UNIVERSITY OF VAASA
FACULTY OF BUSINESS STUDIES
DEPARTMENT OF MARKETING

Niklas Ståhle

VERTICAL INTEGRATION OF A MANUFACTURER'S AFTER SALES UNIT

A case study on transaction costs

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UNIVERSITY OF VAASA
Faculty of Business Studies
Author: Niklas Ståhle

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ABSTRACT: Manufacturers are continuously moving towards customers and offering them value-adding services. These services are called after-sales services and they include different kinds of maintenance work and spare-parts delivery. The need for after-sales servicing is usually located outside of the manufacturer's home country. As the after market is an increasingly important source of revenue manufacturers need to carefully choose how to manage and govern their after-sales operations. The purpose of this thesis is to study the firm, transaction and market specific factors that are most likely to affect the make or buy decision for a manufacturer's after-sales operations. This study follows the work of Morschett (2006) and Morschett et al. (2008) and analyses five particular after-sales characteristics that are most likely to affect vertical integration, i.e. the choice of governance for a manufacturer's after-sales operations.

The transaction costs literature provides a powerful tool for analyzing the choice of governance for a manufacturer's foreign operations. Manufacturers have the choice to internalize the after-sales operations or outsource them trough the markets. The decision to internalize economic activities in the different stages of the value added chain is called vertical integration. This study looks at how after-sales demand, resources requirements, performance evaluability, nature of customer and corporate strategy affects vertical integration positively. The study will add to the theory of internationalization by providing an in-depth case study into the subject of transaction costs in the context of internationalization of after-sales services..

A case study approach is taken in order to get a better understanding the involved transaction costs and the internationalization of the after-sales services. Two Finnish enterprises and one after-sales subsidiary from each company is the subject of the case study. The nature of the AS customer is introduced as a new variable and is believed to have an effect on vertical integration. The findings support Morschett (2006) and Morschett et al. (2008) notions on the effect of strategy, performance evaluability and company size, to some extend, on vertical integration of the AS operations. The concept of demand is redefined and its effect on vertical integration is found to contradict previous findings.

KEYWORDS: After-sales, transaction costs theory, vertical integration,

1. INTRODUCTION

Manufacturers and retailers of capital and consumer goods are always fighting against declining profits and tougher competition. In most cases these companies cannot consider their active role to end with the sale of the final product. In fact the relationship should intensify after the sale has taken place and this should increasingly help the customer's choice next time around. This concept is particular to goods with a relative long life cycle, or durable goods (Levitt 1983). These services are called after-sales services and they can play a significant part in the in the revenues and profits of any manufacturing company. For many manufacturing companies after-sales service revenue has been increasing as a percent of total revenue in recent years given product price erosion, product life cycle, and the extension of product service life for competitive reasons (Keegan 2004). Across manufacturing companies and industries the after sales operations have been shown to contribute about 25 per cent of all revenue and between 40 to 50 per cent of all profits (Dennis, Kambil 2003).

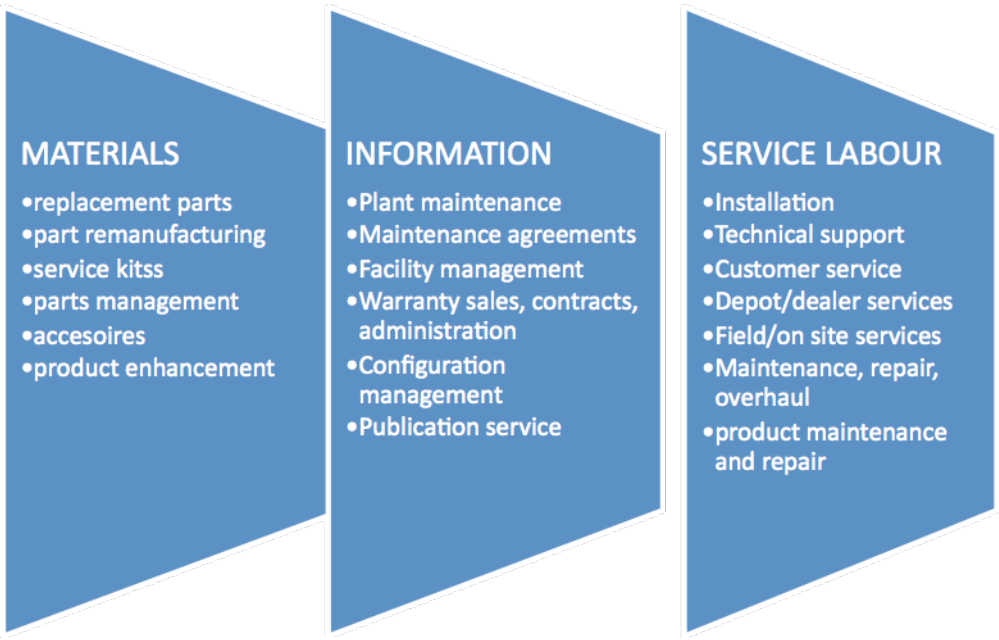


Figure 1. After sales services (Cohen, Agrawal, Agrawal 2006).

The after sales services and operations include various different aspects. Figure 1 illustrates the typical AS operation which manufacturing companies deliver. These services and materials, which include spare-parts, are delivered to the customer in order to enhance the functionality of the product, maintain its usability, facilitate its usage and to offer additional solutions to the customer's processes. The figure categorizes the different operations and services under the materials, the information and the service labor (human capital) functions (Dennis 2003). These categories represent the different functions of after-sales operations.

As much as after-sales are an opportunity they can also be a threat. After-sales operations require a different set of capabilities than manufacturing. Across industries the delivery of after sales services is far more complex than manufacturing. When delivering service to existing consumers, managers have to deploy people, parts and equipment, in some cases, all over the world. To add, these companies have to cope with unpredictable demand with a product-service that cannot be constructed in advance. On top of this many companies have to deal with an inflow of returning, failed, products that need repair or environmentally safe disposal. (Cohen 2006).

In addition to complex logistical and information flow problems the six major problems can be traced to the following. (1) Inconsistent and uncertain demand for spare parts can be a major problem. Intermittent demand can result to a low inventory turnover (ITO) thus increasing the working capital requirements. (2) Extensive parts inventories cause additional costs. In many capital goods industries, spare-parts inventories require up to 20 times more stock keeping units than what is needed for current manufacturing (Cohen 2006). (3) The increase in geographical dispersion of service locations required will undoubtedly cause problems. In many cases the service locations are manifold compared to the manufacturing sites. (4) Non-routine failures are typical to after-sales operations and can be time consuming to resolve. This certainly is not impressing to customers and unprofitable to the company. (5) Varying customer demands are often a nuisance. Calculating warranty cost and parameters to each customer is not always possible; especially when some customers only require spare parts costing pennies while other may need service and parts worth hundreds of thousands. (6) Lastly the service network of the company might provide very uneven service capabilities. Third party after sales operators might not keep up the same standards as wholly owned subsidiaries for example. (Dennis, Kambil 2003).

For many MNEs after-sales servicing can be an integral part of their offering portfolio (Morschett 2006). Any company wishing to provide after-sales services in a foreign market needs to make decision on how to organize the process of delivery in that market. Choosing the right channel structure for providing such service product offering is crucial for any MNE (Nordin 2005). Markets differ around the world, in terms of efficiency for example (Dunning 1980), and in the context of internationalization the decision on these channel choices becomes much more challenging.

1.1 Background of the study

Some studies on organizing after-sales services have been presented by various researchers in the past two decades (Cohen, Agrawal, Agrawal 2003; Asugman, Johnson, McCullon 1995; Milind 1997; Dennis 2003; Bundschuh 2003). After-sales strategies have been the interest of Cavalieri, Gaiardelli and Ierace (2007) as well as Gebauer (2008) while only recently in the past few years European researchers such as Morschett (2007) and Morschett, Schramm-Klein, Swoboda (2008) have introduced the issue of after-sales into the international studies context.

Internationalization means that at least some part of the offering is manufactured in a country other than that which the company is native to. Be it some part of the downstream supply of components or just the installation service. Over the past 30 years the transaction costs theory and the studies on MNEs that it has sparked, have been regarded as one of the premiere ways of explaining internationalization (Geyskens, Steenkamp, Kumar 2006; David, Shin-Kap Han 2004). The transaction costs theory stems from Williamson's (1975) ideas regarding the governance of transactions. Later, authors such as Hennart (1977, 1982, 2010) in particular, have used the transaction costs theory to explain the existence of multinational enterprises and the scope of their activities. Williamson's famous study on Markets and Hierarchies (Williamson 1975) analyses the organization of economic activity within and between markets and hierarchies. In essence, what Williamson (1975) argues is that there are two choices of governance, i.e. operation modes, for companies to choose from. Either the manufacturer has 100% ownership of the international after-sales unit or function, or it outsourcers all of its operations to a local company. In reality the choice of governance is not as polarized as Williamson's theory predicts since hybrid modes such as joint ventures exists and manufacturers have the ability to use multiple channels for sourcing their after-sales activities. The transaction costs

approach, originally developed to explain international manufacturing, has been expanded to study internationalization of services as well (Erramilli 1992) and thus provides an ideal background for studying the service embedded after-sales operations.

The decision to internalize economic activities in the different stages of the value added chain is called vertical integration. The typical reasons, depicted by managers, for vertical integration are plenty and they stem from market failure as the TCT predicts (Stuckey 1993). These typical reasons include defending against market power, opportunities for price discrimination, responding to industry life cycle, moving closer to the customer and assuring supply.

Manufacturers and retailers of capital and consumer goods have vertically integrated to include services in their portfolios (Erramilli 1993; Cohen, Agrawal, Agrawal 2006). These services commonly include maintenance, support, upgrade, repair, depot/dealer services, configuration management, function survey etc. (Cohen 2006). The services are commonly called after-sales services. The move towards after-sales has been largely attributed towards the declining profits in manufacturing (Gauber, Sanches, Fleich 2008). For manufacturers the vertical integration forward in the supply chain, closer to the customer, provides an opportunity to access the more profitable service market and to compensate for the sometimes-cyclical demand of capital goods (Levitt 1983; Stuckey 1993

1.2 Purpose, objectives and limitations of the study

There is clearly a need to study transaction and market specific factors that influence the organization of after-sales in a foreign market. The author of this study feels that the firm and transaction specific factors in organizing the after-sales operations are so interlinked that firm specific influences cannot be ruled out of this study. Thus to truly understand the MNEs reasons for internationalizing the firm, transaction and market specific variables should be understood along with the general theory of the multinational enterprise, this notion is shared by researchers such as John Dunning (1988).

As mentioned in the introduction internationalization and after-sales operations management have been two completely separate fields of study. The works of Morschett (2006) and Morschett et al. (2008) have touched the matter of combining the two fields in a quantitative multi-firm study. These studies focused on solely firm-

specific factors (Morschett 2006) and on the entry mode choice (Morschett et al. 2008). The above-mentioned studies were based on a quantitative case study where respondents were asked to respond to generic questions on a nominal or ordinal scale of pre-determined answers (Morschett 2006, 315). The data was collect trough e-mail/mail surveys and focused solely on the German 'engineering industry' (Morschett 2006, 316). Although questionnaires are a viable method for doing descriptive or explanatory research they only enable to identify the variability in different phenomena or to examine relationships between variables (Saunders, Lewis and Thornhill 2003). As the after-sales operations are an understudied subject in the field of internationalization, a case study should provide rich understanding of the phenomena in question. Saunders et al. (2003) suggest a multiple-method research design for deeper understanding of an issue. The purpose here is not to test Morschett (2006) and Morschett et al. (2008) theory by doing a case study. The purpose of this study is rather to add to the work of Morschett (2006) and Morschett et al. (2008) by providing a case study on similar grounds to further explain the transaction costs in after-sales provision and the above mentioned quantitative study. The case study should help to explain why these phenomenon exists and also why Morschett (2006) and Morschett et al. (2008) studies yielded such correlations.

Thus the purpose and objectives of this study are:

The purpose of this thesis is to study the firm, transaction and market specific factors that are most likely to affect the make or buy decision for a manufacturer's after-sales operations.

The objective of the study is to create and understanding of when and why manufacturers are most likely to vertically integrate into the provision of after-sales services.

The above objectives will be achieved by combining literature and by doing empirical research on the case companies' activities abroad. As mentioned earlier, the works of Oliver Williamson, Jean-Francois Hennart and John Dunning will be the basis for understanding the concept of the transaction costs approach and the theory of the multinational enterprise. In short, the authors argue that companies operating outside of their home country encounter additional costs when organizing interdependencies, compared to native companies. These costs are called transaction costs. In order to succeed in this environment the companies need to have certain types of advantages over their competition to compensate for theses transaction costs, if indeed they wish

to conduct these activities themselves, i.e. to vertically integrate. The after-sales literature offers a view on how after-sales operations should be managed according to asset specificity, customer demand and business strategy amongst other issues.

Combining after-sales literature and the transaction costs approach and testing it in an in-depth, single case, study has not been done yet to the knowledge of the author. So this work will contribute to the academic studies of internationalization. As for the management side, this study aims at giving corporate level answers regarding to the decision made about internationalizing the after-sales unit or function. When should a company try to internalize their operations and under what conditions can external markets be used, is the kind of question that could be answered. The perceived transaction costs can be lowered and emphasis on the right transactions will become more evident, thus saving money and time at the strategy designing level.

The research approach is deductive. Saunders et al. (2003; 93) define a case study as "a strategy for doing research which involves an empirical investigation of a particular contemporary phenomena within its real life context using multiple sources of evidence". The empirical work in a case study is understood to include questionnaires, interviews, observation, and documentary analysis amongst others (Saunders et al. 2003). In this work, the primary source of information gathering is semi-structured interviews and the usage of secondary data.

1.2.1 Limitations

There are both theoretical and empirical limitations to the study. The transaction costs theory has its roots in Hymer's (1960) 1960s theory of the multinational enterprise although its creation has been attributed to Williamson's (1975) theory on markets and hierarchies. Nonetheless, the theory has expanded significantly during the 30 odd years of its existence, making it impossible to summarize all of its different implications in one package. However the most important contributions to the theory have been attempted to be included as well as the contributions most related to after-sales services.

The after-sales operations literature is limited to a few academic articles and its study has been mostly attributed to practitioners. This is probably due to the specific nature of the word "after-sales", the usage of which is done by practitioners rather than academics. However the concept of after-sales operations is in many ways the same the much-studied service-dominant logic, integrated solutions marketing and service centric manufacturing (see Ford 2011; Cova, Salle 2008). This study focuses on the

specific characteristics of after-sales operations as it has been described previously thus the contributions of the above mentioned literature is not present. The study is empirically limited to a few case companies, which makes statistical generalization impossible.

1.3 Structure of the study

The work is composed of five chapters plus the references section. After the introduction, where the research problems and objectives have been discussed, the proceeding to two chapters will construct the main theoretical body of the thesis. In the first of these the transaction costs theory and the theory of the multinational enterprise will be discussed. An understanding of the challenges and opportunities of international production should be established. In the following theory chapter, five characteristics of after-sales activities are introduced and their effect on the make or buy decision is discussed. This chapter will link the internationalization theory with the after-sales theory. In the fourth chapter, the methodology is introduced along with the description of the case companies and the organization of their after-sales operations. In the fifth chapter the empirical findings related to the five characteristics of after-sales activities are introduced and a conclusion is drawn from those results.

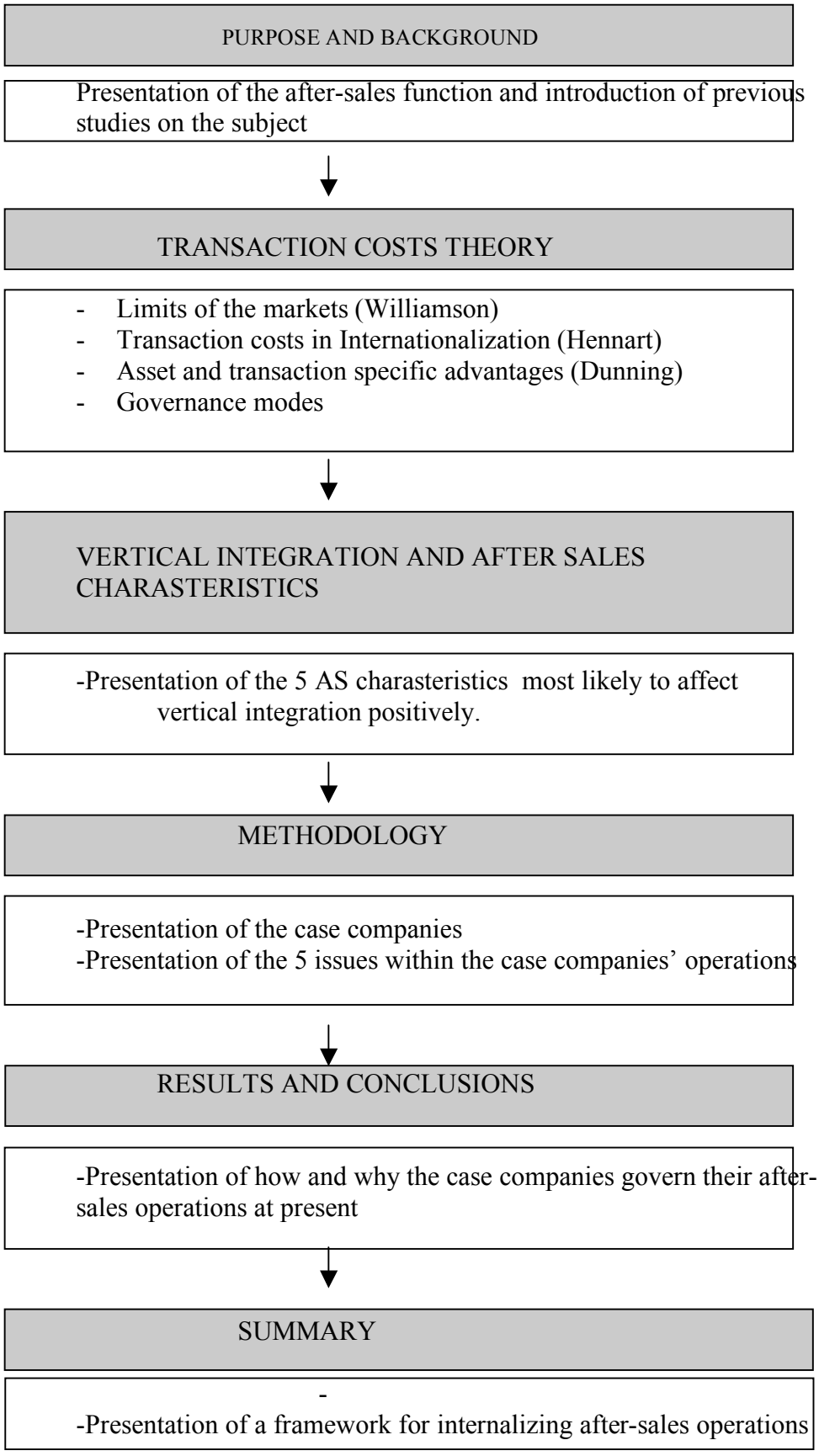


Figure 2. Structure of the study

The structure is common to the method of deduction, where the theory building starts from the fairly general theory of the transaction costs and is narrowed down to five special after-sales characteristics that affect the make or buy decision. The empirical study will focus on those five characteristics but the results are generalized back to the transaction costs theory.

2. TRANSACTION COSTS AND INTERNATIONALIZATION

In this chapter the transaction costs theory will be discussed. An understanding of the concept of transaction costs associated with foreign operations is established. Some transactions are more expensive to do using the markets while other transactions favor the usage of the market. Further, the market imperfections that allow for internationalization and vertical integration are described. At the end of the chapter hybrid modes of governance and criticism towards the transaction costs theory are discussed.

2.1 Transaction costs theory

The transaction costs theory stems from Williamson's ideas regarding the governance of transactions. Later, authors such as Hennart (1977, 1982, 2010) in particular, have used the transaction costs theory to explain the existence of multinational enterprises and the scope of their activities. Williamson's famous study on Markets and Hierarchies (Williamson 1975) analyses the organization of economic activity within and between markets and hierarchies. Williamson considers the transaction, whether it is of a good or service, to be the ultimate unit of microeconomic analysis. Williamson states that markets and firms are the two alternative instruments for completing a related set of transactions (Williamson 1975, 8) and the study attempts to explain the factors that govern the choice between using the markets or the firm, i.e. the hierarchy.

So, there are two ways of organizing economic activities: The price system and the hierarchies. The price system is also called the market and it relies on prices to communicate information, reward behavior and curb bargaining. The price system governs economic activity by rewarding output. When using the hierarchies the economic agents become 'employees' and their activity is rewarded based on behavior. (Hennart 1982, 2010; Williamson 1975).

Williamson's markets and hierarchies approach attempts to identify a set of environmental factors with related human factors that would explain why firms tend to internalize some contingent claim contracts instead of using the markets (Williamson 1975). Contingent prices, in theory, is a function of the spot price for the

good, of the rate of interest at which the future value of the good must be discounted to obtain its present value, and of the insurance premium to be paid to insure against a particular contingency (Hennart 1982, 178). In other words, when companies are faced with decisions concerning future transactions with a lot of uncertainty, the likelihood of using their own administrative processes within the firm instead of using the markets will increase because of this uncertainty. Market failure occurs when companies see the markets as a less effective, or more costly, way of organizing different interdependencies, i.e. making transactions (Williamson 1975; Hennart 1982). It is in part the market failure that allows MNEs to exist (Hennart 1977, Dunning 1980).

2.2 The limits of the market

The basis for understanding the transaction costs theory and the theory of the multinational enterprise comes from the idea of the organizational failure, refined by Williamson (1975), which is also called the market failure (Hennart 1983, Dunning 1980). There are two kinds of market failure, transactional and structural, which trigger companies to invest abroad (Hennart 2001). The initial theory of MNEs by Hymer (1960) sees MNEs as companies that use their monopolistic advantages to enter a new market with high barriers of entry. The MNE, as Hymer understood it, was a company that internalized pecuniary externalities due to *structural* market imperfections. Hymer's (1960) theory implies that the emergence of several MNEs in the same field would be a zero-sum game where each MNE would lose their monopolistic advantage and profits, which in turn would directly benefit the customers to the equivalent of the MNE's loss or vise-versa. This was not a sufficient theory to explain highly competitive markets where several MNEs operated (Hennart 2001). Hennart (1977) amongst others (Dunning 1980) were more interested in studying MNEs internalizing non-pecuniary activities due to *natura*l or *transactional* market imperfections.

An externality can be seen as a transaction spillover, which is transmitted trough prices, to the harm or benefit of a party who was not a part of the original transaction. A pecuniary externality acts trough the pricing mechanism while non-pecuniary externalities do not. Structural market imperfections allow MNEs to capture, i.e. internalize, some of the monopolistic profit that is present in the imperfect market. Non-pecuniary externalities are not transmitted trough prices and can be internalized when there is transactional market failure that yields costs and benefits external to that

transaction, but that are not reflected in the terms agreed by both parties. The modern theory of the MNE focuses on the latter and is better suited for explaining firm specific behavior as is discussed in the following chapters.

As it was mentioned in the first paragraph, the markets and hierarchies are both feasible methods of organizing economic activity. Since exchange costs, or the costs of organizing these activities are positive in both systems, neither of them will perfectly constrain individual behavior (Hennart 1982). The framework is based on the idea that markets are the premiere way of conducting transactions, or set of transactions, and when the markets fail to do so efficiently, the transactions are shifted inside the company. Using the markets is expected to involve costs savings because the external partner benefits from economies of scale and experience curve effects as well as know-how centralization due to specialization (Morschett 2006). This statement is, however, just a presumption, which does not fully explain the reason for internalizing transactions, as we will see in the latter parts of this chapter.

Williamson (1975) argues that the pairing of bounded rationality with uncertainty or complexity will shift the transactions to the firm itself. Another reason is the joining of opportunism with small numbers of exchange conditions. Williamson also refers to information impactedness and atmosphere. Bounded rationality refers to the incapacity to make decisions based on all information available now and in the future. As humans, we are limited by the amount of information we can receive, store, retrieve and process (Williamson 1975). This affects our ability to assess future prices, which are in fact the key determinants in decision-making. Spot prices for commodities have already included in them all the information in the market, where as future prices of heterogeneous goods are impossible to predict due to bounded rationality. When the economic agents are not able to correctly predict the future prices of goods, the contingency markets fail (Hennart 1982).

Opportunism, as it is defined by Williamson (1975, 26), includes the assumption that economic agents are guided by reasons of self-interest and strategic behavior. This is also known as the agency-problem. When making transaction with commodities that are widely traded by many agents the pricing system, i.e. the markets, will prevent opportunistic behavior. Bounded rationality and opportunism means that some economic agents will be able to overprice or undersupply output when the markets fail (Hennart 2010). This is what Hennart calls ‘cheating’ and, which happens when there is a small number of exchange conditions. Williamson also refers to information impactedness, which is a condition that arises mainly due to uncertainty and

opportunism with bounded rationality as a factor sometimes. This phenomenon is more commonly referred to as information asymmetry, which means that one party will have more knowledge about a transaction at present as well as about the conditions in the future.

To overcome the situation caused by market failure, companies can internalize the transactions and avoid the effects of cheating. However there are costs in organizing the transactions within the hierarchy as well. Establishing behavior constraints is necessary when the price system does not control output. Behavior constrains can be external or internal: External trough supervision and rules or internal trough socialization and/or matching employee goals with management goals. Hennart refers to the phenomenon as 'shirking' (Hennart 2001)

2.3 Transaction costs

The governance structure that is utilized in a given situation depends on the comparative transaction costs of using that particular structure. According to Williamson (1975) any given governance structure will incur so called *ex ante* costs of negotiating the contract and the *ex post* costs of monitoring the performance and enforcing the behavior of the parties to the contract. When the environment for 'cheating' becomes more favorable the need to negotiate stricter contracts and to better monitor the performance become higher. When the *ex ante* and *ex post* costs, i.e. the transaction costs, become too high, it is more efficient to replace the external supplier with the company's own employees (Hennart 2001; Erramilli & Rao 1993). Williamson (1975) identified certain dimensions of transactions that raise transaction costs and combine to create market failure, making hierarchies more efficient than market governance. These dimensions are *asset specificity, uncertainty*, and *transaction frequency.*

Transaction specific assets: Transaction specific assets are assets that are particularly tailored for a specific transaction and that cannot be easily redeployed outside of their initial usage. Their idiosyncratic nature gives rise to a safeguarding problem, because the price system is not able to restrain opportunistic behavior (Geyskens 2006).

Uncertainty: Uncertainty will raise the transaction costs, but on condition that asset specificity exists to some degree (David 2004). Uncertainty arises when there is environmental uncertainty and the ex ante costs of negotiating are too high due to the

unpredictable nature of the transaction. When behavior cannot be appropriately monitored due to uncertainty, the ex post costs rise, justifying vertical integration (Geyskens 2006). Environmental uncertainty is argued to bring forth an adjustment problem, making it difficult to reach agreements and thus increasing transaction costs leading to hierarchical governance. Behavioral uncertainty has been identified as a factor affecting the move towards more integrated models since it is essentially a performance evaluation problem.

Volume uncertainty is the inability to forecast the future demand for goods and services and the volume demand in a relationship. Uncertainty will lead to increased and inefficient inventories or stock-outs. According to TCT the firm should be able to organize its own production stream more efficiently trough hierarchies than the markets. Technological uncertainty arises from the inability to correctly forecast the technical requirements in a relationship. When production is faced with technological uncertainty, or fast technological development, companies tend to be unwilling to invest themselves too much into one production method or partner. To maintain flexibility in this situation companies are more compelled to use the markets to source their activity when switching costs are low. Unlike volume uncertainty, technological uncertainty will make the markets a more efficient choice for governance. (Geyeskens 2006).

According to TCT the need for transaction specific intermediate products will lead the MNE to vertically integrate. In many cases, different agents located in different countries can optimally handle the different stages of a value chain. Well functioning markets require a large amount of buyers and sellers. Asset specificity among other factors is most likely to make a market inefficient. Asset specificity makes spot trades risky because asset specificity generally means that one party holds transaction specific investments and the other party can opportunistically renegotiate the terms of trade after the investment has been made or vise versa. Parties with transaction specific investments can protect themselves by writing long-term contracts specifying the terms and conditions of the exchange and the penalties to be paid in case of a breach (Hennart 2001). If market contracts cannot be efficiently used, the MNE can choose to use its own hierarchies to govern the transactions for such intermediate products.

Transaction frequency: Williamson (1975) argues that reoccurring transaction provide an incentive for companies to use their own hierarchies because the overhead costs for running behavior constraints will be easier to recover.

2.4 Internationalization and transaction costs

The eclectic paradigm is particularly well suited in explaining why a single company can succeed in a foreign market by means of direct investment into its own hierarchies, rather than selling its knowledge to a third party and thus using the external intermediate markets to serve its customers. It is necessary to perceive foreign production in a way it was presented by Dunning (1980) in the original study, where it was defined to combine the export of intermediate products, requiring inputs in which the home country is relatively well qualified, whit the use of resources which the host country is endowed in. The change for a foreign company to penetrate a market is when there is market failure present. For example, when there is the failure of the market to organize a satisfactory deal between contractors and contractees of intermediate products, a company wanting to operate here would choose to internalize the production of the offering and thus exploit the different factor endowments, mentioned above.

The eclectic paradigm does not address the issue of why a certain firm will go choose to go abroad in the first place, while some of its competitors do. This issue in general has been argued to need more attention, but since this study focuses on after-sales operations the choice is solely dictated by the characteristics of the goods being sold and the service strategy. This issue will be addressed in chapter 3. There have been identified the same amount of differences between the characteristics of MNEs in one sector and the MNEs in different sectors (Dunning 1988). Since these firms do not usually supply identical products, range of products or the same points of the value-added chain, and since they have different capabilities and needs for international production, it is clear that different companies face different sets of strategic options in the same market. What this implies is that a firm may view identical investment opportunities offered by one country very differently than the other company would. This can be the result of the distribution of their existing portfolios and their attitude towards uncertainty (Rugman 1986). For these reasons firm-specific characteristics should be used to determine the response of MNEs to any particular configuration of the ownership, internationalization and location specific advantages (Dunning 1988). For this reason the effect of business strategy will be introduced in more detail in chapter 3.5.

2.5 Asset and transaction specific advantages

Market failure is not a sufficient reason why MNEs exists, because it is possible that the costs that both the MNE and markets experience in organizing interdependencies are higher than the gains (Hennart 2001). Transactions are sometimes shifted out of the market into the firm because the firm thereby realizes strategic advantages, or as they are called monopolistic advantages, over their rivals and in relations to customers (Williamson 1975).

Dunning (1988), who represents the modern view, distinguished between the *asset* and *transaction* specific advantages of multinational enterprise. The asset specific (a) advantages occur from ownership of these specific assets, which stem from a situation of structural market imperfection. The transaction specific advantages (b) stem from the MNE being able to lessen the transactional costs by utilizing the common governances of the assets located internationally within the same organization. Dunning emphasizes that it is important to recognize both the structural and transactional imperfections in a market and that the companies who are able to exploit both transactional and asset specific ownership advantages are the most successful. In other words, foreign direct investment into the company's own hierarchies will be efficient when there are ownership, location and internationalization (OLI) advantages for the company. These advantages exist when there are structural and/or transactional market imperfections. Hennart (2001) identified the interdependencies that are most likely to incur such costs that transactions trough markets is usually more expensive than trough hierarchies

To better understand foreign direct investment and foreign production Dunning (1980) presented an illustration on how the main types of foreign activities by MNEs relate to the presence of the above-mentioned three conditions. The focus of this study is on companies operating in foreign after-sales markets, so special attention should be made on why, where and how these kinds of companies could profit from international production. For companies operating in trade and distribution Dunning identified market access and product distribution as ownership advantages, source of inputs and local markets for location advantages and the need to protect quality of input, the need to ensure sales outlets and to avoid misrepresentation as internationalization advantages.

2.5.1 Ownership of intangible assets

The ownership advantages must be sufficient to compensate for the costs of setting up and operating in a foreign market, in addition to the general requirements for any indigenous company to succeed in the same market. Some of these ownership advantages listed by Dunning (1980) include intangible assets and/or property rights as well as advantages of common governance.

Intangible assets would include non-codifiable knowledge, superior innovation and production management experience (Dunning 1980). Hennart (2001) identifies know-how as one of the key interdependencies likely to incur high transaction costs. Know-how can be transferred trough hierarchies at marginal costs while markets for know-how suffer from the fundamental problem of information asymmetry. The buyer of the know-how can never be fully informed of what is being offered because otherwise the seller would need to transfer his know-how free of charge.

Another intangible asset identified by Hennart (2001, 2010) is the reputation of a firm. The goodwill of a company is hard to measure. Which processes and actions create the established goodwill can be evaluated sometimes. According to Hennart (2001), "everything else constant, international goodwill interdependencies will be organized trough international (franchising) contracts if (1) it is relatively easy to write contracts which specify a certain level quality and whose violation is easy to detect and prove to third parties and (2) it would be relatively costly to control shirking employees". In other cases where the goodwill is hard to measure, the hierarchies will be used to prevent abuse of the goodwill.

Common governance in itself is an intangible asset. The foreign branches enjoy this advantage over companies from the same markets that are set up from zero. These advantages can also be due to size and position of the enterprise, which could possibly lead to a situation where the company has privileged access to inputs such as labor or financial information. Access to resources of the parent company at marginal cost and economies of joint supply is an advantage as well. In many cases the internationality in itself leads to better knowledge about international markets. The ability to reduce risk by diversifying is a source of advantage that can derive from common governance.

2.5.2 Internationalization Incentives

A firm's expansion into a foreign market can take any of the three following forms: horizontal extension, meaning production of the same good elsewhere, it can also be vertical integration, meaning that the company adds a stage to their production process, or it can be conglomerate activity where the MNE adds an activity unrelated to their existing business (Hennart 1982, 75). Most of the internationalization is related to the first two forms. No-matter what the reason is, there has to be international incentives, stemming from market failure, for the MNE to go abroad.

The second condition for internalizing international operations is that it must be more beneficial for a company who possesses the above mentioned ownership advantages to transfer them across boundaries intra-firm rather than lease their use to a third party. Avoidance of search and negotiations costs, need of seller to protect quality of intermediate or final product, to compensate for the absence of future markets, to avoid or exploit government intervention (e.g. quotas, tariffs, tax differences), to control market outlets and to be able to engage in strategic activities (e.g. transfer pricing, cross-subsidization, etc.) (Dunning 1980)

2.5.3 Location

Selling any product in a foreign market requires both physical and intellectual investment. As with intermediate products, the less efficient the market is for this specific offering, the more likely such transaction costs are likely to occur that the distribution and marketing will be done using the firm's own hierarchy. The difficulty of separating the performance of the manufacturer from that of the distributor is another reason hierarchies may be preferred. Most products, especially those requiring after-sales support (Levitt 1983), are sold with a service in a bundle. It is also hard for the consumer to evaluate the contributions of the manufacturer and the distributor from that bundle.

According to Dunning (1988) companies will engage in internalizing a foreign market, assuming that there are ownership advantages and internationalization incentives, whenever they perceive it is more favorable to produce any part of their offering in that market by themselves. These location specific variables can be: Existing distribution of useful resource benefits and markets, competitive input prices, quality and productivity of for example labor, energy, components etc.

In the paradigm by Dunning (1988), the advantages and disadvantages of any location are treated separately from the ownership advantages. When the markets for these advantages are internalized, the decision on where to set up operations is depended of the ownership of these assets and the way that they are transacted

2.5.4 Financial capital

Lending money is an action with very high transaction costs. Given bounded rationality and opportunism, lenders cannot distinguish from good and bad borrowers. Therefore banks use strategies such as (1) lending to projects they are familiar with, (2) controlling the usage of the borrowed money or (3) ask for collateral. When domestic or international markets for capital have high transaction costs, the solution for lenders and borrowers is to be joined within a firm when there is information asymmetry and a lack of collateral between the two parties. In practice however its is the MNEs and free standing firms which have contributed most to the transfer of private fowls of long-term capital to fund projects which are poorly understood or lack collateral. The role of banks has been the more restricted to the lending of short-term loans on receivables (Hennart 2001, 2010).

2.6 Hybrids

The original study on transaction cost economics included only two separate governance structure for market transactions, which were the market and the hierarchy. Later on hybrids have been identified as a third discrete governance structure (Williamson 1991; Hennart 2010; Bello, Dant, Lohtia 1997). Hybrids stand between markets and hierarchy in terms of incentives intensity, administrative control and contract support. Williamson (1991) views that equity joint ventures (EJVs) are a form of hybrid because they are used when asset specificity is at intermediate level.

Joint ventures, i.e hybrids, have been the biggest source of emerging criticism towards the original transaction costs theory (Beamish, Banks 1987; Bello 1997; Williamson 1991). According to TCA joint ventures could not exist because they always provide an inferior way of maximizing the returns from ownership specific advantages compared to wholly owned subsidiaries (Rugman 1986). This implies that the local partners' assets would never offset the transaction costs faced by the MNE when exploiting their ownership specific assets. The theory would also assume that the MNE's management is always able to better organize alone the transactions within the

company and that joint ventures cannot be organized in such a way as to maintain the shirking costs, which are inherent in such an arrangement, at acceptable levels (Beamish 1987).

Hennart (2010) argues that EJVs are not hybrids, but rather joint hierarchies because asset specificity does not necessarily need to be at intermediate level for joint ventures to exist. The existence of hybrids is determined by the presence of complementary assets by both parties. He argues against Williamson (1991) and states that joint ventures are 'not used when transaction costs are at intermediate levels, but when they are simultaneously high for two or more parties who are contributing complementary output' (Hennart 2010, 264). This would imply that both parties try to exploit their transaction specific assets while maintaining hierarchical governance to prevent cheating.

The existence of joint ventures does not render the TCA futile. TCA is concerned with how different interdependencies, i.e. transactions or sets of transactions, are organized in the most efficient way with the focus on one unit of observation compared to the other (hierarchy vs. market). A joint venture can be seen as a joint hierarchy, which in itself becomes one unit of observation (Hennart 2010). If the asset specifity of the transaction, or the ownership advantages of this joint unit make it more efficient to organize the needed interdependencies within the new hierarchy rather than using the market, the hierarchies will be used as TCA predicts. Whether two or more organizations can form a more efficient hierarchy than one by itself is a different issue, which has been addressed by Dunning (1981) for example. TCA can, however, provide a method of analysis for the formation of hybrids as well. If we consider the opposite party to represent essentially what the market has to offer with contrasts to our own hierarchy, the TCA can be used to evaluate the efficiency of the joint venture. When the individual assets of the two or more parties are assessed, transaction costs economics can be used as a tool to determine whether each individual transaction should be done using the market, represented by the joining party, or within the hierarchy itself.

2.6.1 Relational governance

In the case of hybrids and joint ventures relational governance has been identified as a key factor. TCT's has been criticized for its focus on single-sided cost minimization providing little insight into relational governance, which is not only concerned with efficiency but also about joint value maximization (Geyeskens 2006). Non-juridical mechanisms such as mutual dependence, trust, parallel expectations, joint action and

procedural fairness are the driving force behind these open-ended relationships with no foreseeable termination points. Economists and sociologists argue that the trust in these relationships is build on repeated exchange and that rational decision makers can calculate future benefits of these relationships, which gives the relationship self enforcing power to prevent cheating by both parties. (Geyeskens 2006).

2.6.2 Contracts

Long-term contracting is viewed as a form of hybrid (Williamson 1991; North 1988). Contracting is a hybrid form of governance since it combines the elements of markets and hierarchies (North 1988). The market like qualities arise from the existence of trade between two parties, whom both operate in capital, labor and product market. The firm like quality arises from the nature of the restricted relationship between the two parties. In the case of franchising the relationship between franchisor and franchisee resembles to full vertical integration since the franchisor usually trains, offers managerial assistance, designs the product and does the advertising for the franchisee (North 1988, 199). The long-term contract between the two parties governs the relationship to a great extend.

Contracts are made to protect from ex post costs of monitoring the performance and enforcing the behavior of the parties to the contract. The formation of the contract in itself incurs the so-called ex ante costs. Both *ex ante* and *ex post* costs go up as transactions become more complex (Williamson 1991; Mooi, Ghosh 2010). Both parties try to secure their use of transaction specific advantages and to prevent shirking by using contracts. In any market contract there are in essence two parties called ‘the performing party’ and ‘the paying party’ (Rubin 1990). Although the performing party, according to Rubin (1990), has more opportunities for shirking, the contracts usually have incentives for both parties to be efficient. The better the performing party will be able to guarantee quality and supply the better it can charge for the transaction. Because of opportunism and bounded rationality, making contracts is challenging. In essence the negotiating parties need to figure if the ex ante costs of negotiating a detailed contract will be covered by the additional rents from the detailed contract versus a less detailed one.

2.7 Criticism towards TCE

TCE has been criticized because it focuses on polar forms of organizing

interdependencies. This issue has been introduced in chapter 2.5 when talking about hybrids. According to some critics (Walker, Poppo 1991) the TCE fails to compare transaction costs inside the organization to transaction costs between the organization and its suppliers under comparable degree of asset specialization. In this sense the TCE fails to prove that the hierarchy has superior governance capabilities than the markets. TCE has also been criticized of not considering innovation or the benefits of 'synergy', which may incur from vertical integration (Beamish 1987; Walker 1991). The existence of these complementing assets has been identified as a key reason for many successful joint ventures (Beamish 1987). The transaction costs approach fails to distinguish the different degrees of partnerships (Erramilli, Rao 1993) and other modes that firms use to cope with imperfections in international markets, an issue covered by entry modes literature (Welch, Lawrence, Luostarinen 1988). Further, it has been argued that uncertainty, which is one of the key factors in TCT, is too broad of a concept to determine the choice between markets and hierarchies because uncertainty will lead MNEs to seek flexibility trough markets but to also protect themselves from the arising transaction costs by means of vertical integration (Geyeskens 2006). For the TCE approach to be regarded as a general theory of the MNE it would have to provide an economic rationale for these other modes (Hennart 1985) and specify the conditions under which each would provide efficiency gains over wholly owned subsidiaries and the market (Beamish 1987, 3).

In essence what the TCA lacks according to some of its critics (Beamsih 1986; Erramilli 1993; Hennart 1985; Williamson 1991) is its incapacity to consider the positive effects of collaboration between two or more units. Empirical evidence has not shown that the benefits of joint ventures and other forms of co-operation cannot outweigh the shirking costs or yield rents bigger to that wholly owned subsidiaries (Beamsih 1986). In general the link between TCA and company performance has not been widely acknowledged by empirical studies (David 2004; Geyeskens 2006) and there is little support for TCE proposition regarding company performance and governance forms. Williamson (1975) argued that assets specificity is the driving force behind hierarchical governance, but as latter studies and the existence of joint ventures has shown it is not necessarily the case always (David 2004).

Williamson originally intended transaction costs theory to predict the choice between markets and hierarchies, i.e. the make or buy decision. Empirical evidence on meta-analysis of TCA literature has shown that the theory performs well with regards to the main effects of transaction costs economics (Geyeskens 2006). Assets specificity, volume uncertainty, and behavioral uncertainty have been shown to promote the

choice of hierarchy over market. The TCA was the first theory to assess the question of 'firm boundaries', which is an essential question in the management of any firm (Teece 2010). Vertical integration, outsourcing, diversification, joint ventures, and divestiture are all fundamentally boundary issues to which the TCT provides a powerful tool of analysis. TCT by itself provides a concept for understanding when vertical integration should and could be done (Stuckey, White 1993) and it gives good premises for evaluating horizontal integration as well (Hennart 2001).

Asset specifity in itself does not fully explain the nature and structure of alliances especially when innovation is an issue (Teece 2010). The premises of the transaction economics literature have sparked numerous other studies on multinational enterprises. Dunning's renowned eclectic paradigm, introduced earlier with regards to company specific advantages, is an excellent example of the influence of the TCT. The transaction costs approach should not be used unmodified by itself to explain the internationalization and behavior of a multi national. Company strategy, the ownership of specific assets and their use to pursue the strategy are issues that will affect internationalization beyond the reasoning of the transaction costs theory (Dunning 1980). As mentioned, the ownership of the right complementary assets is seen as significantly affecting the distribution of the rents from internationalization, whether it is between two or more companies or the company and the market. Hence, internalization is not only a mechanism to protect specific assets from re-contracting hazards; it is also a way to benefit from asset appreciation.

The issue of uncertainty has been addressed by Geyesken (2006) and he argues that each dimension of uncertainty will render the use of relational governance a less preferred option compared to a pure hierarchy as TCT predicts. However uncertainty combined with bounded rationality in itself should not be used as a determinant for a make, buy or ally decision. When companies are faced with high volume or technological uncertainty a relational government mode, i.e. a hybrid, can be a more efficient choice to maintain flexibility if embedded in a network where switching costs are low.

Authors such as Hennart (1982, 2001, 2010) have further shown the applications of transaction costs theory to the theory of the multinational enterprise while authors such as Erramilli (1992) and Erramilli and Rao (1993) have modified the theory to focus on the service sector. The applications of the transaction costs theory have reached the fields of economics, organization, law, sociology, marketing, finance, accounting, and operation management. Because of its popularity and wide

applicability the choice of using TCT as a basis is justified for the purpose of this study. As a basis for understanding where and why company boundaries should be drawn, the TCT provides a good tool. To fully understand the rational behind horizontal and vertical investment into a foreign market firm specific behavioral differences should be explainable (Dunning 1988). Using the original TCT to analyze how a MNE can internalize structural market imperfections and combining it with the modern theory of the multinational, the above-mentioned can be achieved.

2.8 Summary

The transaction costs theory predicts that MNEs will internalize markets when structural and transactional market failure are present. The classical view tends to concentrate more on internalizing structural market imperfections where as the modern theories emphasizes transactional market failure as being the main reason for international production. Asset specificity, uncertainty and transaction frequency are the dimension, which guide the choice between the make or buy decision. Many authors have contributed to the theory by pointing out special conditions and phenomena that the original study did not address. As we mentioned, the TCT has evolved into a theory of the multinational enterprise trying to better define the boundaries of the firm's foreign operations to include alliance decision (Teece 2010).

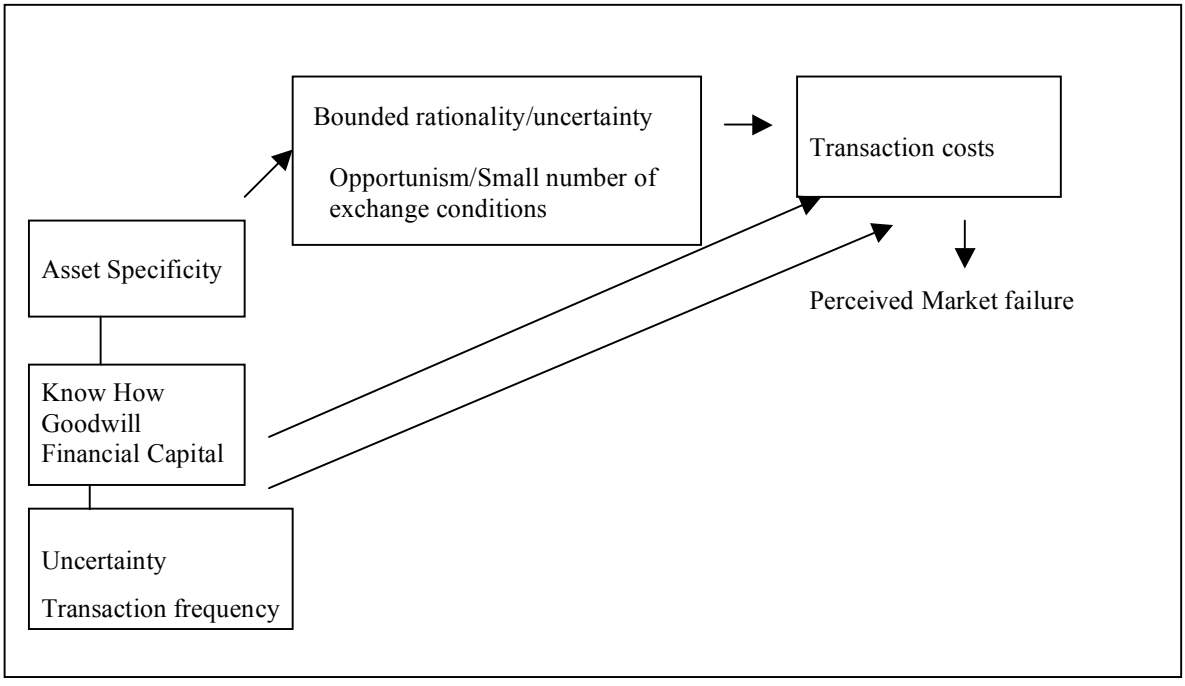


Figure 3. Transaction costs theory

Figure 3 depicts how the theory of transaction costs economics works. Asset specificity means that only a limited amount of economic agents are available on the markets to handle the corresponding transactions. In this case the economic agents will be able to overprice or undersupply output, i.e. to 'cheat' due to a small number of exchange conditions (Hennart 2010). At this moment, transacting at the markets will incur high transaction costs leading to perceived market failure. The transaction of intangible assets, such as know how, good will and financial capital are likely to incur high transaction costs. Uncertainty, including volume uncertainty, i.e. transaction frequency will raise the transaction costs, but on condition that asset specificity exists to some degree (David 2004).

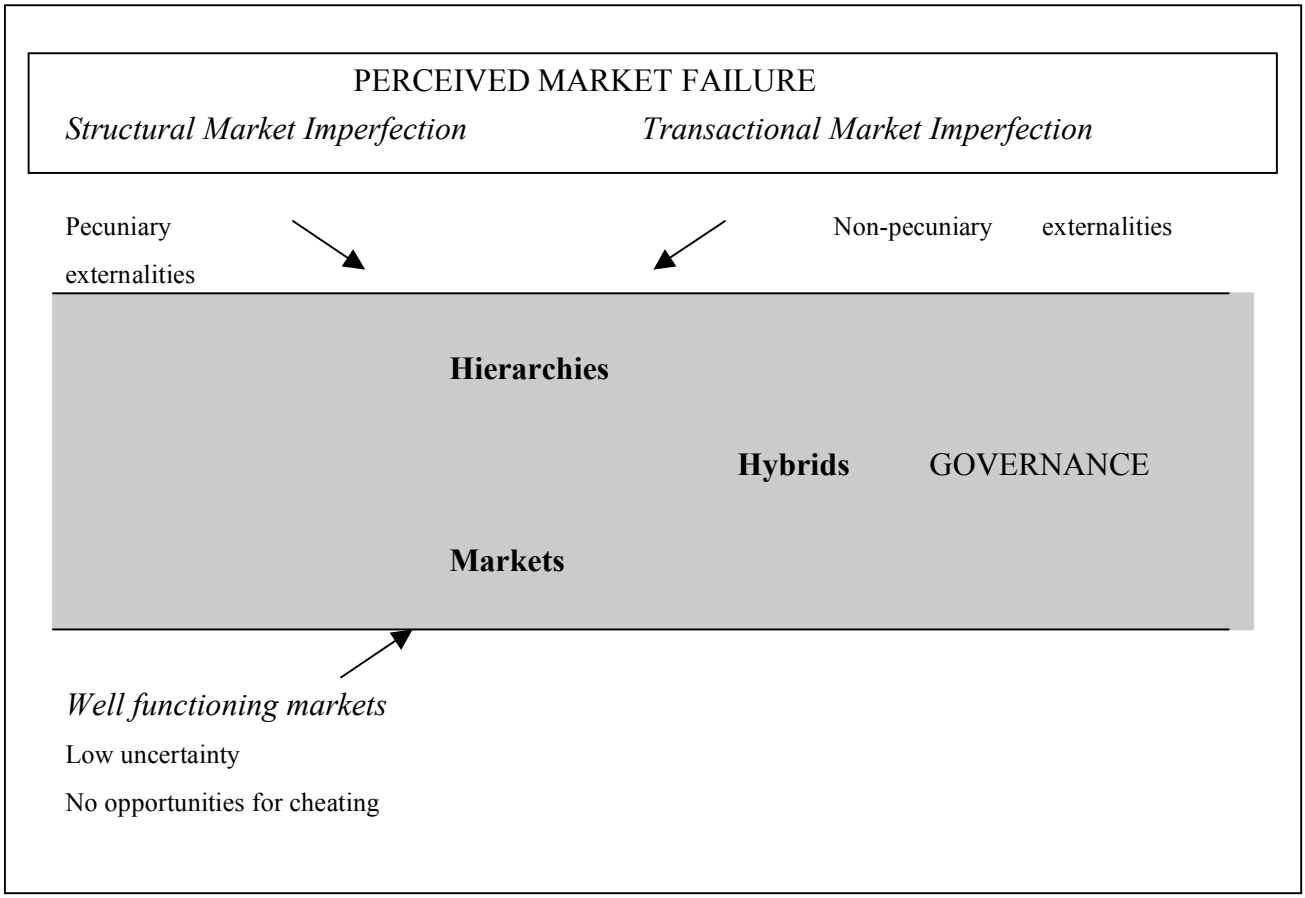


Figure 4. Internalizing market imperfections and market governance modes

Figure 4 illustrates how the transaction costs theory affects the choice of governance. Transaction specific variables, such as asset specificity can lead or can be the cause of structural market imperfections (Williamson 1975). Companies tend to internalize their operations due to structural market imperfections. When companies internalize their operations due to structural market imperfections, they internalize pecuniary externalities. Firm specific variables will affect the choice of governance as well. Dunning (1980) and Hennart (2001) see MNEs internalizing non-pecuniary activities due to *natura*l or *transactional* market imperfections. Companies seeking to exploit the advantages of common governance, as an example, can choose to internalize markets without the presence of structural market imperfections when there are ownership, location and internationalization (OLI) advantages for the company (Dunning 1980), in other words to internalize non-pecuniary externalities. When the markets are working well there is plenty of easy accessible information, low uncertainty and many available economic agents to handle the transaction in question. In this situation the opportunities for cheating do not exists and a market based governance choice can be chosen. A hybrid form of governance is placed between the market and the hierarchies since it combines elements from both governance modes.

3. VERTICAL INTEGRATION AND AFTER SALES CHARASTERISTICS

This chapter begins by depicting the concept of vertical integration. The reason for a manufacturer to move away from its traditional domain and forward towards the customers are depicted. The main contribution of this chapter is to introduce the five specific variables that are most likely to affect the choice of governance. Intermittent demand, performance evaluability, resources requirements, nature of the customer and the chosen strategy are likely to influence the choice of using either the market or the hierarchies. This chapter depicts under what condition each of these variables is likely to affect vertical integration positively.

3.1 Vertical Integration

As it was discussed in the previous chapter the TCT provides a powerful tool in analyzing internalization of economic activities. The decision to internalize economic activities in the different stages of the value added chain is called vertical integration. The typical reasons, depicted by managers, for vertical integration are plenty and they stem from market failure as the TCT predicts (Stuckey 1993). These typical reasons include defending against market power, opportunities for price discrimination, responding to industry life cycle, moving closer to the customer and assuring supply.

Manufacturers and retailers of capital and consumer goods have vertically integrated to include services in their portfolios (Erramilli 1993; Cohen, Agrawal, Agrawal 2006). These services commonly include maintenance, support, upgrade, repair, depot/dealer services, configuration management, function survey etc. (Cohen 2006). These services are commonly called after-sales services. The move towards after-sales has been largely attributed towards the declining profits in manufacturing (Gauber, Sanches, Fleich 2008). For manufacturers the vertical integration forward in the supply chain, closer to the customer, provides an opportunity to access the more profitable service market and to compensate for the sometimes-cyclical demand of capital goods (Levitt 1983; Stuckey 1993). Now days more than ever consumers expect after sales services and they can become a hindrance for a company if not properly provided. The service delivery function is critical in the eyes of the consumers and increasing profits are drawn from services. Both managers and

scholars have been trying to figure out the position a product manufacturing company should take in the tangible goods versus services equilibrium (Gauber 2008).

For a manufacturer, to vertically integrate into the after-sales servicing business, there has to be market imperfections in the markets 'near' the customer. As chapter two depicted, it needs to be more efficient and profitable for the manufacturer to directly invest into the after-sales unit or function and to use its hierarchies to govern the transactions needed to service the end customer rather than using the markets to negotiate a service deal. In this chapter the particularity of providing after-sales services and its implication will be discussed. Firm, market i.e. customer, and transaction specific determinants affecting vertical integration of after-sales services will be discussed. Dennis and Kambil (2003) suggest that companies seeking higher margins and profits as well as greater customer retention should develop a more efficient "service-to-profit chain", meaning an efficient value chain for services. This chain of operations should be especially designed to support the post sale operations and recognize the potential profitability of after sales operations. Manufacturers seeking to vertically integrate into the after-sales operations should thus focus on both designing the right kind of supply chain and minding the transaction costs within this value chain.

3.2 Demand

The demand for after-sales services is usually characterized by intermittency and unpredictability (Cohen 2006). The after-sales supply chain is purely demand based, meaning that there is no possibility of creating the service in advance or storing it for the future. Demand for after-sales cannot be forecasted clearly since it is not dependent on re-occurring need nor time of business cycle. In most cases demand arises from unexpected failure, need for upgrade or other maintenance due amount of use (Dennis 2003). The service in itself cannot be stored and in some cases it cannot be pre-planned because of the idiosyncratic nature of the after-sales work (Bonet, Periz-Ortiz, Gil-Pechuan 2010). Idiosyncratic work is the result of idiosyncratic demand for the different 'levels' of after-sales work. An idiosyncratic service is defined as one characterized by 'high' levels of professional skills, specialized know-how and customization (Erramilli 1993, 23).

Professional skills: Skills that are acquired trough several years of experience and training. Service requiring professional skills will be associated with significant human and sometimes physical investment.

Specialized know-how: Knowledge that is only useful in a narrow field and cannot be deployed outside of the transaction. The greater the specialized know-how in the service is, the less likely it is that associated investments will be utilized outside of current context.

Customization: The degree to which the service has to be customized for each customer will determine the nature and specificity of the investment. The more customized the service is, the greater the amount of transaction specific assets are like to be involved.

Some customers may demand spare parts worth pennies while others, owning the same product, may require services and spare components worth hundreds of thousands. Predicting product failure can be extremely demanding and after-sales providers need to be prepared to serve their customers according to the promised level of service and the customer demand for this service. What this implies is that the overhead costs should not run too high for the supply of simple spare parts or routine maintenance. At the same time the organization has to have resources available for the other extreme of the demand. Since capacity cannot be stored, the costs will also accrue when demand is low and the service is not being used resulting in high idle-time costs (Knight 1999).

Intermittent demand is a major burden for resources allocation. Keeping up a spare parts inventory for after-sales requires on average 15 to 20 times more stock keeping units compared to manufacturing (Cohen 2006). The delivery of the service requires human capital. Human capital is the service labor factor directly related to the installation as well as the people enabling the delivery at the back office functions

3.2.1 Demand affecting the buy decision

The markets reward output, meaning that shirking costs are zero, according to TCT, when performance is evaluated by output and controlled by prices (Hennart 2001). Using hierarchies, i.e. company employees, for the delivery of intermittent after-sales service is costly if these employees cannot be deployed efficiently to perform other task when there is no demand. This would require that the surplus human capital needed to satisfyingly serve high demand could be efficiently deployed to other tasks

when demand is low or non-existent. This situation is unlikely in many cases. When dealing with international services, as in the case of AS usually, the export of services and service capabilities cannot be easily done, making resources transaction-specific (Knight 1999). Using external human capital for service delivery, when the demand is intermittent should be the most efficient way. To add, Williamson (1975) also argues that reoccurring transaction would provide the incentive for companies to use their own hierarchies because the overhead costs for running behavior constraints will be easier to recover. Uncertainty in demand affects the *ex ante* costs of governing transactions. The make or buy decision should be made according to both *ex ante* and *ex post* costs, the latter of which will be addressed in latter chapters.

Morschett, Schramm-Klein and Swoboda (2008) studied the effect of fluctuating demand of after-sales services on vertical integration on 60 German manufacturers. They concluded, as TCT predicts, that the more constant the AS demand and the greater the frequency of demand, the more likely the vertical integration in foreign markets will be. Where as infrequent and generally low demand will lead to co-operative and market governed modes. This is in line with David's (2004) argument that transactions that take place infrequently should be organized trough markets since establishing any hierarchical governance would be too expensive.

3.2.2 Demand and the make decision

On the contrary, as we noted in chapter 2, volume uncertainty, according to TCT (Geyeskens 2006) will increase the likelihood of using hierarchical governance over the markets. This is reasoned when negotiating contracts will incur high transaction costs. The intermittent demand in itself will increase transaction costs in the markets because the sub-contracting party will demand a premium for the uncertainty and unpredictability of the volume in the relationship. As the service becomes more idiosyncratic, the asset specificity of transactions increases. Transaction specificity leads to transaction specific investments, which decrease the likelihood of using the markets (Erramilli 1993).

Transaction costs theory does not give a straightforward answer as to the effect of demand on vertical integration. On the other hand empirical evidence on after-sales (Morschett 2008) and transaction costs literature (David 2004; Williamson 1975) predicts that infrequent and inconstant demand should favor market governance while other literature (Erramilli 1993; Geyeskens 2006) predicts that inconstancy in demand would render market based transaction costs higher, making it more efficient to use internal control.

The effects of uncertainty and inconstancy in demand related to vertical integration might seem inconstant from TCT's perspective but the polarization comes from subtle differences in the meaning of uncertainty/infrequency and other factors related to the transaction. Geyeskens (2006) performed a comprehensive meta-analysis on the past 30 years of TCT literature concluding that uncertainty in itself is too broad an issue to determine a make or buy decision by itself. Demand uncertainty or infrequent demand will make the markets a more efficient way when the markets for that particular transaction are efficient, i.e. the transaction specificity is low or inexistent, and negotiating contracts does not incur costs. This is a plausible situation when the demand is homogenous in terms of quality and quantity. This means that the markets will not put a contractual premium on the infrequency of the relationship.

Uncertainty/infrequency can be understood in the way described by Erramilli (1993, 24). The demand can be uncertain/infrequent in terms of quantity and quality making it idiosyncratic. When demand quality and quantity vary, each transaction is unique. Organizing the transaction specific qualities for each 'project' or service will incur high, reoccurring, transaction-costs since each 'project' is individual. Governing this kind of uncertainty/infrequency in demand is most efficiently done trough hierarchies to avoid high negotiation costs.

Uncertainty/infrequency in demand will lead to increasing governance costs since uniform policies for performance evaluability cannot to be done (Morschett 2008). Increasing governance costs do not determine a make or buy decision in itself, but it will lead to one option being more favorable than the other. Information asymmetry arises when one party is not able to communicate all the data concerning the transaction due to bounded rationality (Williamson 1975). When the quality, quantity and frequency of demand are uncertain, information asymmetry arises. As Williamson predicts in the original study: When uncertainty and opportunism are combined with bounded rationality a situation where the hierarchies are more efficient will arise. Inconsistent demand will augment the *ex ante* costs of contracting since each 'project' has to be re-negotiated. The *ex pos*t costs of monitoring performance increase due to inconsistency in quality and quantity. The more fluctuating the demand is the more complex each transaction is. Both *ex ante* and *ex post* costs go up as transactions become more complex (Williamson 1991; Mooi 2010).

3.2.3 Demand and vertical integration

After-sales operations are characterized by intermittent demand and 'projects' of different magnitudes and qualities. The frequency of the demand for one type of service is often low since the product portfolio for after-sales services are always heterogeneous (Cohen 2006). The nature of the demand is, however, a more determining factor than transaction frequency in the make or buy decision. The frequency for a certain type of service may be low, but the general demand for any type of after sales services does not have to be. What makes the after-sales services different organization wise, is that unlike manufacturing, after-sales service, no matter what type, are usually provided trough a single network capable of delivering different service products (Cohen 2006). What this implies is that the single network can handle different kinds of demand in it. The *ex ante* costs for each 'project' can be lowered if the network has an inherit capacity to handle different kinds of demand efficiently.

This would argue against the findings of Morschett (2008) and predict that the nature of the demand for after-sales services would increase the likelihood of vertical integration, i.e. the make decision. This is most probably due to Morschett studying the frequency of the demand without the concern for the nature of it. Despite the low frequency for one particular type of AS service, the nature of the demand will increase, in general, vertical integration in the after-sales supply chain.

3.3 Performance Evaluability

The essence of after-sales services is to reduce customer risk and to add value to the tangible offering (Dennis 2003). Reducing risk after purchase is what the customer expects to get and additional value is what the AS provider is after. This leads to two very different sets of arguments for performance evaluability. On one hand, the customer is concerned with the effectiveness of the service provider, i.e. the reduction of downtime for example (Cohen 2006), and on the other hand the AS provider is more concerned with efficiency measures such as inventory turnover (Keegan 2004; Bier 1984) and customer satisfaction (Cavalieri, Gaiardelli and Ierace 2007).

Unlike tangible goods, services are hard to standardize. This is due to the fact that services are partly provided by people and partly because their provision entails the integration of heterogeneous external factors. In the case of AS this could refer to the repairing of different kinds of damage or training customer's heterogeneous staff

(Morschett 2008). This leads to the after-sales offerings being characterized by inseparability (Knight 1999). Inseparability means that the production of the service is done at the point of delivery. Inseparability leads to the buyer having an intimate contact with the production process and necessitates close buyer-seller interaction. In order to ensure effective and efficient delivery of these kinds of offerings, elaborate systems have to be put in place to monitor the interaction of the people delivering the offerings (Erramilli 1993). However the quality of service can rarely be evaluated before it is performed and sometimes not even after it has been delivered.

For the consumer, the functionality of the product in accordance with the availability of after-sales services and their price is usually the dealmaker when purchasing capital goods. From the consumer's point-of-view, poor service evaluability increase perceived risk. In such a situation, the trust in the final service provider gains relevance (Morschett 2008). It is assumed that good relations with the good suppliers already exist. When the consumer has purchased a good from the manufacturer, there should be existing trust into the supplier, i.e. manufacturer, of this particular good. Casson (1999) argues that the internalization of service provision could actually provide some guarantee of quality, by virtue of having more credibility than a third party service provider. What this implies is that in general, when service quality is hard to evaluate by the customer, the existing trust should be leveraged thus arguing for vertical integration.

The TCT does not provide much of an insight into analyzing the point-of-view of the customer. But as was mentioned in the previous chapter, the decision to use the markets will depend on the efficiency of the markets. If there is availability of a reputable service provider, its reputation should be possible to leverage to reduce customer's perceived risk.

3.3.1 Performance evaluability and vertical integration

Vertical integration into after-sales servicing will mean that output constraints are replaced by behavioral constraints in terms of how performance is evaluated. The nature of the service, as discussed before, is the key to whether performance can be measured and controlled by output or whether behavioral constraints should govern the behavior of the service laborers.

The critical component in the outsourcing decision of after-sales service is the ability to develop control mechanisms to assure a satisfactory level of service quality. Low

service performance evaluability will lead to high behavioral uncertainty meaning that contracts with external partners will become increasingly hard or impossible to negotiate (Morschett 2008). In these cases the *ex post* cost of monitoring performance will rise. According to TCT, low evaluability can add to the free riding, or cheating, problem inherent in a transaction, since the external partner can gain short-term profits by providing low quality at the expense of the manufacturing company. According to transaction costs theory, the general response to the problem of performance evaluability is vertical integration (Geyeskens 2006).

3.4 Resources requirements and firm size

Resources requirements refer to the equipment, technical know-how, human resources and components as an example, required for performing a specific task. Tasks requiring substantial capital investments and/or highly sophisticated and expensive technologies have high production costs associated with them (Bello, Dant, Lohita 1997). The capital investment needed represents the relative magnitude of fixed investment, i.e. the capital intensity. Increasing capital intensity means rising resource commitments and escalating costs of integration (Erramilli 1993).

Morschett (2008) argues that activities requiring substantial resources commitments are more likely to be done in cooperation with other companies. This is justified by stating that the more resources are needed, the more likely it is for a company to search for a partner with supplementing assets. In addition, cooperation modes are a risk reducing strategy, since sharing the investment costs with the partner reduces risk. In other words, rising capital intensity make it more difficult to establish vertical integration in the foreign country (Erramilli 1993).

Resources requirements, in terms of the economic perspective, create barriers of entry, which in turn tend to affect the performance of the market. The higher the resource requirements are, the fewer firms there are performing the task associated with such high barriers. The lower the entry barriers are, the more likely it is that several firms can perform the task, making the market more efficient. Entry-barriers for tasks requiring substantial commitment of resources are also raised due to considerations of risk of failure and risk of inflexibility (Bello 1997). Vertically integrating into tasks that are characterized by high resources requirements is a substantial risk when the output of the vertically integrated unit serves only the company itself. The markets are able to diversify their risk easily by pooling the

demand curves of multiple clients together, while the internalized unit is solely dependent on the demand of its own (Bello 1997).

In the case of resources requirements the TCT provides a somewhat contradictory view to the above. The theory predicts that MNEs can and should internalize their operations when there is structural market imperfection present. High barriers of entry tend to lead to structural market imperfections with few players trying to exploit their monopolistic advantages. These few companies exploit these advantages because of their ownership of transaction specific assets. Assets specificity, caused by resource requirements and capital intensity will lead to higher transaction costs resulting into market failure, in which situation the hierarchies are a more efficient way of governance (Williamson 1975).

As was mentioned before; resources requirements refer to the equipment, technical know-how and human resources (Morschett 2008). Know-how is according to Hennart (2001) a resource that when transferred creates high transaction costs. Dunning (1980) also refers to intangible assets as a factor creating high transaction costs. Human resources can be a big part of the delivery of after-sales services. If by means of common governance the human resources can be transferred, an approach favoring hierarchies should emerge (Dunning 1980).

Resources requirement is an interesting factor and probably one of the key determinants in the make or buy decision. High capital intensity seems to favor cooperation because of its risk reducing ability. On the other hand high asset specificity will lead to high transaction costs, making it more efficient to perform the tasks in house. The make or buy decision should be made according to the resources that the company already has and what resources are required. If the required resources are high and composed of intangible assets, which the company can match, vertical integration should be favored. Rising capital intensity make it more difficult to have wholly owned subsidiaries, thus when the transaction specific investment is more into a tangible asset such as equipment, manufacturing unit, spare parts inventories etc. a cooperation mode should be favored. The make or buy decision should not be made on the basis of high or low resources requirements, but rather on the nature of the required resources.

A key component when talking about company resources and risk absorbing is company size. The typical argument according to Erramilli (1993) is that integration entails significantly greater resources commitments and carries greater risk than

shared-control arrangements and larger firms in general have a greater ability to expend resources and absorb risk. Larger firms may have greater bargaining power to negotiate for control and empirical studies have demonstrated that the firm's ability to marshal resources is a determinant of entry mode choice (Erramilli 1993, 25). Smaller companies may not have the necessary resources to put up a wholly owned subsidiary even if that were their favorite choice of governance (Hennart 2001). Thus company size is argued to play a role in the make or buys decision.

3.4.1 Resource requirements in after-sales

Morschett (2006) point out that certain after-sales activities seem to be too difficult and expensive for small companies to provide autonomously. Although internationalization of services require less resources than manufacturing (Erramilli 1993; Morschett 2006) it is not necessarily the case in after-sales services. Since the after-sales offering can consist of pure service combined with tangible goods manufactured to customer's demand, the low fixed costs associated with services do not always apply. After sales offerings have to be delivered to a wide geographical area within days or even hours (Milind 1997). The capital tied in after-sales inventories can exceed that of manufacturing by 15-20 fold (Cohen 2006). As was mentioned in chapter 3.1, the fluctuating demand can require a lot of human capital to serve customers effectively.

When the resources required to run the after-sales operations represent a fairly small portion of the manufacturer's total resources, vertical integration could be considered. If the manufacturer can easily deploy the manufacturing resources, i.e. the human resources and equipment for example, to serve the after-sales customer vertical integration should be considered. If the manufacturer has production in geographically dispersed area representing the presence of customers an integrated after-sales strategy could be considered. If the manufacturer has a sales network near the customer, i.e. direct sales channels and the after-sales services require little specialized knowledge; the existing network could be used to serve the after market internally as well. What is implied by these examples is that resource requirements, even if high, should be observed in terms of existing resources. Companies using direct channels for manufacturing at a given location are usually more likely to use direct service channels as well (Nordin 2005). Existing resources mean experience and experience can also be shared across different tasks that involve similar kinds of activities. For example, the costs of producing a product line modification can be substantially lowered if the modified product requires the same production or distribution activity (Bello 1997). Morschett (2006) has also argued that companies

having established manufacturing facilities in foreign markets are more likely to engage in wholly owned arrangements for its after-sales services in that market.

3.4.2 Resources requirements and vertical integration

A manufacturer's after-sales operations can require a lot of resources that the manufacturer does not possess. After-sales services often require much more human capital than manufacturing. AS customers cannot be served from one location, which increases geographical dispersion of resources. Unlike traditional supply management where the velocity of resources is maximized, in after-sales resources have to be pre-positioned (Cohen 2006). Depending on how well the company is able to pre position its resources the after-sales operation will succeed. If the manufacturer is able to pre-position the resources efficiently using its own hierarchies according to after-sales customer's needs, only then can it be successful in vertically integrated after-sales delivery. The positioning of these resources internally should be feasible when the following conditions are present.

Firm size, unlike Morschett (2006) predicted, should not determine the make or buy decision. According to Morschett (2006) and Erramilli (1993) the smaller the firm, the more likely is the use of cooperative modes. Smaller firms will have less power in negotiating cooperation contracts in the same way as they have less power to marshal market transactions (Bello 1997). The size of the firm should not be the determinant of entry mode, but rather the comparative size of after-sales operation requirements. The bigger the portion of resources required for after-sales services the more likely it is for a manufacturer to seek relational and market based governance. Also, the less complementing assets the manufacturing and after-sales have the greater the resources requirements are and the more likely a relational or market based governance is.

When the resources requirements for after-sales services are more characterized by intangible assets, such as know-how, financial capital and property rights, the more likely vertical integration will become. The empirical evidence on transaction costs theory provides strong support to the notion that intangible assets, even such as knowledge of industry vocabulary, will provide greater incentives for hierarchical governance than presence of specialized physical assets (David 2004, 47). Vertical integration is thus more likely in the situation where the manufacturer already possesses those intangible assets or advantages of common governance.

3.5 Nature of customer

According to Cohen (2006) and Bundschuh (2003) the design of the service portfolio appears to be a concerning issue in successful after-sales. Bundschuh (2003) implies that companies are providing too many or too few service and that rather focusing on how many services they are providing, they should focus on designing the right services. The solution that Cohen (2006) and Bundschuh (2003) suggest is that manufacturing companies should segment its service customers. The segmentation shouldn't be based on sales volume, geography, or technological capabilities like it has been common. When customers are segmented according to their needs and willingness to pay, they tend to fall into three categories according to what kind of response time and risk the customers are willing to bare (Bundschuh 2003).

A survey that has been conducted and introduced in the article *how to make after-sales services pay off*, Bundschuh (2003), showed that while response time related to price was often considered the main criteria for evaluating the performance of the after sales service providers, the issue is actually very dual. For the client, either the equipment is critical or it isn't. That being said the customer's preference for coverage and service level varies considerably according to factors such as risk tolerance and ability to do the work in-house. The managerial suggestion given by the McKinsey Quarterly (Bundschuh 2003) is that mangers of manufacturing companies should invest in basic market research to find out the real segments of their after-sales service customers. These customers should be then segmented by their ability and willingness to pay. Cohen (2006) states that mangers should design services based on customer focused metrics such as machine up time instead of such internal metrics as part-fill rate, which is what most companies use today.

Bundschuh (2003) introduces a communications equipment company that had for years provided similar after sales services, at approximately the same cost per unit to all its customers from large professional service firms to individual casual customers. Of course, most customers were dissatisfied with the average service package and the company left a lot of revenue behind. The company responded by offering customized service solutions to its different customers, but soon realized that the costs of customization were eating all the profits. This failure was due to the company's incapability to govern both the transactions to serve the private customers efficiently and the industrial customers effectively. The solution, as the following chapter will argue, will stem from understanding the requirements of the relationship rather than the qualities of the physical good itself.

What the former implies is that the formation of after-sales operations should be dictated by the customer's needs. Different kinds of customers will expect different kind of services and service levels. Different kind of customers will also have different kinds of buying behavior (Rangan, Moriarty, Swartz 1992; Nordin 2005), which in turn are influenced by several relationship factors (Scheer, Miao, Garret 2010). Some AS customers will demand only simple standardized service packages while others require complex sets of AS parts and services throughout the lifecycle of the whole product. Some AS customers have substantial amounts of knowledge of the product being serviced, the process and the environment it is being used in, while other AS customers will have less and will require less knowledge. Customer size and bargaining power is also likely to affect the purchasing process as well as the usage and importance of the product being served (Rangan 1992).

3.5.1 The effect of the customer relationship on the make or buy decision

The number of customers is likely to affect the make or buy decision in the form of demand, as was mentioned in chapter 3.1. The size of the account of one customer will affect selling behavior in the same sense that it affects buying behavior. The larger the procurement scope and order quantity is, the higher the level of buyer-seller interdependency is (Rangan 1992). In the case of after-sales services, the service provider may have only one account that represents all the tangible goods that have been sold to that specific market. In this case the after-sales provider is completely dependent on the demand of one customer. The flip side of the coin is that the customer who is using the product might be solely dependent on the after-sales service provision of that one company.

Complex products are typically engineering-intensive and composed of several tailored components and subsystems. These products tend to play a role in larger systems, in contrast to commodity like stand alone products. Taking responsibility for these kinds of products require understanding of the whole system into which the product is integrated, including interfaces between different products and software (Nordin 2004). When the customer is dealing with such complex products, it can be assumed that the relationship between the supplier, in this case the AS provider, and the customer is knowledge intensive and complex. This observation is especially true in the service sector (Knight 1999). These kinds of knowledge intensive relationships may require transaction specific knowledge and accumulating switching costs. For the customer, complexity and compatibility of the relationship with the supplier refers to the fit of the service into its operations. Costumers that perceive the product line, which the AS serves, to be critical will put more focus and effort in examining the

relationship. To add, the more knowledge on alternative supplier the customer has, the more aggressive negotiation strategies they are likely to use (Rangan 1992).

After sales-services are provided to lessen the customer's perceived risk associated with the purchase (Dennis 2003) and as a tool for marketing the good (Asugman, Johnson, McCullough 1997). In this perspective it is unlikely that the customer would negotiate himself into a position where he would bare all the risk in the relationship. In other words, it is likely that the buyer will demand long contracts demanding certain levels of service for a certain period of time, i.e. warranties, for the purchased good if indeed the good is critical for the buyer and no alternative service-providers are available. Quinn, Doorley and Paquette (1992, 60) have pointed out that service customers can acquire bargaining power in relationships forcing suppliers to meet its needs at less than marginal costs. This kind of power is acquired when one customer's account represents a big enough portion in the supplier portfolio for example. For after-sales services, which by nature are usually customized (Cohen 2006), this problem is not so relevant. However the problem is the customer's ability to negotiate prices down.

Nordin (2005) argues that complex goods typically require more after-sales services and that manufacturers tend to use direct service channels to retain control over the services delivered to the complex customers. The general belief is (See Nordin 2005, 580) that direct channels for contracting and ordering are appropriate for the more heterogeneous business markets, whereas indirect channels are appropriate for the more homogenous consumer markets. Business markets typically involve fewer customers with individual needs who in general buy products and services in large quantities, have high expectations on the support and prefer to have close working relationships with their suppliers.

From the TCT perspective, the size of one account and the threats and possibilities that the dependence on one customer brings is essentially a question of uncertainty. When asset specificity is low, market governance should be favored no matter what the degree of uncertainty is, since continuity matters little and both parties can easily negotiate new transaction arrangements at the markets (Williamson 1975). However, when asset specificity is present to a nontrivial degree, continuity between the transacting parties become important and the adaptive capabilities become necessary in an uncertain environment. The work by David (2004) provides some insight into the relationship between the buyer and seller and its effect on the make or buy decision from the TCT perceptive. Number of customers/users for a single offering in

the context of uncertainty is likely to have the opposite effect to what the TCT predicts, i.e. the number of customers in the context of uncertainty is more likely to promote use of market governance. Human assets as an independent, assets specific, variable has proven to be one of the key variables promoting the make decision. David (2004, 49) points out that coordination needs between seller and buyer, the importance of key buyers, confidentiality of information and lock in to incumbent suppliers are all factors promoting vertical integration.

3.5.2 Nature of customer and vertical integration

For a manufacturer, vertical integration into after-sales provision seems to be more likely when the customer is another business and when the relationship requires high levels of knowledge. This assumption is in line with TCT, which predicts that knowledge, know-how and other intangible assets are the more transaction costs prone assets (Hennart 2001; Dunning 1980). If the machine or good being serviced is critical to the customer, the relationship between the parties is likely to intensify in terms of information and knowledge transfer, incurring higher transaction costs. The more critical the good is to the customer, the more willing the customer is to pay a premium for the availability of the service (Bundschuh 2003) and the better the AS provider can cope with associated overhead costs. The work by Nordin (2005) argues for this cause since the finding show that manufacturers prefer to use direct service channels for their industrial customers, i.e. preferring vertical integration into what essentially is either/both the sales and/or the after-sales function.

As was pointed out in the beginning of this sub-chapter 3.4, the after-sales services should be governed according to the customer. An industrial customer requiring fast delivery of complex and heterogeneous should be most efficiently served via vertically integrated service unit, if the manufacturer possesses the right assets to start with. For homogenous customers with little knowledge of the product being serviced, an external service channel should be favored. The customer needs for the relationship with the after-sales provider can be extremely polarized even if servicing the same physical good as was shown in the example by Bundschuh (2003). An idea that has proven efficient by Cohen (2006) is using multiple business modes to serve different kinds of customers. In other words, manufacturers could separately use both the markets and the hierarchies to govern the after-sales market transactions according to the asset specific need of the relationship.

3.6 Strategy

Nearly all firms in the capital goods industry offer supplementary services, such as after-sales. Some of these services have become standard in their basic form, meaning that customers expect them and they become an integral part of the offering. Often in these cases the customer is not willing to pay extra for such services, or they are mandatory by law, and become a necessary evil (Milind 1997). Warranties and help-desk services are an example of the previous. Since the customer is not willing to pay extra for such services, their provision in an efficient manner becomes increasingly important (Morschett 2006).

Other services can function to distinguish a firm from its competitors. In these cases the after-sales is considered a competitive advantage (Miller 2008) and their provision can yield significant returns. Providing these kinds of value adding services requires specialized capabilities, the governance of which can be complex. Examples of these kinds of services are on-site inspections, upgrade services and different performance based services (Cohen 2006; Milind 1997).

The strategies for manufacturing companies offering after-sales services have been studied by numerous researches (Milind 1997; Cohen 2006; Bundschuh 2003; Cavalieri 2007; Gauber 2008). The general idea is that manufacturer's tend to fall into categories according to their customer's demands. It is the service demand and service level demand requested by the customer, which drives the companies to lean towards one kind of strategy over the other. The customer's demand on the other hand depends on the nature and usage of the product. Manufacturers should be well aware of the customer's preferences and requirements in order to provide the optimal service package. If the after-sales function is not organized accordingly, considerable profits can be left behind and the AS profit center can become a cost center (Cavalieri 2007; Gauber 2008).

3.6.1 Strategic profiles

In this chapter the firm specific characteristics, i.e. the strategy as a factor affecting vertical integration will be discussed. The focus is mostly on service strategy and its effect on organizing different entities. Gebauer (2008) identified three different service strategies for manufacturing companies. According to the research on dozens of west-European manufacturing companies, each company can be classified into one of these three categories. These strategies are the after-sales provider (ASP), the customer-support provider (CSP) and Development partner (DP)-strategy. The

Development partner strategy is concerned with manufacturers providing additional services that are not related to adding value to an already sold product. Internalization of these activities deviates from after-sales and is concerned with horizontal investment thus not covered in this study. However ASP strategy and CSP strategy will be discussed, as they are concerned with after-sales services and operations.

Cavalieri, Gaiardelli and Ierace (2007) have also studied the characteristic of after-service providing companies. The study identifies four types of strategic profiles for after-sales providers and created a framework for aligning performance metrics for each profile. These strategic profiles were:
Product support: typical AS strategy that deals with warranties and where the AS services do not bring in money for the company.

Cash generator: AS represents a good source of revenue for the company, sometimes compensating for the low margins of the sold product

Business generator: AS can create new business opportunities and provide companies with a source of differentiation and profits.

Brand fostering: Very similar to the previous but the reason for providing AS services is to foster the company's brand.

The findings are used with Gebauer's (2008) framework because the characteristics of Gebauer's ASP-strategy can be related to Cavalieri's *product support* and *cash generator* profiles, and the CSP-strategy can be related to the *business generator* and *brand fostering* profile. This relation is justified because in ASPs, after-sales is seen as an inter-organizational operation where as in CSPs case, after sales are seen as its own division within the organization. In his study on firm specific influences Morschett (2006) divided after-sales strategies into two separate categories as well. He argued that price as a competitive advantage and service as a competitive advantage would yield different methods of governance to be more efficient. In product support and cash generator strategies, as in the ASP-strategy, the offered price and efficiency is the key, complementing Morschett's idea. When the service is the competitive advantage the CSP-strategy, where AS generates business and brand, is present.

3.6.2 Price based strategy

As the TCT argues; the markets are a premiere way of organizing transactions since external partners are able to benefit from economies of scale and scope as well as

being able to better cope with demand (Williamson 1975; Geyskens 2006). Price orientation can be linked to the need for cost efficient operations and prices have been determined as one of the key determinants in the make or buy decision (Morschett 2006). According to Cavalierri's (2007) the *ASP*-strategy, focused on price, does not need tight operational metrics because it is an inner-organization function that is committed to keeping up the products functionality during its warranty period for example. If the ASP has to only provide warranties, an integrated performance system is not required nor recommended, since the company can measure its after-sales service by using a few specific and loosely coupled indicators. Consequently the performance measurement is mainly oriented toward financial indicators as efficiency measures. These metrics include fill rates, warranty costs, internal lead times, other costs and asset utilization ect. Less emphasis is put on front office activities such as order fulfilment or hard to measure metrics such as customer satisfaction (Cavallierri 2007).

When the focus is on the price, performance is easier to evaluate since financial indicators can be devised and evaluated easily. The customer who values price over service does not require a high service level (Cohen 2006; Milind 1997), which makes outsourcing more feasible as was noted in chapter 3.4. According to Cavallierri (2007), the price-based strategy is often associated with product-line strategy. What this means is that manufacturers' do not have a separate division for after-sales because they do not represent a core competence and they are merely offered as a part of the product. Activities deviating from core competencies tend to be outsourced more frequently (Wolter, Veloso 2008).

The characteristics of the price-based offering can generally be drawn to the following (Cavallierri 2007; Morschett 2006; Gebauer 2008; Milind 1997; Cohen 2006):

Table 1: Price Based Strategy

1. Production focus on efficiency	2. Standard offering
3. Delivery easy to evaluate	4. Low service ebeddedness
5. Does not represent the core competence of the firm	

Product support: typical AS strategy that deals with warranties and where the AS services do not bring in money for the company.

Cash generator: AS represents a good source of revenue for the company, sometimes compensating for the low margins of the sold product

3.6.3 Service based strategy

When the service is the competitive advantage the service provider should keep control of these activities (Stuckey 1993). In order to focus on core competencies, the functions with marginal significance tend to be outsourced. If the after-sales service is viewed as a fundamental component of company strategy, then the service in itself must become a core competence (Morschett 2006). Core competencies stem from unique capabilities, which are essential for long-term success of the company. At the same time these unique capabilities, which help to gain sustainable advantages over competition, tend to be impossible to acquire trough markets. Accordingly, high competitive significance of a business activity implies an increasing need for internal control should be present in order to maintain and develop the core competence (Wolter 2008).

According to Gebauer (2008), when the service is the competitive advantage for the manufacturer's after-sales operations, the manufacturers' tend to form an independent division for the AS service. Contrary to the price based strategy where manufacturers source their services based on production line strategy, the service focused CSP will have independent responsibilities. Here the AS is seen as a business unit endowed with profit and loss responsibilities, which must guarantee both a high level of profit and high customer satisfaction for long-term success. The focus is not only leading logistics and technical assistance processes but also managing all the services related to customer relationship such as order fulfilment and customer care (Cavallierri 2007). The offerings as well as the performance metrics are more heterogeneous making it difficult to find a suitable partner whit sufficient capabilities to handle the heterogeneous offering and whose performance can be efficiently monitored.

The characteristics of the price-based offering can generally be drawn to the following (Cavallierri 2007; Morschett 2006; Gebauer 2008; Stuckey 1993; Milind 1997; Cohen 2006):

Table 2: Service Based Strategy

1. Production focus on effectiveness	2. Customized offering
3. Delivery hard to evaluate	4. High service embeddedness
5. Represents the core offering of the firm	

Business generator: AS can create new business opportunities and provide companies with a source of differentiation and profits.

Brand fostering: Very similar to the previous but the reason for providing AS services is to foster the company's brand.

3.6.4 Service strategy and vertical integration

For the service-based strategy, i.e. the CSP strategy the resources requirements are higher. The after-sales function is responsible for the development and sustainability of the service, a task costly and often impossible to efficiently outsource. Unlike for the ASP's price based strategy, the performance metrics for CSP's include hard to measure factors such as customer satisfaction adding to the possibility of cheating. As noted in the previous chapters: Increasing resources requirements and difficulties in performance evaluability should increase the likelihood of using hierarchies to govern transactions. The more the strategy is service based the more likely vertical integration will be, where as the more price based the strategy is, the more likely the markets are chosen to govern the transactions.

Not only does the manufacturer need to choose between using external or internal markets for AS, it needs to choose between different strategies and levels of service. Making transaction specific investments into AS is more demanding since hierarchies may be the more efficient way to govern the transactions to respond to one sort of demand, while the markets can be the most efficient when dealing with another sort. Manufacturers are likely to use different ways of sourcing their after-sales operation according to the needs and characteristics of their strategic segment. What this implies is that manufacturers can have separate after-sales channels for different customer segments.

Morschett (2006) and Morschett et al. (2008) found a strong positive correlation between the service-based strategy and vertical integration. Morschett et al. (2008) argue that the more central the after-sales services are to the company, the more these activities tend to be internalized. The study argues that internalized operations afford more control for developing the services as a competitive advantage. For the purpose of this study, the strategy should not be seen as a factor that affects transaction costs. When companies see the service as their competitive advantage it is likely that the resources and capabilities used for such services become transaction specific due to their strategic nature. As figure 5 shows, the chosen strategy can affect the make or buy decision to a great extend. Strategies are built around core competencies or capabilities, which in turn have strategic priority because they involve the formation of the basis of the company's present and future competitive capabilities (Bonnet 2008). Price based strategy has been shown to influence characteristics that make the use of markets possible and more efficient, while a more service based strategy is likely to incur characteristics that favour the use of hierarchical governance. However the strategy should not be used as the sole determinant since it may be possible to have a service based strategy carried out by third party service providers. Whether to vertically invest into after-sales operations or not, is dependent on the desired outcome, i.e. the strategy, and the circumstances that arise from the desire to follow the strategy.

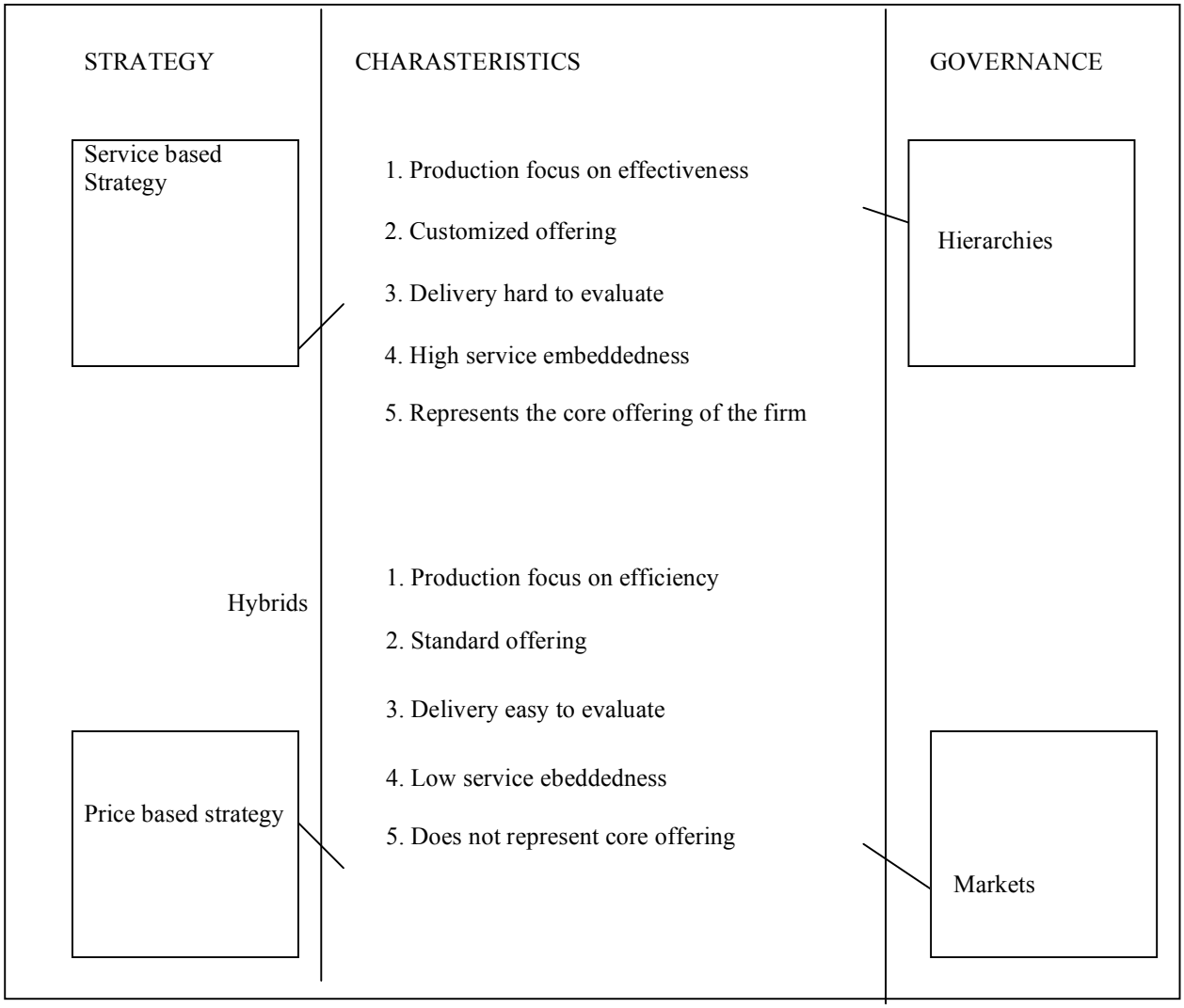


Figure 5: Service Strategy and Governance

3.7 Summary

At the beginning of this study six major problems regarding the provision of after-sales services were introduced. These problems characterise many after-sales services to a great extend. The make or buy decision is strongly affected by these characteristics, and to the extent to which they influence the offering. One characteristic can already in itself determine whether the manufacturer should

vertically integrate into the provision of after-sales or not. However, it is usually the combination of the different elements that will determine the outcome of the make or buy decision. Understanding of the transaction cost economics and the five specific characteristics of after-sales provision should thus provide an adequate tool to determine how after-sales transactions could be governed. The predictions based on the literary overview are depicted in table 3.

Table 3: The five characteristics and vertical integration

1. *Fluctuating demand*: Likely to affect vertical integration positively when demand is heterogeneous.
2. *Performance evaluability*: Likely to affect vertical integration positively when performance evaluability is low.
3. *Resources requirement and firm size*: Likely to affect vertical integration positively when re-deployable and overlapping resources exist.
4. *Nature of customer*: Likely to affect vertical integration positively when relationships intensify.
5. *Strategy*: Likely to affect vertical integration positively when companies apply a service-based strategy.

4. METHODOLOGY

This study is based on a qualitative case research in two different companies providing after-sales services. According to Saunders et al. (2003; 93) define a case study as "a strategy for doing research which involves an empirical investigation of a particular contemporary phenomena within its real life context using multiple sources of evidence". The empirical work in a case study is understood to include questionnaires, interviews, observation, and documentary analysis amongst others (Saunders 2003) which allows the gathering of relatively detailed data enabling a deep understanding contextual factors and issues related to the internalization of after-sales services, at the expense of the ability to achieve statistical generalisability.

The companies were intentionally chosen because they represented different contextual factors, thus enabling a broader perspective on after-sales operations in general. Both firms were involved in the delivery of after-sales services with a combination of goods and services. The purchased good being serviced was such that it required both the delivery of tangible goods and services thus pure service providers were excluded. This condition of *service embeddedness* was chosen because it is representative to the majority of after-sales servicing and is the peculiarity in after-sales provision that merits research in the first place. Broad ranges of industry sectors were included in the initial screening for possible interviews. The software industry was ruled out since their after-sales services was perceived as including only pure services.

4.1 Selection criteria

The two chosen case studies represent different aspects of vertically integrated after-sales units. These companies apply different competitive strategies. While both are multinational enterprises the size of the companies differ drastically. Although both companies have origins in manufacturing, both have vertically integrated into service provision. Unlike Loipart, case 1, Wärtsilä, case 2, owns and operates its own spare parts supply.

To respond to the question of internationalization, both of the interviewed companies were currently servicing their after-sales customers in a foreign market. Foreign markets were defined as markets outside of the initial manufacturing country or the country of origin.

4.2 Case 1: Loipart Florida

Loipart Technologies Oy/Ltd is one of the leading manufacturers in marine catering area solutions including all stages from design, manufacturing, supply, installation to after sales services and refits (Loipart.fi). The Headquarters is located in Finland with subsidiaries in Sweden, Singapore, Florida, Croatian and Estonia. The whole organization employs around 300 people, most of whom are technicians. Loipart has supplied all the catering areas to the world's largest cruise ship, the Oasis of The Seas, amongst others. The services unit, Loipart Fl, serves the growing cruise line industry in southern Florida and the Caribbean. The unit itself was founded for after-sales services and spare parts distribution to existing and potential customers in the region (Loipart.com; interview). There is also a Loipart workshop in the Bahamas that serves the after-sales business which is fully owned by Loipart Ltd.

On average 1/3 of the revenues come from the distribution of spare parts and 2/3 come from service provision. A third party supplies the OEM spare parts distribution and inventory management while the service unit is wholly owned by the Finnish parent company. The service unit was described as being a natural extension to the manufacturing since existing resources and connections to the markets could be leveraged. The Florida service unit generates around 8 million dollars yearly revenue with aims at a 20% profit margin for 2012.

The demand for after-sales service is heterogeneous. The smallest projects are few thousand euros and do not necessary include OEM spare-parts, even though materials and parts are virtually used in all projects. The largest after-sales projects include re-designing and constructing the whole catering areas and are worth several millions of dollars. On time and fast delivery is critical for ship-owners since the time spent docked is limited. For cruise ships, the catering areas present a major part in the customer's consumption experience and thus need to be in tact at all times.

The aim is to get as many new products and parts sold as possible in all projects. Loipart Fl does not offer so-called 'maintenance' work, which includes pluming and electric work to the sold goods. For Loipart's original work there is a 12-month warranty period and a 6-month warranty period for the after-sales work. The after-sales unit is responsible for these warranty claims, but it is able to generate business and revenue by taking care of the competition's warranty claims as well.

For the after-sales work, performance is hard to evaluate on the spot. Working hours, i.e. how efficient the technician is was described as being one of the key operational metrics. The progress of work is daily evaluated but the outcome can be evaluated only once the work has been finished. Trust and knowledge of the workforce is a key factor reducing the need for constant supervision.

Resource allocation is a key factor in successful after-sales operations for Loipart. The same technician used in production can be deployed to serve the aftermarket. The after-sales unit uses the design, technical support and administration used by the manufacturing unit as well. Knowledge of the markets and the key personnel at the shipping companies is a resource that is deployed from the manufacturing unit. There is an additional workshop in the Bahamas that is fully owned by Loipart. This relatively small workshop serves the after-sales business by providing small parts and a few technicians that can be rapidly deployed according to customer needs.

The customers are all businesses and highly informed. The work is often critical and needs to be delivered on time. There is a limited amount of customers since the work is limited to ships and the big shipping companies own most of the large vessels in the area. At the moment one customer brings in around 80% of the total after-sales revenue for the unit in question. There are however only three formidable competitors in the market.

The competitive advantage, identified for Loipart, was the quality of the Finnish technicians. The market is highly price sensitive and larger shipping companies tend to ask quotes from all three large suppliers, making it hard to compete with service. The strategy is price based even though quality and trust are valued both by the customer and the supplier. At the moment, the expansion strategy is such that all incoming work is done and some reference work can be done with a 0% profit margin. The after-sales unit formulates the operational strategy, while the headquarters is responsible for resources allocation.

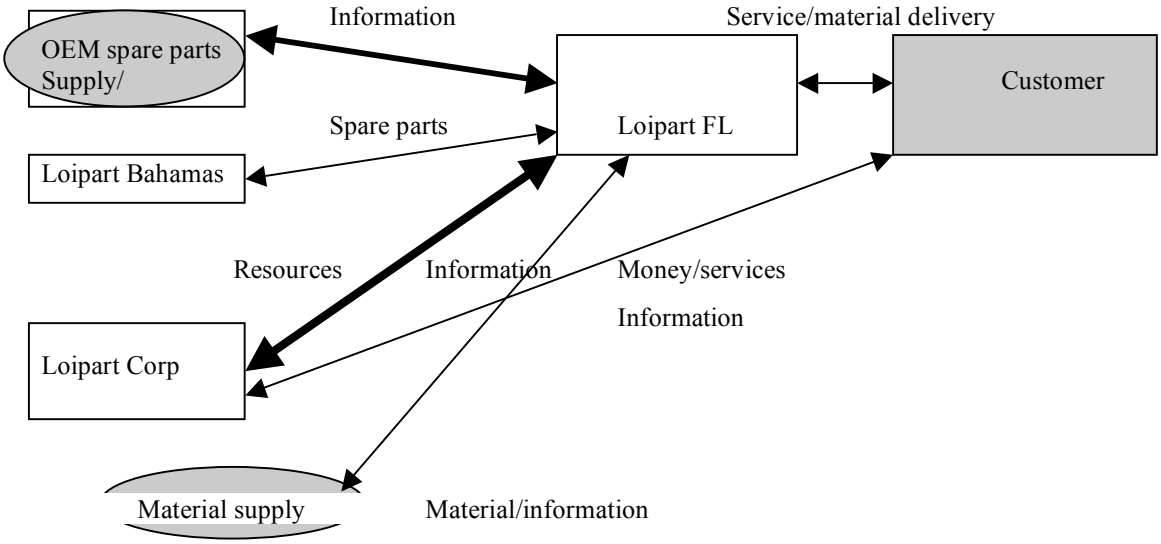


Figure 6. Loipart after-sales supply

Figure 6 shows how Loipart delivers its after-sales services. Loipart FL handles the negotiations with the customer and presents the after-sales offering. Loipart corp. has normally the biggest input in terms of the actual delivery of the after-sales services and human resources. Bigger after-sales deals are signed between the customer and Loipart corp. rather than Loipart FL. The delivery of OEM spare parts represents 1/3 of the offering. Loipart Bahamas accounts for 15-30% of the service/material delivery depending on the nature of the project. Outside material supply is marginal. Loipart FL is working closely with the OEM spare parts supplier and the former also shares information about the customer with everyone else in the supply chain.

4.3 Case 2: Wärtsilä Phillipines

The second case company is an international maritime and power-supply solutions and services provider. It has around 160 offices in 70 countries. With 2010 net sales at 4, 553 million euros and an operating profit of 487 million euros, it is one of the largest manufacturers of capital good is Finland. Wärtsilä Corporation provides lifecycle power solutions for the marine and energy markets primarily in around the globe. Its products include low and medium-speed diesel and gas engines, propulsions, propulsion packages, seals and bearings, automation systems, integrated

solutions, marine and power plant generating sets, mechanical drives, auxiliary engine systems, reconstructed (Recon) engines, as well as environmental technologies. The company also offers a range of basic support services, such as OEM spare parts, tools, field services, workshop services, technical services, and product training services (Wärtsilä annual report 2010, interview, Wärtsilä.com, Bloomberg Business).

Wärtsilä Philippines was established in 1992 during the on-set of the power crisis (Wärtsilä.com). Nowadays the maintenance and service work accounts for 90%(40%) of revenues for Wärtsilä Philippines with an average of 31 % Margin to W-Philippines company (W-Group Services margin was 40%) on maintenance work. For the maintenance work 57% of the revenue comes from spare parts and 42% from pure services. Service delivery (service + spare parts) are estimated to bring in 12-15 million euros to the Wärtsilä Philippines. There is a staff of 150 people located in two different Wärtsilä offices and workshop and Training centre, (workshops) around the Philippines and 2 Operation & Maintenance (servicing) agreements, where the staff is present at the customer's premises. The goal for the future is to expand the services business, which is in line with Wärtsilä's corporate growth strategy (Annual report 2010; WPH Company Brochure 2008).

The demand for the services and goods is heterogeneous. The company can sell a spare part with a minimum order of 100 euros, while the biggest sale has been the delivery of 2 Recon engines for 5.6 million euros. Many of the after-sales offering require idiosyncratic services and a wide range of spare parts from different Wärtsilä outlets. However, for the after-sales services, 80% off all maintenance work is pre-scheduled making resource allocation easier. The customer is typically informed 3-4 weeks in advance and the service delivery can be planned accordingly ahead. The standard delivery time for spare parts is three days.

Performance is strictly evaluated, both for the spare parts and the servicing. A standard customer satisfaction survey is made 1-2 times a year. For all bigger projects internally trained service engineers evaluate and supervise the work of mechanical and electrical engineers and technicians. Other operational metrics include the cost of new warranty claims and supplier performance. However the service work is knowledge intense, thus making the evaluation on the spot difficult.

Resources requirement are high for Wärtsilä Philippines because of the nature of the offering and its range. In order to maintain a high service level and quality Wärtsilä Philippines, like most Wärtsilä subsidiaries, are wholly owned by the corporation.

Resources are allocated within geographical regions. For example the Singapore office is responsible for the sales-support for south Asian operations, which includes a comprehensive spare parts inventory serving the Philippines and the rest of Southeast Asia. Some of the administrative work and technical support is locates in Europe. The headquarters is responsible for planning, designing and calculating prices for bigger projects. Unlike in the first case company, Wärtsilä does not deploy human resources from manufacturing to after-sales. Service engineers are sometimes traded between corporate sub-units but almost never re-allocated or 'borrowed' to each other (there are internal prices when selling the engineers between subsidiaries) and technicians can be cross-traded according to their utilization rate.

After-sales work, in the form of warranty claims, for engines is performed by the Philippines unit and sold to the unit that delivered the original product. In other words, the manufacturing unit, in Finland for example, buys the after-sales service from its subsidiary. The role of Wärtsilä Philippines is to serve the corporation and to generate business. Revenue is transferred back to the headquarters with transfer pricing on spare parts sales.

The nature of the customer account depends on the sold product and the process into which the good is sold. The customers are national and private energy companies, ship-owners and manufacturing plants to name a few. They all use the products as capital goods and are highly informed. For some customer running their manufacturing plants solely on Wärtsilä power supply, the functionality of the offering is critical and a never-fail, paid by performance, approach is taken. A similar product may be used as a back-up generator, in which case it is not as critical. There are 95 active, possible, customers, out of which only 30 are maritime operators. At the moment one customer is accountable for 20% of the revenue for Wärtsilä Philippines.

The strategy of Wärtsilä Corporation and its subsidiaries is service based. All service units are owned by the corporation as well as the sales of spare parts. The sales of OEM spare parts bring in an important cash flow and the wholly owned subsidiaries enable a higher quality of servicing since all workers have direct access to Wärtsilä's resources. Wärtsilä Philippines is more expensive than its competitors but the customers are generally willing to pay a premium of 10-20% for the OEM spare parts, the technical assistance and the fact that the whole offering is backed up by the corporation. The wholly owned subsidiary can take up bigger projects than competitors since the risk is diverted into the corporation.

The strategy is formed at many levels. The corporate strategy and the general direction of the company is dictated from the HQ. The regional centers have their own regional strategies and the country unit will make its own operational strategy.

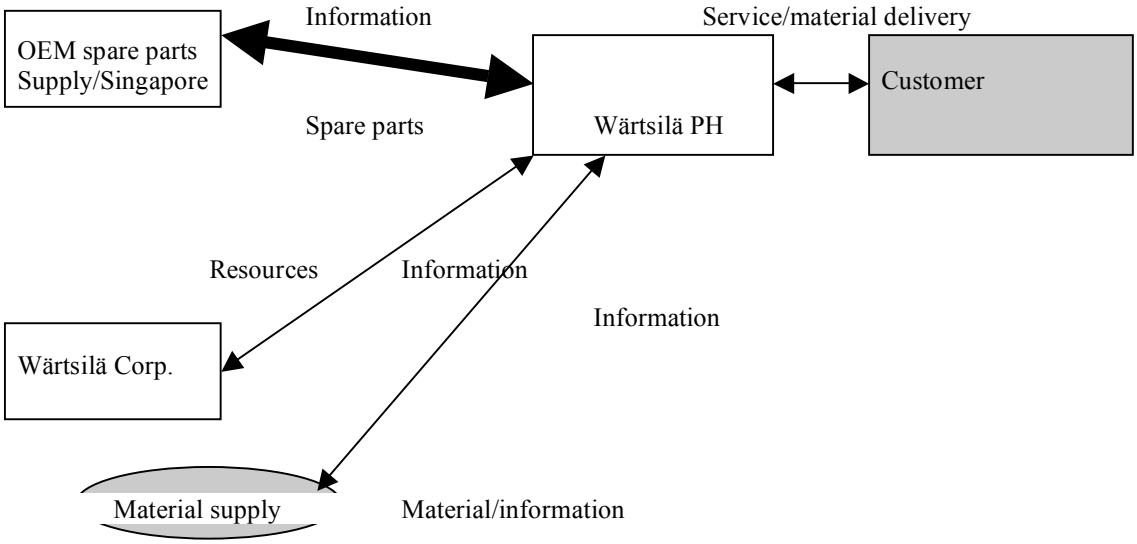


Figure 7. Wärtsilä after-sales supply

Figure 7 illustrates how the Wärtsilä Philippines after-sales network/supply is organized. Wärtsilä PH delivers all front office operations to the after-sales customer but uses three different kinds of sourcing for its back office operations. The manufacturer owns the OEM spare parts supply, while other smaller components and materials are supplied from the market. OEM spare-parts delivery represents a significant percentage of the whole offering. Wärtsilä Corp. shares resources with Wärtsilä PH. These resources are mainly know-how, information and administrational tasks. Unlike Loipart, the after-sales projects and other sales made by Wärtsilä PH in the region are always signed to the subsidiary rather than the Corporation. Wärtsilä PH shares customer related information, such as demand requirements, with all three sources.

4.4 Data Collection and analysis

Data were collected by means of formal, semi-structured interviews with one representative from both companies. Both initial interviews were conducted face-to-face and the scheduled time was one hour for both interviews. Several issues outside of the questionnaire were discussed, which helped to gain a more precise understanding of both the unit itself and the after-sales function. Prior to the interviews and following the interviews secondary data was used in order to obtain more general financial, operational and strategic information. Information such as corporate turnover, strategy, service locations, and descriptions of the offering was gathered from secondary sources for both companies. As the second case company is a publicly listed organization the collection of secondary data were easier and current information was accessible. For the second company the secondary data found online was assessed as being reliable and current. However for the first case company the secondary data were incomplete and some questions needed to be re-addressed following the initial interview.

The interviews took place at the locations chosen by the interviewees. The first interview with the Loipart representative lasted 45 minutes, the second interview with the Wärtsilä representative lasted 90 minutes. The second phone interview with the Loipart representative lasted 20 minutes. The interview was based on themes built around the five propositions derived from the theoretical body of the research. The themes covered in the interviews included:

- The strategy and business of the firm
- The structure of the after-sales services channel
- The relationship with the manufacturing company/unit/division
- The relationship with the customers

The interviewees were asked to answer to several questions (appendix 1) on each theme. The interviewees were asked to provide their own views and opinions on ‘how’ and ‘why’ the mentioned phenomena existed and manifested themselves in the way they do.

The respondents were selected because they were recognized as being knowledgeable about the strategy and the after-sale business models of their respective companies. The first interviewee was the conversion manager for Loipart’s after-sales operations in Florida. He is responsible for all the after-sales projects in the area and in charge of the operational strategy of the unit. The second interviewee was the managing director/ president for Wärtsilä Philippines. In addition to the general management

tasks he is working closely with the service provision function.

A semi-structured basis for the interviews was devised from the premises of the literature. A semi-structured interview allowed for complete theme coverage while enabling a more thorough discussion on organization specific issues. The semi-structured interview allowed the omission of some question. The interview for case company 1 was done first and the 'guideline' for the semi-structured interview was revisited in order to include new questions and themes. The second interview was conducted on the basis of the revisited 'guideline'. A second phone interview with the first interviewee was conducted in order to compare and contrast some new issues aroused in the second interview. Notes were taken from both interviews.

The case description and the concluding analysis were sent to both interviewees for re-checking and approval. Both respondents agreed with the conclusions and results of the analysis. Further, the five characteristics of after-sales services most likely to affect the vertical integration were discussed.

Empirically collected data and patterns were matched with the prediction/suggestions from theory building. An analytical technique of pattern matching was used as a general strategy to analyze the data. The empirical outcomes matched the suggested/predicted pattern. A positive relationship with vertical integration and the presented after-sales characteristics was found. To add, a more deep understanding of how these characteristics manifests themselves in the daily after-sales operations of companies was explored. As an example, the theory emphasized the importance of front end and effectiveness related performance measures for pure service provision. The empirical study showed that efficiency measures such as utilization rate and working hours for human resources were a more crucial measure even when companies had a service based strategy. When asked 'why', both managers emphasized the need to have efficiency in the usage of resources. However Wärtsilä PH exhibited more characteristics of having a service based strategy as well as having much more front-end efficiency measures, thus matching the predicted outcome.

5. RESULTS

The purpose of this study was to understand the firm, transaction and market, i.e. customer, specific factors that are most likely to affect the make or buy decision for a manufacturer's after-sales operations. In order to achieve the former, an overview of the transaction costs literature was presented in chapter two. Both case companies operating abroad acknowledged the possibility of either using the market, i.e. the price system or the hierarchies as means of organizing their economic activities. For both companies the perceived transaction costs manifested themselves in the direct service provision part of the after-sales offering, rather than in the supply management or supportive functions.

Chapter three attempted to combine the specific characteristics of after-sales operations with the transaction costs literature. Five specific after-sales characteristics that are most likely to affect the make or buy decision were identified. Both case companies acknowledge these five characteristics as being in part accountable for the organization of the respective economic activities. Some other factors, discovered during the interviews, likely to affect the make or buy decision in after-sales operations are also discussed in the latter part of this chapter.

In this chapter the findings from the empirical study are reflected on both the transaction costs theory and the five characteristics of after-sales operations. Beginning with the identification of how the market for after sales services fails, the results of Morschett's (2006) and Morschett et.al (2008) quantitative study and this study are compared.

5.1 Market imperfections

It is important to make a distinction "between 'internalization of ownership advantages or intermediate products' and the 'internalization of the markets for ownership advantages or intermediate products' within the context of endogenous structural market imperfections in final products and exogenous transactional market imperfections in intermediate products" (Tolention 2010). According to the theory, both case companies should thus be able to internalize operations due to structural and/or transactional market failure.

Loipart's after-sales service unit is operating in a very mature market in South Florida, which is a hub for the cruise line/ yachting business in North America. As mentioned earlier, the initial investment for the after-sales unit is very small and the company is running on a very thin organization. None of the investments were identified as being highly transaction specific and price competition was described as fierce. All the evidence in Loipart's case suggests that structural market imperfection is not the reason for internalization. In other words the reason for internalization of Loipart's after-sales services should lie heavily in the transactional market imperfections stemming from the ability to organize the markets for ownership advantages.

The value proposition for Wärtsilä PH's after-sales services is unique, to some extend, in the Philippine market. Because of this value proposition Wärtsilä is able to demand up to 20% more than its competitors for the after sales services. Wärtsilä at the Philippine markets, according to the interview, is faced with less competition than other Wärtsilä after-sales units around the globe. This evidence would suggest that some structural market imperfections exist and that Wärtsilä could able to internalize them. Wärtsilä has made significant investments into their after sales operations, which signals that the market is more likely to have structural imperfections. However Wärtsilä does have significant competition in the market for it's final products.

5.2 Asset specificity, uncertainty and transaction costs

Assets specificity and uncertainty are two key elements in the TCA that predict vertical integration (Geyeskens 2006). Williamson (1975) argued that transaction-specific assets are non-redeployable physical and human investments that are specialized and unique to a task. For Loipart, no-single investment came across in the interview as being highly transaction-specific. Stainless steel welding was identified as a highly specialized skill, but at the same time the welders were expected to have other skills as well. Loipart's manufacturing unit and the supply of material enable a wide range of offerings, the evidence of which can be seen in the comprehensive catering areas of the cruise ships. This would suggest that for Loipart no-single investment or asset is highly transaction specific, which in turn implies that the markets could be used for some tasks of after-sale provision. For Wärtsilä the asset specificity is higher, but not totally unique. The CEO illustrates this point by stating that he is not willing to fire a Wärtsilä trained technician even when his utilization

rate is low because the competition is certain to acquire him. What this implies is that the investment into the human capital, made by Wärtsilä, is specific which makes the individual a rare asset. However the human capital is valuable to the competition as well, giving it a more commodity like quality. Similarly the physical equipment at Wärtsilä Philippines workshop can be utilized to service other engines than Wärtsilä's own making the investments less asset specific.

Dunning (1988) distinguished the *asset* specific advantages of multinational enterprise, which occur from ownership of some specific assets stemming from a situation of structural market imperfection. Ownership of intangible assets was identified as a key success factor by both interviewees. For Wärtsilä it is crucial that the technicians and people involved with the customer are Wärtsilä employees in order to have straight access to all necessary information and backing resources. Know- how can be transferred trough hierarchies at marginal costs making it more efficient for Wärtsilä to use its own employees in these highly knowledge based tasks. For Wärtsilä after-sales services, the knowledge of the original product being serviced is crucial. For Loipart the ability to transfer customer related information at marginal costs across functions, i.e. from manufacturing to AS and vise versa, is an asset specific advantage. Knowledge about the customer and the physical good being serviced gives the company an advantage when it competes for after-sales maintenance work.

Another intangible asset identified by Hennart (2001, 2010) is the reputation of the firm. Although not an issue initially covered in the questionnaire, the issue of reputation came up in both conversations several times. The conversion manager at Loipart identified the usage of reputable Finnish technicians and the goodwill of the company as a factor that affects the buyer's decision to form contracts with the company's after-sales unit. Similarly Wärtsilä Philippines was using its reputation as a wholly owned subsidiary of the Wärtsilä Corporation as a competitive advantage to ensure its customers. The CEO of Wärtsilä Philippines emphasized the importance of OEM spare-parts as a factor affecting Wärtsilä's reputation and the sales. The reputation of the manufacturer seems to be easily transferred to the after-sales unit, an asset specific advantage that can be achieved trough vertical integration.

Uncertainty will raise the transaction costs on condition that asset specificity exists to a non-trivial degree (David 2004). The empirical study suggested that both companies had transaction specific assets related to the provision of after-sales services. Volume uncertainty is significant for both companies as yearly revenues is likely to vary

significantly according to sold projects. For Loipart volume uncertainty was identified to be a more significant factor because of the small amount of possible customers and cyclical nature of demand that is associated with being 'stuck' in one industry, the maritime/cruse line industry. Technological uncertainty in the industry that Loipart operates is low. Developing efficient ways of delivering the AS service is more important than innovation, a factor that is likely to affect vertical integration negatively.

Wärtsilä has more transaction specific investment but volume uncertainty is not as high as for Loipart since Wärtsilä PH's portfolio of offerings is wider and segmented to several industries. The effect of volume uncertainty is seen in the way the supply and transactions are organized in the companies. Loipart has low fixed costs of operating the after-sales function and resources are commonly used between manufacturing and AS. Wärtsilä is not faced with such uncertain demand and thus transaction specific investment, which result in high fixed costs, can be made directly into the company's own hierarchy. Technological uncertainty was not identified as a critical issue for neither of the after-sales units. Wärtsilä Corp. develops new technologies and solutions, which Wärtsilä PH offers to the end customers, meaning that the markets for technological development are internalized.

5.3 Five characteristics of after-sales operations

The aim of this study was to evaluate the five factors that are most likely influence manufacturer's vertical integration into after-sales operations. On the basis of the literature, the following factors were identified: *Fluctuating demand*: Likely to affect vertical integration positively when demand is heterogeneous. *Performance evaluability*: Likely to affect vertical integration positively when performance evaluability is low. *Resources requirement and firm size*: Likely to affect vertical integration positively when re-deployable and overlapping resources exist. *Nature of customer*: Likely to affect vertical integration positively when relationships intensify. *Strategy*: Likely to affect vertical integration positively when companies apply a service-based strategy.

5.3.1 Nature of the Demand

For both case companies, the nature of demand is extremely fluctuating in terms of scale and scope of each offering. Both companies offer the majority of after-sales

services and spare parts from a single network capable of handling smaller and larger orders. Idiosyncratic work, as defined by Erramilli (1993, 23), seems to characterize the offerings of both companies. As noted in the previous sub-chapter, for Loipart none of the assets seemed highly transaction specific. However, it seem that the process of handling the heterogeneous demand with idiosyncratic work is a transaction specific asset and a key reason for vertical integration. The relatively high overhead costs of intermittent demand are handled by resource allocation between the manufacturing unit and the after-sales unit. There are only a few key personnel dealing solely with the after-sales services function. The HQ in Finland or the third party dealer in Florida handles accounting, HR, general administration and product design, to name a few. As predicted, there is a low frequency for one particular type of after-sales service. As a rare example, Loipart has delivered, as an after-sales service, custom aluminum doors located on the ship's deck. However the frequency for any kind of after-sales work is high and the company is at present willing to take all after-sales work available. As the Loipart after-sales unit is fully owned by the manufacturer, and many resources are shared, it is negligent to fully separate the demand of these two units. In the case of Loipart, the manufacturer has vertically integrated forward into the after-sales unit in order to protect from cyclical demand. For Loipart, handling intermittent and heterogeneous demand using its own cross-functional hierarchies is a competence, which can viewed by the TCA as a transaction specific asset.

Similarly the demand for Wärtsilä Philippines is heterogeneous. The two cases differ in the fact that Wärtsilä has much more physical equipment deployed near the after-sales customer in the Philippines. This is not simply a question of resources deployment but it highly relates to the nature of the demand as well. For Wärtsilä PH the relative overhead costs associated with responding to heterogeneous demand seem to be higher since resources need to be based closer to the customer than for Loipart. The physical equipment is needed in order to satisfy customer demand in an adequate time, as is the case for human resources as well. For all equipment and technicians utilization rate is constantly evaluated. The business logic for Wärtsilä is different to Loipart, which is also reflected in its operation mode. For Wärtsilä PH, the OEM spare-parts represent 57% of all after-sales service provision revenues with a high 60% margin at W-Group level. According to the Wärtsilä Philippines CEO, the main reason for 100% ownership of the spare parts supply is the significant cash flow it brings to the company. The demand for spare parts is constant and it could be argued that the service is in fact used as a vehicle to deliver the spare parts.

Wärtsilä does not set up operations if not enough volume is achieved in one location and thus dealers are used in the more distant parts of the country. Both companies use centralized spare-parts supply. Opposite to the general view on after-sales literature (Cohen 2003, Asugman 1995, Milind 1997, Dennis 2003, Bundschuh 2003) neither respondents attributed demand for quick delivery time as an overwhelming challenge. For Wärtsilä 80% of the maintenance work associated with after-sales is pre-scheduled and the customer is informed 3-4 weeks in advance of each maintenance delivery. The response time for urgent after-sales work is determined by the availability of spare-parts. The response time is still fairly short since spare parts from the Singapore outlet are delivered to the Philippines within 3 days while human resources are on stand-by. Responding to so-called 'emergency' demand represent such a small portion of the revenue for both companies that it is not viewed as a major burden.

Both companies avoid the high *ex ante* costs for handling infrequent and heterogeneous demand by using their own hierarchies. The governance structure that is utilized in a given situation depends on the comparative transaction costs of using that particular structure, as any given governance structure will incur so called *ex ante* costs of negotiating the contract and the *ex post* costs of monitoring the performance and enforcing the behavior of the parties to the contract (Williamson 1975). For Loipart, the *ex ante,* costs associated with using external workforce were identified as high. According to the conversion manager, responsible for decision on which technician to bring into the ship, the local markets do not provide multi-talented technicians capable of responding to the heterogeneous tasks involved in each project. Using the markets to source technicians would result in the situation where each task (carpentry, stainless steel welding, electronic work) involved in the service provision would have to be negotiated separately and possibly with different actors. The *ex ante* costs become very high compared to using the company's own technicians who are capable of several tasks and whose specific skills and competences are known to the project/conversion manager. Loipart previously owned half of the spare-parts supplying partner and there is a strong bond based on knowledge between the two companies. This kind of previously hybrid long-term relationship does not involve *ex ante* costs at present. The nature of the after-sales demand and the associated *ex ante* costs are the key reason for the existence of the Loipart Bahamas workshop. For Wärtsilä Philippines the *ex ante* costs of negotiating supply contracts was not identified as being an overwhelming task since the larger international competitors used external agents for similar functions. However as the service provision was identified as being knowledge intense and the quality of the service is the competitive

advantage, it is clear that negotiating contracts to assure the desired service level and quality would imply high *ex ante* costs. *Ex post* costs will be discussed later in sub-chapter 5.2.2 as they represent the performance evaluability characteristic of after-sales operations.

5.3.2 Performance evaluability

For Wärtsilä the *ex post* costs associated with using the market would not necessarily be relatively high compared to the current situation. The pure services delivery is highly monitored and sophisticated measures are in place to ensure quality. These measures are in place despite full ownership of the delivery network (spare-parts, design, installation, communication etc.). For outside material supply, i.e. non-OEM spare parts, quality and quantity are rigidly monitored. According to the CEO of Wärtsilä Philippines, independent dealers are not interested in particular spare parts or servicing since their goals are to serve as many clients as possible in order to benefit from economies of scale. What this implies is that the *ex post* costs of monitoring the dealers would be high since they are inherently bound to act contrary to Wärtsilä's high quality and involvement standards. Loipart relies heavily on its hierarchy to deliver the right resources to the right places. Performance is not as rigorously monitored as in Wärtsilä where project delivery always includes supervising service engineers for example. Loipart's case does not give straightforward answers as to the associated *ex post* costs of monitoring performance in the case where external workforce would be utilized. However, since the performance measures are not overwhelmingly complex and a lot of trust is put in the hierarchy to eliminate the need for monitoring, its is likely that switching to external service providers would imply much higher performance enforcement and measurement costs compared to the present. This view was also shared with the company.

Morschett's (2008) work hypothesized that manufacturer's are less likely to use a cooperative entry mode for their AS in foreign market when the service performance becomes more difficult to evaluate. This hypothesis was supported by empirical evidence. In similar fashion, the case companies in this study avoided the associated *ex post* costs of market governance, by utilizing their own hierarchies. Since neither of the companies were using external service providers, the *ex pos*t costs had to be estimated according to the nature of the offering. The interviews provided good insight into the offering. The service part of the offering was described as being the key element requiring a lot of knowledge and know-how for both companies. Both companies were interested in maintaining superior service quality for their customers. Such descriptions would imply high *ex post* costs. The results of this study are in line

with Morschett's (2008) results in that performance evaluability is likely to affect vertical integration positively when performance is getting more difficult to assess.

5.3.3 Resources requirements

For both case companies the resources requirements to serve the unit's after-sales customers are relatively small compared to the manufacturing unit and the rest of the organization. Wärtsilä PH has its own staff of technicians, engineers, administrators and supervisors as well as transaction specific investment into equipment. For Wärtsilä PH the capital intensity is higher in terms of total capital investment into the after-sales unit alone. The Wärtsilä PH unit shares spare parts supply and some administrative work with the rest of the organization; otherwise it is fairly independent unit. If resources requirements were the single key determinant in the make or buy decision, it could be argued that Wärtsilä, according to TCA, should use the markets to govern its after-sales operations in the same manner as its biggest international competitors.

For Loipart's after-sales business, the resource requirements are more characterized by intangible assets than for Wärtsilä. There are a lot of overlapping resources between the needs of the manufacturing and the after-sales unit. These overlapping resources are the intangible assets that are represented by the human capital and the organization's know-how. Vertically integrating into the after-sales unit does not require high new resources requirements; well justifying the decision to vertically integrate. However the spare parts supply and management, which needs to be done near the customer in Florida, requires new independent resources that cannot be shared between the two units. In a similar fashion some smaller custom parts and technicians for smaller projects need to be deployed closer to the customer. These resources are deployed in the Bahamas workshop. The work done at the Bahamas' workshop represents however only a fraction of the work that is required for after-sales delivery. The physical space for the workshop is rented and its operations do not require significant amounts of resources. The manufacturing unit sources its machines and components from Sweden, but the nature of after-sales demand requires the SKU's are deployed near the customer much in the same way that Wärtsilä PH has its spare-parts supply in the region. This resource requirement results into the outsourcing of the spare parts management.

Morschett (2008) hypothesized on resources requirements affecting the choice of vertical integration. The empirical finding yielded contradictory results to the suggestion that increasing resources requirements would increase the likelihood of

using the markets. Morschett speculated on issue that yielded the negative result, only touching the subject of the nature of the resources. This study, however, took a more comprehensive look into the nature of the required resources and concluded that resources requirements affect vertical integration positively when resources inside the organization can be re-deployed to serve the AS function. The nature of after-sales operations differ from manufacturing in that resources need to be pre-positioned and that these resources are usually human resources. Since after-sales differ from manufacturing in terms of required resources it is likely that manufacturer's vertical integration into AS requires capital investment. The high associated overhead costs can coped with only when there is enough demand for those resources, i.e. the utilization rate of those new resources is high enough. An organization can increase the utilization rate of a resource (human or tangible) by sharing the resource with the rest of the organization or by renting the resource on the market. When an organization is able to pre-position its resources to serve more than one unit or function, and one of those units or functions is AS, then vertical integration is more likely. However, it must be noted that as the case of Wärtsilä PH shows, the resources requirements do not dictate the choice of vertical integration; it is more an enabling factor than a determining one.

5.3.4 Nature of customer

The proposition suggested by the literature review was that vertical integration is more likely when relationships between the customer and supplier intensify. The larger the procurement scope and quantity is, the more intense the relationship is argued to be. For both companies a small number of accounts provided a significant percentage of revenue. 20% of Wärtsilä PH's revenue comes from one customer and similarly 80% of Loipart Fl's revenues come from one customer. This combined with the small number of possible customers is likely to be one reason why both companies have vertically integrated into after-sales provision.

Service provision by nature requires more interactions between the customer and the supplier. The understanding of the customer's processes and environment into which the offering is delivered to is essential for both case companies. This understanding is perceived as the competitive advantage on which growth can be achieved. To illustrate this, the CEO of Wärtsilä PH mentions the acquirement of a boiler room maintenance firm in the Philippines. Because Wärtsilä already delivers products and services to the engine rooms in ships it has the knowledge of the customer's process, which it can leverage when offering additional solutions and maintenance services such as boiler repairs. The more goods and services Wärtsilä is able to offer to one

customer the more the relationship can be argued to intensify, thus justifying again the choice of 100% ownership of the AS unit. In a similar fashion, Loipart is able to leverage its knowledge about shipyards and ship owner's processes, which enables it to deliver a wide portfolio of AS services and goods to the ship owners. The ship owners are able to rely on Loipart to deliver and modify all galleys and food storage units in ships and to provide spare parts and new goods such as ice cream machines. The process of delivering after-sales services to ships requires a lot of interactions between customer and the supplier as well as knowledge of other parties such as the dockyard. The relationship between Loipart and its biggest customers is intense, justifying the choice of vertical integration.

As David (2004, 49) points out, the coordination needs between seller and buyer, the importance of key buyers, confidentiality of information and lock in to incumbent suppliers are all factors promoting vertical integration. The conversion manager at Loipart described some sales negotiations as being very much characterized by information confideality where all discussed matters are protected by non-disclosure contracts. Key buyers are essential for the success for Loipart and both of its competitors. For Wärtsilä PH, the larger sales to government owned companies are made trough individual dealers. These dealers are independent persons who work in between the end customer and the supplier. Their role is critical, yet purely bureaucratical, in getting any kind of after-sales work sold to the larger public customers. Handling the relationship with the dealer has proven to be a necessity as much as it can be a burden. As the company enforces a strict rule against corruption and bribery, it is important that control of such relationships is in Wärtsilä's own hands. By providing a wide range of solutions for larger customers, the information flows tend to increase both directions. Wärtsilä started to integrate its manufacturing and (after-sales) services provision by configuring key account manager (KAM) position for larger customers. Wärtsilä delivers both new products and after-sales service from its different unit to Royal Caribbean Cruise lines (RCCL) and instead of making the customer deal with each unit separately there is a KAM that serves as the link between RCCL and the whole Wärtsilä organization.

5.3.5 Strategy

Both companies identified superior service provision as their competitive strategy. On further evaluation Wärtsilä exhibited all signs of a truly service based strategy, as it was described by Cavallierri (2007), Morschett (2006) Gebauer (2008) Milind 1997 and Cohen (2006). Wärtsilä's customer are willing to pay a 10-20% premium for the OEM spare-parts, the technical maintenance and the fact that the Wärtsilä Corporation

stands behind Wärtsilä PH's sales. Wärtsilä PH does not compete with price, offer solutions at break-even numbers or deliver goods at loss in order to safeguard their position. As Wärtsilä Corporation is moving more towards delivering integrated solution and services the role of after-sales servicing has become the company's core offering. The Wärtsilä is clearly an independent unit, with its own profit and loss responsibilities. Wärtsilä PH's offering, delivery as well as the focus of operational metrics on service delivery are all in line with the service-based strategy, which is reflected in its operational mode as well.

Loipart's case exhibited signs of both a service based strategy and a price based strategy. The offering itself is characterized by high degrees of customization and high service embeddedness. The after-sales and conversion business is gaining more importance as manufacturing is slowing down, but still it does not represent the company's core offering or source of revenue. The conversion manager identified price as a key determinant in many choices the company as well as the customers make. The choice of using reputable Finnish workforce has to be re-evaluated in order to stay competitive as work is often awarded to the least expensive suppliers. The emphasis on service delivery was put on working hours and other efficiency measures, a characteristic of the price-based strategy. Loipart's after-sales services do not represent a completely separate division of the company, but they are rather a 'natural extension', as described by the conversion manager, to the product line. Loipart thus exhibits both signs of a price-based and service-based strategy. This is well represented in their choice of governance as spare-parts management is outsourced and the hierarchy controls pure service delivery.

6. CONCLUSIONS AND SUMMARY

This study contributed to the transaction costs theory by studying the phenomena of after-sales operations. The basis for the theoretical body of this study was the transaction costs theory and internationalization. The results of the empirical study suggest that the ideas brought forward by the TCT hold true regarding the effects of market imperfections related to internalization. This study adds new insight to the proposition of Morschett (2006) and Morschett et.al (2008) contradicting some previous interpretations. To add, this study brings the concept of 'nature of customer' into the analysis, by including it as the *market specific* factor influencing vertical integration. An understanding of how the delivery of the after-sales offering, including the tangible goods and the pure service embedded with the flow of information, should be organized.

6.1 Market failure in the after-sales business

This study was concerned with the perceived market failure in the case companies after-sales markets. The theoretical framework suggested that transactions would be shifted from the markets to the company's own hierarchy when the transaction costs for a particular transaction or set of transactions would incur high transaction costs. In other words, when the markets for that particular transaction would fail. The theory identified both structural and transactional market failure as being reasons for internalizing operations.

The study showed that there are not necessarily structural market imperfections that would allow either company to exploit any monopolistic advantages, i.e. to internalize pecuniary externalities. Both case companies faced competition by other companies, offering similar solutions, in their respective markets. Endogenous structural imperfections in the final market for after sales services did not exist at the moment nor was it identified as a reason for the manufacturer's internationalization in the first place. It could be argued that Wärtsilä PH is able to exploit some of the structural market imperfections in the less developed Philippine market, since the company is offering an unique value proposition of OEM-spare parts and fully internalized after-sales operations with the backing of a large multinational. Wärtsilä PH does not get all the after-sales service work that the company bids for in the market, dismissing the idea of a complete structural market imperfection.

This study demonstrated that the special nature of after-sales servicing could promote vertical integration positively for manufacturer's of capital goods in any given market. Both interviewees were aware of the possibilities of organizing the transactions using the markets and acknowledged that third party providers could be found to handle these transactions. This would suggest that the markets for each given transaction did not fail; yet the companies choose to organize these transactions within their own hierarchies. The case of Loipart exhibits this phenomenon well. The markets for cruise line/maritime/yachting servicing in southern Florida are very mature. South Florida, being the hub for the North American cruise line industry, is a market where many economic agents operate to service this sector.

The case studies demonstrated that structural market imperfections were neither the primary cause of internationalization nor internalization of the companies' after-sales organization. Transactional market failure however seems to play a far more important role. The five characteristics of after-sales introduced in this work dig well into the subject.

6.2 The five characteristics affecting vertical integration positively

Morschett et.al (2008) argued that the more the demand for AS fluctuates in a foreign market, the more likely companies are to choose the markets as means of organizing their economic activities. This hypothesis was supported by Morschett empirical study. This study argues against this notion and points out that the *ex ante* costs associated with fluctuating demand and the organization of supply into one network capable of handling such demand is likely to affect vertical integration positively. The case examples exhibit well the effect the demand has on vertical integration of after-sales services. For Wärtsilä it is highly profitable to own its OEM spare-parts supply since the demand is constant and the profit margins for such goods bring in a significant cash flow. Wärtsilä is also able to exploit centralization of the spare-parts supply in order to minimize overhead costs and to benefits from economies of scale and experience curve effects as well as know-how centralization due to specialization. For Loipart, responding to the demand requires more pure services and a global or regional spare-parts supply can not be set up to serve several locations. Both companies thus respond to after-sales demand by vertically integrating into the function, which is represents the majority of the total offering and the majority of the revenue.

Resources requirement does not seem to be a deciding factor in the make or buy decision, rather it represents an enabling or disenabling factor. In other words, the manufacturing company should have strong strategic reasons for vertically integrating into after-sales provision, even if it had existing resources that could be easily deployed. For the 'make' decision, the company can view itself as a market where transactions can be handled. For larger organization, such as Wärtsilä, the internal markets for knowledge, spare-parts and other resources are large enough to efficiently handle the demand of one relatively small unit. For smaller companies, such as Loipart, and companies whose after-sales operations in one particular unit require a comparatively high amount of resources, using of internal markets becomes more costly or impossible. Activities such as administration can be sourced internally since this function already exists and providing additional tasks for them happens at marginal cost or for free if excess capacity existed. Internal markets cannot easily handle more costly activities, such as spare parts supply.

This study showed that the nature of the customer is likely to have an effect on the choice of governance. Both companies serve similar or even the same industrial customers. The nature of the customer is likely to affect the front-end operations of after-sales delivery. Both case companies identified the importance of having control over the final service delivery to the customer. Back end operations such as inventory management can be handled by a third party when it has no direct effect on the front end operations.

This study confirmed Hennart's (2001) and Dunning's (1980) notion that intangible assets such as know-how and good will are interdependencies which are most likely to incur such transaction costs that transactions trough the markets is usually more expensive than trough hierarchies. Vertical integration for after-sales services requiring a lot of know how is very likely since knowledge about the good being serviced needs to be transferred across the two functions frequently. The more know-how is involved, the more costly it is to transfer this information across separate organizations and to avoid information asymmetry.

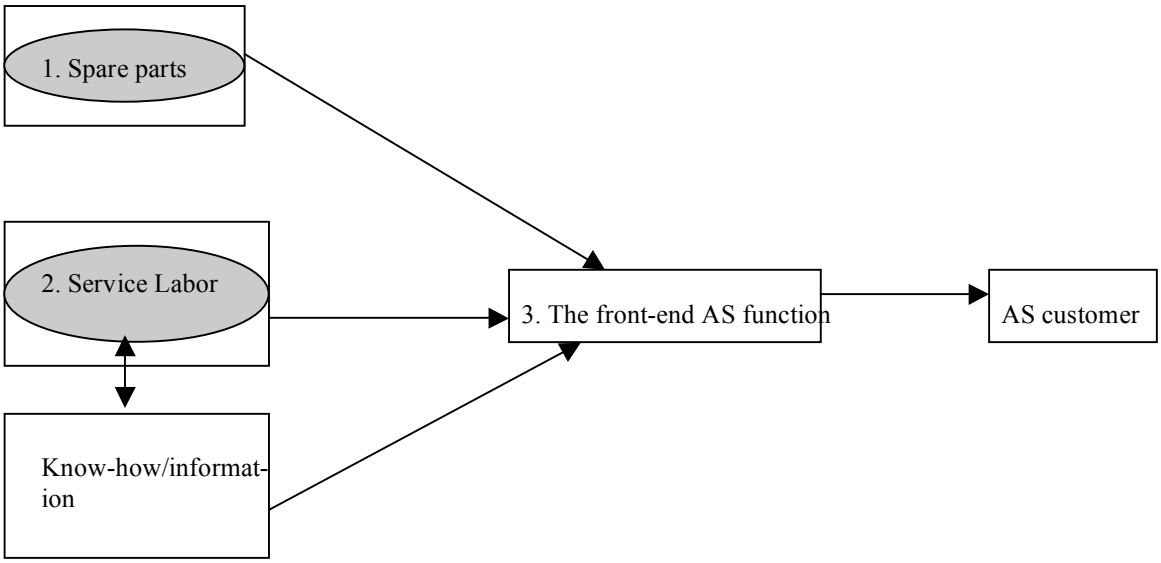
This study provides in-line insight into the after-sales strategy as Cavallierri (2007), Morschett (2006) Gebauer (2008) predicted it. Morschett (2006) divided strategy into the price-based and the service-based one. This categorization provides somewhat good insight into the choice of governance for the after-sales provision. However companies such as Loipart are competing with services while still exhibiting

organizational attributes related to the price based strategy. Loipart's AS operations are characterized by Cavalieri (2007) as being a *cash generating.* The work of Cavalieri (2007) thus provides a better look at the strategic profiles, which should provide insight into understanding hybrid governance and multi channel sourcing choices.

6.3 Internalizing the offering

The aim of this study was to study the manufacturer's vertical integration into the after-sales business. The evidence from after-sales literature suggested that there are in fact three different functions within the after-sales function. The material function, the information function and the service labor function. The interviewees shared this notion and the empirical study on both organizations suggested that the after-sales function was clearly divided into three separate, yet depended functions. This would suggest that vertical integration into the after-sales service business could be done to different extents. Manufacturer's can use the transactions costs economics and the contents of this study to evaluate whether to internalize one or more of these three different functions.

The delivery of the after-sales offering includes both tangible goods, i.e. spare parts and components, as well as intangible goods in the form of pure services. The delivery of these services will require front-end operations regardless of the chosen strategy. The front-end operations, i.e. what the customer finally sees and receives, are dependent on both the supply of tangible goods as well as human capital (Windhal, Lakemond 2010). This three part organizational structure is familiar to companies providing integrated solutions, the organization of which is closely linked to manufacturers providing after-sales services as competitive advantage, i.e. using the service strategy (Davies 2006).



1.A. Internalize when structural market imperfection exists. Due to the widespread geographical nature of the customers and requirements for fast delivery time and a large amount of required inventory, there is likely to be structural market imperfections.
B. Internalize when spare parts delivery has a strategic role in the whole AS offering.

2. Internalize when *ex post* costs of service evaluation are high or when *ex ante* costs of negotiating contracts are high due to high service level requirements or the idiosyncratic nature of the pure service delivery. Internalize when transactional market imperfection exists.

3. Internalize when significant amounts of resources are shared between the AS-service delivery function and the manufacturer. Internalize when increasing amounts of knowledge needs to be transmitted between the manufacturer and the after-sales function.

Figure 8. Internalizing after-sales operations

After-sales services always require the delivery of tangible goods such as spare-parts. The delivery of these goods always requires human resources and the after-sales

operations will always be linked to the manufacturer whose good is being serviced. Figure 1 (Cohen 2006) at the beginning of chapter one divided the after-sales operations into three categories. These categories were the material supply, information and service labor. The manufacturer is the source of information or know-how as depicted in figure 8 above. The previous studies on after-sales operations and the case companies in this study demonstrated that spare-parts supply and service labor (human resources) are two completely separated functions although they become interlinked at the front-end, delivery, function. Thus the three part back office organization in addition to the front-end function making a four-part organization structure. The manufacturer can be highly involved in the AS operations or it can take its distance according to it's after-sales strategy. Thus, the manufacturer needs to choose how to organize both the tangible goods delivery and the deployment of human resources, while still having some role in the supply chain.

An interesting subject related to vertical integration of after-sales operations is to study how the reputation of the manufacturer can be transferred, in the business-to-business market, to the service unit even when overlapping resources do not exists.

6.4 Summary

After sales is an interesting subject to study with the transactions costs theory. Some manufacturers could in fact create structural market imperfections in the markets for the maintenance of their goods abroad by devising such products that can be only serviced by the company itself. This would imply that the markets for the final product, which is the after sales service for that particular good, would fail. By internalizing these markets the manufacturer could exploit its monopolistic advantages and cash in significant profits. 'Complete' and created structural market failure does not necessarily mean that the manufacturer will internalize the after sales markets, because it can use long franchising contract and licensing to name authorized dealers and service partners. The boundaries of the after-sales units are thus more governed by transactional market failure rather than structural market imperfections as the case studies demonstrated. Structural market imperfections in after sales servicing usually exists due to demand that requires a lot of investment and tied capital, such as the handling of spare parts inventories close to the customer. Transactional market failure was identified as being the key reason for internalizing the different after-sales functions.

The specific nature of the after sales operations is well presented using the five characteristics that this study presented. These five conditions that promote vertical integrations are directly linked to the transactional and structural market failure. There are essentially three different parts to the after-sales operations and the governance of each function should be assessed separately. This study introduced and evaluated five special after-sales characteristics that should help managers with the decision to regarding the governance of the three different after-sales functions.

7. REFERENCES

Anderson Erin, Barton Weitz (1986). Make or buy decision: Vertical integration and marketing productivity. *Sloan Management Review* 27: 3, 3-19.

Asugman Gulden, Jean L Johnson & James McCullough (1995). The role of after-sales service in international marketing, *Journal of international marketing* 5: 4 11-28

Beamish Paul, John Banks (1987). Equity joint ventures and the theory of the multinational enterprise. *Journal of International Business Studies*18: 2,1-16

Bello Daniel, Dant Shirish & Ritu Lohita (1997). Hybrid governance: The role of transaction costs, production costs, and strategic consideration. *Journal of Business and Industrial Marketing* 12: 2 118-133.

Bier, John. (1984). Boeing commercial airplane group spares department: simulation of spare parts operations. Detroit, MI: ORSA/ TIMS Joint National Meeting

Bonet, F.J., Peris-Ortiz, M. and Gil-Pechuan, I. (2010). Integrating transaction cost economics and the resource-based view in services and innovation. *The Service Industries Journal* 30: 5, 701–12

Bundschuh Russel, Theodor Dezvane (2003). How to make after-sales service pay off. *McKinsey Quarterly* 4: 116-124.

Cavalieri S, P, Gaiardelli & S, Ieracen(2007). Aligning strategic profiles with operational metrics in after sales service: Special issue of performance measurement and management systems. *International Journal of Productivity and Performance Management* 56: 5/6. 436-455.

Casson, M. (1999), The organization and evolution of the multinational enterprise: an information cost approach. *Management Inter national Review* 39: 3, 77-121.

Cavusgil, S.T (1980). On the Internationalization Process of Firms. *European*

Research 8: 6, 273-281.

Cohen Morris, Agrawal Narendral & Agrawal Vipul (2006). Winning the aftermarket. *Harvard business review* 84: 5, 129-138.

Croston, J. D. (1972). Forecasting and stock control for intermittent demands. *Operational Research Quarterly* 23: 3, 289– 303.

Cova Bernard, Robert Salle (2008). Marketing solutions in accordance with the S-D logic: Co-creating value with customer network actors. *Industrial Marketing Management* 37, 270 – 277

Coveillo Nicole, Martin Kristina (1999). Internationalization of after-sales service SMEs: An integrated perspective from the engineering consulting sector. *Journal of International Marketing* 7: 4, 42-66

David Robert, Shn-Kap Han (2004). A systematic assessment of the empirical support for transaction cost economics. *Strategic Management Journal* 1: 4, 39-58

Davies Andrew, Tim Brady & Michael Hobday (2006). Charting a path towards integrated solutions. *MIT Sloan Management Review* 47: 3, 38-48.

Dennis Michael J, Ajit Kambil (2003). Building profits after the sale. *Supply Chain management review* Jan/Feb: 3, 42-48.

Dunning, John H (1980). The theory of international production. *The International Trade Journal* 3: 1, 21-66.

(1988). The eclectic paradigm of international production: A restatement and some possible extensions. *Journal of International Business Studies* 19: 1, 1-31.

Erramilli Krishna (1992). Influence of some external and internal environmental factors on foreign market entry mode choice in service firms. *Journal of Business Research* 25: 4, 263-276

Erramilli Krishna, C.P Rao (1993). Service Firms' International Entry Mode Choice: A Modified Transaction Costs Approach. *Journal of Marketing* 57: 1, 19-38

Ford David (2011). IMP and service-dominant logic: Divergence, convergence and development. *Industrial Marketing Management* 40, 231–239

Gankema Harold G.f., Henoch R. Snuif, & Peter S. Zwart (2000) The internationalization process of small and medium-sized enterprises: An evaluation of stage theory. *Journal off business management 38: 4, 15-27*

Gebauer Heiko, Carlos Sanches & Elgar Fleich (2008). Service strategies in manufacturing companies, *Business Strategy Series* 9: 1, 12-20.

Geyskens Inge, Steenkamp Jan-Benedict & Kumar Nirmalya (2006). Make, buy or ally: Transaction costs meta-analysis. *Academy of Marketing Journal* 49: 3, 519-543.

Groonroos, Christian. (1984), A service quality model and its marketing implications. *European Journal of Marketing* 18: 4, 36-44.

Hennart Jean-Francois (2010). Transaction Cost Theory and International Business. *Journal of Retailing* 86: 2, 257-269

(2001). Theories of the multinational enterprise, *Oxford handbook of international business 4:* 127-149.

(1977). A theory of foreign direct investment, *Ph. D dissertation*. University of Maryland at College Park

(1982). *A Theory of Multinational enterprise*. University of Michigan Press: An Arbor. 201. ISBN: 0-472-10017-3.

(2001). Theories of the multinational enterprise. *Oxford University Press*, 128-148.

Hymer, Stephen (1960). The international operations of National Firms, *Ph.D dissertation.* Massachusetts Institute of Technology.

Johnson Lauren Keller (2007). Is outsourcing after sales services harming your brand. *Harvard business review* 1: 5, 87-09.

Keegan Kevin (2004). After-Sales Service Revenue Can Yield Even Bigger Returns. *The world trade magazine online.* [online] Available on the World Wide Web: URL: http://www.worldtrademag.com/Articles/Feature_Article/1ea78e96f8af7010VgnVCM100000f932a8c0

Knight, Gary (1999). International Services Marketing: Review of Research 1980-1998. *Journal of Service Marketing* 13: 4/5, 347-360

Levitt Theodore. (1983). After the sale is over… *Harvard Business Review* 61: 5, 87-93.

Loipart Corporate US Website [online]: Accessed on 10.12.2011. Available on the World Wide Web:
<URL: http://www.Loipart.com >

Loipart Corporate Website [online]: Accessed on 10.12.2011. . Available on the World Wide Web:
<URL: http://www.Loipart.fi>

Milind Lele (1997). After sales services: necessary evil or strategic opportunity. *Managing service quality* 7: 3, 141-145.

Miller Ed (2008). Leveraging after-sales services for competitive advantage. *Manufacturing business technology* [online]. Available on the World Wide Web.
URL: <http://www.mbtmag.com/article/CA6605755.html>

Mooi Erik, Ghosh Mrinal (2010). Contract specificity and its implications. *Journal of Marketing* 74, 105-120.

Morschett Dirk, Schramm-Klein Hanna & Swoboda Bernhard (2008). Entry Mode for Manufacturers' International After-Sales Service: Analysis of the transaction-specific, Firm specific and Country-specific Determinants. *Management International review* 48: 5, 525-549

Morschett Dirk (2006). Firm-specific influences on internationalization of after-sales service activities in foreign markets. *Journal of Services Management* 20: 50, 309-323.

Nordin, Frederik (2005). Searching for the optimum product service distribution channel: examining the actions of five industrial firms. *International Journal of Physical Distribution & Logistics Management* 35: 8, 576-594.

North, Seth W (1988). An Empirical Look at Franchising as an Organizational Form. *Journal of Business* 61: 2, 197-217.

Quinn James, Thomas Doorley & Penny Paquette (1990). Beyond Products: Service Based Strategy. *Harvard Business Review* 3, 58-67.

Rangan, V. K., R. T. Moriarty Jr. & G. Swartz. Segmenting Industrial Customers by Buyer Behavior. *Journal of Marketing* 56: 1, 72-82.

Rigoupoulou Iris, Chantionakis Ionnais, Constantine Lymperoupoulous & George Siomkos (2008). After Sales service quality as an antecedent of customer satisfaction. *Managing service quality* 18: 5, 512-527.

Rubin, Paul H (1990). *Managing Business Transactions*. The Free press, New York. ISBN: 0-02-927596-2. 179

Rugman, Alan (1986). New theories of the multinational enterprise: An assessment of internationalization theory. *Bulletin of Economic Research* 38: 2. 101-118

Saunders Mark, Lewis Philip, Thornhill Adrian (2003). *Research methods for Business Studies*. Prentice Hall, ISBN-10:0-273-6580-2, 504.

Scheer, C Lisa K. Fred Miao, & Jason Garrett (2010), The Effects of Supplier Capabilities on Industrial Customers' Loyalty: The Role of Dependence. *Journal of the Academy of Marketing Science* 38: 1, 90-104.

Stuckey John, David White (1993). When and When not to vertically integrate. *Sloan Management Review 1*: 4, 71-83.

Teece, David (2010). A tribute to Oliver Williamson: Williamson's impact on the Theory and Practice of Management. *California Management Review* 52: 2. 162-175

Tolentino, Estrella (2010). From a theory to a paradigm: Examining the eclectic paradigm as a framework in international economics. *International Journal of the Economics of Business* 8: 2, 191-209

Walker Gordon, Poppo Laura (1991). Profit centers, single-source suppliers, and transaction costs. *Administrative Science Quartely* 36, 66-87

Welch, Lawrence and Luostarinen, Reijo (1988), Internationalization: Evolution of a Concept. *Journal of General Management* 14: 2, 36-64

Windahl Charlotta, Lakemond Nicolette (2010). Integrated solutions from a service-centered perspective: Applicability and limitations in the capital goods industry. *Industrial Marketing Management 39*, 1278–1290.

Willemain Thomas, Smart Charles, Swartch Henry (2004). A new approach to forecasting intermittent demand for service parts inventories. *International Journal of Forecasting* 20, 372-387.

Williamson, Oliver E (1975). *Markets and Hierarchies: Analysis and Antitrust Implications: A Study in the Economics of Internal Organization*. The free press. New York. ISBN 0-02-935360-2. 284

Williamson Oliver (1991). Comparative Economic Organization: The Analysis of Discrete Structural Alternatives. *Administrative Science Quarterly* 36, 269-296

Wolter Carl. and Veloso Francisco (2008). The Effects of Innovation on Vertical Structure: Perspectives on Transaction Costs and Capabilities. *Academy of Management Review* 33: 3, 586-605.

Wärtsilä annual report 2010. [online] Accessed on 20.12. 2011. Available online. <URL: http://www.annualreport2010.wartsila.com/>

Wärtsilä Philippines Company Brochure [online]: Accessed on 20.12. 2011. Available on the World Wide Web.

<URL:http://wartsila.no/ss/Satellite?blobcol=urldata&blobheadername1=ContentType&blobheadername2=ContentDisposition&blobheadervalue1=application%2Fpdf&blobheadervalue2=attachment%3B+filename%3DWPH+Company+Brochure.pdf&blobkey=id&blobtable=MungoBlobs&blobwhere=1278586918833&ssbinary=true>

Wärtsilä Corporation Website [online]. Accessed on 20.12.2011. Available . Available on the World Wide Web.
<URL: http://www.wartsila.com>

APPENDIX:

SEMI-STRUCTURED INTERVIEW:

1. What is your role in the company?

2.What do you do? What is your offering?

3. How much spare parts vs services?

4. What is the role of the after-sales business to the manufacturer?
Why?

5. Does the after-sale function have its own strategy or is dictated by the manufacturer?
- What is this strategy?
-Why this strategy

6.What is the structure of the after-sales channel?
-Why?

7. Demand:

-How would you characterize the demand for you offerings? The range of services do you provide?
-Why?

8. Performance evaluability: Is there a need or not?
-Why?

How is performance evaluated?
-why?

Examples:
-customer satisfaction?
-re-doing things
-speed

9. Nature of customer

-how many customers/accounts do you have for new products
why?
-how many of them do you serve in the after market
why?

10. Nature of the product.

11. Resources.