Co-creation in professional service firms

Problem solving processes as an opportunity for enhanced value creation and creative and innovative project solutions

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Does problem solving processes represent an opportunity for co-creation in professional service firms? And which output might one expect from such processes regarding creative and innovative project solutions?

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Abstract

In free markets, firms are in a constant competition with each other. This competition has only been strengthened by processes such as globalization with its emerging markets, and the knowledge society with its empowered and more informed customers. Therefore, firms should pursue strategies to keep themselves competitive in such challenging markets. One such strategy can be found in co-creation. Allegedly, co-creation will lead to enhanced value creation and innovation. Therefore, co-creation appears to be an appropriate answer to the challenges firms meet in modern societies. The literature on co-creation provides many interesting and important perspectives on the subject, but there is little understanding of how co-creation can be achieved in specific businesses. This thesis will attempt to provide a better understanding of how professional service firms can achieve co-creation. More specifically this thesis will investigate if problem-solving processes represent an opportunity for co-creation in this specific line of business. In addition, the thesis will shed light on the output of such processes by searching for creative and innovative project solutions in co-creation processes.

In an attempt to provide answers to the research questions posed in this thesis, four cases (projects) have been analysed. All of the cases are projects conducted by Norconsult, allegedly based on co-creation. In two of the cases, informants from both Norconsult and the customers have been interviewed. In the other two cases, only the project managers from Norconsult were available for interviews.

Findings suggest that problem solving processes represent an opportunity for co-creation for professional service firms. However, the findings also suggest that several factors must be present in order to succeed with co-creation in such processes. First of all, the findings suggest that there must be fruitful dialogue, access and transparency between the customer and advisor to enable co-creation. Secondly, the role of the process leader seems to be important for successful co-creation in problem solving processes. However, what makes a process leader successful is beyond the scope of this thesis to discuss. A finding related to the output of co-created problem solving processes, suggest that such processes seems to

contribute to creative and innovative project solutions in the cases scrutinized. A finding that further supports the claim that problem solving processes represents an opportunity for co-creation in professional service firms.

Foreword

I have always been interested in different societal issues. Ever since I was a teenager I have been interested in foreign policy, economy and other big issues. The ongoing European financial, and now also political and social crisis has further triggered my interest for how both firms and countries can make themselves more competitive. I am therefore grateful for the possibility I´ve had to learn more on such issues by writing this thesis. I am also grateful for the possibility I´ve had to study sciences such as political science, management and pedagogy, as those studies has given me a interdisciplinary academic foundation for understanding more of how this world works. The more I learn, the more complex the world seems. I would like to thank my parents for their brilliant work of raising my brothers and me, and for giving me the tools needed to explore the world.

This thesis did not write itself. I would therefore like to thank Terje Grønning for his swift and detailed feedback on my work. You showed great interest for my work, which inspired me to keep on working. I would also like to thank Norconsult for opening up their doors to me. A special thank to my “gate-keeper” in Norconsult. All of our constructive conversations have been crucial for this thesis. I have learned much from you and your colleagues. Thank you also for giving me easy access to the informants. Writing a master thesis can be frustrating at times. I would therefore like to thank all my fellow students for all supporting conversations. You have made these last two years seem like weeks. My girlfriend also deserves some thankful words. Thank you for all the late night dinners and general support you´ve given me. The last person I would like to thank is my grandmother. You always had great faith in me. I will miss you very much.

Innholdsfortegnelse

1 Introduction

1.1 Presentation

The term “knowledge society” is often used when describing modern societies. Even though all societies to some degree are based on knowledge, the “knowledge society” is based on the assumption that knowledge and creativity are seen as the most important factors for value creation in the society (St. meld. 30, 2003-2004). If one accepts knowledge and creativity as the most important factors for value creation, those factors also represent the main locus of competition among firms. In free markets, firms have always competed with one another, but globalization, economical turmoil, and more empowered customers due to information and communication technology has tightened this competition. Firms therefore need to adopt strategies for meeting those challenges and to stay competitive. One answer for firms to meet such challenges can be found in co-creation. Allegedly, co-creation enhances value creation and innovation, and is therefore a suitable response for the challenges firms experience in the “knowledge society”. This thesis is concerned with co-creation in professional service firms. More specifically, this thesis will attempt to shed light on how co-creation can be conducted in professional service firms, in addition to search for creative and innovative output from co-creation processes.

Co-creation can be seen as a breach with the traditional industrial view on customers and value creation. A principle with co-creation is that the end product will be better if the customer is an active collaborator when creating value. This way of creating value is a rather novel way of thinking, and can easily be seen in firms like Apple and Linux where the customers are free to develop applications with the tools of the firms. But how does one achieve co-creation in professional service firms, which is a sector in growth in modern economies? The literature on the subject does not provide any clear answers to this question, hence my interest of the subject. This thesis will therefore try to contribute to the understanding of how co-creation can be conducted in this specific line of business. Further, the thesis will investigate if observed co-creation in this business leads to creative and innovative project solutions. Even though co-creation often is coupled with innovation, there are no thorough explanation or understanding of how these constructs are related. This thesis

will not attempt to theorize in a comprehensive way over this "missing link", but it is nevertheless an attempt to shed some light on whether co-creation processes in professional service firms lead to creative and innovative output.

In the attempt to provide answers to the research questions posed in this thesis, four cases (projects) from Norconsult will be analyzed, based on literature on co-creation, value creation and creativity and innovation. These cases will be presented in more detail later in the thesis. Hopefully, this thesis can provide a better academic understanding of co-creation in professional service firms, and in addition give some clues to what output one can expect from such processes. Such insight will again help professional service firms adopt co-creation as a strategy for increased competitiveness.

1.2 Rationale

The literature concerning co-creation shed light on many important aspects of that construct. It gives us a background for the construct, shows us how to view the customers as contributors, and help us pinpoint which factors are necessary to enable co-creation. The literature is, however, somewhat generic in its coverage of co-creation as a construct. If a firm attempts to embrace co-creation as a strategy for gaining a competitive advantage, it is not unlikely that they must incorporate a strategy for co-creation appropriate for the line of business in which the firm operates. The literature concerning co-creation though, does not significantly differentiate co-creation for different lines of businesses. Also, even though the literature shed light on important factors needed to enable co-creation, there is relatively little direction on how such a process should be undertaken (Payne et. al., 2008).

This thesis is concerned about co-creation in relation to professional service firms and their professional customers. The aim of the thesis is therefore to shed light on how co-creation can be conducted in this line of business, and thereby hopefully help to fill a gap in the literature. There is little consensus on what defines a professional service firm, but they are often characterized by their dependency on skilled human capital (Nordenflycht, 2006). Firms

typically described as professional service firms are; law-, architect-, accounting-, and engineering firms (Nordenflycht, 2006). Professional service firms represent a growing sector within modern economies (Nordenflycht, 2006), and may therefore be an interesting area of analysis regarding co-creation.

Another quality of the literature concerning co-creation is the rather weak link between the construct of co-creation and innovation, even though the terms often are coupled with each other. This thesis will not try to provide a thorough theoretical explanation of how these constructs can be linked, but rather to examine if co-creation in the cases scrutinized actually contributes to creative and innovative project solutions. If a tendency to correlation between co-creation in the problem solving processes and creative and innovative project solutions can be found, it may give a better base for understanding co-creation in these processes.

1.3 Research questions

Two main research questions are proposed in this thesis. One is of an analytical descriptive nature, and the other is of a more causal nature. Even though the research questions are of a somewhat different nature, they relate rather closely to one another. The first research question will hopefully help give a better understanding of how to conduct co-creation in a professional service firm:

Does problem solving processes represent an opportunity for co-creation of values for professional service firms, and their professional customers?

This research question is based on a desire to complement the literature on co-creation, regarding this specific line of business, and is based on complimentary literature from the discipline of strategic management on value creation. To provide a thorough answer to this question, subordinate questions will be sought answered. These include:

Which cases seem to represent successful co-creation processes?

What can help explain the differences seen in the cases, regarding level of co-creation?

Which values has been (co-)created in the cases?

The second main research question posed in this thesis is:

Does co-creation in problem-solving processes contribute to produce creative and innovative project solutions?

It is always problematic to attempt to give clear answers to causal questions, but for the purpose of providing a better understanding of co-creation in professional service firms, it may be interesting to search for creative and innovative output from observed co-created problem solving processes.

1.4 Structure of thesis

This thesis is concerned with co-creation in two different perspectives. First of all, if problem solving processes represent an opportunity for co-creation in professional service firms. Secondly, if observed co-creation actually contributes to creative and innovative project solutions. Chapter two, concerning the theoretical framework, is therefore divided in two sections. In the first section, literature regarding co-creation will be presented. This includes background, different views on value creation, how to conduct co-creation, and the limitations in the literature, regarding specific businesses. At the end of the section, complementary literature, which provides a better understanding of co-creation in professional service firms, will be presented. In the second section, the thesis will present literature on creative thinking, creativity, and innovation. This subchapter will hopefully provide a language for understanding creativity and innovation, and thus make it possible to seek for creative and innovative output from the cases scrutinized.

Chapter three contains the methodology chosen for this thesis, and includes choice of method, interview- and case selection, execution of interviews, analytical tools. In addition, this chapter includes some reflections related to validity and reliability, as well as some ethical

reflections. In chapter four, the cases will be presented, based on the nature of those projects. Chapter five to eight includes an analysis of the cases. Each chapter represents a typical finding or characterization of the cases. These chapters are divided on the base of the theory presented in chapter two. Finally, chapter nine is an attempt to sum up the findings and analysis, and attempts to give answers to the research questions posed in the thesis.

1.5 Norconsult

Norconsult is one of the leading interdisciplinary engineering and consulting firms in Norway and the Nordic countries. The organization consists of approximately 2250 employees, about 1700 in Norway, the rest in offices abroad. The main office of Norconsult is located in Sandvika, west of Oslo. One of Norconsult´s most important functions is to build the community and infrastructure. However, their business areas also include energy, environment, industry, oil and gas, risk management and planning. They provide their services to private and public sectors on a national and international level. Norconsult employs engineers, economists, social scientists, architects, landscape architects, and information and communication technology professionals, as well as experts in a broad range of specialty fields. The projects Norconsult conducts range from small short-lived studies to large long-term projects where many different disciplines are involved. Examples of projects in which Norconsult has participated are Holmenkollen stadium, new central station in Oslo, and the national museum in Oslo, to name a few. Their net profit for the last fiscal year, 2011, was 141,3 million NOK.

2 Theoretical Framework

2.1 Co-creation

2.1.1 Background

Schumpeter argued that innovation plays a key role for the survival of firms; innovation "strikes not at the margins of the profits and the outputs of the existing firms, but at their foundations and their very lives" (Schumpeter, 1942: 84). More recently Baumol (2002) elaborated this view: "...under capitalism, innovative activity...becomes mandatory, a life-and-death matter for the firm, and innovation has replaced price as the name of the game in a number of important industries" (Baumol, 2002: 1). Accepting this importance of innovation, firms should then seek to innovate, not just for their growth, but their very survival.

Co-creation as a process relates to this need to innovate, but the roots of this concept can be traced to von Hippel (1976) and his work on innovation systems. He found that, in the business of scientific instrument manufacturing, product users were found to be the main source of new products, in contrast to previous models placing the locus of innovation processes at universities, or within the firm itself (von Hippel, 1976). This discovery then, led to a shifting of focus to user-producer interaction as a locus of innovation processes, and to the concept of democratizing innovation (von Hippel, 2005). Open innovation is also a concept related to co-creation. The idea behind open innovation, somewhat simplified, is that firms should seek ways of tapping into and harnessing ideas residing beyond their formal boundaries. In contrast, closed innovation refers to, for example, internal R&D and innovation processes within the firm boundaries (Chesbrough, 2003).

Also, Ramirez (1999) and his value co-production framework can be seen as an inspiration for co-creation. This framework offers an alternative view on value, which we have inherited from the industrial era. One of the differences being that customers are seen as co-producers of value, compared to the industrial view on value as being constrained by the customer

(Ramirez, 1999).

2.1.2 The construct of co-creation

According to the notion of co-creation, if a user is involved in the production of a good or service, the end value will be enhanced because of the possibility for the customer to tailor the product as he or she desires (Lusch et al., 2007). Co-creation refers to collaboration with the customer for the purpose of innovation, and is often compared with the notion of customization (Lusch et al., 2007). The difference between these notions lies in the degree of involvement of the customer. In customization, the customer plays a less active role in the end product/service than in co-creation. With customization, the customer is usually involved only in a reactive role, responding to questions being posed by the manufacturer, often restricted to the end of the innovation phase. On the other hand, co-creation refers to the involvement of the customer as an active collaborator right from the beginning of the innovation process (Kristensson et al., 2007).

With that said, the literature on co-creation does not discuss innovation, and what is meant by that in a thorough manner. This is perhaps because co-creation can take place in so many different contexts, where the term innovation has different meanings. Some companies focus on product innovation, which in short involves the application of knowledge to the development of new products or services, like Apple and the iphone. On the other hand, there are companies focusing on process innovation. This can be the development of new management, work or organizational practices. These two types of innovation can also be the combined focus of a single firm or organization (Newell et al., 2009). There is also the difference between radical and incremental innovation, where the latter is focused on continuing improvement of a product, process or service. In contrast, radical innovation has the aim to make advancements in knowledge for the development of completely new products and processes (Bhaskaran, 2006). Discussing this issue further is, however, beyond the scope of this paper. But the projects examined in this paper, are by nature interested in delivering the best possible solution with, and for, the costumer. Their focus is not on new product development. Therefore it is natural to use an incremental view on innovation in this thesis. Innovation and its coupling with co-creation will be discussed later in the paper. However, that section of the thesis will focus mostly on creativity, and how co-creation can contribute to

produce creative and innovative project solutions. This approach of the thesis is based on the view that creativity is a prerequisite for innovation. More on this in section two.

2.1.3 Value creation, traditional and co-creation approaches

Prahalad and Ramaswamy (2004a, 2004b), among others (Lusch et al., 2007, Ramirez, 1999), suggest that companies have to recognise that a customer is becoming a partner in creating value. To understand what this implies, it might be helpful to take a step back and look at the concept of value creation. In the traditional conception of the process of value creation, consumers or customers were "outside the firm". The value creation occurred inside the firm through its activities. In this sense the firm and their customers had distinct roles of production and consumption. In other words, value creation was not occurring in the market. The market was merely a locus of exchange or an aggregation of consumers. This traditional concept of a market can be viewed as company-centric, where companies create value and exchange this value in the market. Also the communication between companies and their costumers can be seen as company-centric in the sense that companies try to persuade the customers such that the firm can extract the most value from transactions in the market (Prahalad and Ramaswamy, 2004 a).

A parallel to this traditional view of value creation can be seen in the notion of a goods-dominant (G-D) logic that we find in the marketing literature (Lusch et al., 2007). G-D logic views units of output as the central component of exchange. The roots to this logic can be traced to the work of Adam Smith on how to create national wealth through production and export (Lusch et al., 2007). With a G-D logic perspective, competitive advantage is seen to be a utility maximization through embedding value in products by superior manipulation of product, place, price and promotion, with the assumption that the customers and consumers are passive. The idea of "service", based on this logic, is limited to a tool for maximizing the value of other products (Lusch et al., 2007). Examples of such services are installation, repair, training, parts supply, and product adjustments (Ramirez, 1999). Similarly to the traditional concept of value creation mentioned above, the G-D logic also has a company-centric perspective on value creation. The marketing thought in the U.S. after World War 2 is a good

example of how the company-centric G-D logic viewed the market. In their view the customers were an operand resource, a resource to be acted on. Customers and consumers were researched and analysed and then products were produced to meet the demands. In this way the customers were segmented, targeted, promoted to, distributed to, captured, and then enticed to continue to purchase by the seller using heavy promotional programs (Lusch et al., 2007).

In contrast to the G-D logic, a new kind of marketing logic has entered the marketing field in the latest years, called the service-dominant (S-D) logic (Vargo et al., 2008) This logic has a completely different view on customers and value creation. S-D logic sees the customer as an operant resource, a resource capable of acting on other resources, a collaborative partner who co-creates value with the firm (Vargo et al., 2008). Further, the S-D logic emphasises that it´s not the products that are the aim for customers, but the benefit available through the service of the provider. The basis of exchange thus moves from operand resources like goods (G-D logic) to operant resources like competence, skills and knowledge (S-D logic) (Vargo et al, 2008).

With this logic, "products" are viewed in terms of service flows, in which the service is provided directly or indirectly through an object (product). As we can see, S-D logic shifts focus from product to service in value creation. As mentioned above, the G-D logic views service as a tool for added value to a product. S-D logic on the other hand, views service as the basis for competition (Lusch et al. 2007). Competition is then a function of how one company provides applied operant resources (skills, knowledge, competence) that meet the needs of the customer, relative to another company providing such applied operant resources. In other words, competition occurs through service-provision. Lusch et al. (2007) state that key drivers for firms to more successfully compete through service, lie in the applied knowledge and collaboration with the customer. For a company that attempts to achieve a sustainable competitive advantage in a given market, this has important implications (Lusch et al., 2007).

2.1.4 Interactions as crucial within co-creation

The S-D logic brings us back to the suggestion made by Prahalad and Ramaswamy (2000 a), that companies have to recognize that customers are becoming partners in value creation. Løwendahl and Revang (1998) also emphasises such a view: *At the core of strategy, then, is the ability to build and maintain relationships to the best people for maximum value creation, both internally (to firm representatives) and externally (to customers)* (Løvendahl and Revang, 1998; 3). By recognizing that the customer is an operant resource, a company should, with this logic, pursue to co-create values with their costumers. The question then, is how this should be done. The literature on the subject gives us some clues to what should be addressed.

Prahalad and Ramaswamy (2004 a) have some interesting contributions regarding this. They stress the need of high-quality interactions that enable a customer to co-create unique experiences with the company as the key to unlock new sources of competitive advantages. As mentioned above, value must be jointly created, both by the company and the customer. Similar to the mentioned G-D logic, in the traditional system, the firm is often in charge of the overall orchestration of the customer experience. For example, even if you fill your own car with gas, or check in by yourself at the airport, it does not mean that you have created your own experience. However, that does not mean that firms are not focusing on consumer experiences, but they are treated as passive and thus not a part of the value creation. In the view of Prahalad and Ramaswamy (2004 a), what is needed, is to create an experience environment within which customers can create their own unique experience. This will then lead to co-creation of values.

To build a system for co-creation of value, Prahalad and Ramaswamy (2004 a) suggest to start with the building blocks of interactions between the firm and their customer that facilitate co-creation experiences. They have developed a model for those building blocks called DART, based on the factors that should be addressed in order to achieve interactions for co-creation.

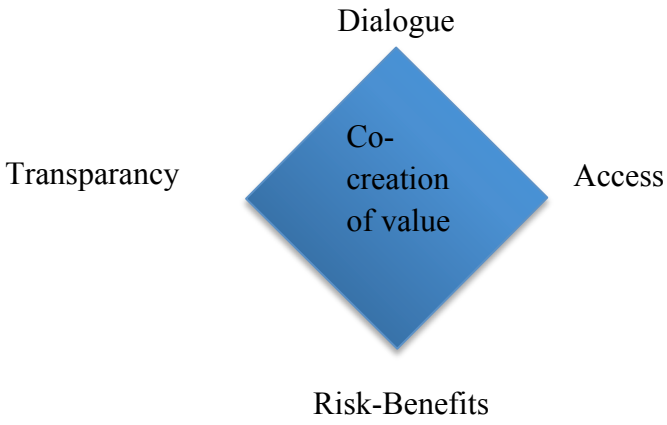

Figure 1; DART-model (Prahalad and Ramaswamy, 2004 a)

Without dialogue, it is difficult to imagine co-creation of value. How would you then engage in interaction with your customer? Therefore, dialogue is perhaps the most important building block, even though it is dependent on the other factors to be effective. Dialogue implies interactivity, deep engagement, and the ability and willingness to act on both sides. Also, a dialogue between two unequal partners is not recommendable. The company and their customer should therefore act as two equal partners and be joint problem solvers (Prahalad and Ramaswamy 2004 b).

For a smooth dialogue, access is important. First of all, if a company working with a customer cuts off access to information, their relationship fails to be between two equal partners. This would damage their dialogue. To achieve access between partners, information and tools, which enable access to the knowledge bases of each other are required (Prahalad and Ramaswamy 2004 b).

Also transparency is critical to have a meaningful dialogue. In the traditional system mentioned earlier, companies benefited from information asymmetry between the customer and the firm. But that asymmetry is now disappearing with enabled, connected and information-seeking customers. Firms can no longer be vague or hide information regarding prices, costs, and profit margins, to mention a few areas. Since information about products,

technologies, and business systems becomes more accessible, the creation of new levels of transparency becomes increasingly desirable (Prahalad and Ramaswamy, 2004 b).

Last of the building blocks is risk - benefits. For a customer involved in value co-creation, risk is involved. What risks are involved for a customer engaged in co-creation? There are no guidelines to assess this, but businesses must inform their customers fully about the risks involved in the co-creation. In addition to economical risk, this also includes societal risks. As long as they have a good dialogue with, access to, and transparency with the company, the customer should have a good base of information regarding risks, which enables them to make a good risk assessment (Prahalad and Ramaswamy, 2004 b).

As can be seen in this model, the factors are greatly intertwined. The idea behind these building blocks is that it will enable companies to better engage customers as collaborators, and thus enable the customer to co-create unique experiences with the company. Prahalad and Ramaswamy (2004 a) then, puts the locus of value creation on the interactions between a company and their customers. In their view interactions can take place any place in the system, therefore this framework implies that all the points of company-customer interactions are critical for (co-) creating value.

This model does, however, not give a very detailed framework for *how* to co-create. None the less, the model contributes with an important point, namely that co-creation is dependent on all of the interactions between a company and it´s customers. The DART-model can help underline important issues needing to be addressed to achieve fruitful interactions for co-creation.

2.1.5 What kind of interactions?

Payne et al (2008) have introduced a conceptual framework for understanding and managing value co-creation. This work is based on the previous mentioned S-D logic, and starts with the centrality of processes in co-creation. Such processes include the procedures, tasks, mechanisms, activities and interactions, which support the co-creation of value. Their framework consists of three main components: *Customer value creation, Supplier value creation* and *Encounter processes.* Here, I will highlight the encounter processes. The encounter processes include the processes and practices of interaction and exchange that take place within customer and supplier relationships and which need to be managed in order to enable successful co-creation opportunities.

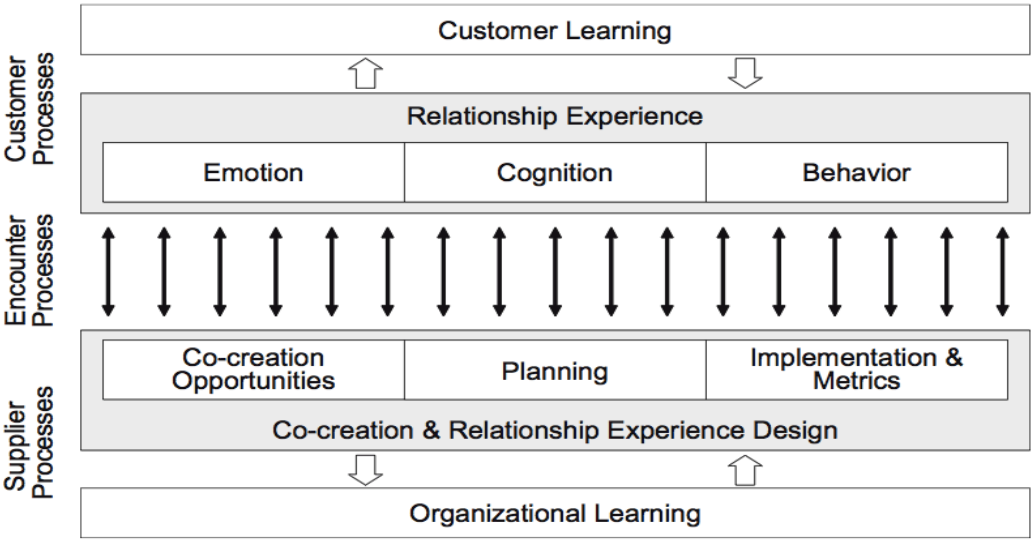

Figure 2; A conceptual framework for value co-creation (Payne et al., 2008)

In figure 2, encounter processes are represented by a series of two-way arrows linking the customer processes and the supplier processes. Payne et al. (2008) recognize that there are many different types of encounters, and not all of these are equally important for value creation. While some are necessary for building customer experiences, others may be more pivotal for value creation. The latter types of encounters can also be called critical encounters, and they can be both positive and negative. What the framework does not tell us is what kind

of encounters that are critical. But because of the differences between different lines of businesses and different industries, this is perhaps an impossible task for a framework of this nature. It is easy to imagine different critical encounters in knowledge intensive businesses contra critical encounters in the fast-food business. An important contribution with this framework, however, is that it points to identifying opportunities for positive critical encounters. When identified, the company should then focus their resources to enable these encounters. By doing so, the company may also identify and act on the co-creation opportunities (Payne et al., 2008).

This framework is somewhat generic by nature. It may therefore be a challenge to use this framework for a specific line of business. In this paper, the focus is on co-creation between professional service firms and their professional customers. This framework does not mention this type of business, but it stresses the need to identify opportunities for these positive critical encounters. I will now try to suggest one such encounter, or interaction, which hopefully can be described as critical in the context of co-creation between professional service firms and their professional costumers.

2.1.6 Problem solving processes as an arena for co-creation

The literature on co-creation can give us useful insights into what needs to be addressed to achieve co-creation. However, there is relatively little direction on how this process should be undertaken (Payne et al., 2008). As seen above, Prahalad and Ramaswamy (2004 a and b), and Payne et al. (2008) put focus on building blocks for interaction and stress the need for critical encounters to enable co-creation. The different natures of different lines of businesses can make it difficult, if not impossible, to give clear directions on how to undertake the processes of interactions and critical encounters for co-creation. As mentioned, the focus in this paper is on professional service firms and their professional customers. The question then, is what kind of interactions and critical encounters can enable co-creation in this line of business.

Before trying to answer the question above, let us take a look at the logic of firm-level value creation. Porter´s value chain framework has long been dominant as a language for representing and analysing the logic of firm-level value creation (Porter, 1986). This analysis is a method for decomposing the firm into strategically important activities and understanding their impact on cost and value. According to Porter, as cited in Stabell and Fjeldstad (1998), this framework with its generic categories of activities is valid in all industries. This framework has since been contested by Stabell and Fjeldstad (1998). When supervising the application of the value chain model to more than two dozens firms from a variety of industries, they found the value chain model to be unsuitable to the analysis in a number of service industries (Stabell and Fjeldstad, 1998). On that basis they suggest that the value chain is but one of three generic value configurations (fig. 3).

	Chain	Shop	Network
Value creation logic	Transformation of inputs into products	(Re)solving customer problems	Linking customers
Primary technology	Long-linked	Intensive	Mediating
Primary activity categories	• Inbound logistics • Operations • Outbound logistics • Marketing • Service	• Problem-finding and acquisition • Problem-solving • Choice • Execution • Control/evaluation	• Network promotion and contract management • Service provisioning • Infrastructure operation
Main interactivity relationship logic	Sequential	Cyclical, spiralling	Simultaneous, parallel
Primary activity interdependence	• Pooled • Sequential	• Pooled • Sequential • Reciprocal	• Pooled • Reciprocal
Key cost drivers	• Scale • Capacity utilization		• Scale • Capacity utilization
Key value drivers		• Reputation	• Scale • Capacity utilization
Business value system structure	• Interlinked chains	• Referred shops	• Layered and interconnected networks

Figure 3; Overview of alternative value configurations (Stabell and Fjeldstad, 1998).

By looking at the value chain we find a certain similarity to the traditional system mentioned earlier in the paper and to G-D logic. Regarding co-creation, the traditional system with G-D logic is, as reviewed above, incompatible with co-creation of value, and therefore not valid in this context. But the value shop model presented here by Stabell and Fjeldstad (1998) is quite interesting for the purpose of this thesis. Firms fitting the value shop configuration rely on intensive technology and competence to solve a customer or client problem. This is typical for

professional services such as law, architecture and engineering (Stabell and Fjeldstad, 1998), and might therefore be fitting as a description of an engineering firm like Norconsult.

Firms that can be modelled as value shops rely on technology to solve a customer or client problem. Based on the requirements of the problem at hand, selection, combination, and order of application of resources and activities will vary. What separates the value chain from the value shop is the different locus of value creation. While the chain performs a fixed set of activities that enable it to produce a standard product, often in larger numbers, the value shop schedules activities and applies resources in a fashion that is dimensioned and appropriate for the clients problem (Stabell and Fjeldstad 1998). If we define problems as differences between an existing state and an aspired or desired state, problem solving, and thus value creation in value shops, is the change from an existing to a more desired state (Simon, as cited in Stabell and Fjeldstad, 1998). For the customer, value is estimated by the success of this process. But also the value shop firm gains value by this process. Of course the firm will get an economical "reward" for solving a problem, but there are also other values involved. Just imagine a professional service firm solving a huge problem for a customer. The media has been interested in the case, and the firm gets a lot of positive attention, from both the media and from other professionals in the business. This success will most certainly improve access to both the best personnel and access to the best clients, problems or projects (Stabell and Fjeldstad, 1998). This will again give the firm a competitive advantage in their market.

According to the value shop perspective, there are five categories of primary value shop activities:

- Problem-finding and acquisition
- Problem-solving
- Choice
- Execution
- Control and evaluation (Stabell and Fjeldstad 1998)

These activities often represent a small percentage of costs in a project, but can have a major impact on value as choices made in one activity, affect the next with spiralling commitment

(Stabell and Fjeldstad, 1998). In figure 4, these activities are represented for a general medical practitioner, but these activities are also valid for a professional service firm solving customer problems (Stabell and Fjeldstad, 1998).

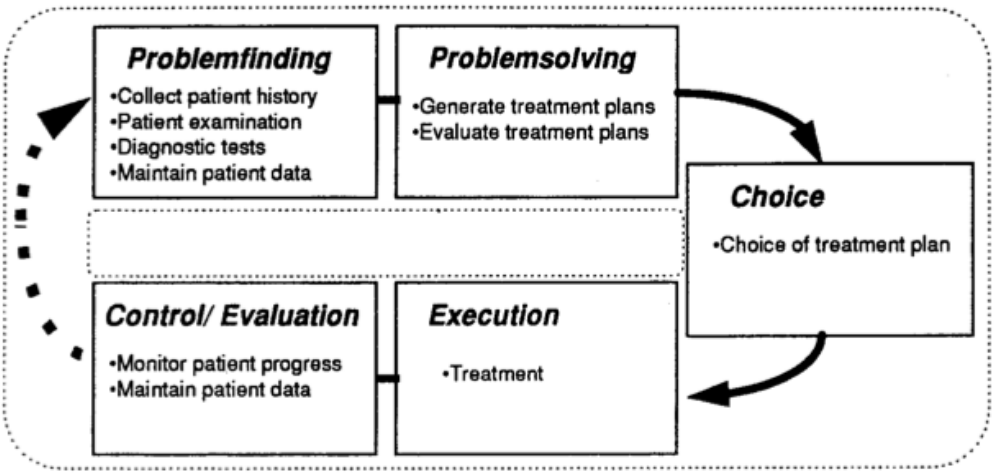

Figure 4; Value shop diagram for a general practitioner (Stabell and Fjeldstad, 1998).

So then, what kind of interactions and critical encounters can enable co-creation between professional service firms, and their professional customers? Stabell and Fjeldstad (1998) provide an exciting view on value creation in professional service firms, placing the locus of value creation on problem solving processes in this line of business. If we accept this hypothesis, it would be irresponsible not to view problem-solving processes as a critical encounter and point of interaction for co-creation of values for professional service firms and their professional customers.

The literature on co-creation gives us some clues on how to enable co-creation of values, namely that interaction with the customer is a pillar in this endeavour, and the issue of how to enable such interactions subsequently becomes very important. The literature also points to how to identify opportunities for positive critical encounters. When identified, the firm should locate their resources and act on these positive critical encounters to enable co-creation opportunities. Based on the insights gained from Stabell and Fjeldstads (1998) value shop conception, I will therefore suggest problem-solving processes as an important arena for

interaction and as a positive critical encounter, and thus a great opportunity for co-creation of value, in professional service firms. Shared problem solving is, however, not a new idea. Bettencourt et al. (2002), point to shared problem solving as a requirement for optimal knowledge-based solutions between a service provider and their client. Albeit their focus is on customer behaviour in shared problem solving, their research shows that this suggestion has little controversy. My first research question is then:

Does problem solving processes represent an opportunity for co-creation of values for professional service firms, and their professional customers?

2.2 The co-creative problem-solving process: linking co-creation with creativity and innovation

2.2.1 Co-creation - creativity – innovation

As mentioned above, Kristensson et al. (2008) couple co-creation with innovation by stating that in co-creation, the customer is involved in the whole innovation process. However, this innovation process is not explained any further. Prahalad and Ramaswamy (2004 b) advocate the need to focus on innovative experience environments for co-creation, since such environments (fruitful interactions) are the basis for value creation. The focus here is then on innovation for co-creation, and not on innovation as an output of the co-creation process. It may seem, from the literature on the co-creation I have encountered, that even though co-creation and innovation often is coupled (Kristensson et al., 2008), there is a lack in understanding, or explaining, how co-creation can lead to innovation. One explanation might be that it is implicit that the co-created value in it-self is innovative, or that the comparative advantage gained from co-creation of values is a foundation for innovation. In any way, the literature gives us little to go by, when trying to link innovation to co-creation. On that base, it might be interesting to search for innovative outcomes from co-creation, as it happens in problem-solving processes. My second research question is then:

Does co-creation in problem-solving processes contribute to produce creative and innovative project solutions?

To answer the question above, it is necessary to operationalize the constructs of creativity and innovation. However, given the "missing link" between co-creation and innovation mentioned earlier in the thesis, the approach in the following section will focus on creativity, and then link innovation to that construct. As Amabile (1996) states: *All innovation begins with creative ideas* (Amabile, 1996; 1)

2.2.2 Defining creativity

Different views, perspectives, and definitions lead to different areas of focus when trying to locate, enable, or explain creativity. Research on creativity is not proceeding in a linear fashion, and the varieties in tackling the construct of creativity can be seen as an indicator of a paradigm with little unification. However, this might be a good thing given the very nature of creativity and given how little we currently know about it (George, 2007). Psychologists have a long history of disagreement over the definition of creativity, defining it in terms of the creative process, the creative product, or the creative person. Most contemporary definitions, however, use characteristics of the creative product as the distinguishing sign of creativity (Amabile, 1983). Products here are broadly defined, and include any observable outcome or response. When trying to answer the research question raised in this section, the creative product approach will be most useful.

In a response to what Amabile (1983) perceives as conceptual, rather than operational definitions, she has adopted two complementary definitions of creativity, one of which tries to answer the lack of operational definitions:

A product or response is creative to the extent that appropriate observers independently agree it is creative. Appropriate observers are those familiar with the domain in which the

product was created or the response articulated. Thus, creativity can be regarded as the quality of products or responses judged to be creative by appropriate observers, and it can also be regarded as the process by which something so judged is produced (Amabile, 1983)

As this definition shows us, it can be easily operationalized for the purpose of empirical research. By defining creativity this way, Amabile (1983) avoids trying to give objective, ultimate criteria for creativity. Although objective ultimate criteria would be the best solution for defining creativity, Amabile (1983), advocates that at this point, such criteria are not possible, based on the research on the matter. A possible challenge to this definition might be that it can be a bit too operational. This definition makes it possible for any firm to call themselves creative, as long as the creators, or the workers, call the products creative, even though the broader public do not see the same product as creative. The second definition of creativity by Amabile (1983), which is more conceptual by nature, may help us to give a better fundamental understanding of what creativity is:

A product or response will be judged as creative to the extent that it is both a novel and appropriate, useful, correct, or valuable response to the task at hand and the task is heuristic rather than algorithmic (Amabile, 1983).

The product criteria of novelty and appropriateness, or value, are common in most definitions of creativity (Newell et al., 1962). Therefore this is a definition with support from other researchers in the field. But in addition, this definition also specifies that the task must be heuristic, rather than algorithmic. Such tasks are those not having a clear and readily identifiable path to solution. Although some heuristic tasks have a clearly identified goal, many such tasks must also start with defining the goal itself. Thus, problem discovery is an important part of much creative activity (Amabile, 1983).

2.2.3 Creative thinking

Based on the operational definition by Amabile (1983), mentioned above, she has proposed a componential framework of creativity, which includes three major components. These components, then, are factors essential for the production of works or responses that are reliably assessed as creative by appropriate judges (Amabile, 1983).

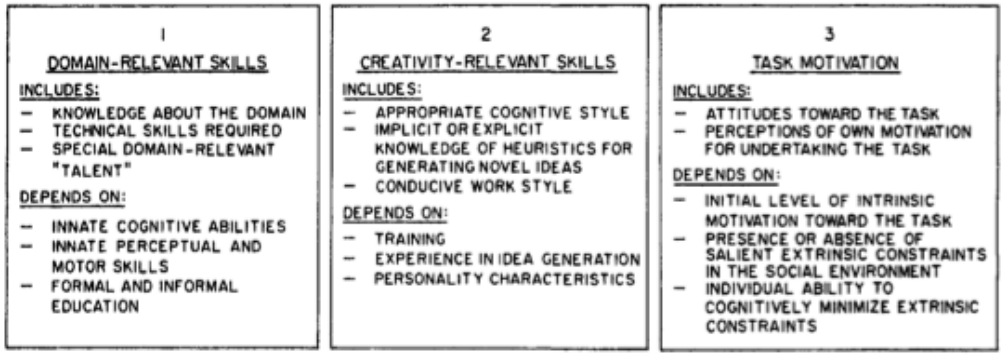

Figure 5; Components of creative performance (Amabile, 1983).

The framework does not need much explaining, but it is important to note that the elements within these major components only can be completed gradually, as progress is made in creativity research (Amabile, 1983). This can be understood as if the elements within the components are continually developing as research is made on the subject, and is therefore not written in stone. The framework points to many interesting and important factors for developing a creative output, but here I will focus on the second component, "Creativity-relevant skills".

So what are creativity-relevant skills? As the framework points out, it includes implicit or explicit knowledge of heuristics for generating novel ideas, which is a rather vague description of a creativity-relevant skill. I will therefore turn to other literature on creativity when trying to develop a better understanding of such skills.

One interesting contribution in understanding such skills and how to develop them comes from De Bono (1970). His contribution starts with an explanation of how the mind works. He advocates that the mind handles information in a characteristic way that is very effective and which has huge practical advantages. The mind does this by establishing concept patterns where information is catalogued and coded, called vertical thinking. The mind, he argues, organizes information in certain patterns, which make the information highly accessible. An example can be when you meet a person for the first time. The mind uses the first impression of this person to categorize him or her in a certain way. This is of course not a very accurate measurement, but it makes it so much easier for a mind to "understand" this person (De Bono, 1970). The same goes when confronted with a problem. Our minds tell us that this problem can be categorized in file X, and we therefor make certain assumptions about the problem, and hence how to solve that problem.

Even though the mind is good at establishing these patterns, De Bono (1970) argues, it is not good at restructuring these patterns to bring them up to date. And it is exactly by restructuring such patterns we can put information together in new ways to generate new ideas (De Bono, 1970). In order to be creative, he suggests, we need to restructure our mental patterns, by the use of lateral thinking.

In contrast to vertical thinking, which by nature selects a pathway by excluding other pathways, lateral thinking seeks to open up other pathways. With vertical thinking, one always moves usefully in one direction. With lateral thinking, one does not move in order to follow a direction, but to generate one. (De Bono, 1970). A parallel can here be drawn to what Argyris and Schön (1974) call double looped learning. Double looped learning, they argue, involves questioning the role of the framing and learning systems, which underlie actual goals and strategies. The basic assumptions behind ideas and policies are then confronted for the purpose of learning. So then, if we accept the hypothesis of lateral thinking as a tool for creativity, how does one engage in lateral thinking?

First of all, to enable lateral thinking De Bono (1970) argues, one must ask the question "why" to challenge assumptions. The intension is to create discomfort with any explanation. By refusing to be comforted with an explanation, one tries to look at things in a different way. This increases the possibility of restructuring a pattern. A second tool for lateral thinking is by the use of delayed judgement. In vertical thinking, one must be right all the way through a logical thinking process. This involves judgement at every stage. With lateral thinking however, one must be allowed to be wrong on the way, even though one must be right in the end. This enables ideas, which otherwise would be judged early on as invalid in a fixed pattern, to develop and possibly even alter the pattern itself (De Bono, 1970). A third tool for lateral thinking is by reversal. The idea is that one take the problem or case at hand and turn it around, inside out, upside down and back to front. This provocative rearrangement of information will then hopefully provoke a different way of looking at the situation, and thus generate new ideas or new patterns (De Bono, 1970). These are not the only tools for lateral thinking, but they give a brief insight into how to engage in lateral thinking.

Lateral thinking, as one explanation or understanding of creative-relevant skills, can tell us how to think creatively, but regarding the definitions of creativity mentioned above, focusing on the output or product, creative thinking and creative output can not easily be compared. However, it might be interesting to search for creative thinking in problem solving processes in addition to the search for creative output, as it might give us a better understanding of the nature of these co-created problem solving processes.

2.2.4 Innovation as a product of creativity

Regarding the research question: *Does co-creation in problem-solving processes contribute to produce creative and innovative project solutions?,* the focus in this thesis has so far been on creativity. However, by using Amabiles (1983) definitions focusing on the creative product or output, a link to innovation can be found. As mentioned above there are multiple views on innovation, stretching between radical-, incremental-, product-, and process innovation. However, most of the widely used definitions of innovation focus on novelty and newness (Johannesen et al., 2001). The European Commission Green paper on innovation defines

innovation rather broadly as a synonym for *the successful production, assimilation and exploitation of novelty in the economic and social spheres* (European Commision, 1995). This definition then, can be seen as an extension of the definition of creativity, given that the novelty in the creative product are assimilated and exploited. Carr and Johansson (1995), has a similar view on this link between creativity and innovation: *...we define creativity as the generation of ideas and alternatives, and innovation as the transformation of these ideas and alternatives into useful applications that lead to change and improvement* (Carr and Johansson, 1995). Linking this to the problem solving processes researched in this paper, the nature of these processes is exactly to exploit the ideas from these processes, which hopefully can be described as creative. Thus, if one can localize a creative product or idea, the same product can be described as innovative as long as it is successfully exploited.

2.3 Summary

Co-creation refers to collaboration with the customer for the purpose of innovation. The roots of the concept can be traced to the revelation of customers as a central factor in product innovation, and in a new way of seeing customers as a resource in value creation. As mentioned, a requirement for co-creation is exactly that customers are treated as equal partners in the collaboration, based on the mentioned service-dominated logic. This, in contrast to the goods- dominated logic of customers as a passive resource to act upon. Firms in pursuit of competitive advantage and maximum value creation should then engage in co-creation with its customers.

So then, how does a firm enable co-creation with its customers? As Payne et al. (2008) emphasise, there is relatively little direction on how this process should be undertaken. Prahalad and Ramaswamy (2004 a and b) provide a model based on what they advocate as pivotal for co-creation; high quality interactions that enable customers to co-create unique experiences with the company. Their model points to four factors that should be addressed to enable such high quality interactions; Dialogue, Access, Risk-assessment, and Transparency. The model points to important factors needed in co-creation, but it gives no detailed picture of how this should be undertaken. Payne et al (2008) provide a further understanding of which

interactions that are crucial for co-creation. They stress the need to identify possibilities for critical encounter processes, which are essential for co-creation. When identified, a firm should then focus their resources to enable these encounters.

This thesis concerns co-creation in professional service firms. The literature on co-creation mentioned above points to important issues needed to be addressed, in order to successfully engage in co-creation. Enabling of high quality interactions, and identifying and acting on critical encounter processes, are seen as crucial for co-creation. The question then, is what kind of high quality interactions, and which critical encounter processes, are crucial for co-creation in professional service firms. Stabell and Fjeldstad (1998) provide an important contribution when trying to answer the question above. They focus on problem solving processes as the main locus of value creation for professional service firms. With this insight, it is natural to focus on problem solving processes as the most important arena for high quality interactions, and critical encounter processes with customers, in professional service firms. The first research question of the thesis is therefore:

Does problem solving processes represent an opportunity for co-creation of values for professional service firms, and their professional customers?

As pointed out earlier in the thesis, the purpose of co-creation is innovation. However, the linkage between those constructs can be described as somewhat weak. Therefore, this thesis will try to explore if the outcome of co-creation in these problem-solving processes result in creative and innovative project solutions. Because of the little understanding and explaining of co-creation and its coupling with innovation, the approach in answering the question will focus on creativity, or rather the creative outcome. This then, can more easily be linked to innovation, as operationalized in the thesis. This approach is based on the assumption stated by Amabile (1996); *All innovation begins with creative ideas.* The second research question of the thesis is therefore:

Does co-creation in problem-solving processes contribute to produce creative and innovative project solutions?

In addition to the search for creative output, it might also be interesting to search for creative thinking as it occurs in these processes. And if one is seeking for such creative thinking, one must also know what to search for. Therefore, the thesis also provides a brief overview of what De Bruno (1975) call lateral thinking (creative thinking), as a creativity relevant skill (fig. 5).

3 Methodology

3.1 Choice of method

The research design chosen for this thesis is a collective case study, based on qualitative data. The problem solving processes in four projects conducted by Norconsult and customers were chosen as cases. These chosen projects (cases) represent some of the projects in which Norconsult allegedly practices co-creation with customers, and are therefore suitable for the thesis. In two of the cases, the project managers from both Norconsult, and the customer, have been interviewed. In the two other cases, only representatives from Norconsult have been interviewed, one project manager and one project engineer. In addition to the interviews, data has also been collected from documents from each case. These are documents concerning the processes and outputs of the chosen cases. Such documents have been helpful in both preparation for the interviews, and in analysing the data from the interviews.

How one conducts a research study, is highly dependent on the research question-(s) of the study (Berg, 2007). The research questions posed in this thesis have therefore been important for the research design. One of the research questions can be described as descriptive-analytical, while the other has a causal nature. The goal is not to provide any undisputable conclusions, but rather to explore how co-creation can be conducted in a specific line of business, and at the same time explore if this gives a creative and innovative output. Based on these research questions, the chosen design is to collect qualitative data. If the focus of the thesis were on standardised and systematic comparison, a quantitative approach would perhaps be a better solution (Silverman, 2011). However, the goal of this thesis is to study a situation (or phenomenon) in detail. For this, a qualitative approach is recommendable (Silverman, 2011).

Hagan, as illustrated in Berg (2007) defines the case study method as *in depth, qualitative studies of one or a few illustrative cases*. This definition points out an important quality of such studies, namely that they can illustrate a phenomenon or situation. Also, the method tends to focus on holistic descriptions and explanation (Berg, 2007), and is thus in line with

the thesis. As mentioned, the research design in this thesis is a collective case study. Collective case studies involve the study of several cases, intended to allow better understanding, insight, or perhaps improved ability to theorize about a broader context (Berg, 2007). Yin, as cited in Berg (2007), indicates that such studies are frequently considered more compelling, and the overall study is therefore regarded as more robust. This might be because of the ability to analyse within each setting, and across settings, and such studies thus enable us to understand the differences and similarities between the cases (Baxter and Jack, 2008). Based on the research questions raised in the thesis, the collective case study approach should be a robust design.

3.2 Case selection – interview selection

In the quest to provide answers to the research questions raised in this thesis, the cases scrutinized had to represent projects where co-creation appeared to have occurred. In Norconsult, not every project is based on co-creation in the problem-solving processes. Therefore I was provided, by the head of the innovation programme, a list of fifteen projects where co-creation was a central part of these processes. From this list, I was given information on the nature of these projects, and could therefore pick out interesting cases, hopefully representative for the other projects. However, it was not given that the project managers for each of these projects were accessible for interviews. The case, and thus the interview selection, can therefore be described as a strategic and opportunistic approach. When project managers were inaccessible, other participants from the project where interviewed. For each case chosen, I was given names and contact information of the project managers at the customer organization, by the project managers or other participants from Norconsult. Hence, this approach for interview selection has also the elements of "snowball-samples", meaning that the first informants led me to the next informant in each case. Snowball-samples are popular for researchers interested in difficult-to-reach populations (Berg, 2007; 44), which is a fitting description for the population in this thesis; professional service firms and their professional customers.

3.3 Execution of interviews

In this thesis, semi-standardized interviews were performed in order to collect the primary source of data. Several factors point to semi-standardized interviews as the most appropriate

approach for this thesis. First of all, completely standardized interviews would make it difficult to adjust the language and wording of questions. As a student of pedagogy I often found it necessary to be flexible in the wording of questions in order to minimize semantic barriers when interviewing project managers in a technical branch. Also, a standardized interview gives no flexibility to add additional questions or ask for clarifications of given answers, which I found to be important for gathering the data needed. In sum, for this thesis, semi-standardized interviews provided a better platform then structured interviews, when investigating these cases. In non-standardized interviews, interviewers must develop, adapt, and generate questions appropriate to each given situation (Berg, 2007). As an inexperienced interviewer, this approach can be a bit too complex, and it might result in a lack of relevant data for the cases. Therefore, semi-standardized interviews were chosen for the thesis.

Semi-standardized interviews involve the implementation of a number of predetermined questions and special topics (Berg, 2007). The questions in the interviews were asked in a somewhat systematic and consistent order for each interviewee, but the interviewee was given freedom to digress and probe far beyond the answers to the prepared questions. Also, the interviews were concluded by open dialogue and open questions. I found this to be a highly appropriate method for probing further into interesting answers given earlier in the interviews. Therefore, the semi-structurized interviews were supplemented by unstandardized questions at the end of each interview.

3.4 Analysis

All interviews were recorded and transcribed. When analysing these qualitative data, this thesis has an interpretive approach. Such an orientation allows researchers to treat social action and human activity as text. How one analyses such texts, however, is dependent on the theoretical orientation of the researcher (Berg, 2007). The interpretive approach when analysing these data is influenced by the hermeneutical tradition. Hermeneutics is not a step-by-step method for analysing qualitative data, but rather a set of general principles, which have been proven helpful in a long tradition of text interpretation, when trying to find the meaning of the text (Kvale et al., 2009). A further discussion of these principles lies beyond

the scope of this thesis, but it might be fruitful to look at the implications a hermeneutical influence has for the thesis.

A frequent critique of interview interpretation is: *different interpreters find different meanings in the same interview; thus, interviews are not a scientific method.* (Kvale et al., 2009). This critique implies that there can only be one correct interpretation of a statement or a comment, and that it is the researcher´s job to locate this one correct interpretation (Kvale et al., 2009). However, the hermeneutic tradition allows for a diversity of interpretations. Dependent on the questions the researcher raises to the text, different interpretations will be the result. If we accept this diversity of interpretations, it is meaningless to demand a consensus on the interpretations (Kvale et al., 2009). What becomes important then, is to thoroughly formulate the evidence and arguments that reside in the interpretation. Only by doing this, other researchers can test a given interpretation (Kvale et al., 2009). Therefore, when presenting findings, and in the discussion of these (as they are interpreted), this thesis will strive to provide the reader with the evidence and arguments used in the interpretations.

3.5 Validity and reliability – a qualitative approach

Cook and Campbell (1979) have developed a system for validation of causal studies, a system which normally is used as a frame of reference in quantitative studies to ensure validity of the study (Lund et al., 2002). Because the concepts of validity and reliability cannot be addressed in the same way for qualitative studies as in quantitative studies, the trustworthiness of such research has often been questioned (Shenton, 2004). However, Guba proposes four criteria that he believes should be considered by qualitative researchers in pursuit of a trustworthy study (Guba, as cited in Shenton 2004). These criteria can be seen as qualitative answers to Cook and Campbell´s (quantitative) validation system:

1. Credibility (in preference to internal validity)
2. Transferability (in preference to external validity)
3. Dependability (in preference to reliability)
4. Confirmability (in preference to objectivity).

These criteria will be the methodological framework from which the validity (trustworthiness) of this thesis can be ensured.

Lincoln and Guba (1985) argue that ensuring credibility is one of the most important factors in establishing trustworthiness in a qualitative study. Credibility is about how congruent the findings are with reality (Shenton, 2004). In this thesis, triangulation of sources of information has contributed to ensuring its credibility. Triangulation is when a researcher uses different lines of sight or different methods, in the research. By combining different lines of sight, researchers obtain a better, more substantive picture of reality (Berg, 2007). First of all, prior to the interviews, documents have been used when accessible, to develop an early familiarity to the cases. In addition to such documents, talks with the head of Norconsult´s innovation programme, has been most helpful to develop a familiarity to the cases. Shenton (2004) argues that such a development of early familiarity with the culture of participating organizations before data gathering is an important step in ensuring credibility. As mentioned, supporting data, through relevant documents, will be used in this thesis. Also, the informants range from project managers in Norconsult, to project managers on the customer side. According to Shenton (2004), this, taken together, ensures a certain triangulation of data that help ensure credibility of a study.

External validity (as in quantitative studies) is concerned with the extent to which the findings of one study can be applied to other situations (Shenton, 2004). Since the findings of a qualitative project are specific to a small number of particular environments and individuals, it is impossible to demonstrate that the findings and conclusions are applicable to other situations and populations (Shenton, 2004). However, as Denscombe (1998) argues, although each case may be unique, it is also an example within a broader group. Hence, the prospect of transferability should not be totally rejected, but pursued with caution. Lincoln and Guba (1985) present a similar view, suggesting that it is the responsibility of the investigator to ensure that sufficient contextual information about the fieldwork sites is provided to enable the reader to make such transfers. Based on Lincoln and Guba´s (1985) argument, this thesis pursues to give enough contextual information about the cases, to ensure that the readers can make their own transferability inferences. The thesis specific focus on professional service

firms and their professional customers should help the readers in this endeavor.

In addressing the issue of reliability, quantitative researchers employ techniques to show that, if the work were repeated in the same context and with the same techniques, similar results would be obtained (Shenton, 2004). However, the changing nature of a phenomenon scrutinized by qualitative researchers makes this problematic (Shenton, 2004). In order to address the dependability, the processes within the study should be reported in detail and thereby enabling future researchers to repeat the work. Even though the results not necessarily will be the same, this enables the readers of the study to develop a thorough understanding of the methods used and their effectiveness (Shenton, 2004). In this thesis, the methods used will be elaborated. Hence, the dependability for this study is hopefully accounted for.

The concept of confirmability is the qualitative researcher´s concern for objectivity in a research project. Steps should be taken to ensure that the findings in the study reflect the informant´s ideas and experiences, rather than the characteristics and preferences of the researcher (Shenton, 2004). This is of course a highly complex task, which Hanson´s concept of "theory-laden observation" shows us (Lund et al., 2002). This concept points out that all observational terms are based on elements of theory. Thus, a neutral and objective observation is highly problematic (Lund et al., 2002). The hermeneutic concept of "pre-understanding" expresses the same principle: what we observe, is not just dependent on the phenomenon, but by our own expectations, perceptions and theoretical background (Lund et al., 2002). As these principles show us, confirmability is not easy to achieve. However, there are tools for improving confirmability of a study. One of which is by triangulation (Shenton, 2002). As mentioned, the data in this thesis are gathered primarily by informants through interviews, from both Norconsult and customers, but also by relevant documents. This data triangulation will hopefully be helpful in securing a certain degree of confirmability.

3.6 Ethical reflections

As a researcher of social science, one has an ethical obligation to one´s colleagues, one´s study population, and the larger society (Berg, 2007). In this section, I will highlight some ethical aspects for this thesis. This includes some general aspects, gatekeepers, and the relations between universities and businesses. In this thesis, the performed interviews are unlikely to conflict with the ethical principles of social research: The questions asked, do not represent an invasion of privacy, there are no lack of informed consent, there are no deception involved, and there is no harm to the participants, all of which are critical to avoid for an ethical foundation of a research project (Bryman, 2004). The reason for this being that the questions raised, by no means, are of a private or sensitive nature, and that all participants are anonymous. However, writing a thesis in collaboration with a firm, it might be useful to shed light on how politics can influence the conduct of research.

Without a gatekeeper to gain access to the firm, it would be difficult, if not impossible, to conduct this thesis. Gatekeepers are often required for access, but they often also represent a political motive in the research. Often, gatekeepers will seek to influence how the investigation takes place, what kind of questions can be asked, who can and can not be the focus of the study, and so on (Bryman, 2004). When writing this thesis, access to the projects would have been very difficult without a gatekeeper. The gatekeeper has therefore been an essential part of the thesis work. However, after providing access, and pointing to interesting cases (projects), the gatekeeper has not in any way sought to influence the further investigation. I think this clear distinction of roles has contributed to a thesis with a minimum of political influence from the gatekeeper, and thus also from the firm in question.

Although writing a thesis in collaboration with a firm represents some ethical or political challenges, it is one of several activities, which may contribute to a closer relationship between universities and businesses (Rambøll Management, 2007). For universities, cooperation with businesses is a central aspect of their social mission (St. meld. 7, 2008-09). Such cooperation may motivate students, make study programmes more relevant, and contributes to innovation (St. meld. 7, 2008-09). However, in an assessment report conducted by Rambøll Management (2007), they found that less than 50% of university students

cooperate with businesses when writing their master thesis. For students of social sciences, this number is even smaller (Rambøll Management, 2007). Therefore, as a student of social science, I think it is important to contribute to "narrow the gap" between the university and firms. My hope is that this cooperation will give me as a student insight into working processes in professional service firms, and at the same time provide the firm with knowledge or perspectives from the university.

4 Case descriptions

4.1 Case Alpha

Case *Alpha* is a project about highway construction. The role of Norconsult in the project was to advise the customer and engineer the solutions in the project, and facilitate and lead the co-created problem solving process. The highway in question is a parcel of about eight kilometers, and includes tunnels and bridges. The plans for the highway were based on an old regulation plan, already approved by the municipality. But both the customer and Norconsult, recognized that there was room for improvement and optimization of that regulation plan, hence the co-creation process.

4.2 Case Bravo

Like the *Alpha* case, also *Bravo* is a project about highway construction. Norconsult had the same role here as in the case above. The highway in question here is a parcel of about sixteen kilometers, and includes several tunnels, bridges, culverts, and two crossings of railroad lines. In addition, the project included restructuring of current local roads, and construction of new ones. This project also had environmental challenges due to the proximity of a river with conservation of wildlife. Also this project was based on an already approved regulation plan. However, the customer acknowledged that some of the plans for the project were difficult and risky to build. Therefore, they were open for a co-creation process to find alternative solutions.

4.3 Case Charlie

Case *Charlie* differs from the two former cases, because this project is about the engineering and construction of a new railroad station. The role of Norconsult in this project was also to advise and engineer the solutions for the new station, in addition to facilitate and lead the co-

created problem solving process. What was interesting in this project was that the project was based on a twelve years old regulation plan. Since then, many things had changed, and the customer acknowledged that the new frameworks for the project required new solutions for the station, hence the customers desire to have a problem solving process based on co-creation. Some of the key personnel from the old plan were participating in this new project. The main challenges of the project was concerned with the localization of the station.

4.4 Case Delta

Case *Delta* is a project about the main supply of electricity to a medium size city. The challenges included how to best solve the future power supply to a city in growth, with focus on placement of new power grids. Again, Norconsult had the role as engineering advisors, and facilitated and led the co-created problem solving process. Even though the customer wanted to conduct a problem solving process for new solutions, they already had some solutions developed.

Case	**Type of project**	**Informants**	
		Norconsult	**Customer**
Alpha	Highway construction. Develop new solutions to an already established development plan for the project.	Project manager	Project manager
Bravo	Highway construction. Develop new solutions to an already established development plan for the project.	Project manager	Project manager
Charlie	Train-station. Develop solutions to the construction and placement of the station.	Project engineer	None
Delta	Placement of new power grids to supply a city. Develop new solutions to connect new grids to a city.	Project manager	None

Table 1; Case overview

5 Presenting the cases based on level of co-creation

5.1 Problem-solving in three phases

One interesting finding in the cases studied is that Norconsult in every case sought to achieve co-creation in different stages of the problem-solving process. These stages reflect some of the stages of the value shop model, mentioned earlier. The stages "execution" and "evaluation/control" from the value shop model are, however, not observed in these processes. This might be because the nature of these problem-solving processes is to provide solutions for further execution and evaluation later on.

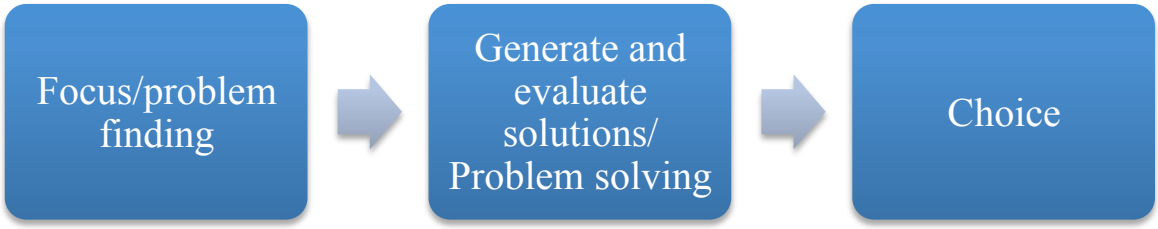

Figure 6; Observed structure of the problem solving processes in all cases

The level of co-creation in these phases, vary from case to case with different levels of collaboration and involvement from the customers. However, all of the cases investigated reveal an intention from Norconsult of co-creation in all these phases, even though they let their customer decide how deeply they will be involved and show some flexibility especially regarding *focus/problem finding* and *choice*. Next, the cases will be described, based on the level of co-creation in the three phases. Because co-creation refers to the involvement of the customer as an active collaborator right from the beginning of the innovation process (Kristensson et al. 2007), the operationalized level of co-creation for the cases is based on how deep the customer is involved in these three phases of the problem solving process.

5.2 Alpha and Bravo – two cases where co-creation occurred throughout the whole problem-solving process

Alpha

According to the project manager from Norconsult, the focus for this project was set in close collaboration with the customer. Focus was set in an initial meeting with the customer, where both customer and client discussed and chose areas of focus for the project. The project manager of Norconsult experienced that the customer had an active participating role at this stage in the process. The customer project manager had a similar view regarding the cooperation at this stage. She experienced that Norconsult led the process of helping them choose area of focus. This process led to a main focus of saving 100 million NOK in the project. The project manager from Norconsult emphasised the importance of this stage in the problem-solving process:

This is an extremely significant phase, to get a good result. If you leave this process with hundred different areas of focus, you got a big problem when trying to be creative. And when trying to evaluate this at the end…, it´s impossible. And it is very important to find the core of what the customer really whishes to achieve.

The next phase in the process, *problem solving*, was also undertaken with the customer as a close collaborator. According to the project manager from Norconsult, the customers were active participants also in this phase. The participants from the customer side were, according to the customer project manager, chosen for their knowledge and expertise relevant for the project. All of the participants were divided into two groups, consisting of participants from both Norconsult and from the customer. Then they competed in trying to reach hundred ideas for solutions. When that goal was reached, the groups evaluated the ideas together. As can be seen from the perspectives of both project managers, this stage of the process has clearly elements of co-creation, in the sense that the customer collaborated closely with Norconsult.

The last stage in the problem-solving process is the phase where the *choice of solution* is made. In an adviser – customer relationship, it is natural that the customer makes the final decisions, as they are the ones that own the project. But in the *Alpha* case, elements of co-creation can be observed, even in this phase in the process. The project manager on the customer side explained the collaboration at the choice-stage:

We worked closely with Norconsult. Because…, even if the final decision at the end is mine, as the project manager, it´s important to evaluate the consequences and the realism in the ideas. (…) …even if something can be smart for the road-element, perhaps it´s not that smart for a bridge. To see such connections…, so that was discussed. We worked very closely with Norconsult on that.

Through the three phases in the problem-solving process, case *Alpha* appears to be a project where the customer and Norconsult collaborated closely. The customer has been a close collaborator in both finding the problem *(focus)*, generate ideas for solution and evaluation of these (*problem solving*), and finally in the *choice* of solutions to implement in the project. Therefore, case *Alpha* is a project in which co-creation was central in the problem solving process.

Bravo

The nature of the project in case *Bravo* is quite similar to the *Alpha* case, which is reflected in the three phases of the process. One difference from the former case, however, is that the focus of the process in this case was partially already established. The project manager from Norconsult explained:

…we had a very open first round. To find focus, and those areas which were relevant here for finding solutions. (The customer) *…had also, in their offer, highlighted some focus areas. But in addition, we had all the relevant disciplines available, and started out rather broadly,*

initially. (The customer) *...was participating in all of the workgroups, on an equal footing as the other disciplines involved.*

According to the customer project manager, the focus developed for this project was to find solutions that were better and cheaper than the solutions in the already regulated development plan for the construction of the highway.

The problem solving phase in case *Bravo,* is very similar to the *Alpha* case. As in the latter case, the problem solving was based on the focus from the earlier stage of the process. Based on that focus, they worked in teams generating ideas for solutions, with participants from Norconsult and the customer. According to the customer project manager, the customer participated with landscape- and bridge architects, project engineers, and tunnel workers, in addition to the engineers from Norconsult. The project manager from Norconsult explained that when the work on generating ideas ended, the collaboration continued on evaluation of these ideas, based on certain criteria:

... the criteria were developed together. Both us from Norconsult, and the people from the customer worked jointly, but they decided which criteria that weighed more.

Choice of solutions was also undertaken in the same manner as in the *Alpha* case. The customer project manager explained how they worked in teams with Norconsult, and graded the ideas together. But as he explained, also in this case the customer had the final decision:

We weight the ideas together, but of course, we..., we had the greater influence in this process because we knew the area and our customers (municipality)...

The project manager from Norconsult had a similar experience of this phase of the process. He also emphasized that the customer had a greater influence in this phase, but that there was general agreement between the two partners. The final choice was taken by the customer, based on the list of graded ideas for solution, developed together.

As mentioned, this case is quite similar to the former, regarding co-creation. The customer and Norconsult worked closely together in all the phases of the problem-solving process. Therefore, this case also represents a project in which co-creation was central in the problem solving process.

5.3 Charlie – the case where co-creation was absent in the focus phase

In finding focus for the problem-solving process, this case differs from the two former cases. According to one of the project engineers from Norconsult, this project was originally 12 years old, and the customer project manager had been working on this project for some time. The focus set for this project was therefore somewhat based on the original project. He explained how Norconsult developed a focus area, based on the original project plan, and then communicated that focus to the customer:

The customer had…, I think they had some comments on that, and that we adjusted the focus after those comments.

The *focus* phase for this project appears to have been developed by Norconsult, with the customer as a peripheral participant. Hence, there seems to be no co-creation of *focus,* or problem finding, in this phase of the process.

However, the next stage of the process, the problem-solving phase was conducted with the customer as a close collaborator. Again, they worked in teams developing ideas for solutions and evaluated these ideas. The project engineer explains the cooperation in this phase:

The customer had an important role. They participated with five, six, seven representatives, I think. (…) We were about twenty people at that workshop. So…, and…, but individually, in a teamwork like this, every person gets juxtaposed. (…) …I felt, in a process like that, that you forget if you are a customer or an advisor… (…) So in a way…, everyone stands on an equal footing.

The choice-stage of the process in this case is quite similar to the former cases. The project engineer explained his experience in this process:

We were pretty juxtaposed here too. (…) It doesn´t really matter who we are, as long as we reach the goal and gets the best result. But it is implied that the customer project manager gets the last word.

Case *Charlie* is, as observed, also a project where the customer has a close collaboration with Norconsult, except in the *focus*-phase of the process. In that phase, it appears as if the customer delegated to their advisors what the focus of the process should be. However, there seems to have been a close collaboration in the latter stages in the process. Therefore, even though the level of co-creation in this whole process is on a lower level than the former cases, case *Charlie* appears as a somewhat successful problem solving process, based on co-creation.

5.4 Delta – an unsuccessful process of co-creation

For the *Delta* case, it appears as if the *focus* for the process was developed alone by the customer. The project manager described how the focus was brought up in a meeting with the customer:

The problem definition was brought up in a meeting with the customer. (…) Then they described what they needed, and we confirmed that we could solve it. (…) So the customer owned their own problem definition, which they described, and which we undertook.

However, in the problem-solving phase, there seems to have been a rather close collaboration. This stage was conducted in a similar fashion as in the other cases, with the customer participating in the generation and evaluation of ideas for solutions. However, one thing differs from the other cases, as the project manager from Norconsult explained:

…At the same time, the workshop did not have the representation (from the customer) *that we would like them to have.*

As he explained, there was one person high in the hierarchy in the customer organization, that was participating in the initial stage, but who was absent in the stage of problem solving.

When it came down to *choice* in the process, this case had an interesting outcome. Even though many ideas for solutions were generated and evaluated, the customer chose their original plan, and thus rejected the alternative solutions from the problem-solving process. The project manager explains how he experienced the phase of *choice*:

...Choice of solution was based on a creative process, plus that we then conducted an economical and technical evaluation of the solutions. (...) How the customer then decided to go further with their predetermined choice of solution, that I don´t know.

The *Delta* case appears to differ from the other cases, regarding co-creation. The first stage of the problem-solving process was assigned to Norconsult, and thus not co-created. And even though the problem-solving phase of the process was co-created, though with some limitations, the final *choice* was made by the customer alone. Therefore, this case cannot be regarded as a successful co-creation process.

5.5 Summary

As observed in these cases, Norconsult sought to co-create *focus*, *problem solving*, and *choice*, in all cases. However, they appear to have been somewhat flexible if the customer had other ideas, especially in the *focus*- and *choice* stages of the problem-solving process. The cases *Alpha* and *Bravo,* appears to be the only projects where the customer collaborated closely with Norconsult throughout the whole process, and thus can be regarded as co-created processes. Case *Charlie* also represents a somewhat successful co-creation process, even though the customer played a minor role in the *focus* phase. The *Delta* case, however, represent a somewhat unsuccessful co-creation process, due to the low level of collaboration in the phases of *focus* and *choice*. Also, the customer was not fully represented in the phase of *problem solving.* Table 3 gives a brief overview of the customer involvement and collaboration, and thus co-creation, in the different phases of the problem-solving process for each case.

Case	Focus for the process	Problem-solving (Idea generation and evaluation)	Choice
Alpha	Set in collaboration	Close collaboration in generating and evaluating solutions	Collaboration, but customer made the final choice
Bravo	Set in collaboration	Close collaboration in generating and evaluating solutions	Collaboration, but customer made the final choice
Charlie	Set mainly by Norconsult, with the customer as a peripheral participant	Close collaboration in generating and evaluating solutions	Collaboration, but customer made the final choice
Delta	Set by the customer alone	Close collaboration in generating and evaluating solutions, but with some limitations on customer representation	Choice made by customer alone

Table 2; Overview of level of co-creation in different phases for all cases

Because co-creation refers to the involvement of the customer as an active collaborator from the beginning of the innovation process (Kristensson et al. 2007), this overview highlights that *Alpha* and *Bravo* clearly can be considered as co-creation processes, and that *Delta* hardly can be considered the same. Case *Charlie,* however, is in a somewhat grey area regarding co-creation, even though the two latter phases indicates a co-creation process.

6 Dialogue, access and transparency – explaining the case differences

As seen above, the cases differ regarding the level of collaboration, and thus co-creation in each case. We have also seen that cases *Alpha* and *Bravo* stands out as the most successful cases regarding co-creation in the problem-solving processes, with case *Delta* as the case with the lowest level of co-creation. Before looking at the results or at values created from these cases, it might be interesting to search for some explanations of these differences, in the light of Prahalad and Ramaswamys (2004, a) DA(R)T-model (No data on Risk-Benefits). It is as mentioned earlier in the thesis worth noticing that the factors in the model are greatly intertwined, and it may therefore be difficult to distinguish the factors from each other.

6.1 Alpha, Bravo and Charlie – successful representation of the factors

Dialogue

According to Prahalad and Ramaswamy (2004 a), the first building block of interaction for co-creation experiences is *dialogue.* This implies interactivity, deep engagement, and the ability and willingness to act on both sides (Prahalad and Ramaswamy, 2004 a). In case *Alpha,* the dialogue between Norconsult and the customer appeared to be good. The project manager from Norconsult emphasized the good relations they had with their customer, and the project manager on the customer side stated:

We were very open to try out the things Norconsult brought to the table, and… I felt that we were on the "same frequency" right away.

In the *Bravo* case, there was a similar dialogue between the participants, as in *Alpha*. The customer project manager described their relationship with Norconsult as jovial, and explained that this could be because many of the participants from both organizations knew each other from earlier projects. Also the project manager from Norconsult experienced a good relationship between the parties:

We had a very open relationship. I did not experience any divergence, whether you had customer- or Norconsult affiliation. I felt that we were on the same level.

The *Charlie* case also represents a case where the dialogue between the participants appeared as good. The project engineer from Norconsult experienced the relationship as good. He emphasized that the customer was willing to, and wanted to use resources on the problem-solving process, indicating a willingness to act, one of the prerequisites for dialogue (Prahalad and Ramaswamy (2004 a).

Access

As mentioned earlier, access to the knowledge bases of each other is an important building block of interaction for co-creation. In the *Alpha* case, both of the project managers had a similar experience regarding access. The project manager from Norconsult explained:

The group (in the problem-solving phase) *was put together the way we wanted. As they wanted it, and as we wanted it. (…) …they were the best people from both partners. (…) There was no lack of access.*

In case *Bravo,* none of the project managers experienced any restraints regarding access. As the description of the *Bravo* case above shows, both Norconsult and the customer worked closely in all phases of the process. This indicates that each part had access to the other.

In the *Charlie* case, like in the two cases above, Norconsult and the customer collaborated in the problem-solving process, even though in a somewhat lesser extent in the *focus* phase as shown above. According to the project engineer, there was full access to the knowledge base of the customer, a very clear indication of access.

Transparency

As mentioned, transparency is critical for a meaningful dialogue. Without it, it is difficult to achieve a dialogue based on equality. In the *Alpha* case, it appears to have been a transparent process throughout the whole problem-solving process. This can be illustrated by the initial contact with the customer, as the project manager from Norconsult experienced:

They made it clear, both in the offer and in the contract; that they wanted advisors, not just some technical engineers who could draw what they were told to draw. They wanted someone who could give them advise.

This clear message from the customer can be seen as a whish for an open and transparent relationship with their advisors. The close collaboration throughout the problem-solving process can also be seen as an indicator of transparency.

In the *Bravo* case, the project manager from Norconsult emphasized that the relationship was very open. In addition, the partners appear to have had a close collaboration, indicating a transparent relationship in case *Bravo.*

According to the project engineer in case *Charlie*, the customer communicated a concern about the restrains the old development plan could have for the process of this new train-station. Such an open concern communicated to their advisors can be interpreted as

transparency from the customer. The close collaboration in this case, can, like in the cases above, also indicate transparency between the partners.

In the three cases *Alpha, Bravo* and *Charlie,* it appears as if the building blocks of interaction facilitating co-creation experiences were all present. Therefore, it is not surprising that these cases are the ones with the highest level of co-creation.

6.2 Delta – unsuccessful representation of the factors

Dialogue

In case *Delta,* however, the dialogue appeared to have some limitations. The project manager from Norconsult experienced that the communication between them and the person that hired Norconsult was very good. However, he also experienced a poor communication to other representatives of the customer. As mentioned earlier, there was a customer representative with great influence on decision-making, that was absent in the problem-solving phase. The project manager from Norconsult explained his absence by emphasizing that the anchoring of the process to that person was handled too weakly.

Access

Linked to the section above, the access to each other was impaired by the absence of a customer representative with great influence in the decision-making. The fact that this person chose not to participate in the problem-solving phase indicates that the access to the knowledge bases of each other was less then optimal.

Transparency

As mentioned, the factors in the DA(R)T model are greatly intertwined. The transparency may therefore also seem to be somewhat impaired in this case, because of the absence of an important customer representative in an important phase of the problem-solving process. A comment from the project manager from Norconsult can help illuminate the perceived lack of transparency:

I think those who ordered us had a genuine whish to develop new solutions, but that other strong forces in the organization did not wish the same. That is what I think, personally.

As seen in the *Delta* case, dialogue, access and transparency are all somewhat impaired in the interaction between the partners. It is therefore not surprising that this case is the one with the lowest level of co-creation through the problem-solving process. Figure 7 highlights the different representations of the factors for the successful *Alpha* case (representing all the successful co-creation processes), compared to the unsuccessful co-creation process in case *Delta.* The value 10 in this chart represents adequate representation of the factors in the DA(R)T model.

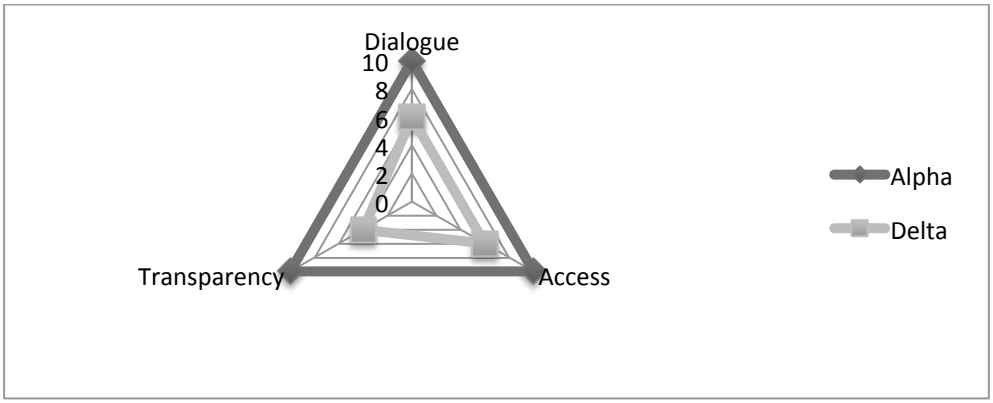

Figure 7; Comparison of the successful cases with the unsuccessful *Delta* case, regarding dialogue, access and transparency.

6.3 Dialogue, access and transparency – a prerequisite for co-creation?

As these observations indicate, the three cases *Alpha, Bravo* and *Charlie,* appears to represent projects where fruitful dialogue, access and transparency has occurred. At the same time, these cases are also the ones where the level of co-creation appeared to be strongest. Case *Delta* stands out as the project where all of the factors in the model were somewhat impaired. This case is also the project where co-creation was absent in the phases of focus and choice. In the problem-solving phase, the level of co-creation appeared to be lower than in the other cases, due to the absent of an important customer representative.

These findings support the Prahalad and Ramaswamys (2004 a) view that the factors *dialogue, access* and *transparency* are important building blocks of interaction for facilitating co-creation experiences, as they correlate with the observed levels of co-creation in the cases scrutinized. These factors alone though, are surely not the only explanations of why case *Alpha, Bravo* and *Charlie* appeared to have a high level of co-creation, and that the *Delta* case apparently failed to represent a process based on co-creation. One explanation of why the first three cases were successful regarding the co-creation process can perhaps be explained by the nature of the relationships between Norconsult and those customers. The customers in *Alpha, Bravo* and *Charlie* are some of the biggest and most important customers of Norconsult, and as in the *Bravo* case, several of the participants from both sides knew each other from earlier projects. In the *Delta* case, however, the customer relationship was new. As the project manager of Norconsult explained, they had been trying to get a project with the customer for some time, and there was a hope that this project would lead to other projects for the customer later on. Therefore, Norconsult and the customer organization had no deep knowledge of each other from earlier processes, which perhaps can help explain why co-creation process was less then optimal.

However, by looking at the relationship between Norconsult and the customers in the different cases for explaining the different levels of co-creation, one cannot avoid going back to the factors in the DA(R)T model. It is difficult to imagine a good relationship without a good dialogue, access to each other and transparency from both parts. Therefore, these factors

can be seen as important explanations for the differences in the observed levels of co-creation in the cases scrutinized. The observations in this thesis thereby supports Prahalad and Ramaswamy (2004 a) and their DA(R)T model. At the same time it indicates that these factors may also apply when building a system for co-creation in this specific line of business; professional service firms and their professional customers.

6.4 The role of the process leader

Another explanation of the different levels of co-creation in the cases, not yet discussed, may be found in the facilitation of the processes, by the process leader. As in all the cases, Norconsult provided a process leader for the problem solving processes. The project manager from the customer side in case *Alpha*, and the project engineer in case *Charlie,* both emphasized the importance of a good process leader for a good process. They both experienced the process leader as an important factor for the overall process. However, as mentioned in case *Delta*, the project manager from Norconsult explained that one weakness with the process was that he, and the process leader failed in anchoring the process to the customer. He explained how he would have outlined a more fruitful process:

I think we would have to have anchored this process…, before we started with the creative work, I think we should have anchored the process more clearly for the customer, that they really were ready for alternative solutions. Because I think that really, some thought this process would only make them more confident in their own solution as the best one. And we did not deliver on that respect. So I think that anchoring of the process should have been done in advance.

It is not surprising that the process leader has impact on a process, and this self-criticism points out how important it is to have a process leader who has a great understanding of the process as a whole. It is impossible to know if the level of co-creation in the problem-solving process in the *Delta* case would have been different, if the process leader successfully had anchored the process to the customer. However, as the customer project manager in case

Alpha and the project engineer in case *Charlie* emphasized, the process leader was an important factor for the successful processes in these cases. A further discussion on what makes the process leader a contributing factor for successful co-creation processes, however, lies beyond the scope of this thesis. But these data suggest that the process leader may be an important factor when trying to achieve co-creation of value in problem-solving processes.

7 Values created in the problem-solving processes

Prahalad and Ramaswamy (2000), among others (Lusch et al., 2007, Ramirez, 1999), advocate that firms have to recognize customers as a partner in value creation. As we have seen above, co-creation was observed in all of the cases, with the exception of case *Delta,* which seems to be a somewhat unsuccessful co-creation process. This implies that, in *Alpha, Bravo* and *Charlie*, Norconsult and their customers created value together as partners. But what kind of values were created in these problem-solving processes? And can we see an impaired value creation in case *Delta,* due to the lower level of co-creation in that problem-solving process?

7.1 Alpha, Bravo and Charlie – which values were co-created?

In case *Alpha,* the project manager from Norconsult emphasized that the most visible value created in the problem-solving process was reduction of expenses for the project as a whole. He said that the solutions produced from the process reduced the costs of the project with approximately 50 million NOK. He also emphasized that the solutions for the project were optimized regarding traffic safety, compared to the solutions in the development plan for the project. Another created value he emphasized was that the problem-solving process cemented a good relationship between the partners. The project manager on the customer side pointed out one particular value created from the process. She experienced that they were challenged rather toughly from the ministry (Departementet) regarding quality control of the project. However, the problem-solving process gave a very good base for decisions, which made her feel very confident on the final decisions made in the project:

…you get so much up on the table, and you stand very steady afterwards, which is the greatest value for me as a project manager. Of course, we also saved money.

The values created in case *Bravo,* are of a somewhat similar nature as in *Alpha.* The project manager from Norconsult explained that there was a bonus system in the contract, meaning that if they reduced the expenses of the project by a significant amount, 10% of the cost-reductions would be paid to Norconsult as a bonus. According to the project manager, the problem-solving process reduced the costs of the project with approximately 60 million NOK, half of it related to the bonus-system, which gave Norconsult a bonus of 3 million NOK. He also emphasized that the process produced better solutions then those already engineered in the development plan, without specifying this any further. The project manager on the customer side also pointed to the economical aspect and better solutions, as the values created from the problem-solving process. He specified that the solutions were significantly better for motorists and neighbors, then the solutions in the development plan.

In the *Charlie* case, the project engineer also mentioned cost reductions as a value, even though he could not quantify this with any numbers. He also emphasized that one of the values created in this process was of a social nature. He found the process to be a catalyst for a close relationship, both social and professional. He experienced that because all of the participants from both sides met and discussed, unlike in other projects where only the project manager has contact with the customer, there was a greater dedication, interest and efficiency from the project participants.

7.2 Any values created in case Delta?

The project manager from Norconsult in case *Delta* explained his understanding of the values created in this problem-solving process:

Alternative solutions were considered. That´s a value. If the customer (...) eventually says that they need to take a step back and look at this in a bigger perspective, the work is already done and out there, right. As long as the customer carries on with their own solution, I don´t think there is any value for them coming out of this.

Thus, he does not see any value coming out of the process, as long as the customer continues with their original solution. However, that does not mean that the process did not create any value. As the project manager on the customer side in case *Alpha* explained, she felt that the alternative solutions generated in the process gave her a solid base for decision-making in the project. It cannot be ruled out that the customer in this case had the same experience, and found the original solutions to be better than those developed through the problem-solving process. However, this process did not lead to any further projects for this particular customer, something Norconsult desired, according to the project manager.

7.3 Summary

Again, we can see somewhat of a correlation between the cases with the highest level of co-creation and the values these processes created. *Alpha* and *Bravo* stands out as cases where significant cost-reductions are observed as very tangible values created. Both of these cases also appears to have created better solutions then those in the development plans, which also can be seen as important values. Another value observed in case *Bravo* and *Charlie* was that the problem-solving process cemented a good relationship between advisors and customers, which in the *Charlie* case apparently led to greater dedication, interest and efficiency among the participants. As seen in case *Alpha,* the customer project manager emphasized that the most important value for her was that the process gave a good base for decision-making, which made her confident on the decisions made. On the other hand, the case in which the level of observed co-creation was lowest, case *Delta,* the project manager did not see any value created from the process, as long as the customer continues with their original solutions. It is not possible to draw any clear inferences out of these data, but they suggest that the co-created values, was greater then in the case where the co-creation process was impaired. Therefore, these data supports the claim made by Lusch et. al., (2007), that collaboration with the customers makes a firm more competitive, through co-created values.

8 Linking co-creation to creative and innovative project solutions

The data from the cases indicate that the *Delta* case does not represent a co-created problem-solving process. One may argue that this makes the *Delta* case interesting for comparing the output from co-created problem solving processes and processes without a co-creation element. However, because the data for processes not representing co-creation processes only include one case, I have chosen to focus on the output of only the processes where co-creation was observed. Therefore, this section of the thesis will focus on the cases *Alpha, Bravo* and *Charlie,* as representations of successful co-creation in problem-solving processes. Even though the latter case has a somewhat impaired co-creation element in the *focus* phase, it appears none the less as successful co-creation process as a whole. But before presenting the creative output of the co-creation processes, it might be interesting to see if creative thinking was a factor in the processes.

8.1 Creative thinking in the phase of problem-solving

One common feature in the three successful co-created problem-solving processes can be found in the phase of problem solving, or generation (and evaluation) of ideas in all cases. In all three three cases, each group of participants were challenged to come up with 100 ideas for solutions. A thorough evaluation of the ideas took place after the idea-generation was finished. As the project engineer in case *Charlie* and the customer project manager in case *Alpha* experienced it, that challenge seemed very ambitious, and they were somewhat surprised when they actually succeeded in the challenge. The customer project manager in case *Alpha* explained how she experienced this phase of the process:

And the goal was to find 100 ideas on each team. And many rather crazy ideas were brought up, when reaching 70-80 ideas. (…) …And the competitive instinct was awakened. So one avoids, I think, the thing when we sit and evaluate these ideas as they come. The focus is set

only on production of ideas. (…) But it is very dependent on having someone like (the process leader) *to see what´s happening in the groups. So that, if one is very dominant, and starts criticising, he can jump in and help us focus on the task. (…) …when you start, you often find yourself "inside the box", but you loose that box eventually. (…) And a lot of good ideas are brought up, because then you are completely free.*

The data basis for this thesis gives little to go by when trying to understand how the other informants in the other cases experienced this process, but it is clear that all three cases had a similar procedure in this phase, as in case *Alpha.* The data above, however, gives some interesting clues regarding creative thinking in the phase of problem solving, as they happened in these cases. As mentioned in the theory section, in lateral thinking one does not move in order to follow a direction, but to generate one. With vertical thinking, on the other hand, one always moves usefully in one direction (De Bono, 1970). The vast focus on idea generation in the three successful co-creation processes, thereby indicate that the participants used lateral thinking in the problem-solving phase of the process. The customer project manager in case *Alpha,* made a comment which helps support this claim:

…in projects we´re often satisfied with the first solution that works. Because we don´t have time to find the most optimal solution all the time. We´re… always in a hurry, so the first thing that works, we use. But with a process like this, you get a lot more up on the table, on much shorter time.

This way of working, and thus thinking, is clearly an example of vertical thinking, and stands as a clear contrast to how the phase of problem solving actually occurred in that case. Another factor supporting the claim of lateral thinking in the process was the delayed judgement of the ideas. As she mentions, the focus was on idea generation, and critique of those ideas was "forbidden" before the thorough evaluation later on. She also explained that even she, as the project manager and owner of the project, was able to delay the judgement of the ideas. According to De Bono (1970), delayed judgement is one of the tools for lateral thinking, thus the data indicate that lateral thinking was occurring in case *Alpha.* One must be careful to not

generalize these findings to the other successful co-creation processes (*Bravo* and *Charlie*), but because they had a very similar procedure in the phase of problem solving, it is likely that lateral thinking occurred also in those cases.

These data also shows that the process leader plays an important role when facilitating lateral thinking. As seen above, the customer project manager in case *Alpha,* emphasized the importance of the process leader when generating ideas, and helping the participants to delay judgement. The project manager from Norconsult in the same case, explained how the participants were "pushed" by the process leader to come up with new solutions and to stretch their limits. Therefore, is seems plausible that the process leader was an important factor in enabling the participants to use lateral thinking in the phase of problem solving.

The data indicate that lateral thinking, as a creativity-skill, seems to have occurred in the phase of problem solving in the co-created problem-solving processes. Also, the process leader seems to have been an important factor in enabling lateral thinking. De Bono (1970) argues that lateral thinking is necessary for restructuring our mental patterns, and thus be creative. But the fact that creative thinking seems to have occurred in the co-created problem-solving processes does not necessarily imply that the output of these processes is creative.

8.2 Creative and innovative output of the co-created problem-solving processes

When searching for creative and innovative outputs of the co-created problem-solving processes, it is natural to link this to the values created in those processes. As we have seen above, many of the values created in the problem-solving processes in the cases *Alpha*, *Bravo* and *Charlie*, were linked to better and cheaper project solutions. The first question then is: to what extent can these project solutions be called creative? Before trying to answer that question, it might be helpful to revisit the definitions of creativity used in the thesis, as advocated by Amabile (1983). She advocates that creativity is the quality of a product judged to be creative by appropriate observers. She elaborates this definition by adding that the

product should be novel and appropriate, useful, correct, or a valuable response to the task at hand. Further, the task at hand should be heuristic, rather than algorithmic.

To start with the last, the very nature of the problem-solving processes in the three cases can be seen as heuristic problem solving. This is because there was no clear and readily identifiable path to the solutions, hence the focus phase of problem finding in the problem solving process. Therefore, these processes meet the requirement of being heuristic.

In case *Alpha,* the project manager from Norconsult explained that the solutions developed in the process in sum would reduce the costs of the project with approximately 105 million NOK. Of those solutions, he explained, about half of the solutions were implemented in the project, saving about 50 million NOK. As mentioned, these solutions also improved traffic safety. By looking at the nature of these solutions, it seems to be novel, useful, appropriate, and valuable responses to the task at hand, and therefore fitting the description as a creative outcome or product. The customer project manager experienced that, even if they perhaps would manage to develop these creative solutions in other ways, the problem-solving process was very efficient in this endeavor. Therefore, the co-created problem-solving process in case *Alpha* seems to have contributed to the development of creative project solutions.

As in the *Alpha* case, the project manager from Norconsult in case *Bravo* explained that the solutions from the process helped cut costs with a considerable amount. As mentioned, Norconsult received 3 million NOK as a bonus for saving 30 million in expenses. However, he explained that the overall cost reductions implemented in the project reached approximately 60 million NOK, but half of these cuts were not a part of the bonus-system. In addition to the cost reductions, also these solutions were better for traffic safety, and for the neighbors. Thus far, the project solutions produced from the co-created problem-solving process appears to be creative, as also these solutions can be seen as novel, useful and appropriate for the task. Interestingly, the two project managers had different views on how creative the project solutions was. The customer project manager emphasized that the solutions did not “fall from the sky”, and that the process was a search for optimization of a

product. He seemed somewhat unwilling to label the solutions as creative, albeit he admitted that some of the solutions were completely new. The project manager from Norconsult, on the other hand, experienced that some of the solutions (related to the bonus-system) were completely new, which nobody could have foreseen. These solutions, he argued, solved a huge technical, environmental and economical problem. He explained how a creative idea was important for that new solution:

It was an idea which we didn´t reject, and when we looked closer on it, and worked on it, it resulted in the solution now in place. And I don´t think that that solution would have been brought up without a process like this.

Therefore, based on the experience from the project managers, it seems like the problem-solving process in case *Bravo* also contributed to the development of creative project solutions.

In case *Charlie,* the project engineer emphasized the social and professional relationships as one of the most important values created. Even though he said the problem-solving process led to cost reductions, he could not produce any numbers to quantify this. Also, he did not focus on the quality or nature of the solutions implemented in the project. Therefore, it is a bit more difficult to "measure" the outputs of these solutions, regarding creativity. However, he explained how some of the chosen solutions were both novel and surprising:

Well, many of the good old solutions were brought up (in the problem-solving process), *but the new solutions was very surprising…, I would say. So you might say you have a combination of the good old solutions, and the new solutions, which surprised everyone I think. Some of them* (the new solutions) *were actually so good and innovative that no one ever had thought of them before.*

So then, even if the nature of these new solutions is unknown, they seem to represent a creative output of the problem-solving process. With that being said, some of the solutions implemented in the project were older, and therefore not produced from the process. In sum, the problem-solving process in case *Charlie* seems to have contributed to some creative solutions, as seen from the perspective of the project engineer.

The *Alpha, Bravo* and *Charlie* cases indicate that the project solutions derived from the problem- solving processes, to a greater or lesser extent, can be considered as creative project solutions. Does this mean that the project solutions also can be considered innovative? To answer the question, it might be helpful to revisit the definitions of innovation from the theory section:

...we define creativity as the generation of ideas and alternatives, and innovation as the transformation of these ideas and alternatives into useful application that lead to change and improvement (Carr and Johansson, 1995)

Innovation is the successful production, assimilation and exploitation of novelty in the economic and social spheres (European Commision, 1995).

As can be seen from these definitions, they focus on innovation as a realized product based on novelty and improvement. Further, the definition from Carr and Johannsson emphasize that innovation stems from creativity. Therefore, this definition indicates that a creative idea will be innovative as long as it is successfully exploited for a change or improvement. By looking at the nature of problem solving processes, as Stabell and Fjeldstad (1998) argue, they often represent a small percentage of costs in a project, but can have a major impact on value creation. We have seen that the problem solving processes in the cases in *Alpha*, *Bravo* and *Charlie,* appeared to have produced creative project solutions. We have also seen that many of those solutions were implemented in the project as a whole. Therefore, it appears as if many of the creative solutions from the processes have been exploited for an improvement

and change in the projects, by realizing the creative project solutions in an execution phase. Thus, the data indicate that the successful co-created problem solving processes contributed to produce creative and innovative project solutions.

9 Conclusion

As demonstrated in this thesis, the literature on co-creation can give us useful insight into what should be addressed to achieve co-creation. Prahalad and Ramaswamy (2004 a, 2004 b) advocate the need of building blocks (DART-model) for interactions as crucial in a system for co-creation of value. Payne et al. (2008) point to identifying, and acting on, opportunities for positive critical encounters in order to enable co-creation. However, there is relatively little direction on how this process should be undertaken (Payne et. al., 2008). This thesis is concerned with co-creation in the line of professional service firm – professional customer business. Stabell and Fjeldstad (1998) advocate that in this line of business, the locus of value creation resides in problem solving, as choices made in one activity, affect the next with spiraling commitment and effect. On that background, I have suggested problem-solving processes as an important arena for interaction and as a positive critical encounter, and hence a great opportunity for co-creation of value for this line of business. So then, based on the data from the cases scrutinized, does problem solving processes represent a great opportunity for co-creation of values for professional service firms and their professional customers?

One interesting finding, which was observed in all of the cases, was that the problem-solving processes were divided into three phases, *problem-finding (focus), problem solving*, and *choice*. These phases represent the first three activities in the problem-solving process, as demonstrated by Stabell and Fjeldstad (1998), see figure 4 in this thesis. However, the level of collaboration, and thus co-creation, was not consistent through all these phases in all of the four cases. As seen above, collaboration and thus co-creation, occurred in all three phases in case *Alpha* and *Bravo.* In case *Charlie* however, it appears as if the customer had a peripheral role in the first phase of problem-finding/focus. Therefore, co-creation in this initial phase was somewhat impaired. However, as seen above, co-creation was occurring in the following phases of problem solving and choice. Case *Delta* on the other hand was a somewhat unsuccessful co-creation process. In this case, co-creation was only observed in the phase of problem solving, and even in this phase, the project manager from Norconsult experienced that an important customer representative was not participating.

One explanation when trying to understand the differences in the levels of co-creation in the four cases, especially the low level of co-creation in case *Delta*, can be found in the DA(R)T model. As shown above, in the cases *Alpha, Bravo* and *Charlie*, there seems to have been a fruitful dialogue, access and transparency between the partners. In the *Delta* case, however, all of these factors were more or less impaired. According to Prahalad and Ramaswamy (2004 a), these factors, or building blocks for interaction, are important when establishing a system for co-creation of value. As seen in the cases, it appears as if when present, the factors have a positive correlation with co-creation. When the factors are not present, however, a negative correlation with co-creation is observed. Therefore, the data supports that the Prahalad and Ramaswamy (2004, a) DA(R)T model may be, an important framework for building a system for co-creation of value. In addition, the data shows that the model also can be relevant as building blocks of interaction for co-creation in problem-solving processes in professional service firms.

Another factor, which may help explain the case differences regarding co-creation, may be found in the role of the process leaders. As we have seen from two of the successful processes, the project manager from the customer side in case *Alpha*, and the project engineer in case *Charlie,* both emphasized the importance of a good process leader for a good process. On the other hand, self-criticism from the project manager from Norconsult in case *Delta,* shed light on how he and the process leader failed when anchoring the co-created problem solving process to the customer. It is worth noting, again, that this process also represents a rather unsuccessful co-creation process. The data from the cases therefore suggest that to achieve co-creation in problem solving processes, the process leader may be an important factor. However, what exactly makes a good process leader in such endeavor lies beyond the scope of this thesis.

When looking at the values created in the different problem solving processes, it is interesting to notice that there seems to be a differentiation between the co-created values and the values from the unsuccessful co-creation process of *Delta* case. The successful co-creation in the problem solving processes in case *Alpha, Bravo* and *Charlie,* seems to have produced values

of different nature. First of all, the project solutions in all these cases were perceived as both cheaper and better then the solutions from the development plans, which represent a great value for both customer and Norconsult. Another value, highlighted by the customer project manager in the *Alpha* case, was that the co-created problem solving process gave her a very good base for decision-making. She therefore felt very confident that the project solutions chosen were the best solutions possible, because so many ideas and solutions were brought up and scrutinized. The last co-created value observed, which many of the informants in these cases emphasized, was that the process helped develop and cement a good social and professional relationship between the partners in the project. In sum, it therefore appears as if the co-created problem solving processes in these three cases contributed to a great value creation, on different levels.

On the other hand, the rather unsuccessful co-creation process in case *Delta* seems to have created little value. As the project manager from Norconsult explained, as long as the customer carries on with their own solution, no value is coming out of this process for them. In addition, Norconsult has not been given any further projects from that customer, a possible indicator of an unsuccessful process with little value creation. However, the project manager added that there is a potential value in the co-created solutions rejected from the customer, if the customer chooses to go back and reconsider their choice. The rather unsuccessful co-creation process in case *Delta* therefore seems not to have contributed to any apparent value creation.

The chart below might help give a brief overview of the case differences regarding the DA(R)T factors, the success of the process leader, the level of co-creation, the values created, and the creative and innovative project solutions from each case. The chart is, however, only a rough overview, and the values are only indicators of the differences, with the value 10 as a benchmark for a successful process.

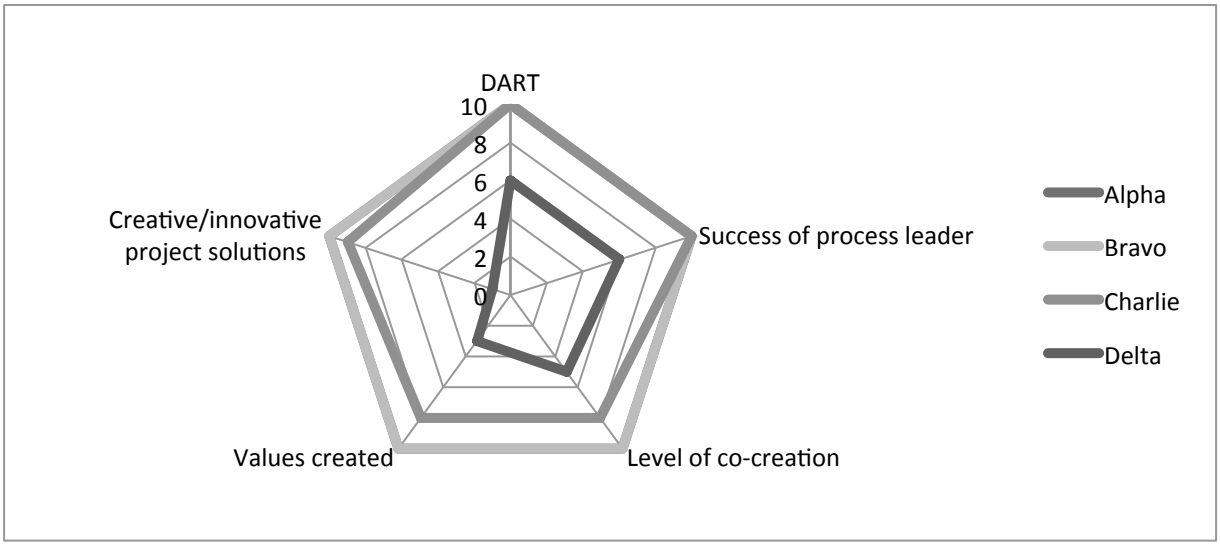

Figure 8; Comparison of all cases regarding the DA(R)T model, success of process leader, level of co-creation, values created and creative/innovative project solutions.

The data above gives us interesting and important contributions regarding the research question; *does problem solving processes represent an opportunity for co-creation of values for professional service firms, and their professional customers*? Three of the cases (*Alpha*, *Bravo* and *Charlie*), seem to be successful co-created problem solving processes, while the *Delta* case seem to be a rather unsuccessful co-creation process. Further, the successful processes seem to have created value on a much larger scale then the unsuccessful process. On that basis, problem solving processes appear to represent an opportunity for co-creation of value for professional service firms and their professional customers. However, as the data has indicated, there are some requirements that need to be fulfilled for successful co-creation in the problem solving process. First of all, the interaction between the partners in the process should be based on the factors *dialogue*, *access* and *transparency* (the DA(R)T model), as these factors seems to be important factors when facilitating co-creation processes. Further, the data suggest that the process leader may be an important factor for successful problem solving processes based on co-creation. What exactly makes a process leader successful is, however, not discussed in this thesis.

So then, for a professional service firm attempting to achieve a competitive advantage in its market through co-creation of value, problem solving processes seems to represent an important arena for interaction and a positive critical encounter in this endeavor. Thus, problem solving processes seem to represent an opportunity for co-creation of values for professional service firms and their professional customers.

When trying to answer the research question; *Does co-creation in problem-solving processes contribute to produce creative and innovative project solutions?,* a link to the former research question can be found. When looking for creative and innovative output from the co-created problem solving processes, it was natural to focus on the co-created values, represented by the project solutions. But also, an interesting finding was that lateral, or creative, thinking seemed to have occurred in the phase of problem solving in the successful co-created problem solving processes. According to De Bono (1970), lateral thinking is required for creativity, and may thus be an important contributor for creative and innovative output. On the other hand, observed lateral thinking is a poor indicator of creative and innovative output from these processes, hence the focus on the project solutions. However, the findings may indicate that lateral thinking is an important factor for achieving creative and innovative output.

Based on the successful co-creation in the problem solving processes in the cases *Alpha, Bravo* and *Charlie,* the project solutions were both cheaper and better then the solutions in the regulation plans for those projects, according to the informants. Informants from all these cases perceived, in greater or lesser extent, the project solutions as creative. And because these solutions were implemented, and thus represented change and novelty in the projects, these creative solutions can also be perceived as innovative, as operationalized in this thesis. Therefore, co-creation in problem solving processes, as conducted in these cases, seems to contribute to produce creative and innovative project solutions. Thus, these findings also gives additional support to the claim above, that problem solving processes is an opportunity for co-creation of values for professional service firms and their professional customers.

9.1 Shortcomings of the thesis

When writing an empirical thesis on a subject like co-creation in professional service firms, one may use a range of different methodological approaches. The chosen methodological approach in this thesis has hopefully led to a higher understanding of co-creation in professional service firms, and to a better understanding of its output. However, because it is problematic to draw any undisputable conclusions in a qualitative case study, further research on the matter should be undertaken. This may include large studies across organizational boundaries, and perhaps also contain test- and control cases. Such studies, even though they can be both time- and resource consuming, may provide a more detailed understanding of the research questions posed in this thesis because of larger representation of professional service firms. It is, however, not necessary to design large studies to gain further understanding of the phenomena. Smaller studies, similar to this thesis conducted in other organizations will also provide a better understanding of co-creation in this line of business as they can support, or question, the findings of this thesis.

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Appendix

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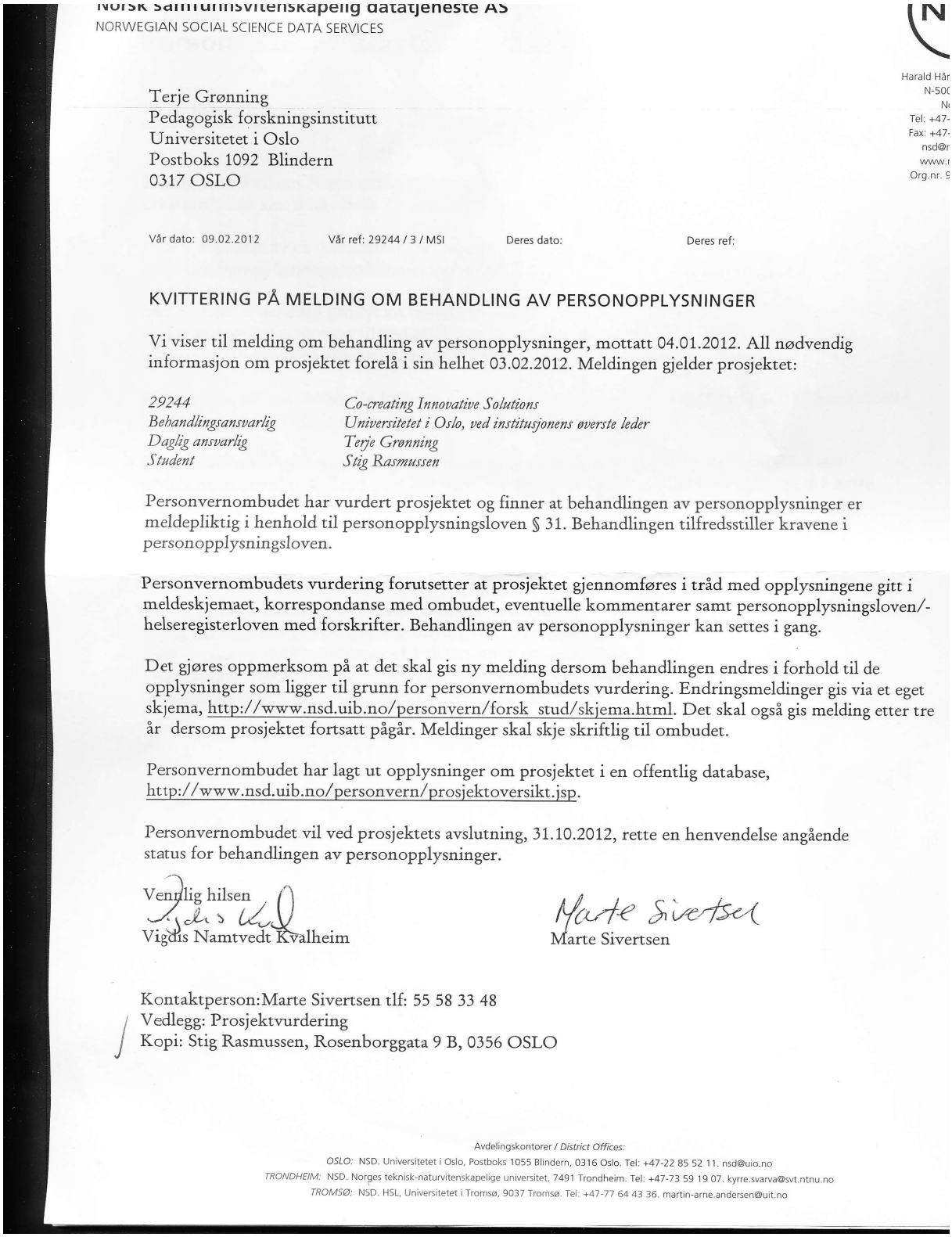

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Vår dato: 09.02.2012 Vår ref: 29244 / 3 / MSI Deres dato: Deres ref:

KVITTERING PÅ MELDING OM BEHANDLING AV PERSONOPPLYSNINGER

Vi viser til melding om behandling av personopplysninger, mottatt 04.01.2012. All nødvendig informasjon om prosjektet forelå i sin helhet 03.02.2012. Meldingen gjelder prosjektet:

29244	*Co-creating Innovative Solutions*
Behandlingsansvarlig	*Universitetet i Oslo, ved institusjonens øverste leder*
Daglig ansvarlig	*Terje Grønning*
Student	*Stig Rasmussen*

Personvernombudet har vurdert prosjektet og finner at behandlingen av personopplysninger er meldepliktig i henhold til personopplysningsloven § 31. Behandlingen tilfredsstiller kravene i personopplysningsloven.

Personvernombudets vurdering forutsetter at prosjektet gjennomføres i tråd med opplysningene gitt i meldeskjemaet, korrespondanse med ombudet, eventuelle kommentarer samt personopplysningsloven/-helseregisterloven med forskrifter. Behandlingen av personopplysninger kan settes i gang.

Det gjøres oppmerksom på at det skal gis ny melding dersom behandlingen endres i forhold til de opplysninger som ligger til grunn for personvernombudets vurdering. Endringsmeldinger gis via et eget skjema, http://www.nsd.uib.no/personvern/forsk_stud/skjema.html. Det skal også gis melding etter tre år dersom prosjektet fortsatt pågår. Meldinger skal skje skriftlig til ombudet.

Personvernombudet har lagt ut opplysninger om prosjektet i en offentlig database, http://www.nsd.uib.no/personvern/prosjektoversikt.jsp.

Personvernombudet vil ved prosjektets avslutning, 31.10.2012, rette en henvendelse angående status for behandlingen av personopplysninger.

Vennlig hilsen

Vigdis Namtvedt Kvalheim

Marte Sivertsen

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