

VALUE CO-CREATION IN THE EMERGING FIELD OF INFRANET BUSINESS

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Abstract

This study explores value co-creation in the emerging Infranet business context and builds an empirically grounded framework that illustrates customer perceived value in this specific type of context. We use the value-in-use perspective as the main theoretical background which emphasizes the customer's value perceptions in value co-creation. The study is conducted as a qualitative case study and the empirical data consists of interviews with the customers of a Finnish full-service supplier of Infranet services. This study contributes the current value discussion by presenting a framework of customer perceived value in the context of emerging Infranet business. It also enriches understanding of the value co-creation between the supplier and its business customer. In addition, practical implications are suggested for suppliers of B2B services on how to manage and enhance value co-creation processes with their customers.

Keywords: B2B service, case study, customer perceived value, Infranet business, value co-creation.

INTRODUCTION

The topic of value creation is one of the key areas of interest in the current research on business relationships (eg. Anderson & Narus, 2004; Lindgreen & Wynstra, 2005; Ulaga & Eggert, 2006). The basic notion is that business markets can only be understood by applying the concept of value (Walter et al., 2001). Recently, the importance of services in business-to-business (B2B) context has been emphasized. In relation to this, service-dominant logic (Vargo & Lusch, 2004) has received growing attention within marketing research. It suggests that the core of marketing has moved from a product-oriented perspective to a resource perspective, where value is co-created between the service provider and the customer. Value creation takes place in an integrated process where both parties are active (Grönroos, 2010). S-D logic has its roots in B2C context but it has also been increasingly adopted in the research within B2B marketing (see Jacob & Ulaga, 2008). The latest view, however, suggests that there is no need to distinguish B2C from B2B but rather use actor-to-actor (A2A) perspective on value creation where complex and dynamic systems of actors co-create value (Vargo & Lusch, 2010). Despite of the rich and expanding discussion, the understanding of value creation is still far from complete. Specifically, there is a need for empirical examination of the phenomenon.

This study explores value co-creation in the context of emerging Infranet business. It refers to business that focuses on planning, building and maintaining necessary societal infrastructure such as telecommunication and electrical networks. It is an important field of business as Infranet is crucial to almost every branch of the society – industry, railway, road, aviation, public service and homeland security. Since suppliers in Infranet business are generally seen as service providers, it is also here discussed as service rather than product business. Ownership in these networks is diverse; they can be owned by private companies, public administration or even defense administration. This study explores value co-creation between the private network owners (i.e. customers) and their Infranet supplier, and focuses on the customers' value perceptions. Infranet as a line of business is still in its infancy since formerly the network owners had their own internal organizations taking care of all of the network related tasks (e.g. building, maintenance and repairing). Recently this business has been opened to competition and the tasks have been increasingly outsourced to Infranet suppliers. In this development Finland has been a forerunner that is currently followed by other countries. Hence, Infranet business represents a very topical business field.

In this context, value co-creation between the Infranet supplier and its business customer becomes important. Business customers explored here refer to telecommunication operators and electrical network organizations. Firstly, since the building, maintenance and repair of the networks have been formerly conducted internally, the customer has high expectations for the value from the supplier. Understanding customer's value creation processes and its value perceptions in-depth is therefore a key to the competitive advantage for the suppliers. Secondly, customer's customers (e.g. households) are strongly dependent on the uninterrupted distribution of electricity and functioning telecommunication in their daily lives. They evaluate the network owners based on the functioning of these networks and thus based on the work of the supplier. Therefore, also end customers' value perceptions need to be taken into account. Thirdly, as the business field has recently become very competitive, any problems make the customer to consider an alternative supplier. This amplifies the importance of creating superior value for the customers. Fourthly, the object of exchange in this context has unique features that affect customer perceived value. It involves both product

and service related elements, for example, in building or repairing the networks there are both physical and service related elements involved, whereas connection types of tasks can be mainly considered as services. In addition to service-related aspects also the relationship between the customer and supplier strongly influences the value perceived by the customer and it needs to be taken into account. Hence, customer perceived value in Infranet business contains elements from the service, the core offering and the relationship between the customer and supplier, which make the value perception highly complicated. Altogether, empirical exploration of customer perceived value in this new, topical and socially important business field enables extending and deepening the current understanding of value co-creation.

The purpose of this study is to explore value co-creation in the emerging field of Infranet business and to build an empirically grounded framework that illustrates customer perceived value in this specific type of context. The research questions are: How can customer perceived value be conceptualized in the emerging field of Infranet business? How does value co-creation take place in the Infranet business from the customer's perspective? How value co-creation can be enhanced by the actions of the supplier? For studying value co-creation the foundation in this research lies on service and business relationship marketing and management (Grönroos, 2000; Araujo, 2007; Jacob & Ulaga, 2008) combined with service-dominant logic (Vargo and Lusch, 2004; Frow & Payne, 2011). We use the value-in-use perspective as the main theoretical background which emphasizes the customer's value perceptions in value co-creation (e.g. Edvardsson et al., 2005; Grönroos, 2008). In line with this, the focus of this study is limited to the customers' perspective, that is, their value perceptions. So, instead of exploring actual co-creation processes we focus on the customer's view on how value co-creation currently takes place which gives Infranet suppliers important implications how it could be developed and enhanced in the future.

This paper contributes the current value discussion by suggesting a framework of customer perceived value in the context of emerging Infranet business. It also enriches understanding of the value co-creation between the supplier and its business customer. In addition, this study gives practical implications for suppliers of B2B services on how to manage value co-creation processes with their customers. It emphasizes that the suppliers need to understand that value is always created together with customers. Thus, to be able to effectively co-create value the supplier needs to have a comprehensive understanding of how its customers perceive value and the factors influencing their value creation processes. This study provides an extensive framework of the customer perceived value including various important aspects that need to be taken into account to be able to create optimal value with the customer.

This study is conducted as a qualitative case study. The empirical data consists of five in-depth thematic interviews with the customers of the Finnish full-service supplier of Infranet services. It has been complimented with other archival data, e.g. company-specific documents and fact sheets.

In the following, we will first review the existing literature on value co-creation and customer perceived value within business relationships and service marketing to find out how the current research has conceptualized the phenomenon. Based on the literature review a tentative conceptual framework is developed. Next, the methodology of the study is presented and the findings from empirical data are introduced. Finally both theoretical and practical implications are discussed and the future research to be done is outlined.

VALUE CO-CREATION AND CUSTOMER PERCEIVED VALUE

Recently, there has been a transformation from product-based business into service-based (Ostrom et al., 2010). Industrial manufacturers are growingly developing services in addition to their core product business to remain competitive in the international and domestic markets (Jaboc & Ulaga, 2008). This kind of development is obvious in the field of emerging Infranet business in which various types of services are taking increasingly important role as the object of exchange. As an industry context of this study, Infranet is clearly more service than product business although it contains elements of both. A big challenge in service business and Infranet business in particular, is how to understand the customers' value creation strategy and processes until the end customers. Also managing the interfaces between own and the customers' processes in value co-creation represents a great challenge for suppliers.

The growing importance of services in the industrial markets has spurred academic discussions that connect the research on services and value creation. Role of the customer in co-creating value and co-producing the service has received increasing interest by researchers in the field of marketing (e.g. Grönroos, 2010; Matthing et al., 2004). The service-dominant logic of marketing, introduced by Vargo and Lusch (2004), has been at the centre of the current debate within marketing research. It suggests that the value-in-exchange view, in which value is embedded in products (i.e. outputs of firms' manufacturing processes), has been challenged by the view that value for customers emerges as value-in-use in their processes of value creation (e.g. Grönroos, 2008; Vargo and Lusch, 2004). Grönroos (2010) suggests that according to the traditional goods business logic, resources are provided to customer for the certain usage process in order to support that process in a value-creating way. On the contrary, along service business logic, the supplier supports the customer's processes with an extended offering including goods components and different kinds of service activities which enable the customer to create ultimate value.

In value co-creation the customer is actively participating in the creation of the service and the attached value. Also suppliers become value co-creators through their direct engagement and interactions with customers in their value-creating processes (Grönroos, 2008). Thus, service is a result of value co-creation between the supplier and the customer, and value is determined by the customer on the basis of value-in-use (Matthing et al., 2006; Edvardsson et al., 2005). The customer is primarily a co-producer of a service and a co-creator of value (Vargo & Lusch, 2004, 2008).

Payne et al. (2008) suggest that value co-creation consists of three main processes: customer value-creating processes, supplier value-creating processes and encounter processes (see Figure 1). Also Grönroos (2010) views value co-creation as customer's and supplier's processes that are combined by matching supplier and customer practices together which has impact on both supplier's and customer's ultimate business processes, i.e. creates value for both parties. This study adopts the customer's perspective on value co-creation and views the collaborative processes from the customer point of view.

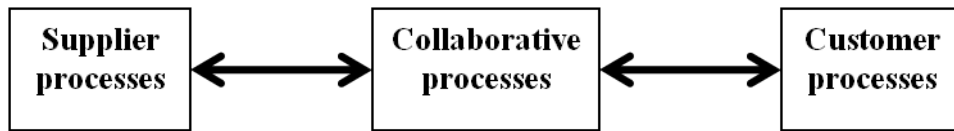


Figure 1. Value co-creation between the customer and supplier (adapted from Payne et al. 2008)

Co-creating value and understanding how customers perceive value in the context of business services (Hirvonen & Helander, 2001; Jacob and Ulaga, 2008; Komulainen, 2010) proposes many interesting challenges in terms of management. It is imperative for successful service development to understand the value perceptions of the customer. In relation to this, customer's involvement in service production processes becomes emphasized. In this study value co-creation is seen as the central phenomenon but the focus is on customer's perspective and value perceptions since they are vital for understanding how value co-creation takes place and how the supplier could enhance it in the future.

Therefore, this study adopts the value-in-use perspective, with customers and their value perception being the center of interest. Value is conceptualized as a subjective perception of trade-off between multiple benefits and sacrifices, relative to competition (e.g. Walter et al., 2001; Woodall, 2003; Ulaga, 2003). This study uses the term 'value element' and analyses customer perceived value consisting of the trade-off between two basic value elements: benefits and sacrifices (e.g. Kothandaraman and Wilson, 2001; Menon et al., 2005). Furthermore, following the Komulainen et al. (2007) and Lapierre (2000) we divide the value elements into sub-elements that reveal the sources of benefits and sacrifices. In our view, this choice honours the definition of value and enables a more comprehensive understanding of customers' value perceptions.

Although the basic elements of value are benefits and sacrifices, the categorizations of service value often seem to stress benefits over sacrifices. Even when sacrifices are investigated, most studies consider purchase price as being the most important sacrifice, and do not focus on indirect and non-monetary sacrifices (see Ravald and Grönroos, 1996). However, we believe that in the B2B service context, it is essential that the customer's indirect and non-monetary sacrifices are also considered. In this study, we acknowledge the two value elements equally, i.e. to categorize the sources of benefits and sacrifices (i.e. sub-elements), since their combination is essential in value perception. This means that this study departs from the majority view of categorising value according to its sources.

Existing research proposes various diverse categorizations of value. Woodside et al. (2008: 9) classify business customer's perceived benefits into four categories. The first category is product related benefits, more specifically physical characteristics. Secondly, service-related benefits include ease of use, repair and ease of installation. Supplier and brand related benefits refer to the supplier's reputation and industry-specific knowledge and finally, emotional benefits refer to social relationships between the supplier and buyer.

Ulaga (2003) presents a classification of relationship value drivers that indicate the areas of value creation from the customer's perspective in the manufacturing industry. The value drivers include product quality, service support, delivery, supplier know-how, time-to-market, personal interaction, direct product and process costs. Product quality includes the performance, reliability and consistency aspects of the product that is being exchanged.

Service support includes product-related services, as well as customer information and the outsourcing of activities. The delivery value driver is composed of on-time delivery, and the flexibility and accuracy of the delivery. Supplier know-how is related to the supplier's knowledge of the supply market, ability to improve existing products, and the ability to develop new products. The time-to-market value driver includes design tasks, prototype development and product testing and validation. Personal interaction is composed of communication, problem solving and mutual goals. Direct product costs form the seventh value driver and issues such as price in relation to competition, annual price decreases and cost reduction programs are connected to this driver. Finally, the process costs include inventory management, order-handling, incoming inspections and manufacturing.

In the context of industrial purchasing Ulaga and Eggert (2002) see customer perceived value as a compromise between benefits and sacrifices. Perceived benefits refer to the combination of physical attributes, service attributes and technical support available in particular use situations (see also Monroe, 1990). Sacrifices are seen in monetary terms or are defined more broadly. Simpson *et al.* (2001) point out that customer perceived value should focus more on the overall benefits than the sacrifices.

Lapierre's (2000) study focuses on the value of IT suppliers supplying both goods and services and its basic logic of classifying benefits and sacrifices to their sources is followed in this study. Benefits are divided into product-related (alternative solutions, product quality, and product customisation), service-related (responsiveness, flexibility, reliability, and technical competence), and relationship-related benefits (supplier's image, trust, and supplier solidarity with customer). The sacrifices identified include product- and service-related price, relationship-related time/effort/energy and conflict.

Based on the previous research both within manufacturing and service industry this study approaches customer perceived value in Infranet business by viewing it as a trade-off between benefits and sacrifices, relative to competition. Furthermore, benefits influencing customer perceived value are divided into core offering-, service- and relationship-related sub-elements. Dividing benefits into these sub-elements is relevant in Infranet business since the object of exchange has characteristics of the product, service and the relationship between supplier and customer. Correspondingly, sacrifices are classified into two main categories: monetary and non-monetary sacrifices. A conceptual framework of customer perceived value in Infranet business is presented in Figure 2.

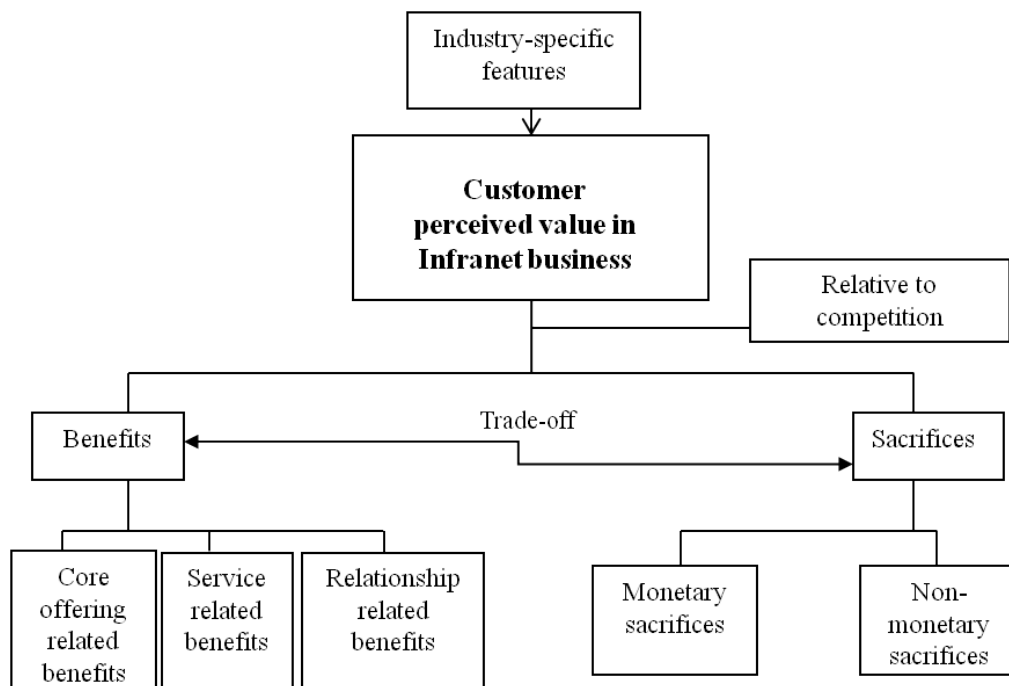


Figure 2. Conceptual framework of customer perceived value in Infranet business.

In order to increase understanding concerning the sources of value and value co-creation processes between the supplier and its customer, an empirical exploration will be conducted. Before that we shortly introduce the methodological choices of this study.

METHODOLOGY

The research design of this study is guided by the purpose of increasing understanding of value co-creation, and customer perceived value in particular. To achieve this, a qualitative case study was chosen since it is useful in situations where new perspectives are sought (Patton, 1999) and when contextual understanding of the phenomenon is important (Bonoma, 1985). Value co-creation explored here occurs in the complex and emerging context of Infranet business and therefore case study enables to get in-depth understanding of the overall picture of the phenomenon under study in its empirical context (Dubois & Gadde, 2002).

The empirical data was collected from the customers of a Finnish full-service supplier of Infranet services. The focal Infranet supplier company builds, maintains and develops Infranet solutions based on an effective interplay between electricity, telecom and IT. It has a long track record of working with the companies in power transmission, distribution or telecom sectors. Its customers are vital to society as they are the owners of the significant networks, for example, electricity companies and telecom operators. The main empirical data consists of the interviews with these customers but also other archival material (e.g. company-specific documents, fact sheets, web pages, newspaper articles) were used to complement the interview data.

The empirical data was collected in the form of thematic interviews. Choosing the interviewees and forming the interview questions were carefully planned to be able to get as versatile and extensive information as possible. Altogether three electricity companies and

two teleoperators were selected. The persons interviewed were experts in significant positions in their companies and thus able to give relevant and topical information for the use of this study (see Appendix 1.). Interview themes covered the following themes: 1) General information about the interviewee and the company, 2) Special features of the Infranet industry, 3) Relationship with supplier, 4) Customer's perceived benefits and sacrifices, 5) Expectations and experiences, 6) Future prospects. Discussion on issues that the interviewees felt important was also allowed and encouraged. All the interviews were recorded and transcribed and the interview data consists of 6 hours and 15 minutes of recorded data.

The data was analyzed with the help of content coding and theme-based categorization. Tentative conceptual framework was used as a basis for analysis and we used six general themes from the framework that were further divided into smaller categories. Specifically factors related to value co-creation were paid attention when analyzing the data. In addition, all the relevant issues were allowed to be raised from the data. The general themes covered the following aspects: benefits related to core offering, benefits related to the service, benefits related to the relationship, monetary sacrifices, non-monetary sacrifices and industry-specific features. In relation to these, all the aspects related to value co-creation were carefully examined. In the following sections, the findings of the study are presented. The basis for the interpretations and conclusions is illustrated by direct quotations from the interviews.

FINDINGS

Following the definition of value introduced in the theoretical part of this study, the sources of benefits and sacrifices (i.e. sub-elements) are categorized since their combination is essential in value perception. First, the benefits related to the core offering, service and relationship are discussed. Then both monetary and non-monetary sacrifices are identified. Based on the discussion below, all these five categories are further divided into detailed descriptions of each sub-element and their contents.

When analyzing the interviews, different aspects in relation to value co-creation became strongly emphasized. They are here illustrated under different benefit and sacrifice sub-elements and are further discussed in the conclusions section of this study. Lastly, industry-specific features are presented since based on the interviews they critically influence the overall customer perceived value in the context of Infranet business.

Core offering-related benefits

In relation to core offering there are three main aspects that were identified from the interviews, namely *physical quality*, *delivery process* and *resources*. Firstly, good quality of the core offering means that work fulfills the requirements defined in the contract and also the safety and quality regulations determined by different authorities. It also involves that the end customers are satisfied with the quality of the work and the way it was conducted. It was emphasized by the interviewees that the physical quality is basically quite good due to strict regulations. The flaws are usually related to constructions differing from the instructions, lack of appropriate marking or landscaping.

“These regulations pretty much dictate how things have to be done. Safety instructions and construction models are the starting point. Then if we think

about households needing electricity, it is important that they get it as we have promised. And the landowners, everything happens in their lands and fields. So when the suppliers go there, they have to clean up their tracks. It is extremely important that the end customers are satisfied.” Electricity company 3

Secondly, in relation to *delivery process* the core offering related elements refer to supplier's ability to constantly provide what the customer has ordered and even more importantly, that the end customer gets the service in time and as was promised. Delivery process also includes that the supplier handles the work and related documentation properly all the way. It is important from the predictability point of view that the work is always of uniform quality. Also in relation to predictability the interviewees stressed that the supplier needs to describe their processes as accurately as possible. This is an important aspect from the value co-creation perspective since in-depth understanding of each other's value creating processes is a prerequisite for adjusting and integrating the processes to each other so that value is created for both.

”Good quality is important and also that we know beforehand what it will be like. If we think about managing our business, supplier relationships are expensive to handle. We have to be able to predict what kind of quality and costs to expect in the following months.” Electricity company 2

Also in relation to delivery process the interviewees stated that the supplier's genuine interest in serving its customer as responsibly and well as possible was highly valuable. Specifically this becomes emphasized in different fault situations when the supplier's willingness to take care of the fault regardless of time or other circumstances is critical. As was the case in physical quality of the core offering, also in delivery process the end customers' satisfaction was strongly accentuated.

”For us good service basically means that the end customers are happy.”
Teleoperator 2

Third aspect in relation to core offering is the supplier's willingness to actively develop their *resources*. It was pointed out that the supplier needs to clearly define the technological environment in which it will operate and where it can provide optimal value for its customer. The interviewees stressed that the supplier should have a right amount of resources in the right place. In relation to this, they demanded extensive know-how to be able to handle various services provided by the customer to their end customers.

”They need to have an extensive knowledge base. The same mechanic has to be able to install connections to consumers and to be involved in firm projects or implement mobile base stations. Techniques can vary significantly.”
Teleoperator 1

In relation to supplier's resource base the interviewees emphasized that suppliers need to actively acquire new resources and to develop their physical resources as well as employees' know-how to be able to handle future demands. This is important because technologies and services are constantly changing and developing, specifically in telecom business. Also the interruptions in use need to be minimized. Again, the most important requirement in terms of

resources is to be able serve the end customer as well as possible. This means that the service or product has to be delivered in time and without problems.

Also the network relationships become central in Infranet business. It would be beneficial for the customer if the supplier could act as a link between the material provider and the customer since the supplier is closer to the material provider and also needs the accurate information regarding different technologies and materials. In addition, the role of supplier's own subcontractor network is essential as it enables providing services also in the case of unexpected situations, e.g. exceptional customer needs or natural phenomena. Thus, by maintaining the subcontractor network and optimal resource base it is possible to be prepared for different circumstances. As was the case in delivery process, also here the accurate description of resources is vital. For example, the customer needs to know what kinds of resources are available in certain geographical areas in certain periods of time. This again relates to value co-creation, i.e. it is important to know each other's resources and value creating operations to be able to effectively co-create value.

"Supplier needs to be able to describe how their processes are organized and how they function. [...] It is necessary that everything works and we need well-defined rules." Teleoperator 2

Service-related benefits

In relation to service there are three main themes that were identified from the interviews: service quality, communication, and the procurement process. First, *service quality* in Infranet business can be divided into two groups that are service in relation to the customer company and to the end customer (i.e. customer's customer). These are naturally closely intertwined. Since the supplier is the only physical contact to the end customer are the aspects of service quality central for the customer perceived value. If there are failures in service the customer is the one who gets the complaints. It was also stressed in interviews that jointly developing the operational models according to which the end customers are served is highly beneficial as it increases value for the end customer as well as to supplier and its customer. Thus, increased cooperation in serving the end customer is important aspect in which value co-creation takes place.

"Our image is based on the supplier's work. How responsibly and well it operates. I would say that supplier is in a way our business card." Electricity company 2

Interviewees demanded pro-activity from the supplier and its employees. Since the mechanics have the most central skills concerning the networks it is vital that they inform the customer about possible defects and development areas. This, in turn, creates opportunities for value co-creation as the supplier's role in the customer's business grows and cooperation takes new forms.

"It would be great if he (the mechanic) contacted us and told that 'here is this kind of thing that cannot be left undone, can we do it?' And when we say 'yes, of course' they can charge us. It would be their internal marketing to us and it would be great service for the end customer. Everybody wins." Electricity company 1

Good collaborative skills are one key aspect of service quality. In addition, it was underlined by the interviewees that the supplier should be able to react quickly to different problem situations, specifically in major fault situations. Also the supplier's interest in its customer's business was pointed out by the interviewees as important factor of service quality. In other words, in-depth understanding about the customer's business forms a solid base for the close co-operation and further value co-creation between the parties.

"When we are making the order for the supplier, well, it represents a good service quality that the supplier has the comprehensive picture of the situation and it offers different kinds of solutions to us. I think it means good quality that it knows what we need and offers it to us." Electricity company 1

When thinking about the future of the Infranet business there is a growing need for a comprehensive service package that covers different aspects of constructing and maintaining electricity and telecom networks. The interviewees saw it essential that the suppliers will take more responsibility of the totality of various types of works. This also refers to the increasing importance of value co-creation between the supplier and the customer. Furthermore, trust in supplier was pointed out as a prerequisite for perceiving high service quality. The customer has to be able to trust in supplier in all matters, from invoicing to serving the end customer as well as possible. In long partnerships it is critical that an open interaction and trust exist between the partners.

Secondly, factors related to *communication* include both informing the customer and the end customer in an appropriate way. Concerning the end customer, the supplier needs to have established communication practice in order to assure that it gets proper information at the right time through one channel. From the customer's point of view it is vital that the supplier provides relevant and timely information, e.g. about the progress of the work and when the work is expected to be finished. Reporting is important also because the customer organization has to be aware of the different phases of the different works and also inform its own customers.

"They need to solve the problems as fast as possible and at least inform about the progress of the work. It (end customer) has to be well-informed about everything that happens during the whole problem situation. Not that they receive letters or emails or text messages from various senders but the supplier has to have an established way to communicate." Teleoperator 1

Thirdly, customer's *procurement process* includes aspects related to supplier's knowledge management skills, personal bonds and service availability. First and most evidently we identified the knowledge management skills and management systems as central parts of the procurement process. Supplier's ability to implement the development ideas and decisions was seen as the key aspect. Personal bonds refer to close relationships between the supplier's and the customer's personnel. They become important specifically in fault situations occurring outside the office hours. For example, when the person on call in the customer's side knows the most capable mechanic from the supplier and can send him to go to solve the problem. Also the availability of the service becomes significant specifically in fault situations when it is important to have clear and predetermined practices to reach the supplier and get the defect fixed.

*"When we need mechanics to fix the problem it is important to have only one number where we can call and get the guys as fast as possible."*Electricity company 3

Relationship-related benefits

Long partnerships are typical in the Infranet business. Both monetary and non-monetary switching costs are so substantial that there has to be a good reason for changing the supplier. On the other hand, due to lengthy relationships the customer can become quite dependent on certain supplier. In relation to this, supplier can enhance value co-creation by deepening the cooperation with the customer and by actively providing new improved solutions to customer. Thus, the first relationship-related sub-element was identified as *actively developing the cooperation*. It involves, first of all, customer-specific know-how that enables extending the relationship to cover new territories. For example, offering new products and services to the customer or supplier's active selling to end customers were seen as possible areas of increased collaboration. The interviewees felt that the suppliers have such a critical knowledge about their business that could be utilized in developing the relationship further. Since suppliers also have a good sense of development trends in the Infranet field (e.g. emerging technologies) they could proactively inform the customer about new business opportunities and find new ways to serve the customer. Interviewees pointed out that supplier could offer their services to take care of new assignments or support services and this way to deepen and expand the cooperation. They also stressed the importance of really understanding the customer's business as a basis for deeper cooperation. Hence, by integrating into customer's business operations and by offering comprehensive service package the supplier can enhance value co-creation between the parties.

"They could get more deeply involved in our processes. To promote their know-how and suggest that 'we could take care of that task' and 'we have created these capabilities and have these kinds of resources useful to you'. That kind of things would be great. [...] And that supplier understands our processes and business, is interested in us and is proactive. It would be great if the supplier was so well aware of our business operations that it could bring in new solutions. It could significantly strengthen and deepen our relationship."
(Teleoperator 2)

In relation to providing new solutions the interviewees emphasized innovativeness and creativity as means to get rid of old-fashioned and rigid operations models. Since the supplier is in close contact to the end customers, suppliers were also seen as possible marketers. Extending the supplier's role to cover different kinds of promoting or marketing research types of tasks was seen as a new value creating opportunity. Thus, deepening the cooperation can be seen as important aspect in enhancing value co-creation between the parties and increasing the customer perceived value.

"Because the supplier is the only physical contact to the end customers it could map their situations and needs and possibly give a hint to us. It (supplier) could also promote our services and that way to extend its role to include also other aspects besides installation. And it could also think how it could serve the end

customer by representing us. These kinds of things. To be more innovative and break the traditional boundaries.” (Teleoperator 1)

Second relationship-related sub-element is related to the supplier’s *image, reliability and flexibility*. These are closely linked to each other and are therefore discussed as one group. In relation to image, the interviewees told that it is imperative that the supplier takes care of safety instructions and environmental issues. Since the supplier works in the customer’s networks are the customers responsible for them. Due to the incremental character of the Infranet business there is always a risk of injuries. Possible neglects in following safety instructions can seriously damage the customer’s image. Therefore, it is important that all the actors carefully follow the instructions.

”After all, they work there in our networks and we are responsible what happens there. And of course we expect the supplier to be well-established and reliable. It needs to have a good image in the public. [...] We have quality certifications and environmental certifications ourselves, so we expect the supplier to have them too.” Electricity company 3

Trust and reliability in long business relationships means that the customer can rely on the supplier in all situations. For example, when there is a lot of work to be done, the customer has no time to check every invoice or sites in detail. It also has to be able to trust that the supplier is available whenever needed and that they offer best possible service in all situations. In addition, the interviewees pointed out that the supplier’s flexibility plays an important role since the contracts are extensive and there might be need to change some details during the contract period.

”It is different if we would order one job from somebody but we have three year partnership contract. It has to be based on trust.” Electricity company 3

Third sub-element is titled as *connecting resources*. It is closely linked to value co-creation and refers to connecting parties’ resources to produce outcomes that they could not do alone. For example, developing the supplier’s staff, working practices and materials together with the customers were pointed out in interviews as good ways to increase mutual productivity. Interviewees hoped that the supplier could also actively participate in developing their products, services and business as a whole. On the other hand, they wished the supplier to listen to their opinions and taking their future needs into account in developing its resources.

”What we wish from our suppliers is them to be a part of us. So that we could together develop our business operations, possibly our products and this way to create more value. And then we could share the added value for both parties”.
Teleoperator 1

Very important aspect in interviews was the customers’ strong willingness to improve the end customer’s satisfaction and perceived value together with the supplier.

”Our main objective is to provide the best customer value and our slogan “World-class service company”, well, we cannot do that by ourselves. It requires cooperation from the whole network. We see our suppliers and

partners as a part of this system that as a whole creates value for the end customer.” Telecom operator 1

In relation to connecting resources the interviewees stressed also the importance of common development working groups and steering groups. Also removing barriers between companies' data systems and creating new established practices to facilitate ordering and other functions were suggested as means to enhance value co-creation. The customers saw that a close cooperation at all organizational levels would be very beneficial to both.

Monetary sacrifices

In the Infranet business, suppliers use building units and unit pricing as means of pricing. Based on the interviews, unit pricing is used only in small individual works and all the larger jobs are put out to tender. In relation to larger works the suppliers are often selected based on *direct costs* that are the first type of monetary sacrifices identified in the interviews. Direct costs have been currently emphasized due to the overall poor financial situation. In general, in the Infranet business customers expect moderate market price and savings based on efficient delivery processes.

Secondly, *function costs* refer to costs that come from making and upgrading products and services to customers as well as costs of guarantees. Since electricity companies have regional monopolies their business is strictly controlled by laws that put special pressures them to decrease costs. Regional monopoly brings along a great deal of liability since the law defines many different types of responsibilities for the electricity companies. Therefore, they have to follow so-called principle of moderate profits which in turn means that the costs need to be diminished.

”According to legislation, we have to take care of the electrical networks in a cost-effective way. Price has to be within reasonable limits. I mean the profit has to be moderate and it also includes the costs. So we need to rationalize and do things effectively and smartly. And there has to be the win-win situation.”
Electricity company 2

Thirdly, *acquisition costs* refer to different types of costs related for example to orders or check-ups. In relation to these, it is beneficial to customers that the network owners can buy the network-related works from the supplier and this way change formerly fixed costs to variable costs. In the case of Infranet business, switching costs can be seen as a form of acquisition costs. In the long run the certain supplier can become such a difficult to replace that the switching costs might be simply too high.

”And of course changing partner and making new contracts is tiresome. [...] If we have a new supplier it requires a whole new IT-project to make everything work. That is why we would like to have a regular partner network but of course the power relations can vary between them.” Teleoperator 1

Non-monetary sacrifices

In relation to non-monetary sacrifices many different factors can be found. Firstly, sacrifices related to *time and energy* were identified from the interviews. Since taking care of networks

has been outsourced to suppliers, the bureaucracy has increased as well as time and energy needed from the customers. For example, knowledge management causes challenges. When there are two different companies with their own goals working together, it is time-consuming and demanding to ensure that all the relevant knowledge is shared at all organizational levels.

"When the supplier's management discusses with our management they can make arrangements that others do not know anything about. So, information sharing from management to mechanics does not always work." Electricity company 3

Secondly, the interviews indicated also different *psychical sacrifices* that were mostly related to personal relationships and different kinds of fears. Personal relationships in Infranet business come from the fact that the supplier's and customer's personnel have known each other for a long time and often have very personal relationships. Thus, there is a possibility that the objectivity between different parties disappears. Fears were mostly related to lost control, i.e. the customers were worried about getting at the mercy of certain supplier. There are a limited number of suppliers in the Infranet business and the customers were afraid of getting too dependent on the supplier's industry- and customer specific knowledge.

Third type of non-monetary sacrifice was identified as *commitment and control* related issues. Interviewees were worried about the lack of commitment from the supplier's side. There is a chance that the end customer's perceived service quality decreases if the supplier does not think it as their manner of honor to take care of all the problems situations as fast and well as possible. The ill effects of decreased commitment are emphasized in the fault situations that occur outside normal working hours.

"Commitment is decreasing and the mechanics do not think that 'this is our thing' so much anymore. For example, when we call them about the fault situation they are not that committed now when they work for the supplier firm. Money is the only inducement. And it can sometimes be seen at the end customer interface that they do not consider it 'our customer'". Electricity company 3

As a result of diverge of ownership and network maintenance the customers also pointed out the declining of their control. Interviewees saw that in the long term they might also lose their local knowledge and the top-level professionalism of their own line of industry.

Industry-specific features

Based on the interviews there are three main industry specific features that influence the customer perceived value as well as value co-creation between the customer and supplier in Infranet business. These features were illustrated in the findings above and are next shortly summarized.

First feature is related to high expectations for the supplier. The interviewed customer companies have a long history which naturally influences their expectations. In certain situations the supplier's work is compared to the time when the customer's own organization took care of network-related works. Thus, the supplier can be seen as more effective but on

the other hand, less committed than the own organization. Secondly, intense competition in the Infranet business means that the jobs are often put out to tender. As the customer compares its suppliers to the alternative suppliers, it is critical that the supplier is able to provide optimal value for its customers. Finally, since the telecom and electricity networks are socially critical, the end customer's satisfaction is highly important. Supplier is normally the only physical face the end customers see which creates special pressures for constantly developing the cooperation and partnership between the supplier and the customer.

In conclusion, the purpose of this study is to increase understanding of how the customer perceives value in the industrial markets and in Infranet business in particular, as well as to better understand value co-creation between the customer and the supplier. Based on both theoretical and empirical exploration, an empirically grounded model is illustrated in Figure 3. It describes the elements of customer perceived value and by identifying these elements it is also possible to better understand value co-creation between the customer and the supplier from the customer's perspective. These findings are next discussed in detail.

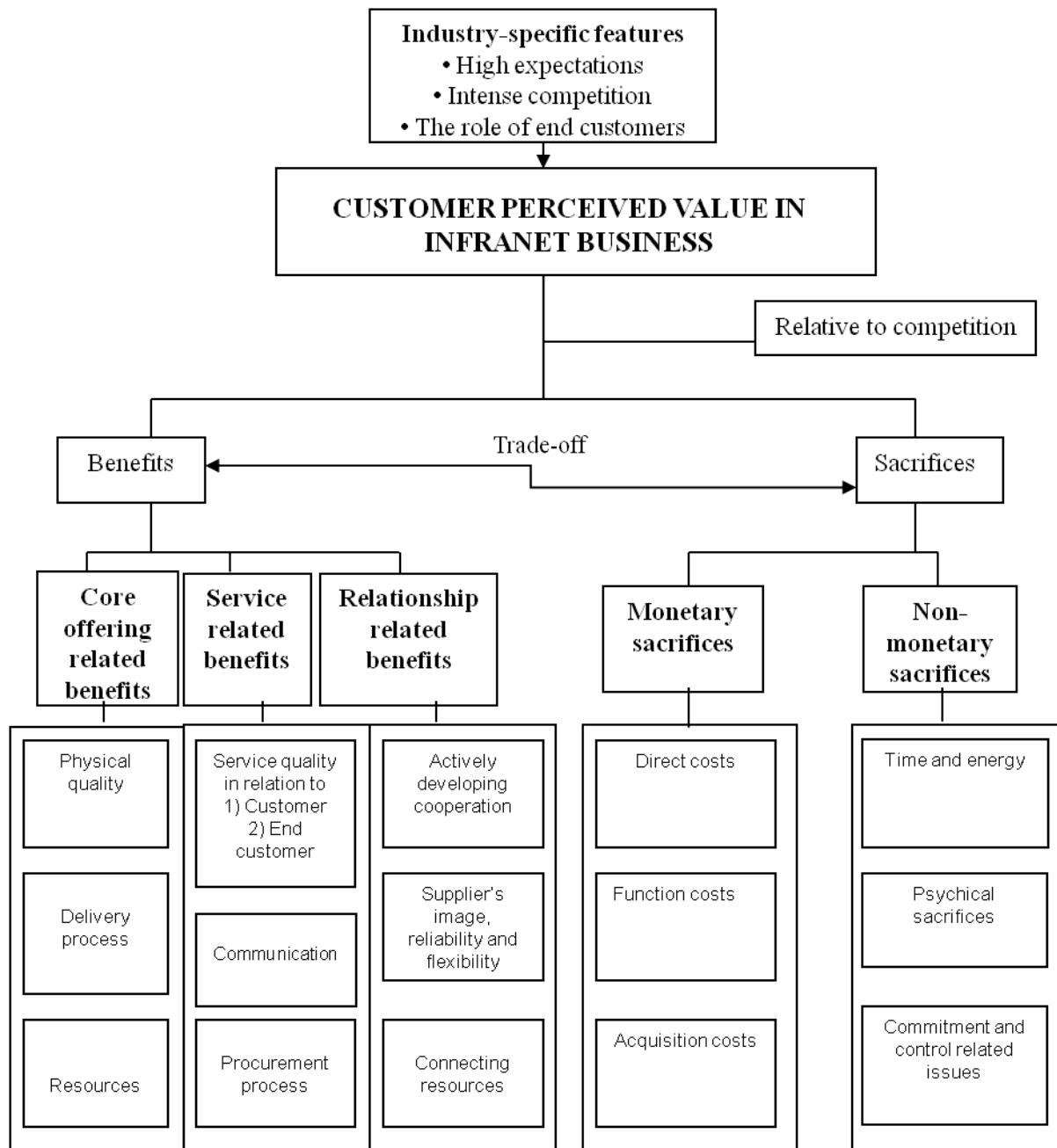


Figure 3. Empirically grounded model of customer perceived value in Infranet business.

CONCLUSIONS AND IMPLICATIONS

In this paper, we have explored value co-creation in the emerging field of Infranet business. We make a contribution by suggesting an empirically grounded framework (see Figure 3) that illustrates how customers perceive value in the industrial context, specifically in Infranet business. This enables identifying the elements of value-in-use that customers experience as an outcome of joint value creation with the supplier. In other words, this study suggests different sources of benefits and sacrifices since their combination is essential in customer's

value perception. Based on these findings we also scrutinized the way value co-creation takes place between the customer and supplier and how it could be enhanced in the future.

In Infranet business customer perceived value consists of trade-off between benefits and sacrifices, relative to competition. Benefits can be further divided into three sub-elements. First, core offering related benefits include physical quality, delivery process and resources. Second, service related benefits contain service quality, communication and procurement process. Third, relationship-related benefits refer to active development of the cooperation, supplier's image, reliability and flexibility as well as connecting the supplier's and customer's resources. Sacrifices are further divided into monetary sacrifices referring to direct costs, function costs and acquisition costs and non-monetary sacrifices covering time and energy, physical sacrifices and commitment and control related issues. Also industry-specific features influence customer's value perceptions, namely high expectations, intense competition and end customer's satisfaction. Based on the empirical data, value co-creation became emphasized as a critical element in the relationship with the supplier.

The findings of our research are in line with previous studies dealing with customer perceived value (e.g. Walter et al., 2001; Woodall, 2003) in that value perception is comprised of trade-off between benefits and sacrifices. In this study we identified different sub-elements of benefits and sacrifices that allow more profound and comprehensive understanding of value creation in industrial markets (see also Komulainen et al., 2007). Dividing benefits into core offering, service and relationship related sub-elements enables careful exploration of how each element influences the value perception and how value co-creation takes place between the supplier and the customer. Furthermore, in earlier studies customer perceived non-monetary sacrifices have been less understood. For example, Ulaga (2003) only identifies direct and process costs and Simpson et al. (2001) almost ignore the importance of sacrifices in value perception by strongly highlighting benefits. In this study the empirical exploration revealed different types of non-monetary sacrifices that play an essential role in customer perceived value. We believe that taking different types of sacrifices into account is highly important in the future studies on value creation.

Adding to existing research on customer perceived value in B2B context (e.g. Ulaga, 2003; Lapierre, 1997; Liu et al., 2005) this study increased understanding of the ways value co-creation occurs between the supplier and the customer in Infranet business. Although our exploration focused on customer's perspective we were able to identify how value co-creation takes place and even more importantly, how it could be enhanced by the actions of the supplier. Although the recent studies on value co-creation strongly emphasize the role of customer, this study agrees with Grönroos (2008) that supplier's direct engagement and interactions with customers is at least equally important in joint value creation. The findings of this study suggest that customers in the Infranet business are very willing to develop their cooperation with the supplier into more intimate and extensive level which increases the value for both parties. Next, we will elaborate how value co-creation related aspects came up in the findings of this study.

In identifying the sub-elements of value many aspects referring to value co-creation could be noticed. First, in the case of core offering-related benefits, being familiar with and understanding the partner's business operations, processes and resources emerged as a critically important aspect. Making them as explicit and transparent as possible enables

adjusting the processes and resources to each other in a value-creating way. This in turn enhances value co-creation between the parties and results in added value to both.

In relation to the service-specific benefits the importance of open communication and detailed reporting were emphasized as value-creating aspects. This enables the relationship to develop to a more intimate level and forms a basis for close cooperation. It was also stressed that jointly developing the operational models according to which the end customers are served would be highly beneficial as it would increase value for the end customer as well as to supplier and its customer. In relation to this, giving the supplier more responsibility of diverse tasks seemed to be a current trend among customers. This means that value co-creation is increasingly critical as the supplier's role in the customer's business grows and cooperation takes new forms.

Value co-creation and its concrete forms were most evident in the relationship-related benefits. First, combining resources enables the parties to accomplish something they could not have without each other. For example, by involving the customer in developing and improving the suppliers' work methods, materials and employees' know-how would increase the end customer's perceived value and strengthen the relationship between the supplier and its customer. Correspondingly, the supplier's participation in developing customer's products, services and business as a whole would benefit all the parties involved. Also taking the other party's views and wishes into account in future planning was also pointed out as a concrete action towards value co-creation. Again, the transparency of processes and resources was emphasized as a basis for deeper co-operation and value co-creation. Knowing the customer's business enables the creation of new innovative work solutions and providing a more comprehensive service for the customer. The supplier could expand its service to cover, for example, selling and promotional aspects and also collect feedback from the end customers. Collective R&D projects, integrating different data systems and creating common practices were also identified as central ways to increase value co-creation between the parties.

To summarize, it became obvious in this study that there is still a need for deeper cooperation between the customer and the supplier. This requires that the supplier gets acquainted with its customer's value creating processes, and vice versa. This way the parties can adapt their processes to each other, their cooperation strengthens and the supplier can more effectively operate in the interface between the customer and the end customer. As a result it is possible to all the parties to perceive higher value.

Managerial implications

Based on this study, the following implications for suppliers, and specifically for the managers working in the industrial context, are suggested. This research puts forward that the supplier needs to have an in-depth understanding of value co-creation with its customers. In general, with the aid of this research the suppliers can better understand how their customers perceive value and how they see value co-creation with the suppliers. This, in turn, allows them to develop their strategic plans towards more value-creating ones.

Specifically in the business field that is developing from product-oriented business towards service business, understanding how to optimally co-produce the service and co-create value with the customer becomes imperative. This study suggests that the customer sees different

aspects in relation to core offering, service and relationship as important benefits that increase their perceived value in relation to certain supplier. Correspondingly, there are several types of sacrifices that decrease the perceived value. In relation to all these aspects there are various implications how value co-creation between the supplier and the customer could be enhanced. They were discussed in detail above. So, understanding all these factors in relation to value creation, allows the supplier to develop its actions to improve the customer perceived net value and advance value co-creation with the customer.

In the findings of this study, the special features of Infranet business were also emphasized. These are related to high expectations, alternative suppliers and role of end customers. First, the supplier needs to understand that their customers often compare their work to the previous time when the customers owned the networks and took care of them by themselves. Being aware of these high expectations and providing the customer high-quality products and services, effective procurement and delivery process, fluent communication and reporting, as well as committed and reliable staff, are prerequisites for satisfied customers.

Secondly, intense competition and comparison to alternative suppliers make it essential that the supplier gains in-depth understanding of the customers' processes and integrates into these processes as effectively as possible. This way it can differentiate itself from the competitive suppliers with the aid of value co-creation that creates superior value for both parties.

Finally, the role of business network around the focal dyad was emphasized in this study. Therefore, from the value co-creation point of view it is important to pay increasing attention specifically to the end customer and also other network actors. In the Infranet context the customer's customers' satisfaction had a strong influence on the customer's perceived value and the supplier was seen in the central role in serving the end customer. Also the societal importance of telecom and electricity networks increased the significance of taking good care of the end customers. In addition, the customer expected the supplier to have an extensive sub-contractor network which is needed specifically in surprising fault situations or in the cases where vast amount of resources are needed. Supplier was also a link between the manufacturing industry and the customer.

In summary, although the study took place in Infranet business we believe the implications can be generalized also in other industrial contexts. In relation to that, the limitations and future research prospects are next discussed.

Limitations and avenues for future research

When evaluating any study certain shortcomings can always be found. In order to keep the focus of the research clear and explicit, this study also engenders some limitations. In the Infranet business there is a need for cooperation and interaction between different network actors, e.g. suppliers, their suppliers, customers and end customers. Exploring the thoughts of all the actors and their interrelated relationships was not within the scope of this study. Instead, this study chose to focus on exploring the business customers' perceived value and their views concerning value co-creation with the supplier. This study acknowledges the network surrounding the customer firm but does not examine how other actors create or perceive value. We believe that taking the customer's perspective as the central viewpoint

enables examination of the value concept in greater depth and confining the viewpoint of the customer does not influence the conceptual analysis of this study.

Since this study explored value co-creation by focusing on the customer's perspective, it is important to take the supplier's perspective into similar exploration in the future studies. This would enable us to compare the views of the different parties on how value co-creation takes place and how it could be developed into deeper levels of cooperation. In addition, it is our intention to explore the actual value co-creation processes between the parties in our prospective research.

We studied value co-creation in the specific context of emerging Infranet business that has some special features influencing the customer perceived value and the co-creation of value between the supplier and the customer. Therefore, it would be beneficial to expand the exploration into different types of industrial context to be able to compare the found customer perceived value elements and the forms of value co-creation also in other industrial contexts.

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APPENDIX 1. Interview data

Line of business	Interviewee(s)' position	Duration
Electricity company 1	Planning Manager and Network Manager	60 min.
Electricity company 2	CEO	1 h 30 min
Electricity company 3	Field Manager	1 h 10 min
Teleoperator 1	Head of Partnering and Subcontracting Management	1 h 18 min
Teleoperator 2	Director (service production)	1 h 18 min
Total	5 companies, 6 interviewees	6 h 15 min