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**Value Co-Creation through Interdependence  
In the Context of Industrial Buyer-Seller Relationships  
- Findings from an Empirical Study**

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**ABSTRACT:**

The paper discusses the value -phenomena in the context of industrial buyer-seller relationships. There is a review on how value has been, and is understood in industrial marketing literature and goes on into introducing the concept of value co-creation. Moreover the paper discusses the dynamics of value and the connection between value and interdependence in a business relationship. Some preliminary findings from an empirical study for a doctoral thesis project on Value Co-Creation in a buyer-seller relationship will be presented at the end. The paper ends with general conclusions from the presented theoretical discussion and the case.

Key words: value, value co-creation, interaction and interdependence

## **1. Introduction**

The aim of this paper is to explore the value phenomenon, to discuss how value is understood in business and marketing literature and further elaborate into the concept of value co-creation in the context of industrial buyer-seller relationship. The role of interdependence for potential value-co-creation will be argued for and some preliminary findings from an empirical study on value co-creation in industrial buyer-seller relationships will be presented

The paper starts out with discussing the concept of value and how it has been used and is understood in business literature, concluding with a definition used in the study presented, followed by a further conceptual elaboration into the idea of value co-creation. After that there will be a discussion about how the possession of heterogeneous resources are the motivation for companies to develop relationships, as relationships are a means to access resources. The paper further discusses how interaction over time creates degrees of dependence and interdependence between the parties. The last part of the paper is a presentation of an empirical case where value co-creation between a buyer and a seller has been explored. The paper ends with a discussion about the preliminary findings, followed by some concluding remarks.

## **2. The Value Concept - its Different Meanings and Roots**

The traditional view on value has its roots in the industrial assembly lines. Here the concept is understood as value that can be calculated with a single metric, which is the monetary one. Going even further back in history, value got its measurable connotation in the 13th century where it was used to mean what something was worth when traded or exchanged with something. In the mid 16th century value was directly associated with a measurable unit which by the 17th century came to be known as the price for something. In the 18th century the idea of value as something subjective was introduced and in the 19th century value was seen as being based on personal judgment (Ramirez 1999, p. 50).

In business studies several different schools of thought have used the value construct. Porter is using the value chain framework, where the economic implications of different activities are studied at the firm level (Porter 1985). Schumpeter discussed value creation through technological change and innovation. This view sees value as being created through the introduction of new goods or production methods, creation of new markets, discovering of new supply sources and reorganization

(Schumpeter 1934). The Resource Based View of the Firm (RBV) looks at the resources possessed by the firm and argues that a firm's resources only are valuable if they can reduce costs or increase revenues compared to the situation where the firm wouldn't possess these resources (Barney 1997). In studies on Strategic Networks the value aspect has been studied in several different ways. Granovetter (1973), Freeman (1979) and Gulati, Nohria and Zaher (2000) have focused on the implications of a network structure for value creation. They have used terms such as network density and centrality. Lorenzoni and Lipparini (1999) have looked at governance mechanisms for value creation. Gulati (1999, 2000) has been studying the importance of resources and capabilities for value creation. He has also looked at value creation through access to valuable information, markets and technologies and enhanced transaction efficiency and improved coordination between firms. Katz and Shapiro (1985) and Shapiro and Varian (1999) argue that networks offer value in the form of shared risk and economies of scale and scope. Dyer and Singh (1998), Dyer and Nobeoka (2000) and Anand and Kanna (2000) have been studying aspects related to networks and the possibility for knowledge sharing and learning (Amit and Zott 2001). Möller and Svahn (2003) are discussing intentionally created strategic business networks and suggest a value-system view for describing the differences between various nets.

### **3. Different ways of Conceptualising Value in Industrial Marketing**

In the modern society characterized by speed, complexity, and high information content, the strategic focus of most businesses acting on industrial markets is in constant transformation. As automation and technology take care of routine and labor-intensive tasks, information and expertise have emerged as important trading goods. Increasingly, business is about working with the right partners and being able to create the right relationship networks emanating from the company: to be successful relationship management has become paramount. In a highly competitive and information intensive world, companies are creating partnerships and alliances with other organizations, such as suppliers, customers, research institutions etc., in order to survive and create value for all stakeholders. This trend is shaping the nature of relationships between industrial buyers and sellers from arms length relations into relations that are increasingly characterized by partnership and cooperation - something that has been the focus of interest for the IMP (Industrial Marketing and Purchasing Group) network view for the last 30 years.

Companies are not acting alone - part of the definition of "*a company*" includes the idea that the entity is engaged in interaction with other parties. Exchange activity in business is about being

involved in interaction, it is through exchange in interaction that the potential benefits of resources are released and value is created – business exchange activity implies *”mutual boundary crossing value creating processes”* (Håkansson & Prencert 2003, p 23) When companies possess complementary, heterogeneous resources, cooperation is likely to emerge. The access to the resources of another company will be achieved through interaction, it is through interaction that relationships are created and maintained. Simply put:

*“... Interaction is not a simple mechanism regulating the life of the company, but a major part of its life. It is through interaction that a company exists and develops... Hence, interaction is a fundamental aspect of development”* (Håkansson 2003, p 14).

The study of an intangible concept like value can be difficult and complicated in many ways, regardless of the field of research. What makes value such a slippery issue of study is that it has a number of different meanings and definitions, depending on the context and perspective taken. First, the phenomenon is dynamic – value is not constant but changes over time. The creation of value at a given moment depends on what has happened before. In the same way it can be said that present value creation re-shapes history, it gives new meaning to events that have happened before. Occurrences might be interpreted in new and different ways. Value is also context and actor dependent – what one considers value depends on where this judgement is made, and by whom. Value can also be analyzed on different levels i.e. the individual level, the business unit level, the company level, the group level or even the network level. Measuring of value by an objective measure, like the monetary one, is also highly relative especially when considering complex “value creating systems” (Parolini 1999). Nevertheless, value has been chosen to be used as a concept in the study and the argument for choosing and using value rests on the commonly understood meaning of it – therefore something may have a certain value.

The value concept is widely used in marketing literature. Most often it is understood to imply economic gain as through Porter’s classical definition: *“The amount buyers are willing to pay for what a firm provides them”* (Porter 1985). However, there are competing interpretations to this narrow view, which dates back to the industrial era. Monetary benefit is obviously the “raison d’être” for actors in business, but when exploring the value concept in the context of industrial buyer-seller relations there is more to it than the direct monetary aspects. In 1985 when Porter stated his definition the dominant buyer-seller paradigm was different than today. There were buying centers with the task of buying as efficiently as possible. The relationship with the supplier

was adversarial. Today companies are acting in networks of relationships where the interaction between buyer and seller is increasingly characterized by partnership and cooperation (Kothandaraman and Wilson 2001, p. 380).

The underlying logic of the IMP network view is that networks are an efficient form of organising business activities, that there is something to gain in operating in a network of relationships instead of being a “lonely rider” on the market. Within this tradition a relationship is defined as: “*mutually oriented interaction between two reciprocally committed parties*” (Håkansson and Snehota 1995). Relationships are characterized by a process over time and interdependence between companies. Activities and resources of the two involved companies are interlocked and together they produce something that one company could not achieve alone. This is why interaction between companies in industrial markets is seen from a relationship perspective (Ibid).

In this paper value and the further elaboration into value co-creation are discussed in the context of a dyad between a buyer and a seller. Value in the context of buyer-seller relationships can be studied from a number of different perspectives. One possibility is to study the value of an offering as Anderson and Narus (1998) are doing. Alternatively one can choose to study the total value of a relationship for the buyer or the seller, yet another possibility is to focus on the value of a customer for the supplier or vice versa or the value created in a wider network of relationships. In all the different cases the value phenomenon has to be defined carefully, in a distinct way in order to make it “tangible” in the specific context of study. The idea of value co-creation is here discussed in a dyad-network context (Halinen & Törnroos, 2004) and value co-creation is seen as an interactive phenomenon.

Walter et al. (2001) are looking at the value concept from the supplier’s perspective. They are using “functions of a customer relationship” as a way to categorize how the supplier perceives value. They are talking about direct and indirect functions and mention that a third type of functions, namely social functions, could be added to make the picture more complete. By direct functions of a customer relationship they mean: the profit function, the volume function and the safeguard function. Indirect functions are: the innovation function, the market function, the scout function and the access function. They argue that the “supplier- perceived value” consists of the above-mentioned functions of a customer relationship (p. 369). Wilson et al. (1994, 1995) are suggesting that value can be understood as competence, market position and social rewards (Wilson et al., 1994, 1995, Biong et al. 1997).

Ulaga (2001) is using the term “customer value” and has three different perspectives on the concept; the “buyer perspective”, “the supplier perspective” and “the buyer-seller perspective”. The buyer perspective is dealing with issues like how the supplier can create offerings that are of superior value to the customer and thus keep the business in increasingly competitive markets. The supplier perspective looks at customers as key assets of the firm. The buyer-seller perspective is about how buyers and sellers can create value jointly through relationships, partnering and alliances (p 316).

Dyer and Singh (1998) are discussing the concept “*relational rent*”, meaning the value that the parties can get out of a relationship. They argue that effective governance of a relationship can generate relational rents by either lowering transaction costs or providing incentives for value-creation initiatives such as investing in relation-specific assets, sharing knowledge, combining complementary strategic resources (Dyer and Singh, 1998). Normann and Ramirez (1993a, 1994) have termed the link between the customer and the supplier as “offerings”. The offering is of value if it provides “relieving value” or “enabling value”. By “relieving value” is understood the labor saving value that the offering provides while “enabling value” is everything that helps the other party to work more efficiently, effectively, easily, safely and elegantly. Offerings consist of five elements: goods, services, risk sharing and risk taking, access to or use of systems or infrastructure and information.

Flint et al. (1997) and Biong et al. (1997) are providing a very basic definition on value, that doesn't regard the idea of monetary value at all. According to them “*Value can be regarded as a trade-off between benefits and sacrifices*” (Walter et al. 2001, p. 366). This definition does not include the idea of value being a measurable unit such as money, but it includes the idea of value being a subjective perception of what has been gained when weighted towards what has been given away or sacrificed.

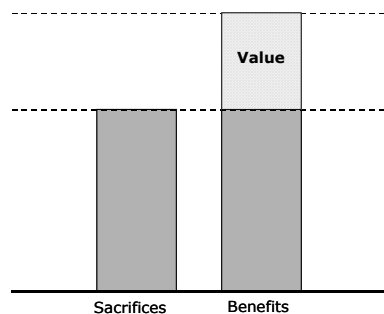


Figure: Value as the difference between sacrifices and benefits

Anderson and Narus (1998) are discussing value of single offerings or products provided by a supplier to a customer. In the Anderson and Narus conceptualization of customer value the offering is said to have two elemental characteristics: **value** and **price**. They argue that value is the expression in monetary terms of what the customer firm receives in exchange for the price it pays for a market offering. The difference between value and price is the “customer incentive to purchase”. Lowering the price doesn’t change the value that the product provides, but it changes the customer’s incentive to purchase the offering. Value is here expressed in monetary terms. Benefits are net benefits, where any costs a customer incurs in obtaining the benefits are included, except the purchase price.

=> Benefits ./ costs = Net Benefits (value is the worth in monetary units of net benefits)  
=> Price = Purchase Price  
=> Value – Price = Incentive to Buy

What is interesting in this conceptualization is that price is not included in the assessment of value, which might be a sensible distinction when considering single offerings. However, when it comes to perceived value in buyer-seller relationships, it is difficult to see how price could be separated from the perception of value, since price is one of the ingredients of how value is perceived in the context of the relationship. In this paper it is suggested that price should be seen as a part of benefits and sacrifices. Price can be seen either as a benefit or a sacrifice, depending on the perception of its accuracy/justifiability. In this study the following underlying logic for understanding perceived value is applied:

Perceived Benefits (including price) – Perceived Sacrifices (including price) = (Perceived) Value

What is perceived to be the value gained from the relationship can be seen as the trade off between benefits and sacrifices in long-term business-to-business relationships. The definition does not include the idea of value being a measurable unit such as money, but it includes the idea of value being a subjective perception of what has been gained when weighted towards what has been given away or sacrificed – something subjective, meaning that there is no value if it isn’t value for someone. This definition is used in this paper, where value is seen as a dynamic and interactive phenomenon.

#### 4. From Value to Value Co-Creation

When discussing value in a business context the emphasis traditionally has been on value for the customer - how the supplier can create “superior value” for its customers. However, recently there has been a growing interest in how and what kind of value is created for the supplier (Walter, et al. 2001, Ramirez 1999). Ramirez (Ibid) has provided an alternative view on value to the pure industrial one. He has introduced the concept; “value co-production”. In this alternative view the parties in a business relation are engaged in mutual value creation and re-creation (p. 50). In industrial network theory one of the underlying assumptions is that relationships exist and that there are more than one active party in a relationship. The IMP network view lays on the basic assumptions that relationships exist and that there are at least two active parties in a relationship (Håkansson 2002). Within this tradition a relationship is defined as: “*mutually oriented interaction between two reciprocally committed parties*” (Håkansson and Snehota 1995). Relationships are characterized by a process over time and interdependence between companies. Activities and resources of the two involved companies are interlocked and together they produce something that one company could not achieve alone. This is why interaction between companies in industrial markets is seen as a relationship (Ibid). From this logic follows that when we are applying Industrial Network Theory on a buyer-seller dyad, there is a relationship where two parties are active. When discussing value in such a context it is then reasonable to assume that there are two parties actively involved in creating value through and in that relationship. There is not just one party creating value and the other consuming it, but two active parties co-creating value. Supported by the Borys and Jemison (1989) definition where “value creation” is seen as: “*The process by which the capabilities of the partners are combined so that the competitive advantage of either the hybrid or one or more of the partners is improved.*” (p. 241).

There is a great amount of literature on networks and how companies should create partnerships with partners (other suppliers) that complement their offering. By joining forces they can offer the customer something of superior value when compared with competitors on the market. This increases their chances to keep the business. These kinds of networks of partnerships have been referred to by several different names by different scholars. They have been called supply chains, market networks, value chains, value nets or value creating networks (Kothandaraman and Wilson 2001, p. 384). What these have in common is that they focus on suppliers joining forces to offer the customer something. The view that is taken in this paper where relationships with customers are the

ones where value is co-created is somewhat different and hasn't received as much attention yet. Ramirez (1999) and Ulaga (2001) have acknowledged the thought of value being produced jointly by the parties in a business relationship. Ramirez (1999) has introduced the idea of "value co-production" as opposed to the traditional industrial idea of value creation. He sees the role of the customer to be one of the main differences between the two schools. In industrial value creation, customers were seen as "*destroying the value which producers had created for them*" while in the alternative view customers are actively co-creating and re-creating value both with their suppliers and their own customers (p. 51). The same idea is put forward in the business to consumer literature by Prahalad et al. (2004) in a recent book, where the authors discuss how creating value together with consumers is the way to compete in the future. The authors use the same concept namely value co-creation and discuss how companies interact with consumers and co-create value through a dialogue with consumers.

Applying the IMP logic of two active parties it is reasonable to assume that when we study dyadic business relations with a buyer and a seller, both parties are actively creating value through interaction in the relationship. This makes it justifiable to use the concept of value co-creation and by this understand the aspects that are perceived to be of value by the parties, and which are created jointly through interaction in a business context.

The foundation and core concept for the study namely value co-creation has now been defined and conceptually argued. In the following attention will be given to the other core theoretical concepts of the study: interaction, dependence and interdependence.

## **5. Interaction, Dependence and Interdependence in Business Markets**

In the 1960's the theoretical models of organizations underwent a considerable change from viewing organizations as **closed systems**, focusing on internal matters to viewing organizations as **open systems** recognizing the importance of processes external to the organization (Scott 1992, p. 100). Pfeffer and Salancik (1978) have contributed with the most comprehensive developments to the theory of resource dependency, which is strongly rooted in the open systems framework. According to the open systems framework:

*"One can not understand the structure or behavior of an organization without understanding the context within which it operates. No organization is self sufficient; all*

*must engage in exchanges with the environment as a condition of their survival” (Scott 1992, p. 114).*

According to the resource dependency theory, organizations can increase their chances of survival by taking actions in order to adapt to the environment. Because no organization can exist without exchanges with other organizations different situations of organizational dependency occur. The extent to which an organization is dependent on another organization determines the power/dependence relationship. This theory depicts the organization as active, not passive, in shaping its own prerequisites for survival and success. The organization is dependent on suppliers and customers but the organization chooses which relationships to enter into and which rules and terms to adapt. According to Aldrich and Pfeffer (1976) the resource dependence model sees:

*“The organization as capable of changing, as well as responding to, the environment. Administrators manage their environments as well as their organizations, and the former activity may be as important, or even more important, than the latter” (Aldrich and Pfeffer 1976, p. 83).*

In inter-organizational theory, which developed from the open systems view, *“the organization is seen as part of a group of interacting units” (Ford 1990, p. 8).* Here also the organization is seen as dependent on other organizations. The way in which the organization answers to this dependency is by establishing **relationships** with partners through **interaction**.

### ***Interaction***

The Interaction Model is the product of work carried out by the IMP Group. The model is a result of the development from the 1960's open systems view on organizations and the development in industrial marketing in the 1970's, where industrial marketing became to be seen not just as one sided i.e. the action of one party and reaction of the other, but that both parties (buyer and seller) are active parties in the marketing situation. Influential articles fostering this alternative trend in economic theory and initiating the development of industrial marketing were Håkansson, Johanson and Wootz (1976) in Europe and in the US Bonoma, Salzman and Johnston in 1977.

The Interaction Approach takes the relationship as its unit of analysis rather than single transactions and relies on the assumptions that most business purchases are not individual events and thus

cannot be understood if they are examined alone, that business purchases are not the action of one party and reaction (or not) of the other and that business purchases are characterized by there being two active parties interacting with each other. (Ford 2002, p. 4)

In the IMP network approach interaction is understood to being directed towards clearly identified counterparts and the interaction is assumed to result in different strata, affecting social, economic and technical features (Håkansson & Waluszewski 2003). In the network view long lasting exchange relationships are seen as something that characterizes business life, interaction is seen to take place within exchange relationships. Interaction is seen as a fundamental part of development: without interaction nothing is achieved, with little interaction something can be achieved and with a lot of interaction, even great things can be created (Ibid.).

*“It is through interaction a resource is confronted with other resources and through this process is given some specific characteristics. Every resource item, whether a production facility, a single machine or a business unit, is uninteresting in itself, it is only when the resource is used, or when it is related to some other resources, an economic value is gained”* (Håkansson and Waluszewski 2003, p. 15).

From this reasoning follows that value co-creation requires interaction - without interaction no value will be co-created.

### ***Dependence and Interdependence***

When companies do business with each other over time i.e. interact, they tend to start to make adaptations in order to make interaction and the exchange more efficient and smooth. Adaptations can be of several kinds; can be related to products, to organizing, to facilities, to routines, to technology just to name a few. As adaptations are made both the offering and the relationship become increasingly complex and specialized. Worth emphasizing is that it is not only the offering itself that becomes more specialized, but it is the whole “business exchange activity” (Håkansson and Prenkert, 2003) or “exchange system” (Bagozzi, 1974, p 78). Due to the complexity and adaptations made by both companies, a certain degree of dependence on each other is starting to build up. Here the definition of dependence:

*“Dependence can be defined as the product of the importance of a given input or output to the organization and the extent to which it is controlled by relatively few organizations”* (Pfeffer and Salancik 1978, p. 51).

Dependence exists when there are only one or a few available actors on the market who can provide the needed resource. As business relationships usually go on for long periods of time and there are adaptations made on both sides of the dyad, dependence is likely to develop over time. After a certain amount of time of interaction the relationship and the offering (object of exchange) becomes more and more customized and complex, which leads to a certain degree of dependence. There simply are not many other alternatives on the market that could offer the same type of resource exchange. This is due to the specific adaptations made in the focal relationships and the degree of tailor-made ness that the adaptations imply. Dependence is about having limited alternatives.

There is a distinction between the concepts dependence and interdependence. They are interrelated, but not synonymous. Interdependence is here defined as Pfeffer and Salancik (1978) defined the concept in the theory of resource dependence. Interdependence is not mutual dependence between two companies, but can be explained through more than one causal relation.

*“Any event that depends on more than a single causal agent is an outcome based on interdependent agent. (...) Interdependence exists whenever one actor does not entirely control all of the conditions necessary for the achievement of an action or for obtaining the outcome desired from the action”* (Ibid, p. 40).

In economic theory dependence has traditionally been seen as a negative thing, inhibiting market forces to act in the most efficient manner. However, in the case of long-term industrial buyer-seller relationships both dependence and interdependence can be regarded as something positive. These are triggers for creating something together and motivate the interacting parties to create value together through interaction in the relationship. In the IMP network view, interaction and the interdependence that is created as a consequence of that, is seen as a prerequisite for development to take place. The opposite of interdependence is independence. An independent actor would try to optimize in every situation and by definition not get involved in relationships, which in turn would imply that there would be no potential for co-creating value with partners.

The assumption of resource heterogeneity<sup>1</sup> and possession of heterogeneous resources is one of the cornerstones of the argumentation on interaction in the network view. As companies possess heterogeneous resources it makes a difference with whom you interact. Interacting with the partner with the resources that are most valuable makes sense. However, no single resource is of any value if you cannot make use of it. So, interacting with the partner right partner and being able to use the partners' resources in a meaningful way becomes key. As Håkansson et al. (2003) puts it: "... *the value of a certain solution depends on the extent to which others can relate to it*" (p. 19).

The above reasoning lead to the following conclusion: when two companies possess heterogeneous resources it makes sense to interact in order to create something together, provided that the companies can make use of each others resources in a meaningful way. Making use of each other's resources requires interaction. Interaction over time creates both a certain degree of dependence and interdependence. The interaction between the parties can be said to be worthwhile if the parties feel that the perceived benefits from the interaction are greater than perceived sacrifices. Now, adding the factor of interdependence to the equation, namely that both parties are needed in order to perceive any benefits and sacrifices, there is a potential for value co-creation. Thus, if there is interdependence the potential for value co-creation exists. With increased interdependence the potential for value co-creation increases. If there is not interdependence both parties can create value for themselves, independently, but for co-creation potential to exist interdependence is a prerequisite.

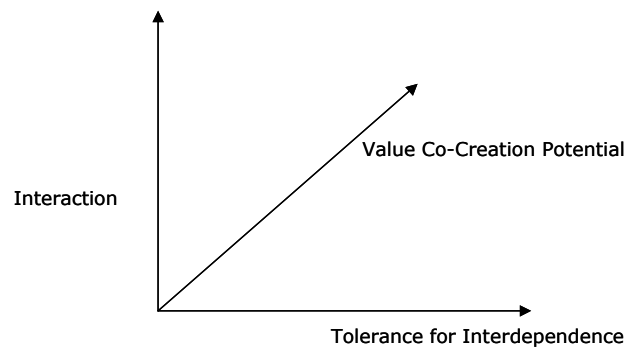


Figure: Value co-creation potential

The figure illustrates that the potential for value co-creation increases with the tolerance for interdependence and interaction over time.

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<sup>1</sup> Heterogeneity is discussed in Liljegren 1988 referring to Hägg and Johanson (1982), Alderson (1965), Richardson (1972) and Williamson (1973, 1975, 1980). Later the assumption of companies possessing heterogenous resources can be found in most IMP literature on interaction and networks.

The following section is a description of an empirical case study of a dyad between a buyer and a seller in the shipping industry. The study has been carried out in order to explore how the buyer and the seller in the marine industry perceive value and how value is co-created through a high-involvement relationship between the parties. The relationship will here be referred to as a “partnership”. This is the word that the involved parties are using when they discuss their business relationship.

## **6. The Case: Wärtsilä and Royal Caribbean Cruises Ltd.**

The case is a single case study of a buyer-seller dyad. The seller is Wärtsilä, one of the worlds leading diesel engine suppliers for ships and power plants, headquartered in Finland. The customer is Royal Caribbean Cruises (RCL), a globally acting, Miami based cruise ship owner and operator. The activity system between the buyer and the seller is closed into a “cooperative activity system” (Håkansson & Prenekert, 2003) where the relationship is governed by a “cooperation agreement” and the involved parties refer to their relationship as a “Partnership”.

### ***Research Method***

The empirical material gathered for the study is 24 qualitative, in-depth interviews with informants from two organizations carried out during the fall of 2003 and spring of 2004. In order to get a deep insight in this study there have been interviews with people on different levels of both organizations, from the hands-on technical departments all the way to the vice presidents of the two companies. The interview data has been complemented with participant observation and document analysis. The impact of the pre-understanding of the business, which has been gained through working in the industry doing customer satisfaction surveys has also proved to be of importance both for gaining acceptance and for understanding the practical relevance of the issues brought up in the interviews.

The case study should be viewed as an exploratory case study, since there did not exist a knowledge base rich enough to have an exact conceptual framework or understanding of the phenomena prior to gathering the empirical data. Nevertheless, an exploratory case study should have a clear idea of what is studied, the purpose of why it is studied and by which criteria the exploration will be judged, before the data is gathered. (Yin 1994) Prior to the empirical study there was a pre-

understanding of the value co-creation phenomena - a practical pre-understanding based on working experience and a theoretical understanding gained through literature studies. However, there was no pre-determined hypotheses or rigid idea that was tested in the empirical study. Rather the qualitative interviews were semi-structured so that the interviewer led the interviewee to tell his or her perception of the relationship and as the interview went on the discussion was led into areas of discussion in order to understand how value was perceived and how the involved parties saw that they were creating value together. Each interview turned out different and unique. The outcome was highly dependent on the organizational position and the work experience of the interviewee. However, each interview focused on discussing the relationship with the focal business partner and on how value is created through interaction in the relationship. All the 24 interviews have been transcribed and analyzed in order to provide a thick description of the relationship and how interaction over time has created the potential for value co-creation.

### ***The Involved Parties – the Buyer and the Seller***

Wärtsilä has been supplying marine diesel engines for RCL's ships since the beginning of the 1970's. To date RCL is operating 25 cruise ships in different parts of the world. The majority of RCL's ships are powered by Wärtsilä diesel engines, a total of some 70-80 engines. Wärtsilä is one of a total of some 3000 suppliers to a cruise ship. In importance, Wärtsilä is within the top five suppliers. RCL is in the tourism business creating dream vacations for tourists and the top priority for RCL when operating cruise ships is safety and reliability. The diesel engines play a vital part in the safe and reliable operation of the vessels. An engine breakdown resulting in a day at a harbour, or lost electricity on board the ship is an economic disaster and can be a great safety risk for RCL. Since the year 2000 the relationship between Wärtsilä and RCL has been governed by a "cooperation agreement". The agreement contains the general guidelines for a partnership-type relationship where both parties are committed for the long run with the aim of improving both parties' business. The agreement also includes commitments from both parties related to transactions, maintenance planning, reliability and operational issues.

### ***An Overview of the Development of the Relationship***

Wärtsilä has been supplying diesel engines to RCL since the 1970's the first service agreement was signed in the year 1993. According to the agreement Wärtsilä took care of service and maintenance of the engines during the operations of the ship. This was part of Wärtsilä's strategy in the 1990's,

namely to take care of the power supply, from delivering the engine to maintaining it and servicing it throughout the lifetime of the ship. Something that still is strongly emphasized in Wärtsilä's vision. In the year 2000 a Partnership agreement between Wärtsilä and RCL was signed. The initial talks about a deepened and widened way of working together was started between the two main actors Mr. Fred Danska, who is responsible for all cruise customers at Wärtsilä and Mr. Harri Kulovaara, who is managing ship operations at RCL already in the year 1997.

Something referred to as the "interesting époque" started between the companies in 1997, when Mr. Kulovaara from RCL and Mr. Danska from Wärtsilä started their interaction in the relationship. By coincidence it happened that by the same times RCL was experiencing several problems with engines and even some engine breakdowns. According to Mr. Kulovaara himself he felt helpless and desperately needed someone, a reliable partner to share his concern and responsibility. This was one of the triggers for the initiative to start discussing a partnership between RCL and Wärtsilä. These two had a shared vision of what a partnership is and what they wanted to achieve with it. Until the present moment these two are still the main drivers of the partnership between the two companies. The expectations from the partnership with Wärtsilä is that they want a partner who supplies reliable systems solutions, someone who is easy to deal and do business with and a partner who helps RCL in the long run i.e. has a long term focus together with the company. Wärtsilä's expectations from the relationship are: to provide parts and service, to provide supervision, technical support and relevant information, to take total care of the running of the power plant providing high operational reliability and transaction efficiency, and to offer RCL possibilities to create value for themselves, to learn with RCL how to develop a partnership and to make Partnership a "way of living".

### ***Dependence Between the Parties***

RCL is operating 16 ships that are powered by Wärtsilä diesel engines and there is more to come in the future. RCL has chosen Wärtsilä as their engine supplier because Wärtsilä is said to have the most reliable product on the market. RCL also has other engine makes in their fleet but Wärtsilä is the most important one. Safety and reliability are number one concerns for RCL in the business they are in and therefore Wärtsilä has been the preferred choice of supplier. RCL is operating a ship for some 20 to 25 years, which means that RCL is "living" with the engines every day for a long time. By definition this situation creates a certain degree of dependence between the two organisations. RCL is "stuck" with the engines for 20-25 years and live with a big amount of Wärtsilä engines

every day. This makes them an important customer and source of revenue for Wärtsilä, both when it comes to new sales opportunities and after sales business.

### ***Interdependence and Value Co-Creation***

Mr. Harri Kulovaara at RCL was the initiator for the cooperation agreement between Wärtsilä and RCL in 1997. At this time he had recently been appointed manager of operations at RCL with the mission of lowering operational costs. The lowering of the costs was something he was not able to achieve on his own, but needed resources possessed by partners. As Wärtsilä stands for the greatest amount of engines in RCL's fleet the discussions about what could be done in order to achieve operational efficiency started. Operational efficiency in this context is fuel economies, maintenance and parts purchase and logistics. There is only so much RCL can do about optimising either of these by themselves, but with cooperation with Wärtsilä there are a number of things that could be achieved. This was and still is one of the fundamental reasons for the sustaining of the partnership between the companies.

When it comes to optimizing fuel consumption RCL needs Wärtsilä's technical know-how and expertise while Wärtsilä needs a live test lab to develop its expertise in fuel economies. This represents an obvious resource sharing opportunity. There are several development projects going on between the companies in this area where RCL provides a real life test lab for Wärtsilä's products and concepts and RCL helps Wärtsilä in improving and developing the offering. With regards to engine maintenance RCL has been participating in developing Wärtsilä's automated condition based maintenance (CBM) concept. The CBM implies that Wärtsilä is monitoring the engines on the vessels from the engine manufacturing plant and makes recommendations according to real time data. The aim of CBM is to increase safety and reliability, to increase overhaul intervals and makes efficient use of parts based on condition. From RCL's point of view the CBM implies a sharing of risk with Wärtsilä – Wärtsilä takes on some of the responsibility of securing that the engines are running without problems, while interdependence between the parties increases as RCL loses some of the control of the performance of the engines.

In the area of logistics and purchasing of parts there have been several initiatives undertaken in order to reduce costs for administration and smoothen routines. Wärtsilä has provided RCL with a price list for spare parts. The parts list saves both time and administrative work by avoiding the sending of requests for quotes and quotes back and forth between the companies. This has proved to

speed up the acquisition of spare parts considerably. The cooperation agreement includes different discount percentages depending on when spare parts order is made and when it is supposed to be delivered. By planning ahead RCL can get a good discount and Wärtsilä can make economies by having less parts in stock and making better planning. Joint spare parts inventory handling is connected with joint planning of maintenance and service. By joining forces and planning together both parties can work smarter - something that no one of the parties could achieve on their own. There are discussions underway regarding the storage of spare parts. It is expensive for RCL to carry a load of expensive parts at sea on each ship. The parties are now investigating the chances for Wärtsilä to start keeping some of the stock and delivering it to port when needed. Some of the parts are re-used and in this way Wärtsilä could service the parts while in their warehouse and deliver the overhauled parts to the ships - yet another example of greater interdependence and possibility for value co-creation. The invoicing of spare parts is another current issue. The parties are discussing a new logic for quarterly invoicing as a way to save costs for both parties.

***Summary of Value Co-Creation Initiatives:***

The value co-creation initiatives taken regarding technical issues are the organizing of different kinds of technical and performance related seminars where problems are discussed and solved jointly. There has also been a decision that the parties will review engine conditions reports together to ensure that the right service and maintenance measures are taken. A hot line for the RCL maintenance team technical questions has been set up in order to ensure fast response on urgent matters. There has also been a decision taken that Wärtsilä and RCL will review systems design for new buildings together before signing the contract with the shipyard. This is to make sure that the best expertise is used when assessing the design of the engine related parts of the ship. The logic for using Wärtsilä shop condition parts for scheduled overhaul is investigated in order to decide whether only to use high quality standard components overhauled by Wärtsilä in the future. The possibility for introducing CBM for all the ships with Wärtsilä engines is investigated and a graph for analysing down time for the engines is developed.

In order to improve communication and increase understanding between the two organisations clear definitions of roles and responsibilities has been defined. A quarterly meeting for Wärtsilä and RCL maintenance team with a standard agenda has been institutionalised. Mission and vision seminars are planned in order to communicate the philosophies of the two organizations. Defined communication partners have been appointed and communication charts have been distributed

within both organisations in order to avoid lack of- and miscommunication. Wärtsilä has agreed to provide immediate all encompassing technical information to RCL according to agreed communication channels and RCL is committed not to use that technical information against Wärtsilä.

When it comes to administrative issues there are efforts made for making spare parts ordering, processing, delivery and payment more smooth and timely. RCL is committed to restrictions for buying parts and service from third parties according to the agreement. There will be revisions of the lists of critical part levels carried out, so that only the relevant parts are carried on board. The min and max levels and re-order levels are systematized and reported monthly. Wärtsilä is preparing a plan for how they could take care of managing inventory onboard ships as well as investigating the procedures for annual ordering for consumable parts.

## **7. Discussion**

It can be said that the relationship between Wärtsilä and RCL is characterized by frequent interaction and open communication. Interdependence is increasingly created between the companies through several value co-creation initiatives and joint development projects that the interacting parties from both organizations are continuously undertaking and starting up. The spirit of the cooperation agreement is to talk openly, share problems and find solutions to them together. All this is done with the aim of improving both organizations' business. This mode of interacting offers potential for value co-creation. The challenge for the future is to get all the interacting individuals involved in the relationship, to believe in a partnership and start realizing the potential for value co-creation that there is in being interdependent.

Value is difficult to grasp and different in each single context, therefore it was not easy to find a general or universal model for the dynamics of value and value co-creation. The conclusion is that the value created is dependent on the individuals interacting on each organizational level. There is no simple formula for how this interaction should take place, but it depends on the actions of individuals in each encounter and each decision if value is co-created or not. The universal thing for this logic is that the benefit versus sacrifice subtraction has to be positive, i.e. it has to be perceived that there is value created, that benefits are higher than sacrifices. The second precondition is that there has to be some sort of interdependence between the acting parties. The more tolerance there is for interdependence, the greater is the potential for value co-creation.

According to the interviews the following benefits and sacrifices of being in the partnership can be identified. As can be seen, the lists contain a number of different issues. To make a judgment of the trade off between the benefits and sacrifices is by no means simple or easily convertible into

<p><b>Benefits: Customer</b></p> <ul style="list-style-type: none"> <li>● A reliable fleet (pro active and condition based maintenance)</li> <li>● Risk sharing</li> <li>● Openness in communication</li> <li>● Increased cost efficiency in operations</li> <li>● Increased efficiency through savings in spare parts handling etc.</li> <li>● Access to technical information</li> <li>● Joint business development</li> <li>● "Tailor made" service</li> <li>● Smooth routines</li> </ul>	<p><b>Benefits: Supplier</b></p> <ul style="list-style-type: none"> <li>● Sales (predictable)</li> <li>● Security</li> <li>● Price received</li> <li>● Lower warranty costs</li> <li>● Lower costs of spare parts handling</li> <li>● Learning the organization to work in a new way is a challenge (partnership)</li> <li>● New business through product development</li> <li>● Public visibility</li> <li>● Reference value</li> <li>● "Fun" to work with a demanding customer and develop new things</li> <li>● Development of new technological solutions</li> <li>● Smooth routines</li> <li>● Easiness of communication</li> </ul>
<p><b>Sacrifices: Customer</b></p> <ul style="list-style-type: none"> <li>● Price paid</li> <li>● Commitment to buying spare parts exclusively from supplier X</li> <li>● Technological dependence</li> <li>● The risk of missing out on something provided by others</li> </ul>	<p><b>Sacrifices: Supplier</b></p> <ul style="list-style-type: none"> <li>● Time dedicated</li> <li>● Price received</li> <li>● Personal effort</li> <li>● Organizational arrangements</li> <li>● Less focus on other possible customers</li> </ul>

Figure: Benefits and Sacrifices

numerical facts. The judgment of a trade off requires a human brain with the capability to intuition. It is impossible to assign exact numerical values to the benefits and sacrifices since they are all complex in themselves. The trade off assessment has to be based a subjective perception by someone at a given time in a specific context.

There have been examples in the relationship between Wärtsilä and RCL where the parties have failed to exploit the potential of interdependence. The following two examples illustrate two incidents where the potential for value co-creation was lost. In the year 1997 when Harri Kulovaara got the position of managing operations at RCL, the company was struggling with high operating costs and tried to find ways to lower them. This is when the customer initiated the first discussions of a widened and deepened cooperation between the two companies. They discussed ways to take care of the service and maintenance of RCL's fleet within the frames of a widened service agreement. However, the discussions did not turn out satisfactorily from either party's view. They could not agree on the terms, scope and price of a service agreement. As a result of this RCL made

the decision to start building up its own service and maintenance organization in-house. This was a big loss of business for the Wärtsilä service organization in the US. This incident illustrates how the chance for value co-creation was lost when the parties could not find a way to exploit each other's resources effectively and tolerate interdependence. Wärtsilä was not willing to go into the kind of service and maintenance agreement that RCL was proposing and RCL was not willing to be dependent on Wärtsilä to the extent that they would let Wärtsilä take care of the whole service and maintenance their own way. Instead RCL decided to set up its own service and maintenance organization.

Another incident where the lack of tolerance for interdependence could be seen is when RCL chose to install GE's gas turbines on two of their new ships in the end of the 1990's. At this time they already had a long history with Wärtsilä diesels, but did want to try out the new gas turbine technology, which at the time was new in the industry and supposed to be more environmentally friendly. At this time Wärtsilä was still developing their "enviro-engine" and had not yet released its new common rail technology - a technology that they managed to release only days after they lost the RCL deal to GE's gas turbines.

Interdependence is a characteristic of long-term business relationships. The argument here is that interdependence is a positive thing, that there is potential in doing things together. Interdependence provides a chance for value co-creation if it is managed in a fruitful way. Parties who have interdependent in a business relationship are managing their interdependence with different governance mechanisms, such as agreements etc. The case of Wärtsilä and RCL presented in the paper, is a good example of how the parties are coordinating activities in an attempt to minimize the risk of interdependence through a partnership agreement. Instead of avoiding being interdependent, the parties are using the potential inherent in interdependence to co-create value. According to the senior vice president for marine operations at Wärtsilä the issue of dependence is one of the key issues when discussing high-involvement relationships with customers. There is always a risk in getting heavily involved with one partner. How can you be sure that you do not miss out on something else that is happening in the market? How do you preserve the balance of not seeming to be favoring a certain customer in the eyes of other customers? There is a certain risk involved in specializing because specializing means that the resource becomes less valuable to alternative uses, which is why dependence can be viewed as a risk from a single company's perspective (Dyer and Singh, 1998). The assessments of the benefits and sacrifices that are involved in a cooperative relationship with one partner have to be made for each specific case.

The overall conclusion of the theoretical discussion, the analysis and the illustration of the case presented in this paper is that there is potential for Value Co-Creation if perceived benefits overweigh perceived sacrifices during the duration of the relationship for both parties involved, and if there is interdependence (i) between the parties. This logic can be modeled by using the mathematical function presented below. The simple logic is that with increased interdependence the potential for value co-creation increases. In the function the constant value for i is 1, if interdependence is bigger than 1 there is value co-creation potential, if i is less than 1 (independence), there exists less value co-creation potential.

$$\text{Value Co-Creation Potential} = \sum_{t=1}^n (B_t - S_t) i^t$$

t = the duration of the relationship

B = perceived benefits for both parties involved

S = perceived sacrifices for both parties involved

i = interaction mode (1 = constant )

- i < 1 = independence
- i = 1 = neutral
- i > 1 = interdependence

There is no formula for how the cooperation and interaction between the parties should be carried out in practice in order to co-create value. However, if the conditions of the formula presented are there (benefits are greater than sacrifices and there is interdependence between the parties), the realization of the potential for value co-creation rests on how the potential is used. What the interacting parties make out of the relationship through interaction and utilization of each others' resources. The outcome of interaction is depending on how the potential for value co-creation is appraised, how the potential is used - how resources are allocated and what priority the relationship gets from the management of the involved companies.

## **8. Conclusions**

It is here argued that the exploiting of interdependence is the key to access resources and to potential value co-creation. Being able to do this requires a new managerial mindset of the management of companies involved in long-term industrial buyer-seller relationships – to be able to

think of interdependence, as a resource is a major challenge. This is especially the case in industrial organizations with a strong product focus - delivering the technically outstanding product - rather than focusing on thinking on value creation for the long term. The main managerial implication from the study is that there is a need for a change in mindset from independence and zero sum game to interdependence and win-win. An obvious question that comes to mind from the arguments presented is; if the benefits of partnering and cooperating are so obvious why are not all companies doing it? According to Prahalad (2004) the fundamental reason is that “*collaboration is not natural. Exercising autonomy is (...) in most cases, the frictional costs outweigh the obvious benefits*” (p 199).

A major challenge for management is to communicate throughout the organization the spirit of working in a collaborative manner. The process of involving people and making them believe in a new way of working takes time and effort, to turn peoples heads around from optimizing own results to aiming at increasing the total value co-created through interaction in the relationship. It also takes new ways of thinking about compensation and motivation. If the maximization of the total value created in the relationship would be the aim instead of each unit optimizing its own result, there might be a chance to start seeing a whole new logic and a range of opportunities.

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