equipment machinery industry. The activities will be compared and analyzed among different sizes of organizations to get a better understanding of how this industry executes its after-sales services.

The fourth research question is derived from the need to investigate how after-sales services contribute to customer relationship marketing. Today, limited studies have been conducted with after-sales service and customer relationship in mind; this makes it even more significant to study. Furthermore, if there are differences in how the different sized organizations executes their after-sales service activities it might be a difference in how their after-sales service contribute to the overall customer relationship marketing.

RQ1. How is customer care executed in the Swedish heavy equipment machinery industry among organizations of different sizes?

RQ2. How is field technical assistance executed in the Swedish heavy equipment machinery industry among organizations of different sizes?

RQ3. How is spare parts distribution executed in the Swedish heavy equipment machinery industry among organizations of different sizes?

RQ4. How do after-sales services contribute to customer relationship marketing in the Swedish heavy equipment machinery industry among organizations of different sizes?

## 4. METHODOLOGY

*In this chapter, introduction of available methodological approaches as well as justification and choices for this study are presented. Discussion regarding inductive and deductive research as well as the reason for selecting a qualitative approach is given; followed by research design, research strategy, data collection and analysis method. The chapter concludes with discussion of the quality criteria of the study.*

### 4.1 RESEARCH APPROACH

#### 4.1.1 INDUCTIVE VS. DEDUCTIVE RESEARCH

Research is made in order to answer a particular research question or hypothesis based on theoretical considerations (Bryman & Bell, 2007). This is how it is commonly viewed, but another alternative is to look at theory as something that derives after the data is collected. This connection between theory and data collection is referred as being either deductive or inductive. The deductive approach is the most common view of showing the relationship between theory and data collection. The researcher collects data based on theoretical considerations and deduces a hypothesis based on these considerations. The steps are easy to follow where the first step is the theory, second step hypothesis, third step data collection, fourth step findings, fifth step hypothesis confirmed or rejected and the sixth and final step is the revision of theory (ibid). The inductive approach has an opposite direction compared to the deductive, where the idea behind this approach is to form theories based on the data collected (Dhawan, 2010).

This research takes a deductive approach, simply because the paper is based on previous theories and has followed the above deductive approach steps. The research questions for this research are derived from theories and previous research as presented in the literature review chapter. Also, to be able to fill the existing research gap a deductive approach is in this case the most suitable. Previous research has pointed out that more research has to be done within the chosen area and especially within diverse industries (Saccani et al., 2007). The intention is not to establish new theories; it is rather to explore the existing theories in new contexts.

#### 4.1.2 QUALITATIVE VS. QUANTITATIVE RESEARCH

In order to carry out a research, an approach and a strategy has to be defined and decided. Researches can choose from two different approaches; a qualitative approach or quantitative approach (Bryman & Bell, 2007). These approaches are taken from two distinctive clusters of research strategies, with other words a general orientation on how to conduct a business research strategy. Quantitative research is a method used for doing measurements, mostly in numbers. The most common approach is to use surveys and questionnaires or other statistical methods. Qualitative research strategy focuses on words rather than the quantification in the collection and analysis of data (ibid). The data collection is more in-depth and detailed, leading to a more accurate and deeper understanding of behavior rather than an external representation of intentions (Granot et al., 2012). The purpose of these two strategies is to collect data suitable for the chosen case; however the strategies differ when it comes to how to collect the data (Eriksson & Wiedersheim-Paul, 2011). A quantitative approach works with numbers and statistics while qualitative studies works with terms. The purpose for a quantitative research is to get defined characteristics whilst the purpose for qualitative is to get a meaning. How the collected data is presented is different as well, quantitative will present numerical data. The qualitative is more detailed, where citations and stories will be featured in the research (ibid).

This research takes a qualitative approach, considering the aspects provided in the above section. Due to the limited timeframe and the restricted accessibility to a vast range of organizations within the heavy equipment machinery industry in Sweden, the choice of a qualitative study was more suitable. The interest and outline of this study lays in achieving a deeper knowledge based on the three main activities of after-sales, and how they would differ depending of the size of the company. Using a quantitative approach would not yield the same results. Furthermore, the study seeks to go in depth rather than to go in breadth in the topic. Thus, in-depth interviews are used and the results are presented as a story rather than in numerical forms. The idea is not to draw any general conclusion which makes the result of eliminating quantitative approach even more significant.

#### 4.2 RESEARCH DESIGN

Research design can be described as a plan for executing the research and answering the research aim and objectives. It provides the structure to resolve the identified problem and avoid situations where the evidence does not address the initial research problems (Yin,

2009). Ultimately, the research design should guide the researchers to collect, analyze and interpret observations (Frankfort-Nachmias & Nachmias, 1992) with cohesion (Rowley, 2002). There are three forms of research design which are descriptive, exploratory and explanatory research designs (Robson, 2002).

Exploratory research design is a fact finding research design where the major emphasis is on clarifying the research problem and research direction. It is mostly carried out in the early stages of major projects (Yin, 2009). In order for this design to be feasible, the research idea should be flexible making it possible to observe all the aspects taking place (Phopalia, 2010).

Descriptive research design focuses on finding facts about a certain subject, answering who, what, when, where and how questions. It is a popular design which is extensively employed in modern researches (Yin, 2009). Descriptive research design is practical for collecting and assessing opinions, behaviors and features of a population or for studying the state of affairs. When applying this design, it is crucial to specifically define what is being measured and what population is investigated (Dhawan, 2010).

Causal research design aims to discover causal relationships between various pre-determined variables (Gray, 2009). Researchers need to study if and how one variable is dependent on, or determinant of another variable (Eliasson, 2010)

This investigation involves a study of organizations after-sales offers and its contribution to customer relationship. Thus, it mainly focuses on observing and analyzing the organizational activities, behavior and intentions. It cannot be seen as exploratory since the subject has been studied before and there is a clear defined problem, as described in the previous chapters. Causal research design has to be excluded as well due to the reasoning that neither after-sales nor customer relationship is dependent on each other. There might be a connection but they are not interdependent variables. Hence, descriptive research design is the most appropriate form of study for this research.

### 4.3 DATA SOURCES

The sources used in a research can be obtained out of primary or secondary method. Primary sources are the data and information that are collected for the purpose of solving a problem; it is generated by tailor made questions seeking answers for specific information collection. Primary data collects specific and up-to-date information; however, it is costly and often inaccessible (Cowton, 1998). On the contrary, secondary sources are the existing data and

information that has been collected for another purpose than solving the problem at hand (Stewart, 1984; Frankfort-Nachmias & Nachmias, 1992). Secondary data contributes to increased credibility of research finding that take a primary data source method (Frankfort-Nachmias & Nachmias, 1992), give alternatives for primary research methods and could possibly solve research problems (Bryman & Bell, 2007). It is also cost efficient as well as has high availability (Cowton, 1998). Cowton (1998) suggests that secondary and primary data are not substitutes for one another. The two research data source methods function as complements to cover inadequacies of the provided data, either in primary or secondary sources (Stewart, 1984).

Because of the qualitative approach the aim is to gain a deep understanding of the subject, the deficiency of earlier studies addressing after-sales as having a relation or effect on customer relationship, primary data is the most applicable method used for collecting and analyzing the research problem. As secondary sources are already collected for another purpose than solving the specific problem at hand, the ability to gain a deep understanding to the subject is restricted and therefore another indication that primary data method is the reasonable way to approach the result.

#### 4.4 RESEARCH STRATEGY

Research strategies represent the different ways of collecting and analyzing empirical data. Deciding on the most advantageous and appropriate method is a critical part of doing research (Yin, 2009). According to Yin (2009), the available methods for researchers are experiment, survey, archival analysis, history and case study. Depending on three conditions, the proper method can be evaluated and chosen correctly regarding a certain research (Yin, 2009). Table 2 illustrates the research strategies and the three conditions namely, 1) Form of research question 2) Require control of behavioral events 3) Focus on contemporary events (ibid).



TABLE 2: RESEARCH STRATEGIES

(YIN, 2009)

METHOD	Form of research question	Control of behavioral events?	Contemporary events?
Experiment	How, why?	Yes	Yes
Survey	Who, what, where, how many, how much?	No	Yes
Archival analysis	Who, what, where, how many, how much?	No	Yes/no
History	How, why?	No	No
Case study	How, why?	No	Yes

This study's research questions are formulated as 'how' questions; thus, limiting it to experiment, history and case study. The researchers do not have control over the behavioral events which further excludes experiment research method. The focus of the research is on contemporary events occurring at manufacturing organizations in terms of after-sales and customer relationship. This factor eliminates history; hence, the most appropriate research method for this thesis is case study.

Case study is defined as "research based on the study of a limited number of naturally occurring settings" (Silverman, 2010, p. 432). It simply involves choosing one or more cases and developing as full an understanding of that case as possible (Punch, 1998). Depending on the research area and subject, a 'case' can be various occasions (Silverman, 2010). In business studies, certain phenomena are highly complex, hard to quantify and, in many situations, impossible to observe from the outside. Thus, case studies are considered the most suitable method in various situations (Ghauri & Grønhaug, 2005), including the circumstances of this research.

Case studies can be either a single case study or a multiple case study. A single case study is akin to a single investigation and a multiple case study intensively focuses on a number of cases (Yin, 2009). In case of single case study, the chosen case should be exceptional in relation to established theory, or for any reason extremely unique and can reveal some special notions. A multiple case study is preferred based on the aim of resulting in robust research outcomes (Rowney, 2002; Silverman, 2010). Thus, the authors aim for conducting a multiple case study. The cases should be selected with the prospect that they produce similar results (literal replication) or produce contrasting results on predictable reasons (theoretical replication) (ibid). This study can result in both literal replication in terms of the after-sales service activities and theoretical replication regarding the manufacturer size.

#### 4.5 DATA COLLECTION METHOD

There are several methods applicable to collect primary data sources, among these; the most common ones are focus groups, in-depth interviews and surveys (Bryman & Bell, 2007). There are distinctions of the various methods in suitability depending on the research approach (Davies, 2007). Focus groups and in-depth interviews are suitable when working towards a qualitative approach and surveys are more applicable for structured and quantitative data collection approach (ibid). Since the approach of this thesis is a qualitative approach, survey is out ruled and focus groups and in-depth interviews are further discussed.

- According to Silverman (2010), a *focus group* is an interview method which is conducted in the form of a group, basing on stimuli provided by the researcher(s). The participants are being observed and recorded when they have been asked a set of questions within a specific topic and the participants discuss the matter of concentration (Bryman & Bell, 2007). The selection of participants for a focus group can vary. One way is to select people that are unknown to each other for the sake of avoiding contaminating the session by pre-existing styles of interaction or status differences. Another way is to select a natural grouping where the group of participants comes from the same organization, such as co-workers and students (ibid).
- *Interviews* are very likely to be the most commonly employed method in qualitative research (Bryman & Bell, 2007), as well as the most important source of case study information (Yin, 2009). The flexibility of an interview is what makes it so attractive (Bryman & Bell, 2007). With such characteristics the respondent can show the direction to take according to the interviewee's responses and could possibly adjust the emphases in

the research which could give a result with significant issues that emerge in the course of the interview (Davies, 2007).

As in any research situation, the problem is the prescription of selection to which methodology to adopt (Granot et al., 2012). Due to the purpose, problem, and structure of the current thesis, a qualitative approach is necessary where a deep understanding of the subject is sought. Qualitative data generates more value in identifying underlying causes as well as it provides better understanding of processes (Granot et al., 2012), which is the aim pursued in this study. Furthermore, in-depth interviews are referred to as a methodology which gives pathways to provoke information related to the needs and motivations of the interviewee. Hence, performing in-depth interviews will give extensive information on a company's motivations, underlying causes and their current processes (Granot et al., 2012). Due to low accessibility to companies and managers, as their time is strictly limited and valuable, the research will be conducted using in-depth interviews with consideration to a time frame. According to Schuman (1982), the length of an interview should be determined before the interview begins. A recommended time is 90 since the interviewee need to put experiences and their motivations in context, anything more or less can be considered inconvenient for the interviewee, but depending on the interest and insights from the interviewee, the time can be extended (ibid). Controlling the interview session is appreciated to limit the time when interviewers need to move on to the next interview or when the immense amount of material has to be analyzed (Granot et al., 2012).

Due to the structure of the research problem at hand, an investigation of three companies in three sizes from the same industry, selling the same kind of products on the same markets, were needed to meet the objective of this study. Furthermore, the study investigates companies that operate in the same area in terms of product and markets; thus, they could be considered as competitors. A focus group, where managers from competing companies join together to discuss detailed company issues, is may not be the best method to get the managers to share information about the processes and practical aspect of the company. Managers might not be willing to share information with competitors in order to protect the company from the other players in the market. In-depth interviews are more suitable as the companies, i.e. representatives or managers of the company can be kept anonymous, compared to focus groups. In addition, the flexibility of in-depth interviews is of advantage since interviewees can repeat or further explain their answers, in case technical concepts that are not fully known to the authors are brought up. This kind of interference is less appropriate

during a focus group where intense discussion is going on between two highly knowledgeable managers. Therefore, the most suitable data collection method chosen is in-depth interviews.

## 4.6 DATA COLLECTION INSTRUMENT

### 4.6.1 OPERATIONALIZATION AND MEASUREMENT OF VARIABLES

Operationalization is a critical part of research in economics and other social sciences (Machlup, 1978; May, 2011). It can be defined as the process of translating a theoretical construct into measurable and observable variables by identifying empirical indicators for the concept (Hox, 1997; Bell, 2010; Dyson & Brown, 2005; Saunders et al., 2009). In other words, operationalization links a mental notion to quantifiable measures in real world (Melcher, 2012). Thus, operationalization involves assembling a list of characteristics representing the studied concept (Mouton & Marais, 1990; Adler & Clark, 2010). The list of characteristics can vary for each research, even though they may operationalize the same concept. This is related with the different natures of researches and complexity and multi-facets of scientific concepts (Mouton & Marais, 1990).

Operationalization requires the researchers to exactly specify what concepts mean and how they will be measured, in order to conduct a rigorous study (Johnson & Buberley, 2003). Babbie (2009) highlights that, the measurements in the survey or interview guide should be formulated as accurate and precise as possible. However, these two qualities do not come hand in hand; a measurement can be very precise but not accurate (Babbie, 2009). Thus, it leads to another significant issue to consider namely, relevance. Relevance relates to ensuring that the developed questions measure what it is intended to measure (Eliasson, 2010). At the same time, the questions should be comprehensive enough to cover the research questions entirely (ibid). These requirements were considered and followed throughout the operationalization process of this research.

Based on the literature review elaborated in chapter 2, the proposed research model was developed comprising the most critical theoretical concepts in this study (see Figure 2). The research questions of this study covered each activity of the model. Therefore, the proposed research model served as the basis for the operationalization scheme, making certain that the interview questions were relevant and comprehensive to the study's focus.

To ensure accurate and precise operationalization measures, the concepts were theoretically and operationally defined and the operational measures were derived from previous academic

researches. The measures or questions were worded in simple and understandable form; simultaneously, not underestimating the knowledge of the respondents. The detailed operationalization schemes for each theoretical focus of this research are illustrated in tables 3 and 4. The tables include the interview question numbers, according to Appendix A, reflecting each operationalized measure.

TABLE 3: OPERATIONALIZATION OF AFTER-SALES

Concept	Conceptual definition	Operational definition	Measures			Question number
AFTER-SALES	Set of activities taking place after the purchase of the product devoted to supporting customers in the usage and disposal of goods (Saccani et al., 2007, p. 54)	Set of activities after product purchase which might enhance customer relationship regarding industrial products.	Customer care (Saccani et al., 2007)	Information provision	<ul style="list-style-type: none"> <li>Contact methods and persons (Saccani et al., 2007)</li> <li>Availability (Saccani et al., 2007)</li> <li>Speed of reply (Saccani et al., 2007)</li> </ul>	1.1, 1.2, 1.3, 1.4, 1.5
				Complaint management	<ul style="list-style-type: none"> <li>Form of handling complaint (Saccani et al., 2007)</li> <li>Speed of handling complaint (Saccani et al., 2007)</li> </ul>	1.6, 1.7
				Warranty extension	<ul style="list-style-type: none"> <li>Form of handling warranty extensions (Saccani et al., 2007)</li> <li>Speed of handling warranty extensions (Saccani et al., 2007)</li> </ul>	1.8, 1.9
			Field technical assistance (Saccani et al., 2007)	Check-ups	<ul style="list-style-type: none"> <li>Form of check-ups (Saccani et al., 2007)</li> <li>Frequency (Saccani et al., 2007)</li> </ul>	2.1, 2.2
				During/after warranty assistance	<ul style="list-style-type: none"> <li>During warranty assistance (Saccani et al., 2007)</li> <li>After warranty assistance (Saccani et al., 2007)</li> </ul>	2.3, 2.3.1, 2.3.2
				Product disposal	<ul style="list-style-type: none"> <li>Product lifetime (Saccani et al., 2007)</li> <li>Price for disposal (Saccani et al., 2007)</li> <li>Speed of disposal (Saccani et al., 2007)</li> </ul>	2.4, 2.5, 2.6, 2.7
			Spare parts distribution (Saccani et al., 2007)	Inventory management	<ul style="list-style-type: none"> <li>Stock management (Saccani et al., 2007)</li> <li>Locations and number of warehouses (Saccani et al., 2007)</li> <li>Locations and number of repair centers (Saccani et al., 2007)</li> </ul>	3.1, 3.1.1, 3.1.2, 3.2, 3.2.1
				Delivery of spare parts	<ul style="list-style-type: none"> <li>Average speed of delivery (Saccani et al., 2007)</li> <li>Price for delivery (Saccani et al., 2007)</li> </ul>	3.3, 3.4

TABLE 4: OPERATIONALIZATION OF CUSTOMER RELATIONSHIP MARKETING

Concept	Conceptual definition	Operational definition	Measures		Question number
CUSTOMER RELATIONSHIP MARKETING	Marketing is to establish, maintain, and enhance relationships with customer and other partners, at a profit, so that the objectives of the parties involved are met. This is achieved by mutual exchange and fulfillment of promises (Storbacka et al., 1994, p. 22)	Process of maintaining and possibly building positive customer relationships through successful/profitable and comprehensive after-sales activities.	Service quality (Storbacka et al., 1994).	<ul style="list-style-type: none"> <li>• Timeliness (time between placing and receiving order should be short and consistent) (Bienstock et al., 1997)</li> <li>• Availability (orders should be consistently available in inventory when ordered and preferably near buyer location) (Bienstock et al., 1997)</li> <li>• Condition items (undamaged, accurate delivery of products) (Bienstock et al., 1997)</li> </ul>	4.3, 4.4, 4.4.1
			Customer relationship profitability (Storbacka et al., 1994)	<ul style="list-style-type: none"> <li>• Customer satisfaction drives customer relationship profitability ( Rust &amp; Zahorik, 1993; Fornell, 1992, Grönroos, 1990; Heskett et al., 1994; Reichheld &amp; Sasser, 1990; Storbacka et al., 1994)                             <ul style="list-style-type: none"> <li>○ Order handling by manufacturer (Ruekert &amp; Churchill, 1984)</li> <li>○ Level of backorders of manufacturer's products (Ruekert &amp; Churchill, 1984)</li> <li>○ Speed of delivery by manufacturer (Ruekert &amp; Churchill, 1984)</li> </ul> </li> </ul>	4.5, 4.5.1, 4.6, 4.6.1

#### 4.6.2 INTERVIEW GUIDE

Performing an interview means to have a conversation where the researcher asks questions with the objective of seeking information that is directly related to the research (Bailey, 2007). An interview guide is a brief list of memory stimuli of areas that should be covered (Bryman & Bell, 2007). An interview could be similar to a casual conversation; however, an interview with a purpose requires practice and ability to adapt to changing setting and situations (ibid). The design features of a data collection instrument can have various structures, and the most common types are: *unstructured and structured interview, semi-structured* (Bailey, 2007).

*Unstructured interviews* are also referred to as informal interviews, involve little standardization and guidelines (Bailey, 2007). Unstructured interviews tend to evolve, and therefore researchers can ask its interviewees one question or many questions as well as ask the questions in different orders. Little planning is involved in an unstructured interview (ibid).

*Structured interviews* involve significantly more guidelines (Bailey, 2007). In a structured interview the researcher asks specific questions in a specific order on all the interviews conducted. It is strictly controlled and planned, even probe questions are designed beforehand. The interviewer control the interview by deciding the order of the questions and setting the pace, the interviewer's job is to keep the respondent on track as a structured interview usually has a scheduled time (ibid). Typically for a structure interview the intention is to verify certain facts that might have been established and not to investigate the topic on a broader perspective (Yin, 2009).

*Semi-structured interviews* are composed in such structure that it has a set of questions on a topic that needs to be covered during an interview (Bryman & Bell, 2007; Bailey, 2007). However, the respondent has a great deal of freedom to how to answer the questions and the interviewer can get ideas from the answers as well as ask probe questions that were unexpected (Bryman & Bell, 2007). Semi-structured interviews are regarded as flexible and structured simultaneously (Bailey, 2007).

In this study, semi-structured interview guide were designed and conducted since the study is probing to make a comparison of companies of various sizes. In undertaking this, same sets of questions were asked to all three companies. The need for a plan and structure of the data collection was preferable as to achieve some consistency in compiling the empirical data,



furthermore, to be able to straightforwardly analyze the data as well as to be able to make a conclusion of the study. The well-defined concepts of this study along with the measure components are carefully developed indicate that a structured interview could be conducted. However, the lack of experience the author's possess in performing interviews and the fact that students (the authors) meet managers (the respondents) designate that semi-structured interview is more appropriate. It is applicable since if the respondents can speak freely and he/she can potentially inform the authors of things that were unexpected which deserves probing for developed answers. Therefore, semi-structured interviews are the most suitable type for this specific study.

#### 4.6.3 PRETESTING

Prior proceeding to data collection, a pre-testing, or also called expert-review period, is crucial (Bailey, 2007). The pre-testing process is one of the mechanisms for monitoring consistency between a study's methodology and its content (ibid). With the help from experts, the researchers can discover if the interview guide is too difficult to understand, if it is vague and if it is too sensitive (Yin, 2009). After this process, the interview guide is intended to have a more polished content (ibid).

During the pre-test process four experts in the field and researchers were asked. The first researcher is a professor specialized in the area of relationship and service marketing with vast research experience. The second researcher is a senior lecturer in Marketing with one of its specializations' being service marketing and the third researcher is a professor in Marketing who intensively supported us during the methodology part of our research. The final expert is a manager with knowledge of the industry as well as experience with after-sales services. The experts tested if the interview guide is well-formulated and coherent, and if the content of the interview guide is able to answer the research questions. The manager answered the interview guide questions and verified its understandability, along with advice and feedback. The aim of the pre-testing was to get a redefined and meliorated interview guide and the experts chosen helped targeting that goal.

#### 4.7 SAMPLING

Once the appropriate methods have been chosen, together with the decisions made regarding the research questions and the overall strategy or approach, it forms in place the main building blocks for the data collection (Robinson, 2007). There are many details to uncover before moving forward, these details include the 'who', 'what', 'where' and 'when' questions. The

‘why’ has been addressed when identifying the purpose of the project. The ‘who’ covers which participants to involve in the research and how many are going to be selected. The ‘what’ and ‘where’ is the next step; in which ‘what’ discloses the overall setting for collecting data, while the ‘where’ focuses on the geographical setting. The geographical setting can vary depending on the researchers’ choice of investigating multiple cities as an instance (ibid).

Before choosing what kind of sample to explore, the researchers have to decide on what kind of sample strategy they want to use, either; probability sampling or non-probability sampling (Bryman & Bell, 2007). The non-probability sampling is used in small-scale research where participants are hard to get hold of (Robinson, 2007). Flexible design research projects, generally when following a theory approach, commonly use a purposive sample. The sample includes people likely to be knowledgeable, influential or has an overall understanding within the area (ibid). Gray (2009) explains that a qualitative research within multiple cases usually involves purposive non-probability samples since it seeks to obtain insights into particular details within a specific geographical area, context and time. The purposive sampling is identified as a sample strategy which aims for getting an information-rich and in depth research that helps understanding the research problem (Gray, 2009; Creswell, 2003).

This study, with the information provided above, uses a non-probability purposive sample strategy. Since this study is a multiple case research and the aim is to get a deeper understanding within the area of after-sales services there is no basis to choose a probability sampling. Also, the target sample will be people with great knowledge within the studied area.

#### 4.7.1 SAMPLING FRAME

When conducting a research, a clear sample frame is of great importance. This sample frame works as a guide to make sure that all aspects are cohesive with the problems investigated in the research (Gray, 2009). Miles and Huberman (1994) advise that the best strategy is to target those aspects that are most likely to extract the most comprehensive data. Having the purpose and research questions in mind, it is recommended to choose a sample frame that can answer the questions (Miles & Huberman, 1994). The sample frame is where the drawing of potential respondents is conducted (Frey & Oishi, 1995).

Considering this study’s purpose and research questions, the frame becomes evident. What the four research questions have in common is the after-sales services executed among the

companies. In order to find organizations following the above criteria, Statistics Sweden was used.

4.7.2 SAMPLE SELECTION

The main criterion behind qualitative research is the opportunity to learn (Denzin & Lincoln, 2000). The case study method is one of the main building blocks in qualitative research where the researchers share an intense interest in the respondent’s personal views and circumstances. The common question that usually arrives when collecting data is how many sample cases one should have (ibid). According to Yin (2009) the discussion about sample size is irrelevant, due to the fact that it does not have the general sample logic. It is possible to settle for two or three literal replications when the theory is straightforward and the problem at hand does not require an excessive degree of certainty (Yin, 2009).

Considering the aspects presented above, the decision fell on choosing three cases, one in each size of small, medium and large. The organizations were categorized into the sizes in terms of number of workers based on the chart developed by Statistics Sweden (Statistics Sweden<sup>3</sup>, 2013) (see Table 5). Since the interest lies in gaining a deeper knowledge where respondents’ personal views are highly important, this research does not pose the purpose of drawing a general conclusion. Other factors affecting the sampling decision are the time and resource limitations.

TABLE 5: BUSINESS CATEGORIZATION IN SWEDEN  
(STATISTICS SWEDEN, 2013)

	Number of employees
Small businesses	10 - 49
Medium sized businesses	50 - 249
Large businesses	250 and more

### 4.7.3 THE SAMPLE

The cases used in this research are three different sized heavy equipment machinery after-sales service providing organizations. They are located in Sweden and, taking the researchers' time and resources into consideration, the organizations are mostly closely located to Linnaeus University, Växjö. The large sized enterprise is located in Växjö city. Two interviews were conducted with one specialist working with after-sales on a daily basis and a manager of the relevant field. The medium sized enterprise is located in a city near Växjö. The small sized enterprise is located in the northern part of Sweden; thus, a telephone interview was conducted.

### 4.8 DATA ANALYSIS METHOD

Analysis is synonymous with interpretation of information (Strauss, 1994). Qualitative data analysis involves interpreting and communicating enormous mass of data collected and presenting its most important features (Hancock et al., 2009). While the qualitative data is usually acquired chronologically as the researchers progressively emerge into the subject, the analysis is topic-oriented; thus, challenging the researchers to effectively move chronologically and topically back and forth (Fischer, 1994).

Observations and interpretation of data should be consistent throughout the analysis process in order to ensure reliability in later parts (Boyatzis, 1998). Furthermore, it affects potential replication, extension and generalizability of the research. When there are multiple researchers on a relatively equal level of knowledge and experience, it is useful to measure their agreement throughout the analysis procedure to ensure more reliable analysis (ibid). Thus, the analysis in this research was conducted individually by each researcher part by part then discussions were held to decide upon a common view. Stake (2006) also highlights that when conducting a multiple case study, the researchers must concentrate on each individual case as if it was the only one; thus, working vigorously to extract vital information and understand each case in depth.

Qualitative analysis comprises three concurrent flows of activities as defined by Miles and Huberman (1994) namely, data reduction, data display and conclusion drawing and verification.

- Data reduction: Data reduction, also called data condensation (Tesch, 1990), includes activities related with selecting, focusing, simplifying, abstracting and transforming

the gathered data (Miles & Huberman, 1994). In order to conduct this procedure the data has to be transcribed in written form in advance. It is an ongoing process which takes place from fieldwork until the final report occurring through various ways such as selection, summary, paraphrase, subsume and so forth (ibid).

- **Data Display:** The gathered data needs to be assembled into an organized and compressed form to overcome the disadvantage of immense mass of information, resulting from qualitative investigations (Miles & Huberman, 1994). Extended texts tend to overload the reader, thus, it is crucial to display information in an immediately accessible and compact form such as matrices, graphs, charts and networks (ibid).
- **Conclusion Drawing and Verification:** This procedure involves noting regularities, patterns, explanations, causal flows, propositions and possible configurations (Miles & Huberman, 1994). It is usual that the researchers have the conclusions in mind from the start of data collection. However, competent researchers are open and critical to new aspects and proposals during the analysis process. Certain conclusions are more and more verified as the analysis proceeds thus ending up with “final” valid conclusions (ibid).

In this research, the recordings of in-depth interviews have been transcribed verbatim making the data more transparent and accessible according to Clayman and Gill (2004). A transcript is not a replacement for recording, it is rather a tool to be used together with the recording; hence, unfolding both vocal and non-vocal activities. Moreover, transcripts allow experts and others to assess analytic claims from the data independently (Clayman & Gill, 2004). Ritchie and Lewis (2003) suggest tagging the transcript according to certain form of index with the aim of linking it to theoretical constructs. Thus, the transcribed interviews were studied and tagged according to the operationalization scheme which bridged the collected data and relevant theories.

Further on, the transcribed and tagged information was filtered and comprised, and the most relevant empirical data for this study is provided in text format in the following chapter. As Miles and Huberman (1994) recommended, the data is also displayed in other forms than text such as tables, presenting the main concepts in structured and illustrative way.

As final analysis procedure, the reduced and displayed data was studied for patterns, themes and clusters in accordance to the proposed research model, and similarities and differences among cases were explored in order to answer the research questions of this study and draw

reasonable conclusions. The theoretical propositions explored in previous chapters have also been used as guidance in data analysis as recommended by Yin (2009).

#### 4.9 QUALITY CRITERIA

When conducting a research it is essential to confirm the rigorousness of the design method disposed, a research never gets better than the level of quality employed in conducting it. Rigorousness can be measured by the concepts of validity and reliability (Bryman & Bell, 2011). Validity represents the extent to which the study accurately investigates what it intends to investigate. Reliability refers to the degree of consistency of the measurement instrument (Hammersley, 1990). Particularly in qualitative research, methodologists have over the years trying to set some guidance for researchers for improving or judging the quality of such research (Seale, 1999). “Because a research design is supposed to represent a logical set of statements, you also can judge the quality of any given design according to certain logical tests” (Yin, 2009 p.40). Furthermore, there are a few commonly used tests/tactics which assess the quality, mainly within social science methods, of the research design (Yin, 2009; Rowley, 2002). Among these are content validity, construct validity, external validity, and reliability (ibid).

##### 4.9.1 CONTENT VALIDITY

Content validity, also known as face validity, concerns how well a measured concept's components actually represent the concept (Ghuri & Grønhaug 2005). By letting experts, authorities and knowledgeable managers in the specific field review the interview guide; it would increase the content validity (ibid).

To ensure the rigor aspect of content validity for the research problem at hand, operationalization structure and interview guide were sent to supervisor as well as examiner to obtain useful feedback so that the interview questions could be further revised and improved before the actual conduction of the data collection took place. This decreases the risk of being questioned about the face validity.

##### 4.9.2 CONSTRUCT VALIDITY

Construct validity regards the sufficiency in the operational set of measures (Yin, 2009). Construct validity can measure and reduce subjectivity and it sets accurate operational measures for the research model and concepts being studied, hence connecting data collection questions and measures to research questions and propositions (Rowley, 2002). The degree

which an operationalization specifically measures the concepts it is supposed to measure can be assessed by various tactics such as using multiple sources of evidence, establish chain of evidence, have key informants review draft case study report (Yin, 2009).

Sources of evidence (i.e., previous credible researches) have been used to back up the operational measures. Furthermore, to ensure that the operationalization step of the thesis has been properly assessed, that the construct validity of the study is exploited, the interview guide and operationalization work were reviewed by the authors' supervisor and examiner to get feedback and professional opinions on the procedures of developing the interview guide. The interview guideline were sent out to the interviewees before the actual interviews were conducted, this due to the complexity of the topic questions, meaning that the interviewee might need some time to prepare the answers before the interview, decreasing the potential errors to occur during the interview session. In addition, the interviews were recorded throughout the sessions to give the possibility to recall the interview after the session is over. These tactics are elimination of errors that can affect the result of the study.

#### 4.9.3 EXTERNAL VALIDITY

External validity concerns if the study and outcome can be generalized and confirmed through another context or another group within the population (Yin, 2009; Rowley, 2002). The external validity criteria have its main focus to establish a field to which a study's findings can be generalized (ibid). The external validity problem has been a leading problem in conducting case studies (Yin, 2009). One case study does not provide sufficiency to induce a generalization over the population studied, it is therefore recommended to replicate logic in multiple case studies so that a pattern can be identified and a broader overview can plausibly be established. External validity attempting is performed by using theory in single case studies, use replication logic in multiple case studies (ibid).

Depending on the research problem and the outline of meeting the problem in this study, multiple cases of cross-sectional analysis will be carried out. However, the research problem is to compare company sizes and their after-sales offers, how these offers differ and how these impacts on customer relationship. Due to the low accessibility to companies to investigate, only three companies, one of three different sizes were investigated and hence the external validity is considered low, and a generalization cannot be drawn, only assumptions will be made. For future investigations, the careful reported and described case study protocols and database enable for further research in a broader sense and can possibly make a generalization by replicating the study.

#### 4.9.4 RELIABILITY

The reliability criteria refer to demonstration that the operation of a study can be repeated with the ability to obtain the same results (Yin, 2009; Rowley, 2002). Another researcher should be able to repeat the actual study and yet show the similar results. However, reliability criteria are not the same as replicating the study for testing the external validity; it is with the purpose of eliminating incorrect answers (Yin, 2009). Tactics to test the reliability are using case study protocol and develop case study database (ibid).

Every step and decision that has been taken throughout the study has been discussed and justified; the available operationalization and interview guide as well as the thorough reported empirical data makes it possible for replication of the study. The report of case study protocols and database empower the reliability of the study as it can be replicated by someone else to ensure the consistency of the study.

In conclusion of this chapter, the choices regarding the methodology of this research are summarized in table 6.

TABLE 6: RESEARCH METHODOLOGY SUMMARY

Research Methodology	
Research Approach	Deductive Qualitative
Research Design	Descriptive
Data Sources	Primary
Research Strategy	Multiple case study
Data Collection Method	Interviews
Data Collection Instrument	Semi-structured interviews
Sampling	Three cases: one large, one medium and one small after-sales service providers in Swedish heavy equipment machinery industry
Data Analysis Method	Data reduction, Data display, Pattern matching and conclusion drawing
Quality Criteria	Validity and Reliability



## 5. EMPIRICAL DATA

*In this chapter, empirical data collected from the three cases are presented. It discusses each case starting from the small size organization to medium size organization and proceeds to the large size organization. Each company is briefly introduced and the gathered data is presented in accordance with the study's theoretical concepts; namely, customer care, field technical assistance, spare parts distribution and customer relationship marketing.*

General information, regarding the companies investigated in this multiple case study, is presented in table 7. The collected empirical data is elaborated in case by case in the following sections. While case A and B are both Swedish manufacturers of heavy equipment machinery; case C is rather special. Case C is an organization carrying out after-sales activities for one very large manufacturer. Due to the complexity and huge size of the manufacturer, they have transferred its after-sales activities to company C. Since Company C is only responsible for providing after-sales services, all its employees were considered to work with after-sales services.

TABLE 7: GENERAL INFORMATION ABOUT THE CASES

	Case A	Case B	Case C	
Number of interviews	1	1	2	
Position of the respondents	After-sales manager	Stock manager	Customer care respondent	Spare parts manager
Years of employment at the organization	20 years	23 years	5.5 years	11 years
Years of experience in the industry	25 years	23 years	8 years	16 years
Number of people working at the company	17	110	448	
Number of people working with after-sales service	2	8	448	
Year of establishment of the organization	1940	1983	1999	

## 5.1 CASE A – SMALL SIZE ORGANIZATION

The small size organization, or Company A, develops, manufactures and markets certain heavy equipment machineries, primarily focusing on the Scandinavian market through their distributors. The interview was conducted with an after-sales manager who has been working for 20 years in Company A with a total of 25 years of experience in the industry. Company A has two people working within the focus on after-sales; the distributor network is mostly responsible for handling the after-sales services.

### 5.1.1 CUSTOMER CARE

#### *Information provision:*

Technical as well as commercial information are provided both in electronic and paper form. The customer can choose which form according to their own preferences. In case of direct contact, customers have the options of contacting Company A through telephone, e-mail and fax. However, the most common contact method to reach the company is through telephone and e-mail. Company A does not charge extra for telephone calls, thus, the rate is the same as a normal telephone call. Regarding the speed of reply, telephone calls are answered immediately during the opening hours 07.00-16.00; e-mails can take longer time depending on the content, in some cases they may need to contact their suppliers to get answers before replying the customer. Company A does not have specific policies regarding speed of reply. However, they aim to answer as soon as they can. Besides, they do not have responsible personnel for specific customers.

#### *Complaint management:*

The complaint handling process strongly depends on the particular issue. For instance, in case there is a defect in a product, there is a specific procedure to follow; the customer needs to send the product back with a detailed description of the deficiency. Concerning some complaints, they are able to solve the complaint directly, while in other cases it is not possible to take any actions before receiving information from the suppliers. In general, the process takes a lot of time, with the average speed of complaint management being 1.5 month. There are no official policies regarding complaint handling; the internal goal is to solve issues in a period of one month. However, they are not able to reach this objective yet.

### *Warranty extension:*

There is a single type of warranty for all products. It is not possible to extend the warranty of all components. The components that are possible to extend are usually the expensive ones such as driveline. The speed and process of warranty extension takes just few minutes since Company A is a small size enterprise so they are able to put it on the contract flexibly.

#### 5.1.2 FIELD TECHNICAL ASSISTANCE

### *Check-ups:*

Company A does not provide the check-ups themselves. This task is carried out by their distributors. There are also no visits made to the distributors. The company usually calls their distributors to discuss what is going on. The customers have access to a website where it is visible if they need any check-ups and program updates. Company A does not visit customers but it has happened before in very seldom occasions.

### *During and after warranty assistance:*

Customers can always call the company for field technical assistance during and after warranty time. As mentioned earlier, there is only one type of warranty for purchase of a new machine. It usually is based on a time limit. It is also possible to purchase a spare parts warranty. The greatest advantage, that Company A desires to provide customers, is to ensure a high degree of capacity utilization of the machine. The customer should be able to use the machine constantly without the machine impeding. During the warranty time all costs are covered by company A.

### *Product disposal:*

The average product lifetime of the vehicles is around 10-15 years. There is also the subcategory of machines which are not used on a daily basis. Regarding those products, the average lifetime can be around 25 years. There are even machines from 1970s which are operating and their spare parts are still available. When it is not possible to obtain spare parts anymore, that is the definitive reach of the product lifetime. Company A does not offer product disposal service. Other waste management around Sweden takes care of the product and spare parts disposal quickly by directly picking it up from the customers. But, they are not related to company A.

### 5.1.3 SPARE PARTS DISTRIBUTION

#### *Inventory management:*

Company A has 15 warehouses located in 15 different cities in Sweden and there are 2 repair centers in Gothenburg and Stockholm.

#### *Delivery of spare parts:*

Average speed of delivery of products and spare parts takes approximately one day, but it varies in relation to the delivery destination. In some regions, it may even take one hour depending on the distributor and location. The customers are provided with two options of delivery: normal or express which they have to pay for the entire delivery costs. However, there are few customers who are not required to pay the delivery fee. It does not necessarily depend on the specific customer rather it depends on the existing contract with suppliers and distributors.

### 5.1.4 CUSTOMER RELATIONSHIP MARKETING

#### *Service quality:*

Company A does not have any formal goal for providing after-sales. However, the company sees after-sales as an opportunity for new sales. They consider that if they do a good job providing after-sales services, they have prepared half the effort for selling a new machine. If the after-sales service is done correctly, they will be able to sell new machines in the future when it is time for a new purchase. The profit created from after-sales service has not been calculated in a formal way. However, the interviewee estimates it as very high if handled properly.

The company has not measured the occurrences of delivery delays. The interviewee expresses that it does happen, but in most cases it is not under their control, usually the delivery companies cause the delays. Company A does not have an exact number of the defective products delivered to customers, but estimation would be around 20 times per year. The most common defects are broken glass windows and other fragile features. Inaccurate deliveries of products happen due to misinterpretations or mistaken description by customers or customers ordered the wrong parts.

### *Customer relationship profitability:*

The orders are made through telephone, personal meetings and online. The most common way of placing an order is online. Company A has a special network dedicated for customers to place orders. In general, the company is able to cover 85% of the requests or orders. Then, there are 6-7% requests which cannot be satisfied due to facts such as the machine being too old and the parts not being produced anymore. For new machines, they might have 15% requests that they do not have in stock. There is no average number of days of backorders, the company aims for providing the missing product as soon as possible.

The interviewee considers after-sales services to be extremely important. If the customers get their after-sales services they need and they are assured that their machine will not stop operating, they will return to the company and seek their help. Otherwise, the customers will go to a competitor. Thus, it is very important to have a good relationship.

## 5.2 CASE B – MEDIUM SIZE ORGANIZATION

The medium size company, also referred to as company B, provided the research with a respondent who is the stock manager with 23 years employment in the company. The respondent has been working at Company B throughout his career thus achieved a total of 23 years of experience within the industry. In company B, there are eight people working with after-sales services.

### 5.2.1 CUSTOMER CARE

#### *Information provision:*

Company B provides their customers with technical and commercial information using brochures and their website; moreover, the customer can also get the information digitally. In terms of contact methods, the available methods are telephone, e-mail and fax and the most common method for Company B is today e-mail. No additional cost applies for customers to call the company; customers are being charged the normal call rate. Every weekday from 08.00-16.00, except for lunch hours 12.00-13.00, the company is ready to answer calls and e-mails. Telephone calls are answered directly while answering e-mails differs. Depending on each individual case, Company B prioritizes the e-mails. The company's procedure is to prioritize cases where the customer reports a machine that is standing still, and less urgent cases are postponed to be answered after sorting out the crucial cases. The aim for Company B is to answer the customer, regardless the contact method, as soon as possible, though they

do not have a written policy on speed of reply. As mentioned, Company B has eight people working within after-sales and they all have the same responsibility to handle customers in the same way. These eight people work towards meeting the customers' needs as fast as possible.

*Complaint management:*

Company B has different procedures for handling complaints. Major customers should fill out a form and e-mail it to them. Smaller customers can call and express their complaints directly on the phone. Again, Company B judges the individual cases of complaints and makes a prioritization of the seriousness of the complaint. In handling complaints, Company B gives an answer to their customers within 24 hours. In more serious cases, they handle it even faster. Moreover, some of the company's contractual customers have required a response time of 3-8 hours. Otherwise, there are no written policies for the speed of handling complaints, but company B's goal is to meet the customers' demands as soon as possible. They see the importance of listening to the customers and act accordingly, this concerns big as well as small customers.

*Warranty extension:*

In terms of warranties, there is only one sort of warranty offered to company B's customers. It is a standard warranty formulated by the machine entrepreneurs of Sweden. Rules, regulations and the contract with machine entrepreneurs make it hard to formulate their own warranties. Moreover, it is possible to expand the warranty; this is handled during the purchase of the product. That is the only occasion where their customers can expand the warranty; it is too late to request an extension on the warranty after the point of purchase. The request to extend warranty takes a few seconds to arrange. They just need to include it into the contract.

## 5.2.2 FIELD TECHNICAL ASSISTANCE

*Check-ups:*

Company B provides their customers with check-ups; they prefer to do it themselves rather than relying entirely on the distributors. Depending on what was formulated in the warranty, the company will provide check-ups provisional on how many hours the machines have been operated. The first check-up is after 500 hours, then after that, 1000 hours. After the second check-up they will not be as frequent anymore, it is the first 1000 hours that are crucial.

*During and after warranty assistance:*

It says on the warranty contract. During the warranty validation period, the customers do not have to pay for anything; the cost is covered by company B. The warranty is set to vary depending on the use of the machine. Some customers may use the machine for few hours per week while others may use every day. Consequently, the warranty may differ. The interviewee considers the warranties to be same as the competitors since they are part of the machine entrepreneurs of Sweden.

*Product disposal:*

Company B's vehicles that were built in 1980s are still functional and therefore the product lifetime of their products is indefinite, but the Company B expresses that the machines built today should be functional for at least 15 years. When machines have become old, Company B buy the customers' machine back and try to fix whatever is possible, could also be spare parts that are fixable to be sold again. Company B tries not to waste what is repairable and functional. The speed of taking the machine out of the customer's hands is as soon as possible after their request. The machine is then taken to the repair shop to be fixed.

### 5.2.3 SPARE PARTS DISTRIBUTION

*Inventory management:*

Company B has one major warehouse located in Ljungby, this warehouse contains more than 32 000 articles of spare parts. Some of the parts are distributed to their distributors, but the main warehouse is located in Ljungby. There are 18-22 locations for warehouses and repair centers spread around entire Sweden. Since the company aims to provide the repairs themselves, the main repair center is in Ljungby.

*Delivery of spare parts:*

Company B delivers the ordered products and spare parts the same day if the order is made before 14.00. Otherwise, the order will be delivered the next day. These estimations apply in case the ordered part is available, but, it is very unusual to run out of stock due to excellent ERP system. Regarding the delivery fee, Company A covers the costs until carrier and from carrier to the customer's location the customer has to pay. However, it can be stated otherwise in the initial contract between the company and the customer.

#### 5.2.4 CUSTOMER RELATIONSHIP MARKETING

##### *Service quality:*

The interview states that selling a product is not a difficult mission; the real mission starts when the customer has bought a product. The profit generated by after-sales services has not been calculated but the interviewee estimates it to be a huge part of the overall profit.

Delivery delays occur sometimes and are mostly caused by the delivery company. In regular intervals, defective products delivered to customers occur. Usually, the defects are in the parts that Company B does not produce. Inaccurate deliveries of products occur since there are many kinds of machines consisting of different parts and features; it is human that mistakes occur.

##### *Customer relationship profitability:*

The most common way of placing an order is through e-mail. Telephone ordering is also used and customers in the area visit the factory and make an order on the spot. Currently, it is not possible to order on the web which they are planning to adopt in the future. The plan is to apply a system for online ordering within the next two years. Backorders occur seldom, but it depends on the kind of component the customer is requesting. Company B has a system that automatically places an order for components which are running out, either they are produced by Company B or ordered from a distributor. In case of backorders, it may take up to 1-2 weeks if the company produces the order. For distributors, the backorder days vary depending on the ordered product.

The interviewee considers that after-sales services definitely influence the relationship customers. The customer will change the brand if after-sales service is not handled in the right way. Since the competition is intense, the customers have to be nurtured after the purchase in order for the customer to buy new products in future cases.

#### 5.3 CASE C – LARGE SIZE ORGANIZATION

The large size company, or Company C in this case, is a distributor to a major manufacturer of heavy equipment machinery in Sweden. Two respondents were interviewed and the conducted interviews were with a customer care respondent with 5 and a half years employment at the company and 8 years of experience in the industry, and a spare parts manager with 11 years of employment in the company and 16 years of experience in the



industry. Company C works only with after-sales services, thus it has around 400 employees in total.

### 5.3.1 CUSTOMER CARE

#### *Information provision:*

Company C provides technical and commercial information through their website where customers can visit to find information. For further technical information, the customer can make an order from the company and they will receive books and brochures containing the information they seek. Moreover, this kind of information can be found online together with spare parts, which they then can order. To access the spare parts online it is required that the customers have an online account of the company. Company C also has its own magazine where they try to spread information to customers.

Even though Company C provides telephone, e-mail and fax as contact methods, the most common method for the customer to get in contact with the company is via telephone. 95% of company C's customers call and only a 0.1% of the customers send e-mails. There is also the availability for the customers to come directly into the office for any kind matter it concerns or even send text messages to order spare parts. Furthermore, no additional costs account for the customers when they call. Apart from the normal telephone rate, the company does not charge any extra fees.

The regular opening hours are 07.00-16.00, and the spare parts distribution department is open 30 minutes extra. The extra 30 minutes is due to company C's consideration to their customers. According to company C, the customers finish their work around the time of closing time, and they might need some spare parts in order to prepare for the next day of work, therefore Company C remains open another 30 minutes for them to get a chance to come and get the parts. This is an additional service for the customers' convenience. Additionally, the spare parts manager highly aims for being available to customers and thus, is ready to receive phone calls anytime.

The average speed of reply is very short when calling; there are people answering phone calls in many departments. Especially, at the repair shop department there is no waiting time. There is no written policy for speed of reply since Company C answers customers with very low waiting time. However, solving their request can take many days depending on the case. There is not assigned contact persons for specific customers. However, employees have

different responsibilities and most customers have certain workers they like to call and contact them directly.

*Complaint management:*

There are market researches which contact customers after a certain time following the purchase and technician visit, in order to investigate their opinion about the service and so forth. If the researches discover certain dissatisfactions, the responsible department tries to take care of it. In case the issue involves several departments, a meeting is organized to solve the problem as soon as possible. It is not practical to call the customers several times a month; it is rather preferred to call them few times during a year, not to irritate them. The complaint handling usually focuses on listening to the customers. The responsible person who could solve the complaint is contacted and tries to satisfy the customer. Company C greatly focuses on making customers happy and satisfied, and in their experience, they have handled complaints well so far. There is no specific procedure or policies when it comes to complaint management. Although, there are no measures currently, Company C is working on a solution for it.

*Warranty extension:*

There is a primary one year warranty included for all spare parts. For new machines, there is also one year warranty; additionally, a maintenance agreement, excluding travel costs, for two years can be purchased as well as a three year warranty which can be expanded up to 10 000 hours. However, the last option is very expensive since it covers 5 years and customers rarely purchase it. Additionally, there is driveline warranty, component warranty and repair agreement which covers labor costs. The buyer has to decide on the warranty upon purchase or there is half a year time to decide on an agreement. For spare parts, it is not possible to obtain an extended warranty.

### 5.3.2 FIELD TECHNICAL ASSISTANCE

*Check-ups:*

Company C provides check-ups in case a customer seeks specific assistance or large reparation is made. They also aim for a proactive approach to discover potential problems before it occurs. Thus, there are technicians working at the organization who have huge responsibilities. The maintenance and services occur at the location of the customer since transporting huge machines is costly and it is the most convenient way for both customer and

them. The check-ups are considered as a daily work at Company C and there are some technicians, who work alone and are constantly travelling and meeting customers. Due to the proactive approach, the check-ups are quite frequent.

*During and after warranty assistance:*

There is no specific during and after warranty field technical assistance. Company C only provides demonstration of using the machine following the initial purchase by sending a person to the customer. Additional components can be included to the general warranty. All warranties cover travel costs for field technical assistance. In case of damaged spare parts, they have to be sent back and are replaced with new ones.

*Product disposal:*

The lifetime of the product depends on the machine; the average is around 10 years. The newer machines have shorter lifetime compared to the older models, due to a lot of electronic gadgets within the machine which do not last long. It is also influenced by the developing environmental requirements where the machine is not up to date anymore and does not meet the new requirements. The newer machines are much more environmentally friendly and some old machines are not even allowed to operate anymore. But, there are still machines from 1960s that are functional although there are no spare parts available in the market anymore. There is not a formal product disposal service offered to the customers. Company C buys back the old machines which are still functioning; after fixing them they are resold. However, machines that are out of function are not bought back. The used machines have a certain second hand value and waste management companies are willing to take care of the product disposal for the customers.

### 5.3.3 SPARE PARTS DISTRIBUTION

*Inventory management:*

There are 42 warehouses and repair centers from north to south part of Sweden. The warehouses and repair centers are together.

*Delivery of spare parts:*

The average speed of delivery of products and spare parts are 2-3 days. The customer can also directly come to the center and receive the desired spare parts since there is large number of products at the warehouses. There is large number of spare parts in the warehouses, thus, most

of the demands can be met without contacting producer. The customer pays for the delivery costs. Different delivery fees are credited depending on the weight of the package. There is still the option to pick the order up at the office without paying for any delivery.

#### 5.3.4 CUSTOMER RELATIONSHIP MARKETING

##### *Service quality:*

The goal for providing after-sales services is expressed by one of the interviewees as to get satisfied customers and on the company website it states that it is to live up to the demands of the customer and always make improvements. In addition, an internal goal of Company C is to have every other machine purchased in Sweden to be the product of the organization. The better the service they provide the higher the chance is to fulfill this goal. The spare parts distribution is the largest part of all after-sales activities conducted by Company C and it results in the most profit while the repair shop department produces the least profit.

Product delays are considered to occur every week. The main objective is to not to promise something that is not kept. Thus, as long as the customer is informed beforehand about a change in delivery time, they do not consider it as a delay. Most delays are due to suppliers in the supply chain and other factors that are not under company C's control. Delivery of defective products occurs once in a while and in the Växjö office, it happens with an approximate interval of once a week. The inaccurate deliveries of products also occur around once a week. The reason behind it can vary; it can be due to human factors, or wrong information on the computer, or sometimes it can also be due to wrong deliveries from the supplier.

##### *Customer relationship profitability:*

The most common method of placing an order is through telephone. There is also an e-commerce platform, where customers can make orders online that is getting increasingly popular. Moreover, orders can go through the manufacturer. Backorders happen every day at the warehouses; it is also closely related with the strategy the supplier is applying. In some cases, the supplier might reduce products in warehouses in order to save money which as a result affects the operation of company C. The backorder days varies from 2-3 days to few months depending on each case. The usual number of backorder days is one; but, sometimes the order might not be in product selection anymore thus it can take months.

After-sales services definitely influence the relationship with customers. The customers choose Company C based on their many locations in Sweden and their fast provision of spare parts and large number of technicians. Since the customer has purchased the machine for high investments, it is crucial for it to be reliable. Thus, service is critical. The customer will not buy another machine if the after-sales service was not taken care before. The customer will go to a competitor, which further on influences the reputation of company C. If they do not deliver good service they will quickly lose customer.

## 6. DATA ANALYSIS

*The data analysis chapter presents a cross-case analysis of the collected data, elaborated in the previous chapter. The cross-case analysis follows the theoretical framework of this study; the main concepts being customer care, field technical assistance, spare parts distribution and customer relationship marketing. This chapter is also dedicated towards setting the basis for answering the research questions.*

### 6.1 CUSTOMER CARE

Customer care can be distributed to different levels such as through centralized call center, manufacturer's website and local repair centers which support customers with commercial and technical information, complaint management and warranty extensions (Saccani et al., 2007). Each of those individual services is discussed across the different cases in the proceeding sections. There is an increasing awareness of the importance of customer care as an operative tool towards a strategic role in terms of customer relationship (Kantsperger & Kunz, 2005) which was also evident in the studied industry, heavy equipment machinery.

#### 6.1.1 INFORMATION PROVISION

Table 8 presents a comparison among the cases of the major activities of information provision. When it comes to information provision, the customers are offered with different options and clearly the options are more advanced with bigger sizes of companies. The small sized firm provided information in paper and electronic form while the medium sized firm added the options with their informative website and finally, the large sized company had created an online account system for customers and they made it also possible to receive relevant information as books. The large sized company successfully utilized the advantages of internet which makes it possible to have more touch points with customers and it also makes it easier to perform the activities of customer care as stated by Earl and Kahn (1994). The small and medium companies will most probably utilize internet as part of their customer care in the near future.

None of the cases had centralized call centers. However, the contact methods were the same and contacting through telephone as well as e-mails were common. In addition, no further price was charged for telephone calls, normal telephone rate applied for all cases. Company C highlighted its availability through telephone and this may be a more personalized way of

offering service (Saccani et al., 2007). The medium sized organization did not achieve the fast speed of reply on the level of company C; however, they do have a prioritization procedure unlike the small size organization which does not have any set procedure.

Kantsperger and Kunz (2005) claim that customer care involves providing advice in financial affairs and managing relationships with key accounts; however, none of the cases gave financial advice and they did not have key account since there was no assigned contact person for specific customers. Providing financial advice and key account management may be applicable to certain industries, but in these cases, it did not apply in the industry of heavy equipment machinery.

TABLE 8: INFORMATION PROVISION

Information provision			
	Case A	Case B	Case C
Technical and commercial information provision	Paper and electronic form	Brochures, website and digitally	Brochures, books, magazine, online account, website
Possible contact methods	Telephone, e-mail and fax	Telephone, e-mail and fax	Telephone, e-mail and fax
Most common contact method	Telephone and e-mail	E-mail	95% telephone
Cost of direct calls	No extra fee – normal call rate	No extra fee – normal call rate	No extra fee – normal call rate
Availability	07.00-16.00	08.00-12.00 13.00-16.00	07.00-16.00 plus 30 minutes for spare parts
Replying to customers	No prioritization. May take long time when answers from suppliers are needed	Prioritization of e-mails based on importance of the case	Immediate reply for telephone calls
Contact persons for certain customers	No specific contact persons	No specific contact persons	No assigned contact persons

None of the cases had any sort of policy on speed of reply; this could indicate that it is not necessary for this particular industry. On the other hand, it may be an attribute that the

companies can develop in the future. The availability of the after-sales providers was relatively similar. However, case C or the large size organization provided 30 minutes additional service in order to serve customers after their working hours. Kahn (1995) argued that organizations operating in the automotive industry have fairly similar offers and their major competitive factors lies with their service quality including friendliness, availability and trustworthiness. It can be suggested by company C's features and attitudes that they highly aim to be available to its customers through their fast replies and extra opening hours. As the authors have personally contacted all the investigated organizations numerous times, it was observable that Company C met their promise. When making a telephone call to company C, during the opening hours, it is certain to receive an answer immediately without long waiting lines which can be a significant asset to their customers in need.

#### 6.1.2 COMPLAINT MANAGEMENT

Poorly handled complaints can lead to lack of trust between the customer and the provider, which further on impacts the relationship between the two parties, highlighting the importance of complaint management (Bejou & Palmer, 1998). In case A or the small size manufacturer, there is no specific procedure to handle complaints which is understandable since there are only two people working with after-sales service full-time. The two employees can flexibly discuss complaints as it occurs based on their experience and knowledge without setting regulations beforehand. Case B or the medium size company prioritizes the complaints depending on the seriousness of the case and the size of the customer. In comparison to company A, their approach is far more regulated. Finally, case C has taken a proactive approach where customers are contacted before they have expressed their dissatisfactions. In order to effectively utilize this approach, Company C has turned to market professionals specialized in the task. The different ways of dealing with customer dissatisfaction strongly shows the differences that come along with firm sizes. Yet again, there are no stated policies regarding the speed of complaint management, which could designate that this is a point to be developed. A summary of complaint management process is shown on table 9.



TABLE 9: COMPLAINT MANAGEMENT

Complaint management			
	Case A	Case B	Case C
Complaint handling procedure	<p>The procedure depends on individual case.</p> <ul style="list-style-type: none"> <li>- Some complaints can be solved directly</li> <li>- Actions upon receiving information from suppliers</li> <li>- Send product back with description of defect</li> </ul>	<p>It varies depending on the customer and the case. Cases are prioritized based on seriousness.</p> <ul style="list-style-type: none"> <li>- Major customers fill out and e-mail a standardized form.</li> <li>- Small customers express complaints directly by phone.</li> </ul>	<p>General market research of satisfaction after purchase by professionals. Customers are contacted several times a year or in case of significant change.</p>

### 6.1.3 WARRANTY EXTENSION

In the three case studies, each warranty offer differs as shown on table 10. Case A offers one warranty that apply for all its products which may relate to the relatively low number of products they are trading. Case B offers a standard warranty formulated by the machine entrepreneurs of Sweden that according to them limits their flexibility in warranties. Case C offers warranty of various kinds; the offers are significantly more than in case A and case B. The two interviewees from company C, namely the spare parts manager and customer care respondent had different levels of knowledge regarding the warranties. The spare parts manager was not aware of all the types of warranties while the customer care respondent could fully explain each of the warranties and agreements that are available at company C, indicating their knowledge on different levels.

The speed and process of warranty extension is among the cases fairly similar; it is not possible to extend warranty on all products, and the extension has to be done at the purchase of the product or after some restricted time, such as six months for case C. However, Company A expressed that they can be flexible and can in some cases extend their warranty features, when the customer highly desires it. As mentioned, there are only two people working with after-sales in company A; thus, they seem to be able to be far more flexible and personalized compared to the medium and large enterprises.

TABLE 10: WARRANTY EXTENSION

Warranty extension			
	Case A	Case B	Case C
Warranty types	Single type of warranty for all products	Warranty formulated according to machine entrepreneurs of Sweden.	Standard warranty of one year. Optional 2, 3, or 5 years warranty, driveline warranty, component warranty, maintenance agreement and repair agreement.
Warranty extension possibility	Not possible to extend all components. Some expensive ones are available for extension.	It is possible to extend the warranty at the point of purchase and not afterwards.	Warranty decision upon purchase and half year time to decide on any agreements.
Speed of warranty extension	Few minutes	Few minutes	Few minutes

## 6.2 FIELD TECHNICAL ASSISTANCE

Saccani et al. (2007) have described field technical assistance as the assistance provided from seller to buyer where the buyer can receive encompassing installation, warranty work as well as out-of-warranty repairs, product disposal and check-ups. The field technical assistance activities differed for each of the investigated cases. As Russell (2008) states in his article, outsourcing of field technical assistance occurs as a consequence of the activity being highly time and cost consuming; this is the case of Company C since it handles all after-sales activities for a huge manufacturer. Company C is the only after-sales provider of the mentioned manufacturers' products in Sweden. Thus, the reputation of the manufacturer and Company C is closely related. Armistead and Clark (1991) mentions that outsourcing is favored by companies that needs to serve a large and geographical scattered service volume. Company C, which serves one of the largest manufacturers in their market fits in this description since the huge manufacturer is well known and has established a global brand and therefore, needs to serve a large and geographical scattered service volume.

### 6.2.1 CHECK-UPS

Company B executes the field technical assistance activities themselves, Company C conducts it as an outsourced organization itself, whereas Company A allows their contracted distributors to take care of the check-up activities (see table 11). Company B and C are a good example of what Russell (2008) describes as what a customer expects from a business-to-business seller. It has a high level of availability; since the companies are selling highly technical machines the buyer might encounter issues that need to be fixed fast. Company B takes care of all its field technical assistance as well as check-ups, it is stated in the interview that the company prefers taking care of check-ups and field technical assistance themselves in order to take full responsibility of their products and build a close relationship with its customers.

TABLE 11: CHECK-UPS

Check-ups			
	Case A	Case B	Case C
Provision of check-ups	Distributors are responsible for check-ups. Company A discusses with distributors through telephone for updates.	Provides check-ups themselves	Reactive as well as proactive check-ups
Frequency of check-ups	-	First check-up after 500 hours of operating the machine. Second check-up at 1000 hours and less frequent after that.	Customers are contacted via phone in case of specific assistance or large reparation is made. Frequent visits by technicians

The companies also differ on how frequent they provide check-ups, since Company A, or the small size enterprise, does not provide the check-ups themselves, they have telephone contact with its distributors to get an idea of the situation. Company B, the medium size enterprise, has a more established way of supplying check-ups, the customer will receive check-ups after the machine has been used 500 hours and then after 1000 hours. Company C or the large size enterprise has no established way of providing check-ups; however the company has

technicians continuously working at site and is able to provide check-ups if the customer requests it. Additionally, Company C has a routine of calling the customer after large reparations are made. This again indicates the proactive approach of the large size organization.

6.2.2 DURING AND AFTER WARRANTY ASSISTANCE

As Chien (2007) stated the main purpose of warranty is to provide an after sale remedy for the customer when a product fails to meet its intended achievement during a certain period. During the stated period, the manufacturer is obligated to ensure orderly functioning of the product (Bischke & Murthy, 1992). In the heavy equipment machinery industry, the average warranty period is around one year where all costs are covered according to the studied cases. Table 12 presents a summary of during and after warranty assistance of the studied cases. Since the large organization had extensive choice of warranties, the warranty period could be arranged up to 5 years which is half of the entire product lifecycle of their machines. However, contracting the 5 year warranty is very unusual since it is expensive to purchase from the customer’s side.

TABLE 12: DURING AND AFTER WARRANTY ASSISTANCE

During and after warranty assistance			
	Case A	Case B	Case C
Warranty features	<ul style="list-style-type: none"> <li>- All costs are covered by company A.</li> <li>- There is a single type of warranty which is based on time limit.</li> <li>- The company aims to provide assurance that the purchased machine will not stop working.</li> </ul>	<ul style="list-style-type: none"> <li>- All costs are covered by company B.</li> <li>- The warranty can differ depending hours of usage of the machine per week.</li> </ul>	<ul style="list-style-type: none"> <li>- Very extensive warranties</li> <li>- Field technical assistance provided is product demonstration at customers’ location after purchase.</li> </ul>

Providing warranties is very costly for manufacturers (Chien, 2007). Thus, the resources of the organizations may have a significant role when providing warranties and other field technical assistance. This can be derived from the fact that the small organization outsourced its field technical assistance to their distributors and that the large organization had drastically more warranties and agreements compared to the smaller ones. The organizations have to

calculate if they can realistically afford providing the services throughout the warranty time (Chien, 2007). Hence, smaller organizations might realize in their calculations that they are financially in disadvantage to provide extensive warranties.

6.2.3 PRODUCT DISPOSAL

All companies still have machines running from the start of establishment; this goes back to the sixties for some companies. However, most of those machines do not have available spare parts anymore; since it is difficult to determine the production of spare parts for old and possibly obsolete machines which is also argued by Kennedy et al. (2002). The machines traded currently are estimated to have a product lifetime of 10 to 15 years for all organizations.

Company A offers no product disposal service; instead they forward their customers to different waste management organizations. Company B and C offer product disposals; they would fix the machines and sell them again or reuse the parts that are still functioning. Nevertheless, product disposal seem to be not a crucial activity in heavy equipment machinery industry since all cases were convinced that the used machines have high second hand value which the customers can easily take advantage of. Table 13 presents a summary of each case regarding product disposal.

TABLE 13: PRODUCT DISPOSAL

Product disposal			
	Case A	Case B	Case C
Average product lifetime	10-15 years. But there is subcategory of machines which are not used daily where the average lifetime is 25 years.	15 years. But, machines from 1980s are still working.	10 years. Changing environmental policy affects considerably.
Product disposal service	No product disposal service offered	The old products are bought back and fixed for reselling.	The old products, that are working, are bought back and fixed for reselling.

6.3 SPARE PARTS DISTRIBUTION

Spare parts distribution includes activities related with inventory management, customer order management and delivery of spare parts (Saccani et al., 2007). It is crucial function for customers, throughout the consumption of a product (Gopalakrishnan & Banerji, 2004). The provider has to decide on what kind of level they want to distribute their spare parts, central warehouse, stockiest, regional warehouses, field warehouses, retail outlets and dealers (ibid); these decisions varied case by case as elaborated in the following sections.

6.3.1 INVENTORY MANAGEMENT

From table 14, it is visible that the number of warehouses as well as repair centers increases relative to the size of the company which is not to a surprise. For all cases, it was their distributor network which determined the number of warehouses and repair centers. However, the medium sized organization has a central warehouse with large number of spare parts, along with smaller warehouses that their distributors have in different locations in Sweden. The company is aware of the importance of holding spare parts inventory as explained by Kennedy et al. (2002); thus they have introduced a thorough enterprise resource system for their central spare parts warehouse.

TABLE 14: INVENTORY MANAGEMENT

Inventory management			
	Case A	Case B	Case C
Number of warehouses	15	18-22	42
Location of warehouses	In 15 different cities around Sweden.	All around Sweden, the main one in Ljungby	All around Sweden
Number of repair centers	2	18-22	42
Location of repair centers	Gothenburg and Stockholm	All around Sweden, the main one in Ljungby	All around Sweden

The main purpose with spare parts distribution is considered as ensuring the right availability of spare parts at the right time for the customers’ needs (Gopalakrishnan & Banerji, 2004). While, warehouses and repair centers can represent the ease of access or ‘availability’, well-

organized delivery can indicate the ‘right time’ perspective which is discussed in the next section.

6.3.2 DELIVERY OF SPARE PARTS

Cohen and Lee (1990) highlighted that the automobile manufactory is an industry where delivering spare parts quickly is a key aspect of their after-sales services. In the investigated cases in heavy equipment machinery industry, the average speed of delivery is similar between small and medium sized firms whereas the large firm’s delivery takes around one day more. This may relate to the high number of customers they have to serve every day as well as the complexity of their supply chain since they might need to contact the producer which lengthens the transactions. The two interviewees from Company C had different ideas of the delivery fee. While the customer care respondent was convinced that the company itself pays all delivery costs, the spare-parts manager informed us that the customers pay for it. The manager’s answer was regarded valid in the analysis, as shown on table 15, since a spare-parts manager should possess more knowledge and overview over the spare parts delivery process.

TABLE 15: DELIVERY OF SPARE PARTS

Delivery of spare parts			
	Case A	Case B	Case C
Average speed of delivery	1-24 hours	If ordered before 14.00 – delivery on the same day If ordered after 14.00 – delivery on the next day	Average of 2 days
Delivery fee	The customers pay the delivery costs unless it is stated otherwise in the contract.	Company B usually pays the delivery until the carrier and the customers pay for the costs from carrier to their location, unless it is stated otherwise in the contract.	The customers pay for the delivery costs. Customers can also directly pick up at the office.

6.4 CUSTOMER RELATIONSHIP MARKETING

#### 6.4.1 SERVICE QUALITY

For survival in a competitive business environment, quality guarantee and extended service programs are essential strategies for success, driving the customer's perception of a company's product in the right direction (Takeuchi & Quelch, 1983; Reichheld & Sasser 1990; Zeithaml et al., 1990). For a company that offers customer service, it has the means for tailoring a company's offerings to the needs and desires of its customers (Asugman et al., 1997). In all three of the cases, the goal of providing after-sales service seemed fairly evident for the respondents, it is to satisfy customers' needs and demands. Case A and B particularly considered after-sales to be the main mission of their work, with the goals of satisfying the customer requirements after purchase and to maintain the customer until the next purchase of a new machine.

Poor customer service can quickly contradict the advantages associated with a product offer of superior quality (Gaiardelli et al., 2007); therefore, the companies need to apply superior service quality to stay competitive. Measuring the service quality comprised questions related to delayed deliveries, defective product deliveries, and inaccurate deliveries which are presented in table 16. It can be observed that, in all the three cases, there was lack of accurate measurement on the frequency of delayed, defective or inaccurate delivery occurrences. Delayed deliveries were expressed to be out of the companies' hands, the faultiness occurs with the suppliers or the carriage companies. However, the defective product delivery was expressed more clearly by the three case studies, further concrete answers were given. Maybe that is because defective products need to be investigated and taken records of, whereas inaccurate deliveries and delayed deliveries already have a known reason. Negative incidents such as poorly handled complaints and inadequate communication with customers, may lead to lack of trust which impacts on the relationship (Bejou & Palmer, 1998). This argument is being considered by all the three companies, since their aim is to solve any sort of problem as fast as they can; nevertheless, no policy on speed or procedure exist in when and how to solve the complaints.



TABLE 16: SERVICE QUALITY

Service Quality			
	Case A	Case B	Case C
Goal with after-sales	Doing a good job in providing after-sales means doing half the effort in selling a new machine.	Selling the product is not a difficult task, the real mission starts when the product has been sold.	To get satisfied customers, and to live up to the customers' demands.
Frequency of delayed deliveries	Not measured, however, it occurs, but usually not under the company's control.	Not measured, however, it occurs, but usually not under the company's control.	Not measured, however, delays occur due to the suppliers.
Frequency of defective product delivery	Not measured, but estimation is 20 times per year.	Occurs in regular intervals, however, usually caused by products from their suppliers and not the products that Company B produces.	Approximately once per week.
Frequency of inaccurate deliveries	Not measured, but it occurs and usually due to misinterpretations or customers have ordered the wrong parts.	Not measured, but it occurs due to the many types of machines, consisting of different parts and features.	Approximately once per week. Reasons vary, it could be due to the human factor, computer defaults or supplier's inaccurate deliveries to company C.

#### 6.4.2 CUSTOMER RELATIONSHIP PROFITABILITY

From a firm's point of view, the financial outcome of a customer relationship through service quality improvements is resulting in that service management and perceived service quality are tied together with relationship marketing (Storbacka et al., 1994). As shown on table 17, the estimated profit from after-sales proved to be a rather difficult question for the

respondents to answer. There was no concrete answer regarding the estimation on profit made on after-sales activities; however, case B and C were aware, even though no actual calculation is made, that the after-sales activities comprise a huge part of the overall profit.

Since Storbacka et al. (1994) claim that service management and perceived service quality affects the financial outcome on customer relationship, the successfulness of the service quality should be able to be measured based on profitability. However, the lack of record and calculation on the profitability on after-sales services may point to that after-sales service activities influence the customer profitability in a satisfactory way while the perceived service quality might be questionable. Customer relationship profitability may be in focus; however, the service quality improvements may not be in such focus since there are no signs of structured ways of keeping track of negative incidents that impacts perceived service quality.

Rust and Zahorik (1993)'s chain of impacts regarding service quality's impact on satisfaction, satisfaction's impact on customer retention and customer retention impacts on profitability has been measured in terms of methods of placing order and backordered availability. The methods available for placing an order varies slightly, in case A and B the methods are similar and the most common method is also the same, namely e-mail and online. In case C, the largest company of all cases, have an established e-commerce service providing the possibility for customers to order their products/spare parts according to their own schedule and preference.

The frequency of backordered items was answered differently by the three companies. It seems as if Company A and B mostly manage their orders instantly, the frequency is seldom, while Company C view the frequency of backordered items as something unpredictable, it could happen every day depending on the case. To get the order available is yet again hard to predict; it all depends on what is ordered by the customer. It can take some time if the ordered items are no longer in production or the supplier has reduced items in the warehouses and so forth. Company C answered with 1 day – months, while Company A could not give a tangible answer than as soon as possible.

TABLE 17: CUSTOMER RELATIONSHIP PROFITABILITY

Customer Relationship Profitability			
	Case A	Case B	Case C
Method of placing orders	Telephone, personal meetings, and online	Telephone, personal contact at the factory location and E-mail	Telephone and e-commerce
Common method of placing orders	Online	E-mail	Telephone and e-commerce
Frequency of items backordered	Company A is able to cover 85% of the requested orders directly	Items backordered happen seldom	Can happen everyday
Average backorders days	No average backordered days, the company's aim is to provide missing parts as soon as possible	-	Depends on the case. Usually it is 1 day, but could take up to 1 month if the parts are not in product selection anymore.
Estimated profit from after-sales services	Not calculated and no estimation could be given.	Not calculated but it is considered to be a huge part of the overall profit.	Spare parts distribution generates the largest part of the after-sales activities. The repair shop department makes the least profit.
After-sales influence on customer relationship	Extremely important. If the company can assure the customer that they get what they need in order to avoid the machine to stand still, the customers will come again.	Certainly after-sales influence the relationship, to the extent that the customers will change brand if not handled correctly. In such intense industry, customers need to be nurtured.	After-sales influence the relationship to the extent that customers will switch to competitors and furthermore, influence the reputation of the company.

All three companies expressed its view point on the impact after-sales services have upon the relationship with its customer. The vision point is considered severe. When customers have bought a machine it is also expected to be running so that they can continue their business, if Company A cannot make sure of it, they will potentially lose their customer. Company B, explicitly mentioned that their customers can potentially change the brand of the next machine if the relationship is not nurtured soundly. Company C believes that the customer will go over to the competitors and create a bad reputation of Company C if not handled correctly. Thus, the awareness of the importance of providing high quality service indicates that the companies consciously try to structure their after-sales services in a way that will satisfy their customers.

## 7. CONCLUSIONS AND IMPLICATIONS

*The final chapter presents the findings and conclusions of this qualitative case study. The four research questions are answered in the discussions section where each research question is discussed individually. The chapter moves on with managerial implications and theoretical contributions as well as limitations. Finally, this thesis ends with suggestions for future research.*

### 7.1 DISCUSSIONS

This thesis has focused on studying after-sales services and customer relationship marketing in the Swedish heavy equipment machinery industry. The purpose of the study was to investigate the major activities of after-sales service focusing on customer relationship among different sizes of after-sales service providers. The research questions formulated in order to meet this purpose are answered in the preceding sections.

#### 7.1.1 CUSTOMER CARE

*RQ1. How is customer care executed in the Swedish heavy equipment machinery industry among organizations of different sizes?*

This study suggests that customer care is the most focused activity of after-sales services in the heavy equipment machinery industry in Sweden. Simultaneously, it shows the most significant differences of offers, depending on the size of the company, in relation to the remaining two activities.

Technical and commercial information provision is progressively more complex when the size of the organization increases, especially regarding the utilization of internet as an additional customer touch point. Moreover, when the size of the company is bigger, they focus on availability and have more structured and effective way of responding to customers. Complaint management is settled in a proactive way in large size organization while there is a reactive approach applied by medium and small size organizations. Large organizations have a variety of options regarding warranties in comparison to small and medium sized firms. However, in this particular industry, the warranty extension possibilities are restricted for

medium and large firms while the small firm is more flexible, thus can extend some components of their warranty in case a customer highly desires.

It can be concluded that customer care is executed on relatively similar levels for small size and medium size companies while large organizations have more structured and advanced procedures. Regardless of firm size, the after-sales employees had equal responsibilities to provide customer care in case it is needed, since there seem to be no assigned contact persons for certain customers in the industry. Availability is a crucial aspect of customer care which all size organizations focused on; but, the large size organization seem to take it one step further.

### 7.1.2 FIELD TECHNICAL ASSISTANCE

*RQ2. How is field technical assistance executed in the Swedish heavy equipment machinery industry among organizations of different sizes?*

Field technical assistance appears to be the part of after-sales that produced least profit in heavy equipment machinery industry. Thus, it might be the reason that small organizations would rather tend to outsource it, in order to avoid high costs.

Medium and large organizations provided check-ups for their customers themselves. The medium sized organization has a pre-planned procedure for providing field technical assistance. However, the large organization's approach is one step ahead due to its proactive nature; problems are discovered before they occur. The warranty features become more extended and complex relative to the firm size; this could suggest that the high costs of providing warranties make it problematic for smaller organizations to offer advanced warranties to their customers. Product disposal is not a crucial service for the customers in the industry, since the used machines and spare parts still have high second hand value. Nevertheless, the medium and large sized organizations offer to buy the machines back from the customers for repairing and reselling. The product lifetime of currently produced heavy equipment machines are estimated to be 10-15 years. However, there are machines that are still functional for 30-50 years. Since the machines are long-term investments for customers, field technical assistance is important to support and assist the customers throughout the usage of the product.

### 7.1.3 SPARE PARTS DISTRIBUTION

*RQ3. How is spare parts distribution executed in the Swedish heavy equipment machinery industry among organizations of different sizes?*

Spare parts distribution can be considered as the most profitable activity of after-sales. The warehouses and repair centers of companies naturally varied according to firm sizes. In order to meet customer demand, the warehouses and repair centers are located all around Sweden, especially in the bigger cities. The location of the warehouses as well as internal communication systems can influence the delivery time of spare parts to customers. The delivery time for all sizes of companies is around 1-2 days if they have the product in stock. The circumstance for the large size company is rather complex since they have to order the product from the producer and the producer might need to contact their suppliers; thus, complication the material and information flow. Costs related with the delivery are usually covered by the customers in this industry; however, the medium size company investigated in this study might be an exception since they paid around half of the delivery fee. The organizations all have introduced additional options, such as express delivery, direct pick-up or including delivery fee agreement in the initial product purchase contract. A considerable advantage that the large organization offers is to have additional half an hour open time for their spare parts distribution department until 16.30. It is a beneficial option for customers who finish their work at 16.00 where they can get their spare parts after work to be set for work the next day. This may be a point that the smaller organizations might catch up on.

### 7.1.4 CUSTOMER RELATIONSHIP MARKETING

*RQ4. How do after-sales services contribute to customer relationship marketing in the Swedish heavy equipment machinery industry among organizations of different sizes?*

Although the organizations do not have formal goals for providing after-sales to its customers, they understand its importance and aim for meeting customer demands.

The organizations do not have accurate measurements for delayed, inaccurate or defective product deliveries. However, they are aware of the incidents, especially when it comes to defective product deliveries; they are able to identify the cause of the problem. In the industry of heavy equipment machinery, it is not usual to calculate the exact income created by after-sales services, even though, it is a common statement among industry professionals that it is a significant part of the profit.

Since perceived service quality and customer profitability are directly related with customer relationship marketing, this study shows that the customer profitability is satisfactory while the perceived service quality might be questionable. The organizations do not apply any structured way of keeping track of negative incidents that impacts perceived service quality. All organizations are convinced that if after-sales services are not handled properly, they face the risk of losing the customer. Thus, the awareness of the importance to provide high quality after-sales services, the services are consciously structured by the companies, consequently after-sales services contribution to customer relationship marketing in different sizes are equal no matter the size of the company. Moreover, this research indicates that organizations in this industry have a lot of room for improvements which can be accomplished in strategic and systematic ways.

## 7.2 THEORETICAL AND MANAGERIAL IMPLICATIONS

This study comprised the theoretical framework of customer care, field technical assistance, spare parts distribution and customer relationship marketing. The purpose was to gain deeper understanding of each concept and their relations in terms of firm size. This thesis makes theoretical contributions based on testing the previous studies in a different context and perspective. Some theoretical contributions were acknowledged and some were not recognized in the studied context.

The basic principles set by Levitt (1983) coincide with the study results. After-sales service is a way of creating relationship with returning customers. Armistead and Clark (1991) suggested that large organizations tend to outsource due to their geographical dispersed service volumes. It was correct in the case of large sized company that was studied, but, the small organization also outsourced the field technical assistance to their distributors. It is probably related to the high costs of executing field technical assistance as suggested by Bryce and Useem (1998). Regarding spare parts distribution, Gopalakrishnan and Banerji (2004) have brought up conclusions that correlate with the outcome of this study such as large turnover ratio, many customers' demands, large number of spare parts, right availability of spare parts, stability and steadiness of spare parts distribution. This further on relates to customer relationship marketing since many of those qualities relate to customer satisfaction.

Certain previous research results were not applicable in the context investigated. In the studied industry, customer care has not advanced to managing relationship with key accounts and providing financial advice as Kantsperger and Kunz (2005) suggested. There are still in



the level of providing information and handling orders; they need time to develop and shift to the higher level of customer care. Crawford (1993) claimed that large organizations benefit from advanced systems in comparison to smaller organizations. However, in the studied context, all large, medium and small organizations had relatively similar computing systems.

Several managerial implications can be suggested based on the findings of this research. After-sales services do influence customer relationship to a significant level and it can be enhanced through effectively managing the after-sales service operations. The following suggestions might bring after-sales service providers a step closer to achieving better understanding and utilizing after-sales to its full extent.

- As this research showed, the three activities of after-sales service were not equally focused. Customer care had the most focal point of all the activities followed by spare parts distribution and field technical assistance. Organizations are recommended to keep balance between the activities since their importance is equal and each one has its significant role in customer relationship.
- In case the organization has decided to carry over certain after-sales activities to their distributors, more awareness of their work is needed. Even when the distributors are conducting certain activities, they are representing the manufacturer. Thus, managers should have in any case general overview of the service provided to their users.
- As the study showed, there are no defined key accounts in this industry. It could be a useful step for organizations to identify their key accounts in order to offer the very best service to their most valuable customers. Key account management would also contribute to a more structured way of handling orders, requests, complaints and so forth.
- Managers could align workers so that they are aware of the organizational goals and have the attitudes towards the services. In one of the cases, two respondents from one company were interviewed according to the same interview guide and they have answered differently. The suggestion is to align the workers so that they all have the same ideas and perceptions of what is happening in the organization. When customers contact the organization, they should be able to get the same answer regardless who they ask, this will in return create communion among the employees.
- The distributors might have difficulties to work efficiently due to the complex relationship with manufacturers as in case C studied in this research. More efficient

supply chain management should be applied in order to create steadiness and stability with the orders. Additionally, a more effective approach should be considered regarding deliveries to overcome the more complex supply chain with distributors.

- In the heavy equipment machinery industry, there are little formal policies and regulations when it comes to after-sales activities. Organizations could introduce policies in order to get a step closer to a structured and effective way of providing after-sales services. For all employees especially newly hired, they need guidelines to follow. No objectives are formalized but there are certain internal goals, having it on paper might enhance the structure and clearness of the organizational targets.

### 7.3 LIMITATIONS

Overall, the limitations that were experienced throughout the study were those connected to the qualitative approach the study had. Because a qualitative approach was chosen, no generalization could be made for the industry from the research results. Due to the low number of case studies made, there were difficulties to find suitable respondents for the study; the limited time made it even more important to find respondents that could participate immediately. Even though a generalization of the study cannot be made, the aim for this study was to gain knowledge and depth within the area of after-sales services among heavy equipment machinery organizations in Sweden and this was achieved by carrying out in-depth interviews among organizations within the chosen industry with different sizes.

Another difficulty encountered was that there were limited previous studies related to the three main activities within after-sales services (Saccani et al., 2007). This made the study restricted to only a few sources, sources which could not be generalized either.

Relevant measures of key concepts were also limited, in return making it difficult to conduct an operationalization of the study, but it motivated to further investigate the concepts.

The interviews were rather short, although precautions such as pretesting by experts and managers were taken. The interview guide was sent to the respondents in advance in order for them to give coherent and elaborate answers. The short interviews could be caused by the respondent's lack of the overall view of the organization. The interview involved questions that touched upon different areas of expertise of the after-sales service departments within an organization, in one case, the customer care respondent experienced a challenging stage answering questions involving spare parts distribution, since he/she was not involved in their work nor had knowledge about the area.

#### 7.4 SUGGESTIONS FOR FUTURE RESEARCH

Several suggestions for future research are presented below, for researchers who are interested in investigating the three main activities of after-sales services and its relation to customer relationship marketing.

- A similar research can be conducted taking the customers' perspective into consideration, in order to describe the impact of after-sales on customer relationship more accurately and comprehensively. With a sufficient level of resources, this kind of investigation would study both sides of the buyer and seller relationship.
- With the limitations of this research in mind, a suggestion is to decide on a quantitative research method on this topic since it can cover larger sample of organizations where more general conclusions can be drawn.
- Future researchers can study and develop the theory of three activities of after-sales services by investigating other industries and discovering different aspect to it. Since this study as well as previous academic researches has pointed out the significance of after-sales services in manufacturing industries.
- Finally, we suggest that the future researchers take the investigated research model and implement it in a new context. As a suggestion, in a different demographic location or culture, in order to subsequently make a comparison among the different locations and cultures that has been studied previously.



## REFERENCE LIST

- Adler E. S. and Clark R. (2010) "An Invitation to Social Research: How It's Done" 4<sup>th</sup> ed., Cengage Learning, Belmont, CA.
- Alvarez L. S., Casielles R. V. and Martin, A. M. D. (2011) "Analysis of the role of complaint management in the context of relationship marketing" *Journal of Marketing Management*, 27 (1-2), pp. 143-164.
- Anderson J. C. and Narus J. A. (1995) "Capturing the value of supplementary services" *Harvard Business Review*, 73 (1), pp. 75-83.
- Armistead C. and Clark G. (1991) "A framework for formulating after-sales support strategy" *International Journal of Operations and Production Management*, 11 (3), pp. 111-124
- Asugman G., Johnson J. L. and McCullough J. (1997) "The role of after-sales service in international marketing" *Journal of International Marketing*, 5 (4), pp. 11-28.
- Babbie E. (2009) "The Practice of Social Research" 12<sup>th</sup> ed., Cengage Learning, Belmont, CA.
- Bailey C. A. (2007) "A guide to Qualitative Field Research" 2<sup>nd</sup> ed., Pine Forge Press, Thousand Oaks.
- Bejou D. and Palmer A. (1998) "Service failure and loyalty: an exploratory empirical study of airline consumers" *Journal of Services Marketing*, 12 (1), pp. 7-22.
- Bell J. (2010) "Doing your Research Project" 5<sup>th</sup> ed., McGraw-Hill Professional Publishing, Berkshire.
- Belz C., Schuh G. Groos S. A. and Reinecke S. (1997) "Industrie als Dienstleister", Thesis, St. Gallen.
- Bendapudi N. and Berry L. L. (1997) "Customers' motivations for maintaining relationships with service providers" *Journal of Retailing*, 73 (1), pp. 15-37.
- Berry L. L. (1995) "Relationship marketing of services – growing interest, emerging perspectives" *Journal of the Academy of Marketing Science*, 23 (4), pp. 236-245.
- Berry L. L. (1999) "Discovering the Soul of Service" The Free Press, New York, NY.

- Berry L. L. (2000) "Relationship marketing of services – growing interest, emerging perspectives" in Sheth, J. N. and Parvatiyar A. (Eds), *Handbook of Relationship Marketing*, Sage Publications, London.
- Beverland M. and Lindgreen, A. (2004) "Relationship use and market dynamism: A model of relationship evolution" *Journal of marketing management*, 20 (7-8), pp. 825-858.
- Bienstock C. C., Mentzer J. T. and Bird M. M. (1997) "Measuring physical distribution service quality" *Journal of the Academy of Marketing Science*, 25 (1), pp. 31–44.
- Blischke W. R. and Murthy D. N. P. (1992) "Product warranty management: a taxonomy for warranty policies" *European Journal of Operational Research*, 62 (2), pp. 127-148.
- Bonaccorsi A. (1992) "On the relationship between firm size and export intensity" *Journal of International Business Studies*, 23 (4), pp. 605-635.
- Boyatzis R. E. (1998) "Transforming Qualitative Information" Sage Publications, London.
- Boyt T. and Harvey M. (1997) "Classification of industrial services: A model with strategic implications" *Industrial Marketing Management*, 26 (4), pp. 291-300.
- Brashear T. G., Boles J. S., Bellenger D. N. and Brooks C. M. (2003) "An empirical test of trust-building processes and outcomes in sales manager-salesperson relationships" *Journal of the Academy of Marketing Science*, 31 (2), pp. 189-200.
- Brax S. (2005) "A manufacturer becoming service provider – challenges and a paradox" *Managing Service Quality*, 15 (2), pp. 142-155.
- Bryce D. and Useem M. (1998) "The impact of corporate outsourcing on company value", *European Management Journal*, 16 (6), pp. 635-643.
- Bryman A. and Bell E., (2007) "Business Research Methods" Oxford University Press, New York, NY.
- Bryson J. R. and Daniels P. W. (2007) "Handbook of Service Industries", Edward Elgar Publishing Limited, Cheltenham.
- Bundschuh R. G. and Dezvane T. M. (2003) "How to make after sale services pay off" *The McKinsey Quarterly*, 4 (2), pp. 116-127.

- Cannon J. P. and Perreault Jr. W. D. (1999) "Buyer-seller relationships in business markets" *Journal of Marketing Research*, 36 (4), pp. 439-460.
- Cavalieri S., Gaiardelli P. and Ierace S. (2007) "Aligning strategic profiles with operational metrics in after-sales service" *International Journal of Productivity and Performance Management*, 56 (5), pp. 436-455.
- Celuch K. G., Bantam J. H. and Kasouf C. J. (2006) "An extension of the marriage metaphor in buyer-seller relationships: An exploration of individual level process dynamics" *Journal of Business Research*, 59 (5), pp. 573-581.
- Chien Y. H. (2007) "Determining optimal warranty periods from the sellers perspective and optimal out-of-warranty replacement age from the buyer's perspective" *International Journal of Systems Science*, 36 (10), pp. 631-637.
- Christopher M. Payne A. and Ballantyne D. (2002) "Relationship marketing: creating stakeholder value" Butterworth-Heinemann, London.
- Clayman S. E. and Gill V. T. (2004) "Conversation Analysis" in Hardy M. and Bryman A. (Eds), *Handbook of Data Analysis*, Sage Publications, London.
- Cohen M. A. and Lee H. L. (1990) "Out of touch with customer needs? Spare parts and after sales service" *Sloan Management Review*, 31 (2), pp. 55-66.
- Colgate M.R. and Danaher P.J. (2000) "Implementing a customer relationship strategy: The asymmetric impact of poor versus excellent execution" *Journal of the Academy of Marketing Science*, 28 (3), pp. 375-387.
- Cowton C. J. (1998) "The use of secondary data in business ethics research" *Journal of Business Ethics*, 17 (4) pp. 423-434.
- Crawford M. C. (1993) "New Products Management" 4<sup>th</sup> edition, Irwin Publishing, Boston.
- Creswell J. W. (2003) "Research Design: Quantitative, Qualitative and Mixed Methods Approaches" 2nd ed., Sage Publications, Thousand Oaks, CA.
- Crosby L. A. (1989) "Building and Maintaining Quality in Service Relationship" in *Quality in Services*, Brown S. W. and Gummesson E. (eds), Lexington Books.
- Crosby L. A., Evans K. R. and Cowles D. (1990) "Relationship quality in services selling: an interpersonal influence perspective" *Journal of Marketing*, 54 (3), pp. 68-81.

Davies M. B. (2007) "Doing a Successful Research Project: Using Qualitative or Quantitative Methods" Palgrave Macmillan, New York, NY.

Davies, A. (2003) "Are firms moving 'downstream' into high-value services?", in Tidd, J. and Hull, F. M. (Eds), *Service Innovation, Series on Technology Management*, Imperial College Press, London.

Day G. S. and Wensley R. (1988) "Assessing advantage: a framework for diagnosing superiority" *Journal of Marketing*, 52 (2), pp. 1-20.

de Brentani U. (1995) "Firm size: implications for achieving success in new industrial services" *Journal of Marketing Management*, 11 (1-3), pp. 207-225.

Dhawan S. (2010) "Research Methodology for Business and Management Studies" Global Media, Dheli.

Dwyer R. F., Schurr P. H. and Oh S. (1987) "Developing buyer-supplier relationships" *Journal of Marketing*, 51 (2), pp. 11-27.

Dyson S. and Brown B. (2005) "Social Theory and Applied Health Research" McGraw-Hill Professional Publishing, Berkshire.

Earl M. and Kahn B. (1994) "How new is business process redesign?" *European Management Journal*, 12 (1), pp. 20-30.

Ehinlanwo O. O. and Zairi M. (1996) "Best practice in the car after-sales service: An empirical study of Ford, Toyota, Nissan and Fiat in Germany - Part 1", *Business Process Re-engineering and Management Journal*, 2 (2), pp. 39-56.

Eliasson A. (2010) "Kvantitativ Metod från Början", Studentlitteratur AB, Lund.

Eriksson L. and Wiedersheim-Paul F. (2011) "Att utreda Forska och Rapportera" Liber, Malmö.

Ettorre B. (1994) "Phenomenal promises that mean business" *Management review*, 83 (3), pp. 18-23.

Fischer M. D. (1994) "Applications in Computing for Social Anthropologists" Routledge, London.



Fornell C. (1992), "A national customer satisfaction barometer: the Swedish experience", *Journal of Marketing*, 56 (1), pp.6-21.

Frankfort-Nachmias C. and Nachmias D. (1992) "Research Methods in the Social Sciences", Edward Arnold, London.

Frey J. H. and Oishi S. M. (1995) "How to conduct interviews by telephone and in person" Sage Publications, Thousand Oaks.

Gadiesh O. and Gilbert J. L. (1998) "Profit pools: a fresh look at strategy" *Harvard Business Review*, 76 (3), pp. 139-147.

Gaiardelli P., Saccani N. and Songini L. (2007) "Performance measurement of the after-sales service network- Evidence from the automotive industry" *Computers in Industry*, 58 (7), pp. 698-708.

Garcia-Quevedo J., Mas-Verdu F. and Montolio D. (2013) "What types of firms acquire knowledge intensive services and from which suppliers" *Technology Analysis and Strategic Management*, 25 (4), pp. 473-486.

Gebauer H., Fleisch E. and Friedli T. (2005) "Overcoming the service paradox in manufacturing companies" *European Management Journal*, 23 (1), pp. 14-26.

Ghauri P. and Grønhaug K. (2005) "Research Methods in Business Studies: A Practical Guide" 3<sup>rd</sup> ed., Pearson Education Limited, Harlow.

Goffin K. and New C. (2001) "Customer support and new product development" *International Journal of Operations and Production Management*, 21 (3), pp. 275–301.

Gopalakrishnan P. and Banerji A. K. (2004) "Maintenance and spare part management" Prentice Hall of India, New Delhi.

Granot E., Brashear T. G. and Motta P. C. (2012) "A structural guide to in-depth interviewing in business and industrial marketing research" *Journal of Business & Industrial Marketing*, 27 (7), pp. 547 – 553.

Gray D.E. (2009) "Doing Research in the Real World", 2nd ed, Sage Publications, London

- Grönroos C. (2000) "Service management and marketing a customer relationship management approach" 2<sup>nd</sup> edition, John Wiley, Chichester.
- Gummesson E. (1998) "Implementation requires a relationship marketing paradigm" *Journal of the Academy of Marketing Science*, 26 (3), pp. 242-249.
- Gummesson E. (2002) "Relationship marketing in the new economy" *Journal of Relationship Marketing*, 1 (1), pp. 37-57.
- Gutek B. A., Groth M. and Cherry B. (2002) "Achieving service success through relationships and enhanced encounters" *The Academy of Management Executive*, 16 (4), pp. 132-144.
- Gwinner K. P., Gremler D. D. and Bitner M. J. (1998) "Relational benefits in service industries: the consumer's perspective" *Journal of the Academy of Marketing Science*, 26 (2), pp. 101-114.
- Hammersley M. (1990) "Reading Ethnographic Research: A Critical Guide" Longmans, London.
- Hancock B., Ockleford E. and Windridge K. (2009) "An introduction to qualitative research", Available at: [http://www.rds-sc.nihr.ac.uk/wp-content/uploads/2011/07/5\\_Introduction-to-qualitative-research-20091.pdf](http://www.rds-sc.nihr.ac.uk/wp-content/uploads/2011/07/5_Introduction-to-qualitative-research-20091.pdf)
- Heskett J. L., Jones T. O., Loveman G. W., Sasser Jr. W. E. and Schlesinger L. A. (1994) "Putting the service profit chain to work", *Harvard Business Review*, 72 (2) pp. 105-111.
- Heskett J. L., Sasser Jr. W. E. Schlesinger L. A. (1997) "The Service Profit Chain" Free Press, New York, NY.
- Hopp W. J., Zhang R. Q. and Spearman M. L. (1999) "An easily implementable hierarchical heuristic for a two-echelon spare parts" *IIE Transactions*, 31 (10), pp. 977-987
- Hox J. J. (1997) "From Theoretical Concept to Survey Question" in Lyberg et al. (Eds), *Survey Measurement and Process Quality*, Wiley, New York, NY.
- Hunt S. D. and Morgan R. M. (1995) "The comparative advantage theory of competition" *Journal of Marketing*, 59 (2), pp. 1-15.
- Hunt S. D. and Morgan R. M. (1996) "The resource-advantage theory of competition: dynamics, path dependencies and evolutionary dimensions", *Journal of Marketing*, 60 (4), pp. 107-114.

- Johansson P. (2006) "Adapting manufacturing strategy to industrial after-sales service operations", Doctoral Thesis, Institution of production economics, Linköping University.
- Johansson P. and Olhager J. (2004) "Industrial service profiling: Matching service offerings and processes" *International Journal of Production Economics*, 89 (3), pp. 309-320.
- Johnson P. and Buberley J. (2003) "Understanding Management Research: An Introduction to Epistemology" Sage Publications, London.
- Kahn A. (1995) "Kundvård" Liber-Hermöds, Malmö.
- Kandampully J. (2010) "Service quality to service loyalty: A relationship which goes beyond customer services" *Total Quality Management*, 9 (6), pp. 431-443.
- Kandampully J. and Duddy R. (1999) "Relationship marketing: a concept beyond primary relationship" *Marketing Intelligence and Planning*, 17 (7), pp. 315-323.
- Kantsperger R. and Kunz L. (2005) "Managing overall service quality in customer care centers: Empirical findings of a multi-perspective approach" *International Journal of Service Industry Management*, 16 (2), pp. 135-151.
- Kelly S. and Scott D. (2012) "Relationship benefits: Conceptualization and measurement in a business-to-business environment" *International Small Business Journal*, 30 (3), pp. 310-339.
- Kennedy W. J., Pettersson W. J., and Fredendall L. D. (2002) "An overview of recent literature on spare parts inventories" *International Journal of Production Economics*, 76 (2), pp. 201-215.
- Kimberly J. A. (1976) "Organizational Size and the Structuralist Perspective: A Review, Critique and Proposal" *Administrative Science Quarterly*, 21 (4), pp. 571-597.
- Laforet S. (2009) "Effects of size, market and strategic orientation on innovation in non-high-tech manufacturing SMEs" *European Journal of Marketing*, 43 (1-2), pp. 188-212.
- Laforet S. and Tann J. (2006) "Innovative characteristics of small manufacturing firms" *Journal of Small Business and Enterprise Development*, 13 (3), pp. 363-380.
- Lele M. M. (1997) "After-sales service: necessary evil or strategic opportunity?" *Managing Service Quality*, 7 (3), pp. 141-145.

- Levitt T. (1983) "After the sale is over" *Harvard Business Review*, 61 (5), pp. 87-93.
- Liljander V. and Roos I. (2002) "Customer-relationship levels – from spurious to true relationships" *Journal of Services marketing*, 16 (7), pp. 593-614.
- Liljander V. and Strandvik T. (1995) "The nature of customer relationships in services" in Swartz T. A., Bowen D. E. and Brown S. W. (Eds), *Advances in Services marketing and Management: Research and Practice*, JAI Press Inc., London.
- Loomba A. (1996) "Linkages between product distribution and service support functions" *International Journal of Physical Distribution and Logistics Management*, 28 (2), pp. 143-161.
- Machlup F. (1978) "Methodology of economics and other social sciences" Academic Press, London.
- Matthyssens P., Vandembemt L. and Berghman L. (2006) "Value innovation in business markets: breaking the industry recipe" *Industrial Marketing Management*, 35 (6), pp. 751-761.
- May T. (2011) "Social research: Issues, methods and process" 4<sup>th</sup> ed., McGraw-Hill Professional Publishing, Berkshire.
- Melcher J. (2012) "Process measurement in business process management: Theoretical framework and analysis of several aspects", KIT Scientific Publishing, Karlsruhe.
- Miles M. B. and Huberman A. M. (1994) "Qualitative Data Analysis: An Expanded Sourcebook" 2<sup>nd</sup> ed, Sage Publications, London.
- Morgan R. M. and Hunt S. D. (1994) "The commitment-trust theory of relationship marketing" *Journal of Marketing*, 58 (3), pp. 20-38.
- Mouton J. and Marais H. C. (1990) "Basic Concepts in the Methodology of the Social Sciences" HSRC Publishers, Pretoria.
- Neu W. A. and Brown S. W. (2005) "Forming successful business-to-business services in goods-dominant firms" *Journal of Service Research*, 8 (1), pp. 3-17.
- Oliva R. and Kallenberg R. (2003) "Managing the transition from products to services" *International Journal of Service Industry Management*, 14 (2), pp. 160-172.

- Orlitzky M. (2001) "Does firm size confound the relationship between corporate social performance and firm financial performance?" *Journal of Business Ethics*, 33 (2), pp. 167-180.
- Pagano P. and Schivardi F. (2003) "Firm size distribution and growth" *The Scandinavian Journal of Economics*, 105 (2), pp. 255-274.
- Palmatier R. W., Dant R. P., Grewal D. and Evans K. R. (2006) "Factors influencing the effectiveness of relationship marketing: A meta-analysis" *Journal of Marketing*, 70 (4), pp. 136-153.
- Parasuraman A., Zeithaml V. A. and Berry L. L. (1985) "A conceptual model of service quality and its implications for future research" *Journal of Marketing*, 49 (4), pp. 41-51.
- Patelli L., Pelizzari M., Pistoni A. and Sacconi N. (2004), "The after-sales service for durable consumer goods: methods for process analysis and empirical application to industrial cases", 13<sup>th</sup> International Working Seminar on Production Economics, Innsbruck, Austria.
- Pendapudi N. and Berry L. L. (1997) "Customers' motivations for maintaining relationships with service providers" *Journal of Retailing*, 73 (1), pp. 15-37.
- Phopalia A. K (2010) "Modern Research Methodology: New Trends and Techniques", Japiur, India.
- Prahalad C. K. and Hamel G. (1990) "The core competence of the corporation", *Harvard Business Review*, 68 (3), pp. 79-91.
- Pun K. F. (2004) "A conceptual synergy model of strategy formulation for manufacturing" *International Journal of Operations and Production Management*, 24 (9), pp. 903-928.
- Punch K. (1998) "Introduction to Social Research: Quantitative and Qualitative Approaches" Sage Publications, London.
- Reichheld F. F. and Sasser Jr. E. W. (1990) "Zero defections: quality comes to services" *Harvard Business Review*, 68 (5), pp. 105-111.
- Ritchie J. and Lewis J. (2003) "Qualitative Research Practice: A Guide for Social Science Students and Researchers" Sage Publications, London.
- Robinson C. (2007) "How to do a Research Project- a Guide for Undergraduate Students" Blackwell Publishing, Singapore.

- Robson C. (2002) "Real World Research", 2<sup>nd</sup> ed., Oxford, Blackwell.
- Rosenberg L. J. and Czepiel J. A. (1984) "A marketing approach to customer retention." *Journal of Consumer Marketing*, 1 (2), pp. 45-51.
- Rowley J. (2002) "Using case studies in research" *Management Research News*, 25 (1), pp. 16-27.
- Ruekert R. W. and Churchill G. A. (1984) "Reliability and validity of alternative measures of channel member satisfaction" *Journal of Marketing Research*, 21 (2), pp. 226-233.
- Russell B. (2008) "Call centers: A decade of research", *International Journal of Management Reviews*, 16 (6), pp. 635-643.
- Rust R. T. and Zahorik A. (1993) "Customer satisfaction, customer retention and market share" *Journal of Retailing*, 69 (2), pp. 145-156.
- Saccani N., Johansson P. and Perona M. (2007) "Configuring the after-sales service supply chain: A multiple case study" *International Journal of Production Economics*, 110 (1-2), pp. 52-69.
- Saunders M., Lewis P. and Thornhill A. (2009) "Research Methods for Business Students" 5<sup>th</sup> ed., Prentice Hall, Harlow.
- Schmenner R. W. (1995) "Service Operations Management" Prentice Hall Inc., Englewood Cliffs, NY.
- Schuman D. (1982) "Policy analysis, Education, and Everyday life", Heath, Lexington, MA.
- Seale C. (1999) "Quality in qualitative research" *Qualitative Inquiry*, 5 (4), pp. 465-478.
- Sheaves D. E. and Barnes J. G. (1996) "The fundamentals of relationships: an exploration of the concept to guide marketing implementation" in Swartz T. A., Bowen D. E., Brown S. W. (eds), *Advances in Services Marketing and Management. Research and Practice*, JAI Press Inc., London.
- Silverman D. (2010) "Doing qualitative research" 3<sup>rd</sup> ed., Sage Publications, London.
- Stake R. E. (2006) "Multiple case study analysis" The Guilford Press, New York, NY.

Statistics Sweden<sup>1</sup> (2013)

[http://www.scb.se/Grupp/Teman/Sveriges\\_Ekonomi/\\_Dokument/Econreportq408.pdf](http://www.scb.se/Grupp/Teman/Sveriges_Ekonomi/_Dokument/Econreportq408.pdf),

accessed on February 4, 2013.

Statistics Sweden<sup>2</sup> (2013)

[http://www.scb.se/Grupp/Teman/Sveriges\\_Ekonomi/\\_Dokument/Sverigesekonomikv312.pdf](http://www.scb.se/Grupp/Teman/Sveriges_Ekonomi/_Dokument/Sverigesekonomikv312.pdf)

, accessed on May 22, 2013.

Statistics Sweden<sup>3</sup> (2013) [http://www.scb.se/Pages/List\\_\\_\\_\\_\\_19851.aspx](http://www.scb.se/Pages/List_____19851.aspx), accessed on

February 11, 2013.

Stewart D.W. (1984) “Secondary Research: Information Sources and methods”, Sage, Beverly Hills.

Storbacka K., Strandvik T. and Grönroos C. (1994) “Managing customer relationships for Profit: the dynamics of Relationship Quality” *International Journal of Service Industry Management*, 5 (5), pp. 21-38.

Strauss A. L. (1994) “Qualitative Analysis for Social Scientists” Cambridge University Press, New York, NY.

Sweeney J. C. and Webb D. (2002) “Relationship benefits: an exploration of buyer-supplier dyads” *Journal of Relationship Marketing*, 1 (2), pp. 77-91.

Takeuchi H. and Quelch J. A. (1983) “Quality is more than making a good product” *Harvard Business Review*, 61 (4), pp. 139-145.

Tesch R. (1990) “Qualitative Research: Analysis types and Software tools” Falmer Press, London.

Vargo S. L. and Lusch R. F. (2008) “Service-dominant logic: continuing the evolution” *Journal of the Academy of Marketing Science*, 36 (1), pp. 1-10.

Walter A., Ritter T. and Gemunden H. G. (2001) “Value creation in buyer-seller relationships” *Industrial Marketing Management*, 30 (4), pp. 365-377.

Wernerfelt B. (1984) “The resource-based view of the firm” *Strategic Management Journal*, 5 (2), pp. 171-180.

White M., Braczyk J., Ghobadian A. and Niebuhr J. (1988) “Small Firms’ Innovation: Why Regions Differ” Policy Institute Studies, London.

- Wilson D. T. (1995) “An integrated model of buyer-supplier relationships” *Journal of the Academy of Marketing Science*, 23 (4), pp. 335-345.
- Wise R. and Baumgartner P. (1999) “Go downstream – The new profit imperative in manufacturing” *Harvard Business Review*, 77 (5), pp. 133–141.
- Yang Z. and Peterson R. T. (2004) “Customer perceived value, satisfaction, and loyalty: the role of switching costs” *Psychology and Marketing*, 21 (10), pp. 799-822.
- Yin R. K. (2009) “Case Study Research: Design and Methods”, Sage Publications, London.
- Zackariasson P. and Wilson T. L. (2004) “Internetworked after-sales service” *Industrial Marketing Management*, 33 (2), pp. 75-86.
- Zeithaml V. A., Parasuraman A. and Berry L. L. (1990) “Delivering Quality Service: Balancing Customer Perceptions and Expectations” The Free Press, New York, NY.
- Zineldin M. (2002) “Developing and managing a romantic business relationship: life cycle and strategies”, *Managerial Auditing Journal*, 17 (9), pp. 546-558.
- Zinkhan G. M. (2002) “Relationship marketing: Theory and implementation” *Journal of Market-Focused Management*, 5 (2), pp. 83-89.





## APPENDIX A – INTERVIEW GUIDE

### General information

Position of the respondent:

Number of years of employment:

Number of years in the industry:

Part 1:	Customer care
1.0	How many employees work with dealing with after-sales services?
1.1	How do you provide your customers with technical and commercial information?
1.2	What are the contact methods for customers to reach your after-sales department?
1.3	What are the available times depending on the contact methods?
1.4	What is the average speed of reply depending on the contact methods?
1.5	Are there any contact persons for specific customers?
1.6	How do you handle complaints? Fill-out-forms vs. direct contact?
1.7	What is the average speed of handling complaints?
1.8	What do you offer in your warranty? Is it possible to expand it?
1.9	What is the average speed of warranty extension process?

Part 2:	Field technical assistance
2.1	Do you provide check-ups for customers?
2.2	How often do you provide check-ups for customers?
2.3	What are the field technical assistance you provide to customers during warranty time and after warranty time?
2.3.1	What type of warranties do you provide?
2.3.2	What are the major advantages of your warranties?
2.4	What is the average product lifetime of your vehicles?
2.5	Do you provide disposals of used products?
2.6	Do you charge the customer for disposals?

2.7	What is the average speed of product disposal?
<b>Part 3:</b>	<b>Spare parts distribution</b>
3.1	Do you have any warehouses?
3.1.1	If yes, how many warehouses do you have located in Sweden?
3.1.2	In which cities are they located?
3.2	How many repair centers are operating in Sweden?
3.2.1	In which cities are they located?
3.3	What is the estimated average speed of delivery of products and spare parts?
3.4	How do you settle the delivery fee with your customers?

<b>Part 4:</b>	<b>Customer relationship marketing</b>
4.1	What is the goal for providing after-sales services for your company?
4.2	How would you estimate the profit from your after-sales services?
4.3	How often do delays occur with your deliveries?
4.4	How often do defective products get delivered to customers?
4.4.1	How often do inaccurate deliveries of products occur?
4.5	What are the methods of placing an order? Online? Through telephone? Personal meeting? Etc.
4.5.1	What is the most common method of placing an order?
4.6	If an order is not in stock, what is the frequency of items backordered?
4.6.1	What is the average number of backorder days?
4.7	Do you consider that the after-sales services influence the relationship with your customers?
4.8	If yes, to what extent would consider?



## Linnaeus University – a firm focus on quality and competence

---

On 1 January 2010 Växjö University and the University of Kalmar merged to form Linnaeus University. This new university is the product of a will to improve the quality, enhance the appeal and boost the development potential of teaching and research, at the same time as it plays a prominent role in working closely together with local society. Linnaeus University offers an attractive knowledge environment characterised by high quality and a competitive portfolio of skills.

Linnaeus University is a modern, international university with the emphasis on the desire for knowledge, creative thinking and practical innovations. For us, the focus is on proximity to our students, but also on the world around us and the future ahead.

**Lnu.se**

Linnaeus University  
SE-391 82 Kalmar/SE-351 95 Växjö  
Telephone +46 772-28 80 00