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**Attaining a sustainable competitive advantage  
through service co-creation with strategic part-  
ners: Measurement Company X**

Master in Global Business  
Management

Spring 2023



**KAMK • University  
of Applied Sciences**

## **Abstract**

The thesis aims to examine the importance of collaborative activities with customers in product and service development to focus on sustainability. This thesis is carried out to establish a value co-creation framework, which will be customer-centric and sustainable. Sustainability is an organization's strong attribute since the world is moving continuously with changes. The change is happening following the global trend and economy. Customers are an important element of the market. Market demands are created by customers depending on the current situation. Considering all these consequences, this study is starting to find out how to develop a co-creation model for Company X. Several challenges have been worked out and sorted with specific outcomes.

The research questions for this study aim to form a proactive service co-creation approach with key stakeholders in the strategic business network to enhance company X's industry leadership position in the next decade. Furthermore, it also finds out the strategic partners of Company X, their activities, and their type of interactions.

This thesis follows the qualitative interview method to conduct research in developing the current model of the existing activities of the employees of Company X and propose a new co-creation model with customers. After the interview sessions, a workshop was done with all the informants to discuss the summary of the findings from the interview. Thematic analysis is done with the finding of the interview sessions. To validate the proposed research framework a questionnaire survey has been done at the end of this research.

Following thematic analysis from the feedback of the interviews, Company X's current working model is found. The co-creation model has also been suggested following the interview feedback, which took place with different company employees. This study discovers several findings and related challenges with existing working situations. And finally, it established a co-creation model, which can bring importance to the company to be sustainable in the market.

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**Title of the Publication:** Attaining a sustainable competitive advantage through service co-creation with strategic partners: Measurement Company X

**Degree Title:** Master's in Global Business Management

**Keywords:** Products, services, service centricity, value, co-creation, value co-creation, collaboration, co-activities, strategic partners, actor, S-D logic, G-D logic, KIBS, B2B

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## **List of abbreviation**

G-D logic

S-D logic

KIBS

B2B

Goods Dominant logic

Service Dominant logic

Knowledge Intensive Business Service

Business to Business

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## 1 Introduction

This chapter serves as the introduction to the thesis and covers several key aspects, including the research background, industrial product trends, the background of case company X, the objective of the thesis, and an overview of its contents. The research background highlights the shift from product-centric to service-centric trends and establishes a connection to industrial products. Subsequently, the author briefly overviews the company's background and its industry. The objectives of the thesis are then presented, outlining the research problems and questions that will be addressed. Finally, this chapter concludes with an overview of the thesis's expected outcome and structure, setting the stage for the subsequent chapters.

Customers are the element of the business, who are considered the recipient of goods, services, or products. Apart from the products, customers are seeking service value, comprehensive solutions, and distinctive experiences in this new business landscape. More options for goods and services are available to customers than ever before, but this does not guarantee their pleasure. Personalized customer experiences are quickly replacing a focus on products and companies as the primary source of value and the process of creating value (Korhonen, 2012; Prahalad & Ramaswamy, 2004). An option to keep service in the center rather than focusing on goods, which is the conventional approach, for enhancing the value creation and economic interaction, is service-dominant (S-D) logic. S-D logic offers an alternative viewpoint to the Goods-Dominant (G-D) logic, to get the knowledge regarding the value-in-use and the exchange in the economy. According to this service-oriented perspective, market exchange refers to the process through which parties use their specialized knowledge for mutual gain, or the provision of mutual services (S. Vargo & Lusch, 2004). The service-centered perspective can also be clarified by stating that a company is attempting to uncover or enhance its core competencies and essential knowledge to build a genuine competitive advantage. As opposed to the conventional goods-dominating idea, a service-dominant approach to marketing is being adopted. A variety of organizational actions, such as processes, and competencies including knowledge and skills help to construct the service process (Korhonen, 2012; S. Vargo & Lusch, 2004).

Considering the specific features of S-D logic, which focuses mainly on the interaction between the supplier and the customer and the value of knowledge, a changing trend is obvious from product-centric to service-centric (Lusch & Vargo, 2006; S. L. Vargo & Lusch, 2008; S. Vargo & Lusch, 2004). This trend is the main background of this research. Other facts such as the trend of

industrial products, and the background of the case company are also considered the base of this thesis.

This study is related to the development of a service co-creation model in the case of Company X. Company X is a leading global developer and supplier of process technologies, automation, and services. The aim of the thesis is to examine collaborative activities with partners. Here partners are suppliers or customers. So basically, this thesis is focusing on collaboration with partners for product or service development to be sustainable. The purpose of the thesis is to find out the existing model of Company X. Currently, the case company is doing business with its partners. So, it is to find out, how their activity looks like. Then to establish a customer-centric and sustainable value co-creation framework. So, it is assumed that, currently they don't have any value co-creation framework, for this reason, their existing working model will be analyzed first.

The research problem of this thesis is, "How will a proactive service co-creation approach with strategic partners in the strategic business network enhance company X's industry leadership position in the next decade?" Here, the time frame of the development has been considered ten years. That means the developed concept should sustain for at least the next ten years. After that, it might be reworked.

This research problem has been solved based on the following three relevant research questions (RQ):

**RQ 1.** Who can be considered the strategic partners of Company X for co-creation of services?

**RQ 2.** What activities are suitable for service co-creation with Company X's strategic partners?

**RQ 3.** What kind of value co-creation model is suitable for Company X to support service co-creation?

This master's thesis is organized into five chapters: Introduction, Literature Review, Research Methodology, Results and Analysis, and Conclusion. In Chapter 2, the author presents a service co-creation framework developed for the case company X based on a literature review that was conducted to address the research questions. The literature review covered relevant models, primarily applicable to co-creation in business-to-business (B2B) service. Chapter 3 describes the research methodology using one-to-one interviews with 17 informants. Chapter 4 discusses the

analysis and interpretation of the results, including the evaluation of the existing model of Company X and the proposed new model for the co-creation process. Chapter 5 presents the conclusion and recommendations of the study, while Chapter 6 outlines the limitations and prospects for future research.

## 2 Literature Review

This chapter provides the literature review of this thesis. This literature review will determine how to answer the questions to solve the research problem. The research is done mainly based on the relevant co-creation models from earlier studies. Then there are some other supportive concepts used in this thesis. Several terminologies have been explained in this literature review. Based on this review, a theoretical framework for this research will be built, which will guide the conducting of the research activities.

### 2.1 Strategic Partners

Strategic partners are the bonded in a long-term relationship between two or more commercial enterprises. Strategic partners work together to achieve a common goal, which is normally difficult for one to realize (Jin & Zhang, 2013). Joint ventures, alliances, collaborations, and co-development agreements are just a few examples of the various ways that strategic partnerships can be formed. Organizations can use their networks, resources, and skills through strategic partnerships to add value and accomplish their goals (Hax & Wilde II, 2001). Strategic alliances provide advantages like exposure to new markets, technology, and specialization; however, they also have drawbacks including power imbalances, misdirected incentives, and trust concerns (Somaya, 2005). Regardless of these obstacles, strategic alliances have grown in popularity as a means for businesses to accomplish their objectives and add value in the linked and complicated business environment of today (Hagedoorn, 2002).

From the viewpoint of the customer, a strategic partner is a supplier who offers outstanding and quality goods or services and is eager to work with the customer to accomplish common objectives and provide value (Li et al., 2015). Strategic partners work closely with the client to comprehend their demands and preferences. They are dependable, responsive, and flexible. By increasing the effectiveness of their supply chains, lowering costs, and enhancing product quality and innovation, consumers can gain a competitive advantage through strategic partnerships with suppliers (Min & Mentzer, 2004).

From a supplier's perspective, strategic partners are referred to as a client that the supplier has a long-term, collaborative relationship with. This relationship is built on shared objectives,

reciprocal confidence, as well as open interpersonal interaction (Kotha & Orne, 2004). In order to provide value and enhance performance, the suppliers as strategic partners collaborate to cut costs, raise productivity, and improve quality. By gaining a better understanding of consumer wants and preferences and creating solutions that are specifically tailored to those needs, suppliers can gain a competitive advantage (Sollish & Semanik, 2007).

In these theoretical discussions, different activities or roles of strategic partners are distinguished. Based on this discussion on the features of the suppliers and the customers as strategic partners, this research will attempt to find out the answer to the RQ 2.

## 2.2 Collaborative Activities

Collaboration including co-creation and other co-activities has become important in the business-to-business (B2B) context, which entails working with customers to generate goods, services, or solutions. This strategy may produce results that are more focused on the needs of the consumer and improve the bonding between businesses and their customers. In this literature review, an overview of different co-activities is discussed in terms of the B2B context. Accordingly, to find the answers to this question regarding collaboration, the products, and services need to be studied from different dimensions.

### 2.2.1 Products and Services for Business

There are different parts and different forms of business. Products are the ancient and initial thought of a return to customers in a business. A product is an item offered for sale. It can be either an item or a service. It can be physical or virtual or cyber form. In this context, it is considered an item. The variation of products does not always give an advantage over competitors (Prahalad & Ramaswamy, 2004a, 2004b). Therefore, the center of the value proposition and the exchange is the service offering, whereas physical commodities are considered tools that allow businesses to offer services (S. Vargo & Lusch, 2004). On the other hand, a service is an act or use that a consumer, business, or government is willing to pay for. Utilizing their resources, expertise, creativity, and experience, service providers help their clients. Services are intangible activities or performances by which the service provider gives value to the client. Three distinct features can be used to characterize the concept of service -service as an activity, service as a perspective on

the customer's value creation, and service as a perspective on the provider's activities, i.e. business logic. Service as an activity is a process in which one party, such as a service company, assists another party, such as a customer, with his or her everyday activities (or processes) (Grönroos, 2008).

Organizations are starting to work with the service in terms of a product concerning their business. Service is frequently seen as a value-add for customers in organizations where the focus is on the product since it can improve their overall experience with the product and encourage loyalty and repeat business. According to research, adding service to a strategy that is centered on products can have several advantages, including higher customer retention rates, increased customer happiness, and increased profitability. In an earlier study, it was found that service may provide product-centric organizations with a crucial competitive edge. It was also suggested that offering a high level of service that goes above and beyond simply providing a product allows businesses to stand out from the competition (Chen et al., 2017). In another study, service was mentioned as an important driver of customer loyalty (Chong et al., 2018). In this research, it was found that customers are fonder of the suppliers to consider them as partners rather than just suppliers when they provide exceptional customer service. It has been suggested in other research that service can also play an important source of revenue for product-centric organizations. High-quality service providers can frequently demand higher fees for their goods (Yen et al., 2016). Customers will pay more for a product if they believe they will receive outstanding service in return, which explains the reasons for this kind of situation.

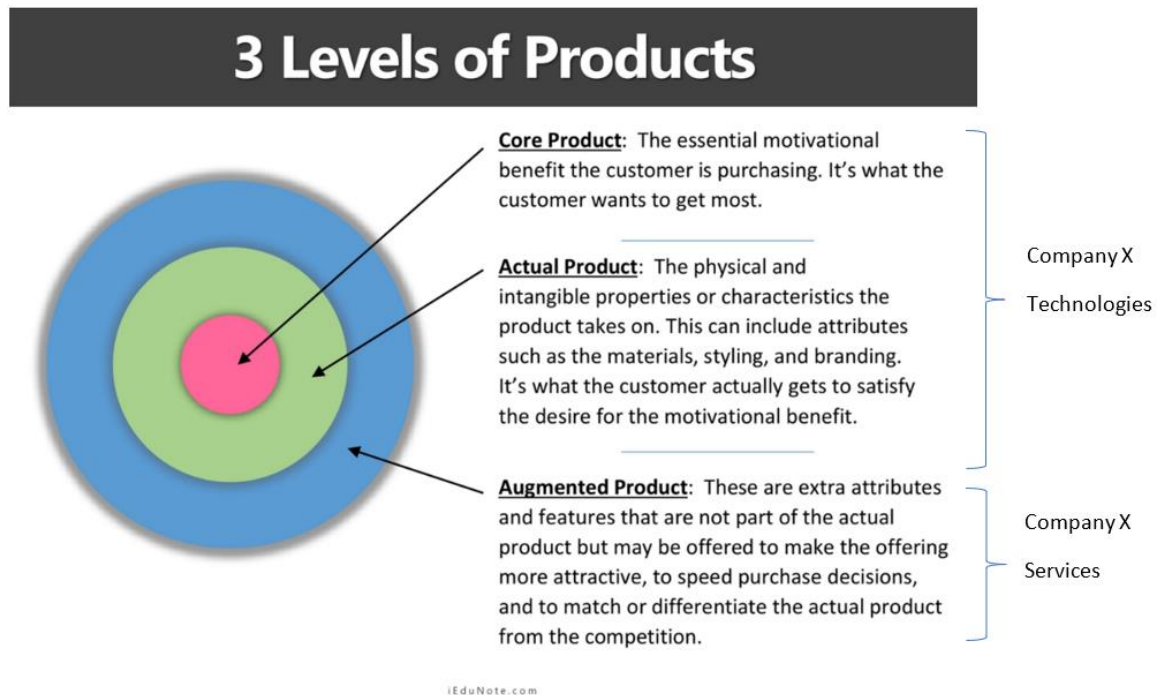


Figure 1: Considerable level of products

In Figure 1, different levels of products are explained and clarified, where it has also been distinguished that the augmented products are considered industrial product, which consists of mainly services. Maintenance or warranty support, lifecycle services or learning services provided by an organization can be considered as some examples of industrial products, those are part of the augmented product level. This research would be carried out with the augmented product level of Company X based on these theoretical assumptions, and whether those can be leveraged in solving the research problem of this thesis.

### 2.2.2 Service-Dominant Logic (S-D Logic)

Service-Dominant Logic is a way of thinking that aims to provide an entire perception of the nature and function of organizations, marketplaces, and communities. It emphasizes the central role of services in the economy and the co-creation of value by customers and service providers. It argues that traditional product-oriented approaches to marketing and business are no longer adequate in today's service-based economy, where customers are active participants in the value-creation process. The focus is on understanding customer needs and co-creating value through interactions between customers and service providers. Furthermore, it highlights the importance of relationships and networks in value creation rather than simply focusing on transactions between individual actors. Originally, it is developed by Steve Vargo and Robert Lusch (Korhonen,

2012). In conventional G-D logic, services are perceived as outcomes that are not tangible, inconsistent, mutually exclusive, and transient. To phrase it another way, services are everything that products are not. S-D logic is based on the idea that a company's financial markets, as well as society, are all about the sharing of service, which is the use of capabilities for the betterment of some other party (Korhonen, 2012). In this respect, all businesses are service businesses, and all sectors revolve around the transmission of services. Ultimately, all societies and their economies are founded on services (Korhonen, 2012; S. Vargo & Lusch, 2004).

According to the most recent modifications of the service-dominant (S-D) logic, actors are not able to provide value, but they can create and offer value propositions (S. L. Vargo & Lusch, 2016). In earlier literature, goods-centric supplier-customer logic has been challenged, where the customers increase the value, which is created by the suppliers. S-D logic accentuates how important it is for customers to be involved in every step of creating value together (Kohtamäki & Rajala, 2016).

The change in perspective due to the S-D logic concept has significant ramifications for companies that produce industrial products and also for businesses that operate in the B2B context. So far discussed already, according to S-D logic, fundamentally all businesses are service providers, even including the producers, which produce tangible goods (S. Vargo & Lusch, 2004). Therefore, rather than only selling material goods, manufacturers of industrial products must concentrate on adding value through the services they provide to their B2B customers. This means that businesses need to put more effort into interacting with customers, learning about their requirements and desires, and developing solutions that are specifically designed to suit those demands (S. L. Vargo & Lusch, 2008).

Industrial product manufacturers must create service platforms that enable them to communicate with their B2B customers and provide value to their offered services (S. L. Vargo & Lusch, 2008). Services like technical support or product customization may fall under this category. Manufacturers of industrial products must consequently collaborate closely with their B2B clients to fully understand the requirements and preferences to develop solutions that address those needs. Building strong, sustainable relationships with B2B customers is essential for manufacturers of industrial products (S. L. Vargo & Lusch, 2008). According to S-D logic, value is created through the integration of resources between buyers and sellers. Furthermore, S-D logic emphasizes continuous innovation in value creation for customers (S. L. Vargo & Lusch, 2008). Industrial product manufacturers must adapt to the customer's needs and preferences in terms of products

and services, which are being changed continuously. Consequently, S-D logic provides a valuable and useful framework for industrial product manufacturers, who are operating in a B2B context.

### 2.2.3 Co-creation

Co-creation has already been studied and is defined as "the process of jointly creating value by customers and companies" (Prahalad & Ramaswamy, 2004b). Co-creation in B2B contexts may consist of working together with customers to create specialized solutions that address their unique demands (Giesler & Piller, 2016). This approach has been shown to improve the loyalty and satisfaction of customers. (Kohlbacher & Herstatt, 2017). Co-creation in the B2B context has been found in research to provide several advantages. For instance, it can assist businesses in better comprehending the wants and preferences of their customers (Frow et al., 2015). Additionally, it may encourage the creation of more innovative solutions (Lusch & Nambisan, 2015). Moreover, co-creation can also increase the engagement of customers and their participation in the product development process (Prahalad & Ramaswamy, 2004a).

### 2.2.4 Value

The customers define value based on their experiences and perceptions. Interactions between a corporation and its consumers produce value (Lehtonen, 2018). Creating value is a procedure that improves the user's position in some way or enhances the customer's wellness. Customer value is defined by Grönroos in way as follows, "Value for customers means that after they have been assisted by a self-service process (cooking a meal or withdrawing cash from an ATM) or a full-service process (eating out at a restaurant or withdrawing cash over the counter in a bank) they are or feel better off than before" (Grönroos, 2008). Perhaps the value which has been developed can be assessed in economic terms, for example through impacts on earnings or assets obtained or through cost savings; however, the value will always have an ideological component, namely confidence, affection, comfort, and ease of use (Grönroos, 2008). Customers are encouraged to purchase from a company because the offering provides them with value. The production of greater value makes a company more appealing to clients than the alternatives that are available to them in the market (Töytäri, 2015).

Value is considered in the B2B context in this study and also from the customer's point of view. Although customer value has many definitions, in every case, it is trading against a price, where customers receive a benefit or make any adjustments in any other way (Flint et al., 2002; Woodruff, 1997; Zeithaml, 1988). Benefits can be either measurable (cost saving, increased revenue) or non-measurable (safety, efficiency, brand value) (Lehtonen, 2018). Customer value does not stay fixed, rather it is changing always based on the new requirements of customers. In that case, the old customer value vanishes at the same time. For this reason, continuous interaction is the only way for the supplier to be updated regarding updated customer value (Woodruff, 1997).

Therefore, value is the principal element to relate the company with customers. In other words, value is everything for an organization. There is no marketing, no customers, and as well as no business, if there is no value.

#### 2.2.5 Value Co-creation

Co-creation of value necessitates close collaboration between the organization and the customer at each step of strategic and new service development. The customers define value based on their experiences and perceptions. Interactions between a corporation and its consumers produce value. Furthermore, the interactions among actors within business ecosystems that are mutually advantageous are the basis for value co-creation. Managers in organizations must comprehend the prospects for cooperative value creation that their business ecosystems provide if they are to grasp such networked value creation (Kohtamäki & Rajala, 2016; S. L. Vargo & Lusch, 2008). According to the co-creation perspective, all company-customer touchpoints are opportunities for both value creation and value extraction (Prahalad & Ramaswamy, 2004b). On the other hand, a company must incorporate sustainability into its decision-making for all supply chain activities. Sustainability and competitive edge are linked with each other. A firm's absorptive capacity is defined as the "ability to recognize the value of new information, assimilate it, and apply it to commercial ends" (Cohen & Levinthal, 1990). To establish a competitive advantage, businesses must acquire crucial knowledge and data about the nature of competition and the ever-changing (Guo, 2007). Sustainability is supported by dynamic changes and newness as well as innovations. Apart from that, due to the shortage of natural resources, it is also essential for businesses to create new resources, talents, and activities (Rodriguez et al., 2002). By following the route of innovation in this manner, businesses will obtain a sustainable competitive advantage. Sustainable organizations consider the protection of resources over time in the future to preserve their

competitiveness (Chaharbaghi, 1999). Owing to the very dynamic nature of the global market-place, a sustainable competitive edge is a paradox. Companies must therefore evaluate all three economic, environmental, and social factors to meet the interests of all stakeholders, not just shareholders. A sustainable competitive advantage is comprised of more than a single product or service, but rather the existing products and services that contribute to a company's success (Oliver, 2000).

Apart from the co-creation activity, there are also other collaborative activities with customers that have been extended intensively in the literature on value co-creation (Kohtamäki & Rajala, 2016). Co-learning indicates collaborative institutional learning and learning based on relationships. Another concept is co-innovation. In every case, the prefix "co" signifies shared activities among actors within partnerships, transnational networks, and ecologies (Kohtamäki & Rajala, 2016). In the case of the coproduction of value propositions, the customers have a strong contribution to how service offers are made (S. L. Vargo & Lusch, 2011).

In value co-creation, on the other hand, the consumer actively participates in the value-creation experience and the concluding thoughts of value according to the interaction. Understanding value co-creation among the parties of cooperation in terms of networked systems of economic actors is recommended for optimal comprehension. The active role of the customers in developing service offerings and experiences has been focused on (S. L. Vargo & Lusch, 2011).

This study considers all these possible collaborative activities during developing the research framework of Company X. Since these collaborative actions are highlighted in services as well as augmented industrial products, it is equally important to consider those.

### 2.3 Value Co-creation Models for the Services

A crucial point is that co-creation processes are implemented as a learning technique to help firms meet growing market demands (di Tollo et al., 2012; Payne et al., 2008). The majority of co-creation descriptions and frameworks so far have centered on defining the general and domain-specific needs of co-creation concerning factors like interactions, suppliers, and customers (Durugbo & Pawar, 2014). In terms of customer interactions at points of contact, the completeness or incompleteness of solutions, rewarding co-creators, and leveraging information technology to support tasks, these themes seek to explain co-creations features (Durugbo & Pawar, 2014). In this section, models for co-creation will be discussed those are relevant to this thesis. Every model

has different attributes, which will help to understand the situation of developing the proposed model of Company X. Apart from that, as in the research question, to find their current working model, the idea from the earlier developed model also plays an important role. The last question of the research problem consists of the finding of the suitable value co-creation model for the services offered by Company X.

### 2.3.1 Value co-creation with individual domains

In existence, products and services of the production process are valuable as objects. These are viewed as output in goods-dominant view. Users and customers consume and destroy this value in a practical view (Schüritz et al., 2019). On the other hand, through the application of the operand and operant resources of both consumer and provider, the co-creation of the value is considered by service-dominant logic (S. Vargo & Lusch, 2004). The service-centered perspective can be clarified by stating that a company is attempting to uncover or enhance its core competencies and essential knowledge to develop a legitimate advantage over the competition. The company additionally has to recognize potential clients who might reap advantages from these fundamental skills and build relationships with them to meet their specific needs through sincere contributions and compelling value propositions. The premium actors of business systems are the suppliers and customers dealing with the conversion and transformation of services (Grönroos, 2011). Both have different roles in their place of business. The supplier is the primary process owner during the product development, design, manufacturing, and delivery phases. From a value standpoint, the supplier can only provide the client with value-in-exchange and value proposition during this period shown in Figure 2. Suppliers are value facilitators because they engage in value-facilitation activities during the production phase (Grönroos, 2011; Lehtonen, 2018). Although the provider may be the only party involved in the production phase, the client may still play a role in the process. When a supplier and a customer communicate with one another, the supplier sees the customer from the perspective of a co-producer who collaborates in the construction of a value proposition. This occurs whenever there is interaction between the provider and its customer.

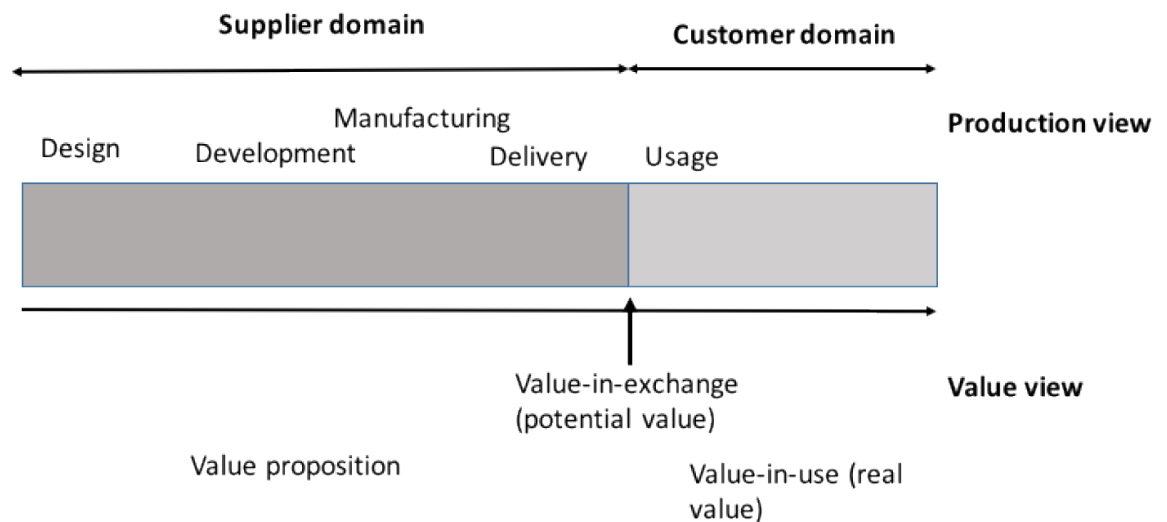


Figure 2: Customer and supplier roles in the value-creation process (Lehtonen, 2018)

When a customer receives a product or service during the consumption phase, they receive the potential value with the expectation that it will be changed into real value as a result of using the product. In addition, it should be mentioned that value generation occurs progressively during the lifetime of the solution rather than all at once (Lehtonen, 2018). Being a value facilitator in the utilization phase affords the provider the chance to become involved in their customers' life and to influence their nature of use (Grönroos, 2011; Heinonen et al., 2010). Co-creation based on the initial S-D logic view was agreed to be vague to adequately understand value creation between a customer and a service provider (Ballantyne et al., 2011; Grönroos & Voima, 2013). After that, the evaluation of the interactions between a supplier and a customer was carried out. After analyzing a joint creation scenario has been proposed. Value creation was separated into three spheres or domains: the supplier domain, the customer domain, and the joint domain (Grönroos & Voima, 2013). This is the ideal model of value co-creation, where the joint domain sphere is the critical part of all activities. This model is presented in Figure 3.

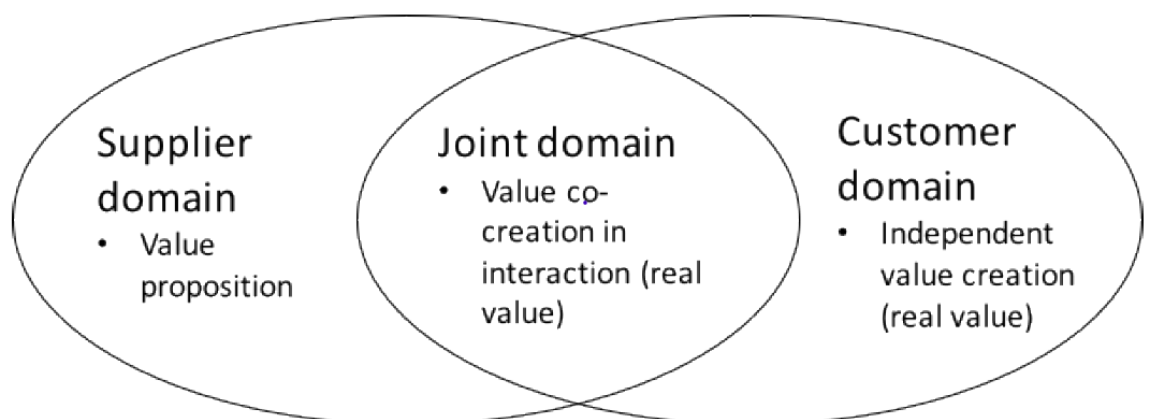


Figure 3: Value creation model by Grönroos & Voima (2013)

### 2.3.2 Co-creation Model with different types of collaborative activities

All the situations discussed so far point to collaborative activities with customers and suppliers. An analysis had been done on the cooperative endeavors, functions, and assets involved in a relationship between a supplier and a client within the scope of knowledge intensive business services (KIBS) (Aarikka-Stenroos & Jaakkola, 2012). An empirical qualitative approach was followed in this study, where interviews were done with 120 suppliers and buyers of KIBS. The importance of the role that suppliers play, and the interactive process is emphasized in KIBS since the value provided to the customer depends heavily on the supplier's knowledge and effective communication with the customer. They actively contribute to the emergence of value-in-use and the value process of the client. In these situations, value is created not only via the usage of the traded goods or services but also throughout the exchange process, which is influenced by the interaction and relationship between the seller and the buyer (Aarikka-Stenroos & Jaakkola, 2012; Grönroos, 2011; Lapierre, 2000). Five identified collaborative activities constituting the process of value co-creation of complex offerings had been named as follows (Aarikka-Stenroos & Jaakkola, 2012):

- 1) diagnosing needs,
- 2) designing and producing the solution,
- 3) organizing the process and resources,
- 4) managing value conflicts, and
- 5) implementing the solution

Furthermore, since the value co-creation model is required to be sustainable, regarding sustainability, a holistic value co-creation model called 'sustained purposeful engagement' had also been presented that is connecting organizational capabilities, practices, and resources across actors (Marcos-Cuevas et al., 2016). The model is shown in Figure 4. In this model, it had been concretized the value co-creation process has been concretized with a set of practices and capabilities that may be used in different phases of the co-creation process. It is based on the thinking that the capabilities of organizations enable co-creation practices between them (Lehtonen, 2018). According to (Marcos-Cuevas et al., 2016), practices can be used in different phases of cooperation where value co-creation may emerge.

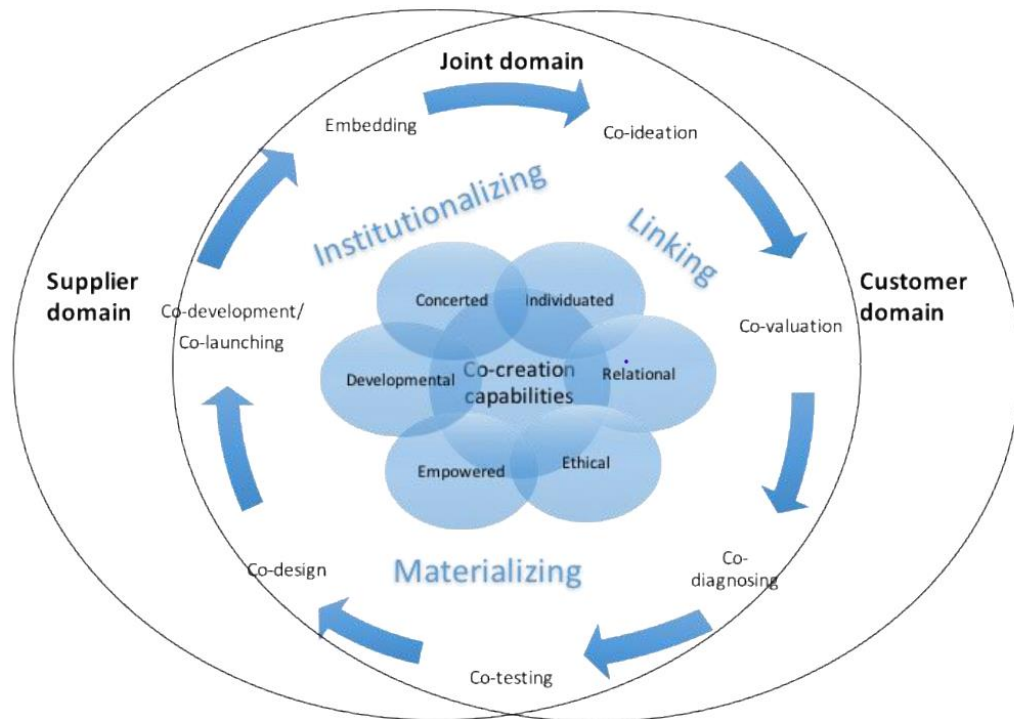


Figure 4: Model of value co-creation by Marcos-Cuevas et al. (2016, 99).

### 2.3.3 Co-creation Network by Actors

An entity that is responsible for carrying out activities within an organization, such as business processes or functions, is referred to as a business actor. In most cases, a business actor will carry out the actions that have been ascribed to them by one or more Business Roles. It is essential to differentiate between the actor and the part since a business actor can play more than one business part, and a business role can be played by more than one business actor. People, departments, and other organizational units are all examples of business actors. They may be individuals or groups. Following all the discussed theories and pieces of literature above, it can be determined that interaction and resource integration in the network context might be a fruitful concept to add to this study that has been established in recent years. Value co-creation studies focusing on this concept have started to emerge (Gummesson & Mele, 2010; Jaakkola & Hakanen, 2013). According to this, value co-creation in the network is enabled by actor-to-actor involvement and commitment (Lehtonen, 2018). Interaction in the network is a key phenomenon stimulating resource integration, which takes place via resources, competencies, and processes. It was pointed out that value co-creation in a network context is a time-based process comprising parallel and sequential phases at the same time (Gummesson & Mele, 2010).

In the activities, the suppliers and the customer have roles, but roles change during the process. Based on the supplier's and customer's roles, the model proposed is presented in Figure 5.

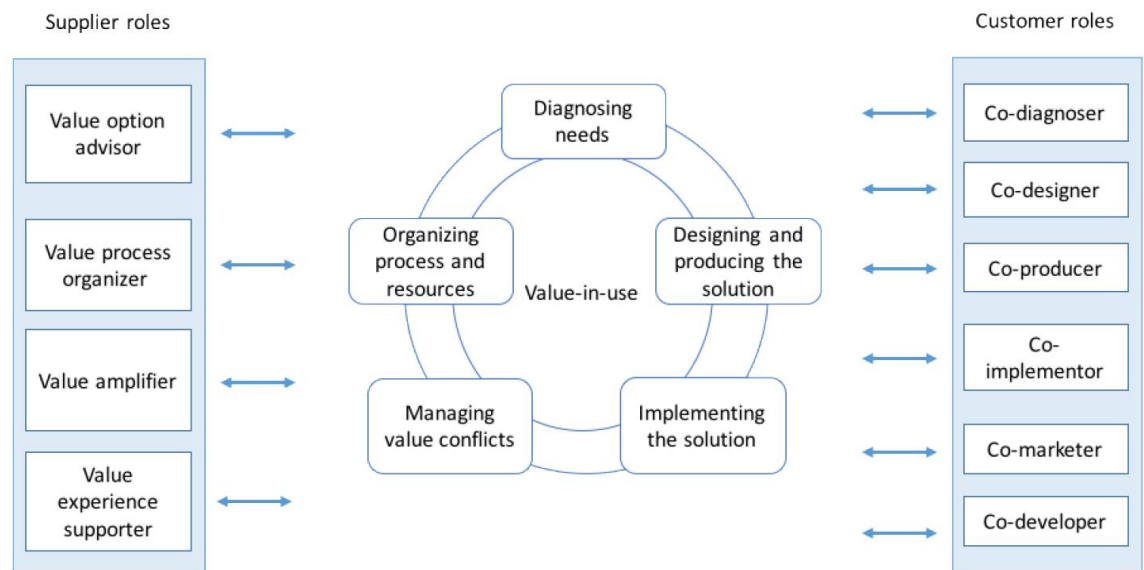


Figure 5: Value co-creation process in KIBS services by (Aarikka-Stenroos & Jaakkola, 2012)

In this concept, customers play different collaborative activities, i.e. co-designer, co-diagnoser, co-producer, co-implementor, co-marketer, and co-developer. Along with this, suppliers have also different roles like value option advisor, value process organizer, value amplifier, and value experience supporter. Figure 6 illustrates the network-based value co-creation model with different actors. In this model, three levels are active among actors to make the final integration to value co-creation. The first level of the model is the actor's internal level, where actors undertake activities in their context of value creation. The second level is the relationship level, where network actors produce value collectively through interaction and resource integration. The third level is a network level in which resources are integrated into a bigger resource entity via a pattern of actions performed by a network of actors. Compared to the resources made available by separate providers, the integrated solution and the actions that create it represent a new value proposition for the customer. Hence, value co-creation involves value processes within organizations, in interactions among actors, and within a network of players (Jaakkola & Hakanen, 2013; Lehtonen, 2018).

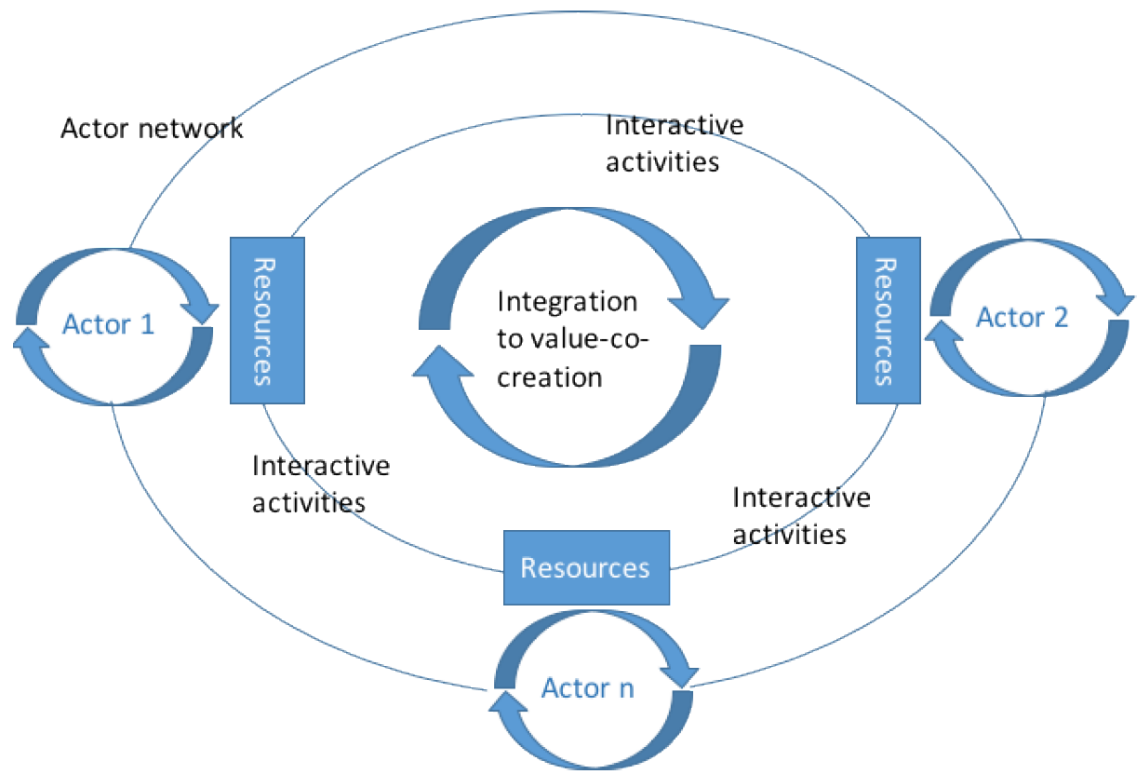


Figure 6: Value co-creation model in network-based (Jaakkola, 2013).

Since Company X is working with their agents and customers, who have their customer range as the end users of their products, this entire circle can be compared with the B2B context. Accordingly, this model can be used to solve the research problem of this thesis. Numerous developments in the B2B environment, such as digitization, an increase in interaction touchpoints, alterations in consumer behavior, and global rivalry, have pushed B2B sales into an eco-systemic environment and altered its position in value co-creation (Rustholikarhu et al., 2020).

The established theoretical background provides a transparent gateway to conduct this research further. The list of the literature, which will help to find out the answers to the research questions, is shown in Table 1.

| Constructs                 | Author          | Title                                     | Year | Key findings                                                                                                                                                                                       |
|----------------------------|-----------------|-------------------------------------------|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Co-creation in B2B service | Korhonen, Karri | Value co-creation approach in B2B-service | 2012 | This study works with the development of the business model in a co-creation approach. Co-creation activities and roles in B2B service relationships have been identified mainly in this research. |

| Constructs                                             | Author                              | Title                                                                                                                             | Year | Key findings                                                                                                                                                                                                                                                                             |
|--------------------------------------------------------|-------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Co-creation in joint domain                            | Lehtonen, Liina                     | Value co-creation in smart metering business                                                                                      | 2018 | This study works with the relationship between the parties, which has raised its importance as a value enabler instead of a tangible product. It also fulfills the need for practical studies from different business areas to get more concreteness into the value co-creation process. |
| Co-creation model                                      | Durugbo, Christopher, et al.        | A unified model of the co-creation process                                                                                        | 2014 | This study works with the proposal of a conceptual model to characterize the co-creation process descriptively and to assess co-creation methodologies.                                                                                                                                  |
| Collaborative methods with customers on customer needs | Prahalad, C. K. & Ramaswamy, Venkat | Co-creation experiences: The next practice in value creation.                                                                     | 2004 | This study shows the movement from product-centricity to customer-centricity to create value through the creation process with customers.                                                                                                                                                |
| Co-creation with the help of organizations             | Hilton, et al.                      | Service co-creation and value realization                                                                                         | 2012 | This study works with the concept of S-D logic over organizations. The realization of value co-creation with the organizations is emphasized and determined.                                                                                                                             |
| Involvement of customers in the co-creation process    | Cheung & To                         | The effects of customer involvement on perceived service performance and word-of-mouth: the mediating role of service co-creation | 2020 | This study elaborates on the impact of customer involvement in the co-creating process.                                                                                                                                                                                                  |

Table 1: List of literature as the theoretical background of the research study

## 2.4 Research Framework

The concept of the co-creation model for different types of collaborative activities has been intended in this thesis study using the interview process during analyzing the value co-creation model, which is inspired by the value co-creation process in KIBS services. This model will be used as the theoretical framework of this thesis. Along with this model, the network-based co-creation network will also be considered as the theoretical framework to develop the value co-creation model for Company X. The strategic partners of Company X are anticipated as the actor network, those that have their resources, which could be integrated to develop a value co-creation model. Therefore, through the interview process and information gathered from the interview session,

cross-checking steps are executed to match with the value co-creation model network-based (Jaakkola & Hakanen, 2013).

After reviewing the relevant articles, the following factors will be considered in developing the theoretical framework of this thesis,

1. Collaboration activities between suppliers and customers
2. Customers and suppliers are the actors, that will be considered in the business of Company X
3. Suppliers and customers would have specific roles in different types of activities for collaboration
4. Interaction between suppliers and customers would be the key action
5. An actor-based co-creation model would be the best match from the perspective of Company X

Accordingly, the research framework of Company X s could be proposed as shown in **Error! Reference source not found. Error! Reference source not found.**, which is adapted from existing models from different researchers (Aarikka-Stenroos & Jaakkola, 2012; Jaakkola & Hakanen, 2013; Marcos-Cuevas et al., 2016).

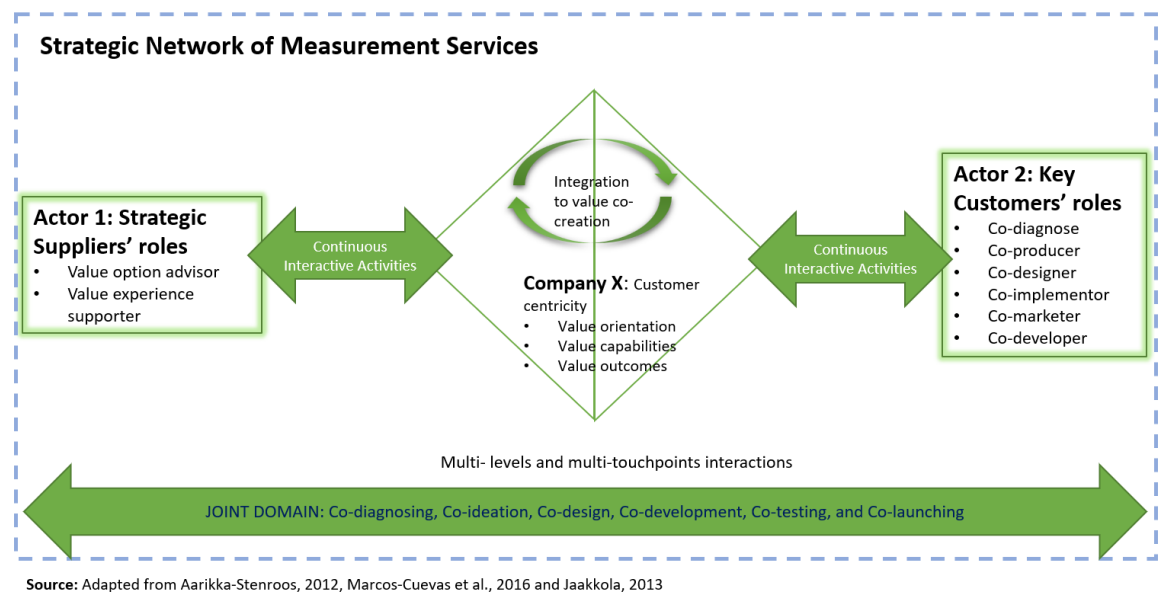


Figure 7: Research framework for Company X (self-elaboration)

In this research framework, strategic partners play the role of actors, where customers and suppliers are considered as strategic partners.

- Company X's suppliers have an important role as the value option advisor and value experience supporter. Suppliers deal with different clients and customers. They possess comments and recommendations from different parties, which can be the options for Company X also. Through interactive activities, value can be shared with the suppliers. Similarly, customers have the main role in the co-creation process. They can play a role in different activities like co-diagnosing, co-designing, co-implementing, co-marketing, and co-developing.
- Customers provide specific directions to Company X for further development processes both in service and product. In the diagnosis process, customers can give feedback on a service or product to evaluate the performance with the results. Customers can express their self-imagination and expectations of Company X services and products, which can help further design the process of service and product. This situation can be considered as a co-designing process. In the same way, they can act as co-developers also. Similarly, implementation and marketing are also possible with the same collaborative activities with customers. A strong co-creation process can be visible with active customers in such a way.

These are the values that can be shared for the co-creation process. These values are integrated to make the value orientation. In the integration process of the value co-creation value capabilities and value outcomes are also developed.

All the factors have been illustrated in the literature review used to develop the research framework. The author will attempt to answer the research questions of this thesis following this theoretical framework after the data analysis achieved from the research methods conducted in this thesis.

### 3 Research Methodology

#### 3.1 Research Design

The overall strategy of research is referred to as the research design utilized to carry out research that identifies a logical and succinct plan to tackle established research question(s) through the collection, interpretation, analysis, and discussion of data. When the objective of the thesis study is set, then the further important step is to decide the best-suited research design according to the research objective.

An exploratory research design is more unstructured and also informal as compared with the other two types of research design. Specially to explore the situation in any unfamiliar territory this research design is used. An exploratory design is useful in achieving background information and deciding about upcoming research approaches. In this research design, there is the possibility to generate more questions, which need to be tackled with other research designs (Khan, 2022).

On the other hand, to describe the characteristics of the market or respondents' a descriptive research design is employed. It normally generates quantitative information. Therefore, such a design would often involve surveys. Surveys are useful to measure the descriptive numbers relating to respondents' age groups, income levels, expenditure patterns, and even attitudes. Employing relevant scales can be a way (Khan, 2022). This research design is used to prove any hypothesis.

The rest category is the experimental research design, which depends on the variables. It normally identifies the covariation of two variables. It is also called causal research design. It is also highly rigid and structured like descriptive research. It is also used when to find the answer to 'why' in a context and during experimental designs to test casual relationships.

Considering all the research designs, this thesis study will follow the exploratory research design according to the objective as the research is done in an unfamiliar situation. The research has been done in this thesis based on the data analyzed with Company X. Before doing the analysis, the territory is unknown by the author.

### 3.2 Research Approach

The procedure selected by the author to collect, analyze, and interpret data is called a research approach. There are three approaches to research: quantitative, qualitative, and mixed methods (Budert-Waltz, 2023). Before selecting the approach for this thesis study, it is required to discuss all the approaches used for scientific research.

Quantitative research is the collection and analysis of numerical data to describe, explain, predict, or control phenomena of interest. The analysis of numerical data must be addressed systemically, and it is also complex. Quantitative research uses deductive reasoning (Budert-Waltz, 2023).

Qualitative research is the collection, analysis, and interpretation of comprehensive narrative and visual data to gain insights into a particular phenomenon of interest. Qualitative research can be characterized as the simultaneous study of many aspects of a phenomenon and the attempt to study things as they exist naturally (Bhandari, 2020). Qualitative research normally involves collecting and analyzing non-numerical data (e.g., text, video, or audio) for understanding the concepts, opinions, or experiences. It can also be used to gather in-depth insights into a problem or generate new ideas for research. In qualitative research, the author's personal experience is at the core of making sense of the data, which is a normal and active reflexivity process. It places immense value on spotting, deciphering, and understanding qualitative data trends. Qualitative data can be viewed in a particular way with this analysis (Bhandari, 2020). It is normally used to find common themes, repeated ideas, topics, or ways of putting things and to refer to a collection of texts, such as an interview or a collection of transcripts (Villegas, 2023). This approach uses normally inductive reasoning (Budert-Waltz, 2023). However, depending on the types of research problems, other reasoning can also be used in qualitative research.

Mixed methods research combines quantitative and qualitative approaches by including both kinds of data in a single study. Mixed methods research allows the author to build on the relationship and strength that exists between quantitative and qualitative research approaches. This allows for the phenomenon that is being researched to be better understood (Budert-Waltz, 2023).

After the analysis and discussion of all the approaches, this study will follow a qualitative research approach. This research will be done based on the opinions, and thoughts of the people from Company X, which play the role of data of this thesis to analyze further. After that, data analysis

will be done preparing the themes. Another reason can be mentioned that there is no quantifiable data in this study. These are the reasons for choosing the qualitative approach.

### 3.3 Research Reasoning

Reasoning in research is the process of using existing knowledge to conclude, make predictions, or construct explanations. There are three methods of reasoning, namely inductive, deductive, and abductive approaches.

Inductive reasoning starts with precise, focused observations before moving on to a generalized conclusion that is likely but not certain in light of the accumulated data. The inductive technique is widely used in science to gather data, look for patterns, and develop a hypothesis or explanation to explain what is observed (Butte College, 2019). An inductive research approach begins by collecting data that is relevant to the topic of interest. Once a substantial amount of data has been collected, the author will then take a breather from data collection, stepping back to get a bird's eye view of the data (Sheppard, 2020).

Deductive reasoning is a type of reasoning where a general rule is first asserted. From then, this reasoning continues to a certain, precise conclusion. Deductive reasoning proceeds from the broad principle to the particular application: If the initial claims are true, then the conclusion must likewise be true in deductive reasoning (Butte College, 2019). Researchers taking a deductive approach take the steps described for inductive research and reverse their order. They start with a social theory that they find compelling and then test its implications with data, i.e., they move from a more general level to a more specific one. A deductive research approach is one that people typically associate with scientific investigation (Sheppard, 2020).

Apart from all these two reasonings, the other reasoning is called abductive reasoning. Abductive reasoning usually starts with a partial set of observations and moves on to the most likely explanation for the observations. Abductive reasoning produces the type of day-to-day decision-making that makes the best use of the knowledge available, which is frequently insufficient (Butte College, 2019). The abductive analysis starts following a theory or model and finally, it ends with a new concept developed with the analysis of the data collected from the research method. This study will follow abductive reasoning since it will start with the literature review. The base of the research is the existing models or concepts. Then following the research objectives, the ultimate result is a new model or research framework.

### 3.4 Research Strategy

According to (Yin, 1994), there are five types of research strategies,

1. Case study
2. Qualitative interviews
3. Action-oriented research
4. Survey research
5. Experimental research strategy

Case studies are used to focus on a specific case or small single group by in-depth investigation. The qualitative interview strategy allows for gathering rich data through different types of interview techniques. Action research is used for practical research. The quantitative survey was used for gathering data from a high number of respondents. Experimental strategy referred to the exercise of finding a cause-effect relationship between two or more variables.

To choose the best research strategy, which is matched with the research problems, it needs to define the types of research questions.

If we go through the questions and strategies of this thesis, the best matching strategy of this thesis is qualitative interviews. This research will be conducted based on the results of the interview technique since other strategies are not suitable for the research problem of this thesis based on their definitions. The author will look at the strengths and advantages of gathering data using the interview technique.

### 3.5 Data Collection Method

The author explains in this section the way of collecting the data in this study and what kind of method is used.

### 3.5.1 Types of Data Collected

Data can be defined as facts, statistics, and information that have been gathered concerning a certain study. Data collection is essential for research because it forms the basis of the entire study (Adams et al., 2007). Data for research can be collected in two ways; primary and secondary data (Wiersma, 2005). Primary data are those that a researcher collects from the target population. It is stated (Malhotra, 2007) that “primary data is data originated by the researcher for the specific purpose of addressing the research problem”. On the other hand, secondary data are those that are collected from existing literature. “Data that are data collected for some purpose other than the problem at hand” (Malhotra, 2007). Following the definitions, both primary and secondary data have been used in this thesis study. Primary data was collected through qualitative interviews and survey questionnaires. And secondary data has been obtained from various articles, scientific journals, direct websites, etc for this study.

### 3.5.2 Developing Interview Themes and Package

There are several interview techniques used in qualitative interviews to conduct qualitative research. It depends on the nature of the questions and the samples studied.

Structured interviews are interviews where the questions are asked in a preset order and format for each participant. In quantitative research, structured interviews are frequently used to make sure that all participants are given the same questions in the same way, enabling more reliable comparisons across responses. (Crinson & Leontowitsch, 2006).

Semi-structured interviews can be illustrated by topic guides with significant questions that are used consistently in each interview, although the order of the questions and the extent of the interviewers digging for information can vary (Crinson & Leontowitsch, 2006). This technique is suitable if the researcher has some idea of possible consequences with the samples based on the research topic. In a semi-structured interview, the questions are placed as open-ended as possible to avoid direct answers with yes/no or any concrete opinion which is set earlier.

Narrative interviews are done with the interviewer's guidance. The respondent can narrate their own stories in their terms during an unstructured interview (Crinson & Leontowitsch, 2006). It can be summarized that the goal of an unstructured interview is to "elicit rich, descriptive resources that can be used in qualitative analysis."

In the case of in-depth interviews, the goal is to gain a richer, more in-depth grasp of the subject under discussion. It typically includes an ethnographic approach and is a supplement to approaches like participant observation or action research (Crinson & Leontowitsch, 2006). In-depth interviews help the researcher to look deeply into a participant's experience, behaviors, feelings, and/or attitudes to uncover underlying concepts that are then analyzed to produce an idea about the research issue. Normally in-depth interviews are more structured than narrative interviews since the discussion topics are directed by the researcher, and these are free from the involvement of any stories or life histories.

Another interview technique is a group interview which is conducted with multiple interviewees or informants at the same time. It is often used in qualitative research and can be structured or unstructured.

Considering the above discussions of all the interview techniques, it is found that a semi-structured interview technique can be considered in this study. In this kind of interview, the expectation is to be heard based on a particular topic. However, the questions are normally open-ended, and the same way or same order is not maintained for every respondent (Blackstone, 2012). All these situations are parallelized with the condition of this thesis. In this case, the conversation is guided by the author carrying a goal in mind of gathering information from a respondent (Blackstone, 2012).

An interview guide is a list of topics or questions which are aimed to cover during an interview. Although it is used to guide the entire interview process, it is not like a stone. There is no concrete binding to accomplish everything in the list or even the exact order. Perhaps there might be new events coming up that force one to rearrange the entire schedule. In the qualitative interview technique, the main task is to prepare this interview guide. The interview guide should be developed following the issues which are felt to be important. However, because participants are asked to talk freely and give their answers in their words raising the points, which they think are important, each interview flows a little differently (Blackstone, 2012). In this research, an interview guide was provided based on above principles a week before the commencement of the interview.

Following the literature review, the interview themes have been developed. Based on these themes interview questions have been prepared. So, in this work, interview questions have been considered in the interview guide. Also, in this guide, key theories and models, also terminologies specific to the research were introduced. This is important since many of the interviewees

are not from a business background. This thesis is a collaborative research work along with other project work of Kajaani University of Applied Science (KAMK) also with Company X. Therefore, A bunch of collaborative research questions were prepared. The interview was done with 11 questions. The questions are shown in the Appendix.

### 3.5.3 Research Samples

A research sample refers to "the group of individuals who participate in a study and from whom data are collected" based on the Publication Manual of the American Psychological Association (7th edition) (APA, 2020). A research sample is a portion of the target population that is chosen for a study. To enable the generalization of the study's findings to a larger community, sampling aims to collect a sample of people who are representative of the population. The sample size, or total number of participants, is determined by several variables, including the study topic, the degree of precision required, and the resources at hand.

The interview session has been taken with a group of dedicated service specialists from different departments as samples. The informants are identified by the commissioner, and they participated in the interview process voluntarily. There were 16 interview sessions. In total, 17 key people from the company were interviewed. A list of the informants with other details is shown in Table 2.

| Informant | Position                                                   | Working region | Work experience |
|-----------|------------------------------------------------------------|----------------|-----------------|
| 01        | Business Manager                                           | North America  | 23              |
| 02        | Country manager, regional sales manager, operation manager | Thailand       | 14              |
| 03        | Business & Service Manager                                 | Finland        | 37              |
| 04        | Service Manager                                            | Portugal       | 8               |
| 05        | Business Manager                                           | Finland        | 24              |
| 06        | Service Manager                                            | Austria        | 25              |
| 07        | Service Manager                                            | Finland        | 29              |
| 08        | Product Manager                                            | Finland        | 25              |
| 09        | Both in service and sales                                  | China          | 12              |
| 10        | Sales Manager                                              | Finland        | 10              |

|    |                  |         |    |
|----|------------------|---------|----|
| 11 | Sales Manager    | Finland | 8  |
| 12 | Business Manager | Finland | 22 |
| 13 | Service Engineer | Poland  | 5  |
| 14 | Product Manager  | Finland | 1  |
| 15 | Service Manager  | Finland | 23 |
| 16 | Service Manager  | Brazil  | 1  |
| 17 | Service Manager  | Brazil  | 21 |

Table 2: List of informants for the interview process

The informants are selected covering a good range of variations in responsibilities and working regions. The work experience has also been maintained in a good distribution. Therefore, with these variations, data had some different dimensions to analyze as well as a saturation point can also be achieved.

#### 3.5.4 Interview Data Collection

To get the story behind the participants' experiences, it is particularly useful to conduct the interview. In-depth information about a topic can be pursued by the interviewer (Management Library, 2022). Before starting the interview questions and the interview process, the problems and needs need to be articulated, which are to be addressed using information gathered by the interviewer. This helps to have a clear focus on the intent of each question (Management Library, 2022). To conduct the interview the following preparations have been taken,

1. The author made sure that there was no distraction during the interview. The interview process was smooth with full attention to focus on the important discussion necessary for the research study.
2. The interview's purpose was clearly explained to the informants. If the interviewee is not aware enough of the purpose of the interview, then the answers would not be purposeful for the research. In that case, the entire interview process would go in vain.
3. The terms of confidentiality were addressed at the same time to the interviewees. This is important to make the interviewee free from any confusion and rigidity.

4. An explanation of the interview format was also a part of the interview process so that the interviewee can be well prepared in advance.
5. The interview duration was mentioned before starting the interview process. The interview process in this research indicated a specific time duration for each question. It was required to cover all the questions within the determined time frame for the entire interview process.
6. The author explained to the interviewee the way to get in touch after the interview process. It was required to have further communication in case of any questions or clarification after the interview.
7. After that, the author asked the interviewee any questions or clarification needed.
8. In the end, the author asked for permission to record the interview, which is required for analysis purposes later.

These steps are visualized in Figure 8.

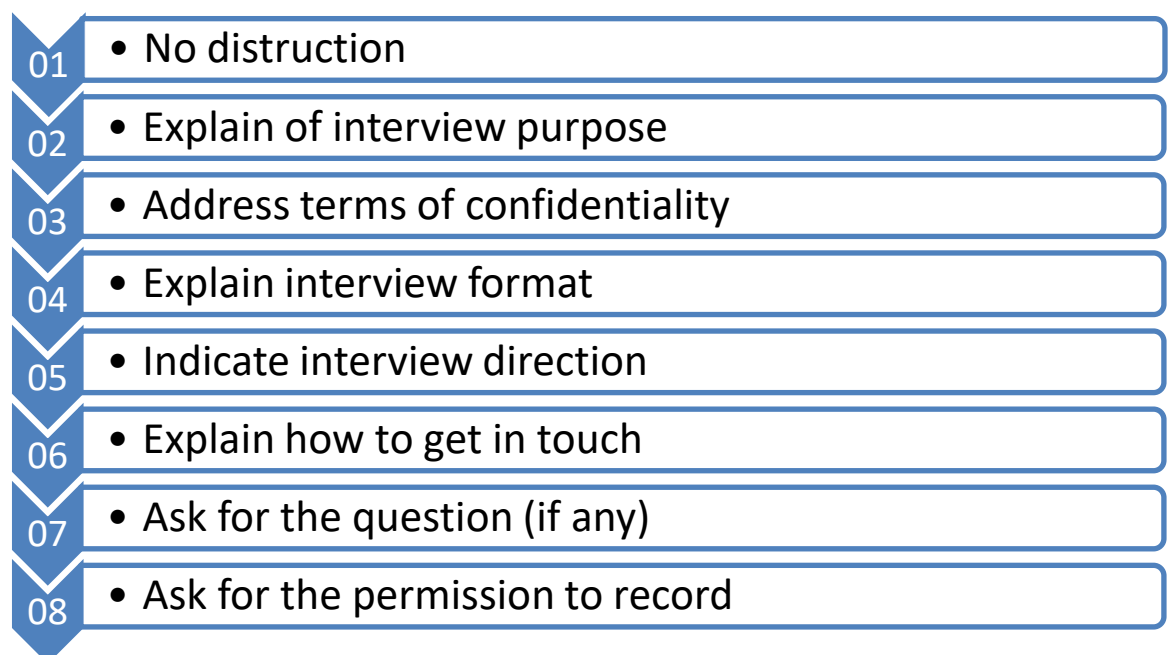


Figure 8: Preparation for interview (Management Library, 2022)

A well-structured interview package and themes were already developed, which were explained. After preparing the interview package, it is focused on conducting the interview. Conducting the interview should follow some steps. Each interview was approximately 90 mins long. The

interviews were done via Microsoft Teams, which were recorded for transcription purposes. With these transcriptions, further data analysis is carried out. Each question has a specific time limit, which can guide the interview process to cover all the questions within the entire time limit. Before going to the questions, all participants were asked to give a short introduction of themselves. During conducting the interview, below points were considered,

1. Check if the recording is running well without any issue.
2. Ask one question at a time, so that the informant can focus on the answers specifically.
3. To remain neutral, so that the interviewee would not be biased in answering the questions.
4. Any responses are to be encouraged so that the interviewee would be motivated enough to cooperate in the interview process.
5. Be careful to take notes.
6. To provide a transition between topics, so that there is a breathing space between questions to think about and answer well.
7. Don't lose control of the interview. This is the most important fact in the interview process to make the interview successful for the research.

Figure 9 shows these steps in conducting the interview.

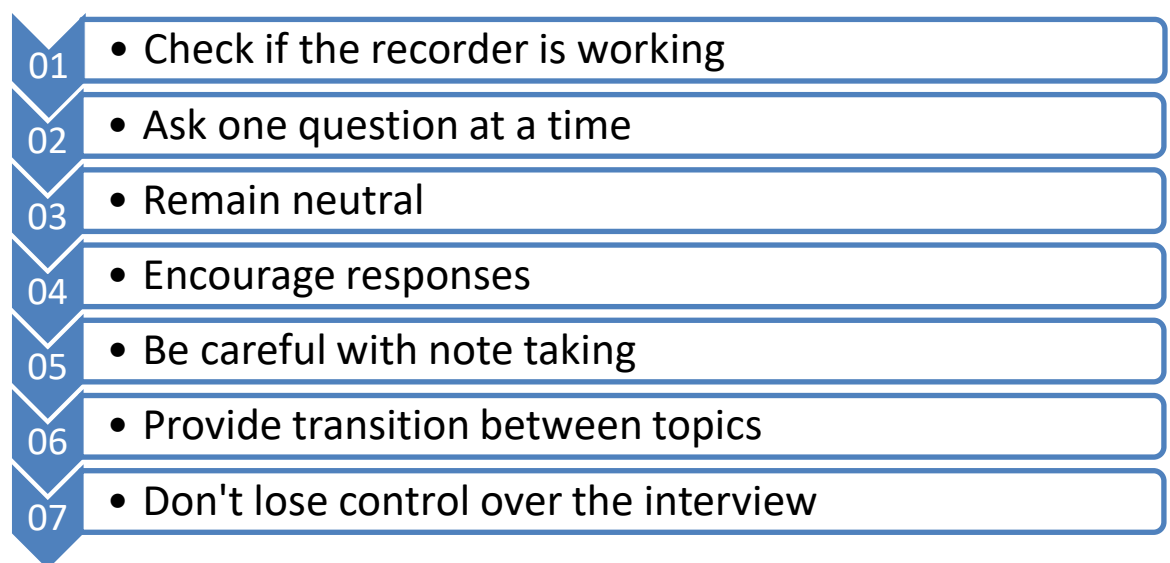


Figure 9: Conducting the interview process (Management Library, 2022)

### 3.6 Interview Data Analysis

Coding is a process to organize feedback from an interview. Coding typically starts in general as a preset schema. In another way, coding is called the process of organizing and labeling qualitative data to identify the relationships and different themes between them. To become proficient at doing qualitative analysis, one needs to learn code well and easily. “The excellence of the research rests in large part on the excellence of the coding” (Strauss, 1987). In most cases, a code in qualitative inquiry is often a short phrase a word that symbolically assigns a salient, summative, essence-capturing, and/or evocative attribute for a portion of language-based or visual data (Saldaña, 2013).

#### 3.6.1 Conducting Thematic Analysis

In this study, thematic analysis is done with the interview data. Thematic analysis is a method for systematically identifying, organizing, and offering insight into patterns of meaning (themes) across a data set (Braun & Clarke, 2012). According to the earlier article on thematic analysis, there is an approach based on six phases studied to conduct the thematic analysis (Braun & Clarke, 2012). The phases in the Six-Phase approach are as follows,

1. Familiarizing with the data

This phase is done by reading and rereading the textual data from the transcript of any interview or responses to any survey and by listening to or watching the interview recording. This step is very important to continue the further steps of the analysis. In this study, data familiarization is done by reading the interview transcript to do a thematic analysis.

2. Generating initial codes

This phase is started with the systematic analysis of data by coding, where codes are used to build the main structure of the analysis. The analysis is normally done by following the themes and the themes are built based on the literature. In this study, codes are generated by spreadsheet analysis using Microsoft Excel, those are following the research questions. Before generating the codes, different keywords are highlighted in the transcripts in a scattered way.

3. Searching for themes

The analysis started to take a new shape in this phase, as the author moves from codes to themes. A theme “captures something important about the data concerning the research question and represents some level of patterned response or meaning within the data set” (Braun & Clarke, 2012). It is a more active process to develop or create themes than it is to discover them, and since theme searching is an active process, the author generates or constructs themes. In this study, the author developed the themes based on the codes highlighted in the transcript. Each theme has been developed from each question, where the answers cover a specific topic for the research. These themes follow the research questions and help to demonstrate the proposed co-creation model of Company X.

#### 4. Reviewing potential themes

During this stage, an iterative procedure is carried out, during which the developing themes are examined concerning the coded data as well as the entire data set. Checking the workmanship of the item is the primary focus of this stage. It is especially necessary for inexperienced researchers as well as those dealing with very big data sets, as it is simply impossible to keep a whole data set in one's head when working with such a vast set of data. In this thesis, the author reviewed and checked the themes based on the data fragments that have been compiled and explored whether the theme works concerning the data. This review is done mainly focusing on research questions. (Braun & Clarke, 2012).

#### 5. Defining and naming themes

The statements of themes are required to be unique and differ from other themes. In this phase, this requirement is checked and defined. The themes are named uniquely for easy identification. A good thematic analysis should have the themes with below properties (Braun & Clarke, 2012)

–

- To avoid taking on too much, each theme should ideally have a distinct concentration of attention.
- These are connected, but they do not overlap with one another; therefore, they are not redundant, although they may expand on prior themes.
- To directly address the research questions

Considering all these facts, the author developed the themes to analyze further the research process.

## 6. Producing the report

This is the final phase of the analysis, where the production of the report is done. It is the entire process of analysis rather than just the start of any specific phase. In this thesis, the author illustrates the current model of Company X based on their existing way of working. Then the research framework for value co-creation has been proposed. The co-creation model was validated through a questionnaire survey, where the responses to the questions by the respondents are analyzed. At the end of the report, a minor correction was made in the proposed framework and then the updated co-creation model was proposed as the outcome of the analysis. (Braun & Clarke, 2012).

### 3.6.2 Reason for Using Thematic Analysis

Thematic analysis is a useful method for generating people's perspectives, knowledge, and experiences, as well as for determining what people think and believe. The creation of values from a set of perspective data, such as interviews, transcripts, social media profiles, or different types of surveys, is another useful application of this method. The data must first be gathered from the relevant participants in the qualitative research, and then it must be examined before the answers to the qualitative research questions can be found. This kind of data analysis also has versatility when it comes to understanding the data, especially when working with big data sets. For example, it can readily organize data into broad themes. Since the interview answers are so scattered and individual. Therefore, flexibility is required while doing the analysis. For this reason, thematic analysis has been chosen, since the two main reasons to use thematic analysis are accessibility and flexibility. (Braun & Clarke, 2012).

Although thematic analysis is a good match with this research, however, because this method is frequently subjective and depends on the expert opinion of the researcher, it also carries with it the possibility of overlooking complexities present in the data. Because of this, it is extremely important to maintain control over the author's perceptions while working with raw data.

### 3.6.3 Data Analysis Tool

The data of this thesis study is the interview transcript. All the interviews conducted with the interviewees are transcribed through Microsoft Teams. These transcriptions are analyzed thematically. In this analysis, spreadsheet analysis has been done with the transcriptions using Microsoft Excel. The interviewees are named as Informant 01, Informant 02, Informant 03.... Rather than using their names, since the research information is a confidential part of company X.

### 3.7 Validity and Reliability

Validity and reliability are the concepts of the accuracy of research. The quality of the research is defined by them (Heale & Twycross, 2015). Validity is a criterion to indicate the accuracy level of the acquired information and its relevance to the research topic (Ghauri & Grønhaug, 2005). The base of the thesis is the earlier valid research works and the interview process. The interview data was reviewed by the commissioner and the thesis supervisor. The interview guide was also reviewed by the commissioner before circulation to ensure all essential explanations and terminologies were covered. They are tested and piloted before further interviewees were conducted. The interview process is done with the participants directly using online communication tools. Hence, the data collected in the research method is accurate and correct. Therefore, the author ensures the validity of the research strongly, since the entire research has been carried out by the author with the help of the participants of the interview and the collection of valid literature. Hence, this thesis is reliable for any further research activity.

### 3.8 Ethical Consideration

The interview guide contained ethical consideration, which is shown in the appendices. This interview guide was sent to the informants by e-mail before conducting the interview. In qualitative research privacy, concerns regarding reproducibility and the quality of the research are termed ethical considerations (Statistics Authority, 2022). The extensive nature of the research process has special relevance for ethical issues (Mohd Arifin, 2018). This study was based on the voluntary participation of the samples targeted for this research. However, considering the organizational benefit they were encouraged to take part in the study. The interviewees consented and

participated voluntarily. They were informed the sessions will be recorded before recordings started. A confidentiality agreement was signed before the research. The responses were kept anonymous during the interviews and were only identified as Informant 01 to Informant 17. The interviews were conducted based on the flexible schedule of the interviewees. The protocol to handle data collected was also discussed and pre-agreed with the commissioner so that they will be kept for an agreed period after the thesis completion, and all materials collected for this research would be destroyed after that safekeeping period.

## 4 Findings and Analysis

As already mentioned in Chapter 3 that thematic analysis is done with the data synthesized from the interview in this study. With the synchronization of the pieces of literature and the themes achieved from interview data, the research problems are addressed, and the research questions are answered very carefully and sensibly. Since all the questions are not directly relevant to this study, analysis was not done for all the questions. Questions 01, 07, 08, 09, 10, and 11 were considered in this study for analysis.

For thematic analysis, the main task is to develop the theme. To find themes, it is also done to look for patterns in the meaning of the data. Following the six-phase approach of thematic analysis, themes were developed based on the answers to each interview question. Below are themes considered for the analysis process:

1. Importance of service as part of a physical product.
2. Interaction process and activities between customers and suppliers.
3. Customer-centricity mindset and current practices.
4. Suppliers' and customers' roles or activities in collaboration.
5. Development suggestions for sustainability.

The analysis chart is presented in detail in the appendices. Code has been generated from the extracted data of the interview transcription of each informant. Following the codes, themes are developed to conduct thematic analysis. The results are outlined based on this analysis of determined facts that give the solution to the research questions.

### 4.1 Importance of services of a product

After analyzing the interview transcriptions, it is found that service and product both are considered equally important. The informants responded more with the neutral decision. Therefore, services are getting important along with products. In this way, it can be stated that there should be a co-creation process for both service and product development based on the feedback from the informants.

According to Informant 01,

*“...I would say from my point of view that that service is very important for our product, but I couldn't say that it's more important, that the product may be marginally more important because the thing is that if the products are not service properly...”*

There was a comment regarding the importance of service directly from the respondent.

According to Informant 16,

*“...We are also involved as a service organization in the initial phases of the project. We have now some hot cases for clapping in which they are discussing the mill capacity, the capacity of the machines and we are also including ourselves capability...”*

The overview of the responses in the interview in this regard is shown in Figure 10. The process should contain the scope for both product and service development with collaborative activities with customers.

| Services are marginally important                                                                                                                                                                                                                                                                                        | Neutral                                                                                                                                                                                                                                                                       | Products are marginally important                                                                                                                                                                                                                                                                                                                                                            |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>• <b>4/17</b> informants</li> <li>• Region specifics (service value in China vs. more service concerning a product itself)</li> <li>• Customer's technology/digitalisation advance level</li> <li>• Products can't deliver value without being serviced (in long term)</li> </ul> | <ul style="list-style-type: none"> <li>• <b>9/17</b> informants</li> <li>• "Product must work &amp; service must work"</li> <li>• Organisational structure (service and product groups, own KPIs)</li> <li>• Subjective to the interviewee's position in a company</li> </ul> | <ul style="list-style-type: none"> <li>• <b>4/17</b> informant</li> <li>• Historical reasons</li> <li>• KPIs are set for products</li> <li>• High reliability on product performance</li> <li>• Gradual change towards service-centricity</li> <li>• "Product has to perform and have a solid design platform with very little room for error. People are allowed room for error"</li> </ul> |

Figure 10: Products vs. Services

## 4.2 Interaction Process

Different findings were observed for the tools used mainly in Company X in the customer relationship, service management, etc. through thematic analysis. Following the expectations

illustrated from the interview data, it can be mentioned that these tools cannot fully support co-creation. Therefore, something needs to be implemented newly to fulfill the expectations. However, as per information gathered from the interview, a new tool is under development, which can cover all the requirements. It is recommended by the informant to have a tool with better synchronization of data from different departments, better categorized. There is a recommendation to have a single platform or system instead of multiple systems that are not connected. This tool should be easily accessible to customers which are easy to use with user-friendly interface.

According to Informant 01,

*"...I think we need to develop a standalone customer system with manuals with videos, things like that. We can share the information we want, which is going to help service people. You don't give them all the information, but you give them enough. A little tutorial to do basic things, especially if you're as part of the service and service could manage that, in the sense that they give them what they want. So, it doesn't interfere with what we're trying to do, but it can help the customer a little bit. So, I don't think we do very well with our internal systems helping the customer in the service aspect..."*

*...To manage a type of communication platform with the customer and that will allow them to do basic things, basic service things, especially when a service person can't be on-site...."*

Therefore, customer involvement is expected by the informants. The system needs to be updated regularly with all the information based on the current situation of global business.

According to Informant 03,

*"...it should be created in an easy way so that it's up-to-date information all the time available. In principle, it should be in the CoMPass system. And this CoMPass system is getting information from M-files. That's the way how it is it is planned and designed to be running but the basement information in M-files it's not available from some countries and then those countries, from where it's available may be not up to date...."*

According to Informant 12,

*"...also we need to develop our tools to provide the data of devices, use the digitalization tools basically. This fleet management type of tool provides data to our service, and which is then guiding the service to do the right things for the right customers, for the right products at the*

*right time. That's the way to kind of change our things to be reactive because they cannot be reactive..."*

Therefore, the development of existing processes and a user-friendly platform interface is required to support and encourage customer interaction.

#### 4.3 Customer Centricity Mindset

Frontline employees from Company X have a customer-centricity mindset. In their current practice, employees have the awareness to document the issues for follow-up. They have an awareness regarding customer centricity. This has been extracted after analyzing the feedback on the interview question. The employees are also attending the different training programs, which is focusing on customer centricity. Customers are being considered as the strategic partner of Company X. Currently, interaction is happening with customers.

According to Informant 04,

*"...A portal and that where the customer is communicating through this portal and getting somebody online. I would say that it can help and support, but it should not be the only other direction. So, I see this internal system more as a tool to really improve our way to serve our customer-centric relationship to get more data to do the things our process a little bit better. But I still believe that we should have somebody local. There is a disconnection between Valmet and the customer. We still need to have some somebody some face behind the systems..."*

The measurement service of Company X was created with a reactive approach based on customer demand. That means, there are opportunities for proactive co-creation of services. This is also found after thematic analysis of interview data. Here some expectations are found as follows:

- More resources are expected to be proactive, which is the required approach.
- Better synchronization among different countries is demanding.
- Real-time updates from the devices.
- A common tool with all departments.
- Better synchronization with the sales and operation phase.

- To perform periodic audit
- Create room to pay attention to the pro-activity with customers.
- Regular meetings and better communication with the customers.
- To support regular meetings with customers (visits, calls)

All these facts point to the interaction with customers on a common collaborative platform. From all kinds of findings, a scattered situation is visible among different levels of employees and groups. Therefore, a co-creation process would be the way out of this situation, where the customers could be at the same interaction point.

#### 4.4 Collaborative Activities

Common feedback has been received in thematic analysis that there is no joint creation effort of Company X with the customer. There are opportunities for proactive interactions leading to solutions cocreation, brand engagement, and commitment to service usage. Very good communication and decentralization are recommended by the informants. A requirement of systematic approach to getting customer involvement is also recommended.

According to Informant 02,

*“...I think that areas are not that much involved in that co-creation process today. I'm not talking only about myself. I'm talking in general and if we are there on the field with the customer, I think we would be heard as may be a little bit more systematically...”*

Through the analysis, it was established that there are several ways in different directions to be sustainable in a competitive edge. According to the interview data analysis, different co-activities with customers were strongly recommended at different levels of the organization. Therefore, different types of collaborative activities could take place between suppliers and customers as their roles in the collaboration. The suppliers' role was justified by the informant. However significant improvements were needed in service, which indicated the necessity of the feedback from customers to identify the area to do so.

According to Informant 01,

*"...I mean right now the only work around is sending us an e-mail. That's it. And we can develop some tools, Excel files and calibration tools and things like that. Absolutely. But it's an e-mail to say, here's a link to a video I have. Go ahead and do this. And so on. I mean, I think there's a huge opportunity for service to serve. To manage some types of communication platforms with the customer and that will allow them to do basic things, basic service things, especially when a service person can't be on site..."*

There were not so many activities found by customers based on the feedback from the informants during the interview session.

According to Informant 07,

*"...may be some of our R&D phases are done only inside the company but of course we need, we need Customer Feedback. In different phases, we are going in the right direction in the development phase. So sometimes there is also customer interaction needed..."*

#### 4.5 Development Suggestions

During the interview process, several development suggestions were obtained from the informants in different dimensions like process control, maintenance program, training program, ease of access by the customers to the system, and proactive thinking of the employee of Company X. These suggestions focused on the integration of the collaboration.

According to Informant 16,

*"...which is this case, then we figure out that this customer can address this product, that's a perfect match. But we have the other case when customers bring to us some new idea..."*

To be sustainable, an online diagnostic of the products is required, which was also mentioned by the informant as a suggestion.

According to Informant 06,

*"...my opinion is still that we need this kind of online diagnostic and online feedback in the cloud form and that would be a competitive edge. So, as soon as a product is switched on, the customer should clearly know the health status and we should clearly know the health status. And that would help us and the customer and that is then also a competitive edge against other*

*ones. Again, like in the car industry, so diagnostic is sent per minute with these new cars to the head office or the maintenance head office. And that is what I expect also in the future from our products, but it needs to be as simple as possible. That means you switch it on, you press one button and then for the customer and us all information is available...”*

The training program was recommended by the informant to improve the service and the interaction with customers, which indicated the approach of customer centricity.

According to Informant 16,

*“... we’re trying also to talk with our team and provide them training for that as well. But we have not started with training yet. We are about to search for important training for this service mindset to them...”*

Proactivity was mentioned strongly by the informant, which is required to be sustainable in a competitive edge.

According to Informant 07,

*“...but now we want more proactively doable that we will get information about these evolving issues which are not affecting any harm yet but would create harm if we are not doing something in a few days. So that's the way, how to do more proactively. But then of course, this kind of life cycle management is one thing working proactively not only for maintenance purposes but also proactively informing the customer or communicating with the customer if there is some part of the product or equipment which is coming to be obsolete. So that we have enough time to upgrade these parts of equipment early enough...”*

Thematic analysis shows a requirement for the implementation of collaboration with customers. This implementation means the integration of data from customers by involving customers through continuous interactions in different phases of the process and value-creation activities to achieve value co-creation.

## 5 Discussions and Recommendations

Based on the findings and analysis achieved from the thematic analysis, key factors to solve the research problem were addressed. Accordingly, strategic partners were determined for Company X. In the current situation, the supplier, which is Company X in this case, is acting individually without customer engagement. In the proposed model, customers are recommended to be the strategic partners along with suppliers. Currently, Company X is using M-files and CoMPass for generating service reports and sales updates. However, these are not enough for the collaboration. Salesforce is under development. Based on the expectations of the informants, this might be helpful for customer interaction as well as the proposed model for value co-creation. Currently, customer interaction was not visible enough according to the informants of the interview process. Hence, in the proposed model, continuous interaction by customers was considered. In the current situation, there was no joint creation effort found based on the interview feedback. Therefore, in the proposed model, different types of activities by customers are recommended for collaboration. The standing of the key factors is shown in Table 3.

| Key Factors        | Current situation                                                                    | Proposed model                                                                                               |
|--------------------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| Strategic partners | Currently, only suppliers act as strategic partners, customers are not active enough | Along with suppliers, customers are recommended to be the strategic partners                                 |
| Processes          | Currently, M-files and CoMPass are used                                              | Salesforce is under development, which might have the features necessary for the co-creation model developed |
| Interactions       | Customer interaction is not visible enough                                           | The proposed model is based on customer interaction                                                          |
| Activities         | No joint creation effort by customers                                                | Different types of activities by customers for collaboration                                                 |

Table 3: Standing of the key factors to solve the research problem

The discussion on the key factors as well as thematic analysis helped to draw a picture of the existing working model of Company X. This analysis then showed the way to propose the value co-creation framework.

Considering the findings and feedback from the interviews, it was stated that currently Company X and their customers are working strategically in separate domains. Since no joint creation activity or joint effort is visible based on the comments from the informants, there is no joint domain

found between them. Company X is working in two segments named sales team and service team. It can be shown based on the current roles and activities. Company X's sales team, Company X's service team, and customers all are working in different domains, and entire interactions are happening separately with customers. The current model can be found in Figure 11.

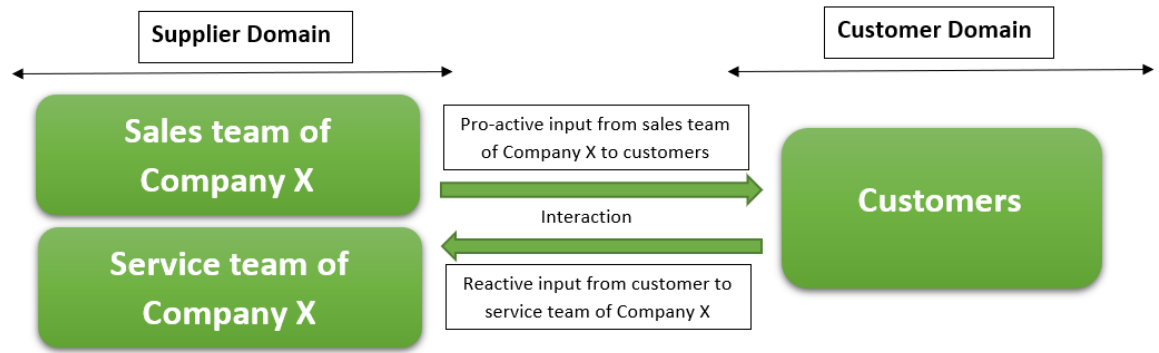
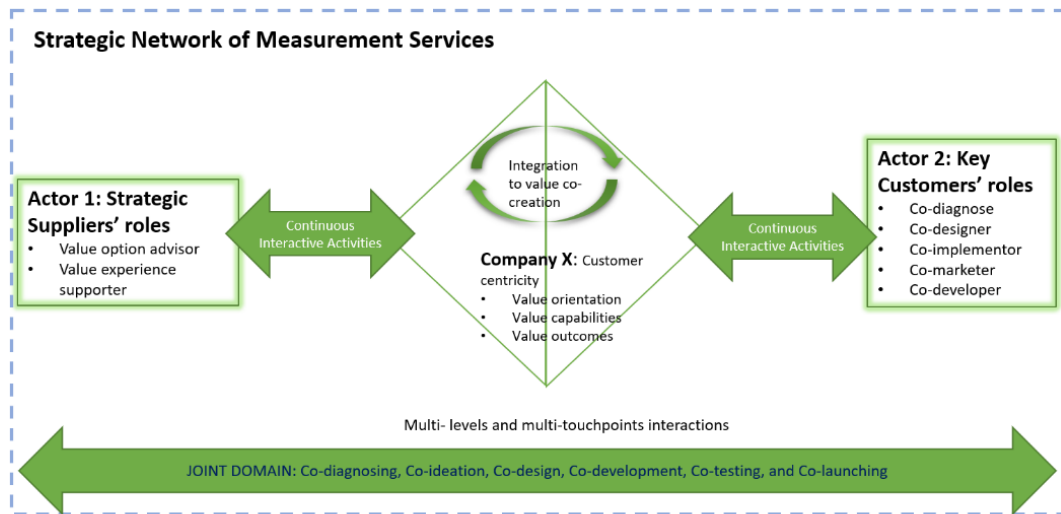


Figure 11: Current model of Company X (self-elaboration)

After considering the current situation, a recommendation was made following the discussion on the key factors. The proposed research framework of the Company X measurement service was developed based on a thematic analysis of the interview feedback. The recommendation was verified through the workshop and a questionnaire survey, which was done with the informants of Company X. The overall findings of the interview process were discussed with them. This workshop was arranged remotely via Microsoft Teams. All the questions in the survey which are relevant to this thesis are shown in the appendices.

Following the questionnaire survey, the key factors of the recommended model were verified by the informants. As different types of activities by customers, co-producer was also considered initially. However, this activity was not recommended by the informants in the questionnaire survey. Accordingly, the recommended model of this thesis was updated and finalized as shown in Figure 12

## Proposed Co-creation Framework of Company X



Source: Adapted from Aarikka-Stenroos, 2012, Marcos-Cuevas et al., 2016 and Jaakkola, 2013

Figure 12: Proposed value co-creation model of Company X based on a questionnaire survey (self-elaboration)

## 6 Conclusion

A distinct requirement of a co-creation perspective for sustainability was established in Company X's measurement services. Focusing on this point, a successful study was accomplished and clear directions were made to develop the co-creation model. Through thematic analysis of the interviews, the existing scenario of the company was raised in front of eyes in different levels of activities and different working areas. Simultaneously, a few observations were also marked to be sorted out. The company should go through these observations and work out the expectations to bring perfection to the strategic theme of the company.

The base of the thesis was the earlier valid research works and the interview process. The interview process was done with the participants directly using online communication tools. Also, after the interview process, another questionnaire survey was done to validate the analyzed data from the interview transcript. Based on the interview feedback and responses to the questionnaire survey, the appropriate form of the co-creation model was proposed. Now the company needs to think strategically for the establishment of this model. The current model of the services was also shown in the study. In this way, the research problems are addressed with a solution.

Considering the validity, the author ensured the reliability of the thesis to be used in any further research. Based on the ethical consideration discussed in section 3.8, all the data remained confidential following their policy. The recommended value co-creation model in this research would benefit Company X in achieving a sustainable competitive edge with customer engagement. Since the current model did not show any co-creation model, this research would add value to the business of Company X, which would be the achievement of this thesis.

Finally, to summarize, the research questions were answered in detail through the finding and analysis discussed in Chapter 4. The overall research problem was also sorted out by making the appropriate recommendation. After reporting this thesis study, the company could initiate the development process of the co-creation model, which started with brainstorming and listing the most crucial points to be addressed based on these results. This thesis would also be beneficial for those who want to do further research on a similar topic.

## 7 Limitations and Future Research

To realize this model, proactivity is always carrying the first place in the requirement list. Proactivity requires adequate resources including manpower. Since the existing situation and arrangement of the company is not supportive to develop the suggested model, there are challenges to follow the results after this study. These challenges are not included in the research scope of this study. Further study or research could be carried out to find a feasible way to address these issues.

Since this model has been developed based on Company X, it might not be applicable in general for other companies. However, this will of course provide an impression to develop any similar framework, which can have a good contribution to keep the sustainability in future. There are further research scopes regarding the realization of the proposed value co-creation model in Company X. It can also be tested in different business models so that the proposed value co-creation model in this thesis can be given a general formation to have a versatile utilization.

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## Appendices – 1

### Ethical Consideration in the Interview

## 2. Research Methods

### Interviews

- The researchers will use the in-depth thematic semi-structured interview technique.
- The interviews will be conducted via Microsoft Teams. See **Chapter 4 Interview Arrangement** for the link.
- The interview will take approx. 60-90 minutes.
- The Teams sessions will be recorded. All recordings and transcriptions will be private and confidential. Only the researchers (interviewers) will have access to the recordings.
- A Non-Disclosure Agreement (NDA) has been signed between the researchers and Valmet
- Interviewees' names will not be presented in the report. They will be referred to as Informant 1, Informant 2.... Informant n.

## 4. Interview Arrangement

- The interview contains 10-12 questions (see Table 1 for details) focusing on both scopes
- The interview duration will be approximately 60-90 mins. Kindly *reserve 90 mins* in your calendar.
- Please join the Microsoft Teams meeting through the below link  
[https://teams.microsoft.com/l/meetup-join/19%3ameeting\\_YWJjYTk5N2ltNGFkOS00OGZlWFmYiUtYihhMTdkMTY4Zig0%40thread.v2/0?context=%7b%22Tid%22%3a%225b59d994-1032-4fbc-8705-36544c6e0edb%22%2c%22Oid%22%3a%2221fe0767-90d8-46c9-b421-8e568c01e453%22%7d](https://teams.microsoft.com/l/meetup-join/19%3ameeting_YWJjYTk5N2ltNGFkOS00OGZlWFmYiUtYihhMTdkMTY4Zig0%40thread.v2/0?context=%7b%22Tid%22%3a%225b59d994-1032-4fbc-8705-36544c6e0edb%22%2c%22Oid%22%3a%2221fe0767-90d8-46c9-b421-8e568c01e453%22%7d)
- The interview will be recorded. We appreciate the video camera will be turned on during the session.
- The researchers will contact you via email if clarifications are needed after the interview.

## Appendices – 2

### Interview Questions for Research

|   | Questions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Allocated time |
|---|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
|   | <b>General scope</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                |
| 1 | <p>On a <i>scale of 1 to 10</i>, rate Company X's <b>employees' perception</b> of the importance of products and services offered for the application and measurement equipment.<br/>Provide explanations.</p> <p>Services are perceived as more important than products.<br/> <b>1</b> – service is highly important<br/> <b>5</b> – <i>service is marginally more important</i> than products such as analyzers, applications, and measurement equipment<br/> <b>5.5</b> – Neutral: Products and services are equally important.<br/> Products are perceived as more important than services.<br/> <b>6</b> – <i>product is marginally more important</i> than the service surrounding the products<br/> <b>10</b> – product is highly important</p> | 5 min          |
| 2 | <p>Name 5 key interaction points between Company X and the customer during the operation phase.</p> <p>Why are those interaction points important?</p> <p>Based on these 5 touchpoints, rate the customers' satisfaction for each point. Explain your rating.</p> <p>1 – being least satisfied<br/> 5 – being most satisfied</p>                                                                                                                                                                                                                                                                                                                                                                                                                       | 10 min         |
| 3 | How can Company X get more customer/user insights and feedback to improve customer satisfaction <i>proactively</i> ?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 5 min          |
| 4 | Do you think Company X's employees generally understand the concepts of 'customer-centricity', 'customer-focused', or 'service centric'? Please justify your observations.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 3 min          |
|   | <b>Service design scope</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                |
| 5 | Can you identify the 5 most valued services by customers during the operation phase?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 5 min          |
| 6 | What are the key gaps in Company X's service provision? What can Company X do better in terms of organizational processes, internal systems, strategy, systems, and tools?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 10 min         |

|    | Questions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Allocated time |
|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
| 7  | What is the most efficient way of managing Company X's customer relationship, i.e., is it done by internal systems or other ways? What are the best and worst aspects of current Company X's customer relationships management systems in terms of supporting the introduction and sales of Services? Justify your answer. Feel free to provide ideas to improve or share your practices that overcome the challenges.                                                                    | 5 min          |
| 8  | Are Company X's employees (also employees of authorized agents) with direct or indirect interactions with customers aware of their roles and impact to increase awareness, increase sales, and introduce more services to customers in their capacity?                                                                                                                                                                                                                                    | 3 min          |
|    | <b>Value and service co-creation scope</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                |                |
| 9  | Based on your understanding, how are services created and delivered at the moment? Is this a proactive or reactive approach? Explain the process and the parties involved.<br><br>How can this co-creation process be improved? Explain your observations with illustrations.                                                                                                                                                                                                             | 3 min          |
| 10 | What kind of involvements and interactions are there between Company X, its customers, and other key actors in its strategic network when designing new services or solutions to meet customers' current and future needs? Are there joint creation efforts between Company X and its strategic partners such as suppliers, customers, authorized agents, end users, etc.?<br><br>Describe briefly the process and parties involved. When will these collaborative activities take place? | 5 min          |
| 11 | Any suggestions on how Company X's services can create a sustainable competitive edge in the coming ten years? How strongly are Company X's strategic partners taking a holistic approach to creating win-win, mutually beneficial collaborations?                                                                                                                                                                                                                                        | 5 min          |

### Appendices – 3

Questions in the questionnaire survey:

Thematic analysis was done with Interview data. This analysis was supported by a questionnaire survey. This survey was done to reconfirm the decision after the analysis. There were 12 questions in the survey.

The questions are selected for the questionnaire survey as below,

1. In addition to good technical skills, employees at all levels could take a proactive approach to introduce Company X services that can prevent future problems.

*Mark only one oval.*

- ☐ 1 (Strongly disagree)  
☐ 2 (Disagree)  
☐ 3 (Neutral)  
☐ 4 (Agree)  
☐ 5 (Strongly agree)  
☐ Other: \_\_\_\_\_

2. Mid- to high-level Company X employees (e.g. business managers, product managers) understand customer-centric concept better than ground-level employees (e.g. service engineers)

*Mark only one oval.*

- ☐ 1 (Strongly disagree)  
☐ 2 (Disagree)  
☐ 3 (Neutral)  
☐ 4 (Agree)  
☐ 5 (Strongly agree)  
☐ Other: \_\_\_\_\_

3. Which of these activities of Company X team could be involve customers and strategic suppliers to support collaborative creation (co-creation)?  
(Please tick the boxes that you deemed applicable)

*Check all that apply.*

- ☐ Diagnosing  
☐ Designing  
☐ Producing  
☐ Implementing  
☐ Marketing  
☐ Developing  
☐ Other: \_\_\_\_\_

4. Multiple touchpoints could be implemented in Company X and the customer organizations to create good, continuous dialogs for service opportunities (i.e. introduce awareness for needs of services).

*Mark only one oval.*

- ☐ 1 (Strongly disagree)  
☐ 2 (Disagree)  
☐ 3 (Neutral)  
☐ 4 (Agree)  
☐ 5 (Strongly agree)  
☐ Other: \_\_\_\_\_

5. It is important that Company X includes actors such as key suppliers, customers, agents and employees in multi-level activities to ensure more functionality in pro-activeness.

*Mark only one oval.*

- ☐ 1 (Strongly disagree)
- ☐ 2 (Disagree)
- ☐ 3 (Neutral)
- ☐ 4 (Agree)
- ☐ 5 (Strongly agree)
- ☐ Other: \_\_\_\_\_

6. Continuous interactive activities are also required from different actors such as key suppliers, customers, agents and employees in multi-level activities to encourage co-creation of future solutions and services.

*Mark only one oval.*

- ☐ 1 (Strongly disagree)
- ☐ 2 (Disagree)
- ☐ 3 (Neutral)
- ☐ 4 (Agree)
- ☐ 5 (Strongly agree)
- ☐ Other: \_\_\_\_\_

7. Which of the following actors are important in the co-creation process? (Please check all that applicable, you may add more contributors in "Other" option)

*Check all that apply.*

- ☐ Strategic suppliers
- ☐ Key customers
- ☐ Authorized agents
- ☐ Dedicated service tool
- ☐ Other: \_\_\_\_\_

8. **Detailed and systematic feedback** from the different partners (e.g. key suppliers, customers) are important for product and service development.

*Mark only one oval.*

- ☐ 1 (Strongly disagree)
- ☐ 2 (Disagree)
- ☐ 3 (Neutral)
- ☐ 4 (Agree)
- ☐ 5 (Strongly agree)
- ☐ Other: \_\_\_\_\_

9. Competitive pricing compared to other competitors is a good motivation for the customers to be engaged in the co-creation process of Company X measurement services.

*Mark only one oval.*

- ☐ 1 (Strongly disagree)
- ☐ 2 (Disagree)
- ☐ 3 (Neutral)
- ☐ 4 (Agree)
- ☐ 5 (Strongly agree)
- ☐ Other: \_\_\_\_\_

10. Current system tools cannot fully support co-creation process of Company X measurement services.

*Mark only one oval.*

- ☐ 1 (Strongly disagree)
- ☐ 2 (Disagree)
- ☐ 3 (Neutral)
- ☐ 4 (Agree)
- ☐ 5 (Strongly agree)
- ☐ Other: \_\_\_\_\_

11. Current communication level is not sufficient and structured enough to build co-creation process of Company X measurement services.

*Mark only one oval.*

- ☐ 1 (Strongly disagree)
- ☐ 2 (Disagree)
- ☐ 3 (Neutral)
- ☐ 4 (Agree)
- ☐ 5 (Strongly agree)
- ☐ Other: \_\_\_\_\_

12. Collaborative creation (Co-creation) of solutions and services with **strategic customers and suppliers can lead to the creation of a sustainable competitive advantage for Company X.** (e.g. during R&D, prototyping in addition to pilot testing)

*Mark only one oval.*

- ☐ 1 (Strongly disagree)
- ☐ 2 (Disagree)
- ☐ 3 (Neutral)
- ☐ 4 (Agree)
- ☐ 5 (Strongly agree)
- ☐ Other: \_\_\_\_\_

## Appendices – 4

### Thematic Analysis of interview data

| Themes       | Importance of Service of a Product | Interaction process and activities between customers and suppliers                                                                                                                                                                                                                                            | Customer-centricity mindset and current practices                                                    | Suppliers' roles or activities in collaboration                                                                                                                                                                                                                         | Customers' roles or activities in collaboration                                                                                                                                                                                                         | Development Suggestions for Sustainability                                                                                                                                                                                         |
|--------------|------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Codes        | Product<br>Service                 | System tools<br>Customer relationship<br>Synchronization with data<br>Categorized<br>Comfortable<br>Easy to operate                                                                                                                                                                                           | Aware<br>Committed<br>Mindset<br>Training                                                            | Reactive<br>Pro-active<br>Troubleshooting<br>Synchronization with customer demands                                                                                                                                                                                      | Joint creation efforts<br>Collaboration<br>Communication<br>Questionnaire<br>Interaction<br>Co-operation                                                                                                                                                | Process control<br>Maintenance program<br>Training<br>Easy access to the system of customer<br>Online involvement with customers<br>Pro-active thinking<br>Collaboration with customers                                            |
| Informant 01 | Product                            | Need to develop a customer support website where a customer can obtain manuals, videos, etc for the product that they just purchased. M files is a slow and awkward system. Company X needs to make an easy system to navigate. Company X has a difficult time making easy and intuitive customer interfaces. | Yes – Company X employees are aware. Agents probably do not do so much.                              | Normally tend to be reactive because of limited resources compared to actual customer demand. Performance maintenance solutions would consist of laboratory and calibration work – and documenting and communicating this work, also troubleshooting customer problems. | No joint creative efforts between Company X and customers. However, need to be careful when authorizing AGENTS to perform services for Company X. Good communication with the customer can reveal needed services where Company X can supply expertise. | Very important to maintain process control.<br>Can Company X offer a Consistency Maintenance Program that calibrates all consistency measurements (including competitors)?<br>Process and Measurement training certification.      |
| Informant 02 | Service                            | CoMPass for initial sales planning, M-files for service, not really Salesforce is used, all are internal system                                                                                                                                                                                               | Very small employees are aware, agents are working with a different mindset                          | Reactive, but the intention to be proactive, no co-creation process currently in practice.                                                                                                                                                                              | Through questionnaires, meetings, but there is no systematic approach,                                                                                                                                                                                  | Improve internal level of digitalization, online equipment status, need to recover the lack of customer interest, need easy access of the customer to the system, need the arrangement to reduce online involvement with customers |
| Informant 03 | Product                            | CoMPass, M-files, Customer portal, and Salesforce, need to be simplified, too much information, difficult to find reliable and useful information. Not up                                                                                                                                                     | Authorized agents, partners, and electively small companies with Company X products are committed to | The reactive approach should be more proactive, lack of synchronization with all countries to be proactive, every country should do an internal discussion.                                                                                                             | Not so much interaction and co-operation regarding service                                                                                                                                                                                              | The way of thinking should be proactive to reactive during selling new equipment or services                                                                                                                                       |

|              |         |                                                                                                                                                                                                                                                       |                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                            |
|--------------|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|              |         | to date in some countries, need to be categorized and specific to find the information easily, need to pay attention in some countries for getting feedback, need systematic/automated approach to contact customers                                  | contacting customers, but different mindsets are there with each employee of Company X. |                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                            |
| Informant 04 | Neutral | The customer portal needs more capacity to be customer-centric to work for service. M-files, are not proper to do this kind of job, it should be a document management system.                                                                        | Yes, employees are aware of customer centrality                                         | Reactive, needs the response from customer to invest more time, collaboration process can improve the service co-creation                                                                                                                                                                                                                                                                                                      | No joint creation, need to improve and find the best way to grow, type or way of services to deliver and find the right model.                                                                                                                                                                                                                                                                | Creating good products, moving to the right level of services, different business models, different ways to get data, and different ways to collaborate.                                                                                   |
| Informant 05 | Neutral | CoMPass- old fashioned, not updated regular basis<br>M-files - complex and difficult to use<br>Salesforce - under development, very different, currently the best way to have the customer management, need to be simple, the speed is also essential | Yes, employees are aware of customer centrality.                                        | Quite a reactive approach, to reduce the gap between suppliers' specification and customer expectation, initiatives due to the proactive approach. the road map of the service manager is proactive, it is for the next 5-10 years indicating the investment required for maintaining and upgrading<br>Competitors are doing traditional service. Customers are not involved at the design stage, but the partner is involved. | Not so much interaction and co-operation about service, need to increase communication with the customer to get more involvement. mid-level managers should be allowed to conduct continuous discussions with the customers to involve them more proactively to understand their pain points, and their challenges to think proactively rather than wait for them to ask Co-create solutions. | Need to develop the calibration procedures and material that will bring confidence to the customer, need to develop online tools, so that equipment might run without minimum interaction or minimum support from the people in the middle |
| Informant 06 | Neutral | M-files - now it is an efficient way<br>CoMPass - more used in the sales department                                                                                                                                                                   | Yes, Company X employees are aware to push the customer forward.                        | 70-80% more proactive with the analyzer, 100% proactive with measurements                                                                                                                                                                                                                                                                                                                                                      | No joint creation efforts                                                                                                                                                                                                                                                                                                                                                                     | Need online diagnostic and online feedback in the cloud from an analyzer or a measurement instantly to customer to update healthy status.                                                                                                  |

|              |         |                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                            |                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                           |                                                                                                                                                                                                                                           |
|--------------|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Informant 07 | Service | CoMPass - less used<br>M-files - important tools<br>Customer Portal<br>Salesforce - need to build more functionalities                                                                                                                                                                                                                                                                                                                     | Yes, need further training to improve the mindset and motivation to increase awareness.    | Reactive approach, but in some countries it is proactive, without a service agreement, it is difficult to be pro-active<br>real-time updates will be helpful to be proactive. The dedicated service tool is a very useful tool to provide proactive information. | During development sometimes there is cooperation on several levels and several parties, sometimes it comes from customers directly. There is cooperation with universities as well. No joint creation with the customer. | Service needs to be more proactive, advanced process controls and optimizations, and customer interaction is needed.                                                                                                                      |
| Informant 08 | Product | CoMPass, M-files, and Salesforce need to simplify, is too much information, difficult to find reliable and useful information.                                                                                                                                                                                                                                                                                                             | Yes, mainly agents and distributors are more aware, as it is a part of their own business. | Reactive approach. Not so much time to focus on proactivity. Need more training, remote connection is one way, e.g. virtual reality.                                                                                                                             | Few interactions and involvements with customers, but not so much visible, as it is based on customer expectations.                                                                                                       | to have some systematic tools to update customers regarding the services of product maintenance, schedule, spare parts, lifetime replacement interval, and maintenance interval., to have a systematic approach for customer involvement. |
| Informant 09 | Service | M-files, Excel sheet.                                                                                                                                                                                                                                                                                                                                                                                                                      | Yes, through promoting to customers.                                                       | Reactive approach, one needs to have technical knowledge of the product.                                                                                                                                                                                         | Training is required for the interactions                                                                                                                                                                                 | Need to upgrade the old product to a new product, not with a whole set, need to have more local suppliers/partners, and need to review pricing.                                                                                           |
| Informant 10 | Neutral | CoMPass is absolutely the best tool to manage customer relationships currently. Collecting relevant information. A good tool to use. M-files is a bit more complicated. It is like a data bank. All the documents are saved there, but navigation through M files is complicated. The sales force is underdeveloped. If they can generate more quickly the reference lists and the status of the existing installed base list can be seen. | Yes. Company X employees are aware of customer centricity.                                 | Some cases are proactive, and some cases are reactive.                                                                                                                                                                                                           |                                                                                                                                                                                                                           | The service department needs to know the products and also has to know the customer process                                                                                                                                               |

|              |         |                                                                                                                                                                                         |                                                                                                  |                                                                                                                                                                                                            |                                                                                                                                                                                   |                                                                                                                                                                                                                                                                               |
|--------------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Informant 11 | Neutral | CoMPass - efficient M-files - so difficult to use<br>Salesforce - upcoming<br>- the customer doesn't have access to this<br>- Need customer feedback<br>- Need feedback channel         | Yes – Company X employees are coming for training because of awareness.                          | The reactive approach should be more proactive, needs better communication with capital sales and operation phase, and need a common tool with all departments for better interaction and synchronization. | collecting feedback from customers, no joint creation effort with customers,<br>- It is a very good idea to have a contribution from the customer side with development feedback. | Need follow-up tools built-in with measurement, that is automatically analyzing the data that is coming from the devices, regular meetings, and better communication with the customers                                                                                       |
| Informant 12 | Service | CoMPass is used in all technology sides, and M-files is used for official reporting, to find all the documents.<br>Need standardization and efficiency with customer-specific road map. | Employees are aware of customer centricity; they have a role to increase business at all levels. | Mainly reactive, probably in North America, South America, few areas in Europe it is proactive.                                                                                                            | No joint creation effort                                                                                                                                                          | Need tools to improve the performance of devices and the process performance                                                                                                                                                                                                  |
| Informant 13 | Neutral | Offline communication is going on over the phone. Need to develop an online digitalization system with customer access for good feedback.                                               | Employees are aware of customer centricity.                                                      | Few proactivity is there, a mostly reactive approach based on customer feedback                                                                                                                            | No idea about any collaboration activity                                                                                                                                          | Need to develop the system, Need a standard communication system with other departments                                                                                                                                                                                       |
| Informant 14 | Product | M-file is used at different levels                                                                                                                                                      | Employees are showing awareness by contacting customers                                          | More reactive                                                                                                                                                                                              | No idea about any joint creation effort with customers                                                                                                                            | Co-creation can be improved by service contracts.<br>Need more customer involvement, so that they can give their ideas for further improvement and innovation.                                                                                                                |
| Informant 15 | Neutral | Excell, CoMPass, and M-files<br>M-file is used for service reports.<br>The new tool is in the pilot stage.                                                                              | Awareness is present in the employees through communication with customers.                      | Reactive based on customer calls.<br>Need proactivity to bring more perfections in the service                                                                                                             | No joint creation effort with customers                                                                                                                                           | Customers should be involved in the development of new products.<br>There could be kind of joint efforts between the customers so that the solutions can be created together from the beginning rather than only at the pilot stage where things are already quite developed. |

|                 |         |                                                                                                                                  |                                                                                                                                                     |                                           |                                                                                                                    |                                                                                                                          |
|-----------------|---------|----------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|--------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|
| Informant<br>16 | Neutral | Salesforce<br>CoMPass is used to store the<br>feedback from any meeting with<br>customers.<br>M-files is used for service report | Employees are aware of<br>customer centricity;<br>they are building rela-<br>tionships with custom-<br>ers to know better<br>about their interests. | Reactive based on the customer's<br>query | Customers are involved in the pi-<br>lot stage of any product develop-<br>ment, no other joint effort is<br>there. | Need to develop one system for every-<br>thing.<br>Customers can collaborate with new<br>ideas in the development stage. |
| Informant<br>17 | Product | Salesforce<br>CoMPass<br>M-files                                                                                                 | Employees are aware of<br>their interest                                                                                                            | Reactive                                  |                                                                                                                    | Customers should interact to develop a<br>solution together.                                                             |

## Appendices – 5

Responses from the questionnaire survey:



Figure 13: Response to Question 01 in the questionnaire survey

Mid- to high-level Company X employees (e.g. business managers, product managers) understand customer-centric concept better than ground-level employees (e.g. service engineers)

8 responses

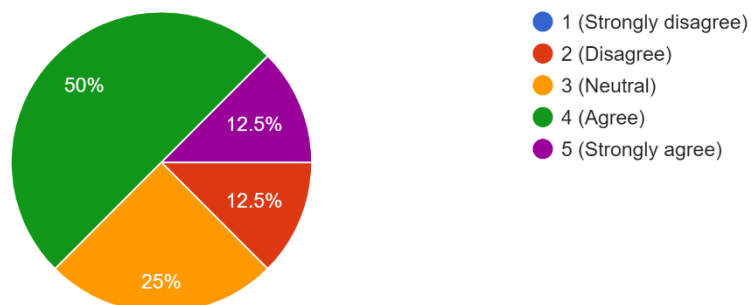


Figure 14: Response to Question 02 in the questionnaire survey

Which of these activities of Company X team could be involve customers and strategic suppliers to support collaborative creation (co-creation)? (Please tick the boxes that you deemed applicable)

8 responses

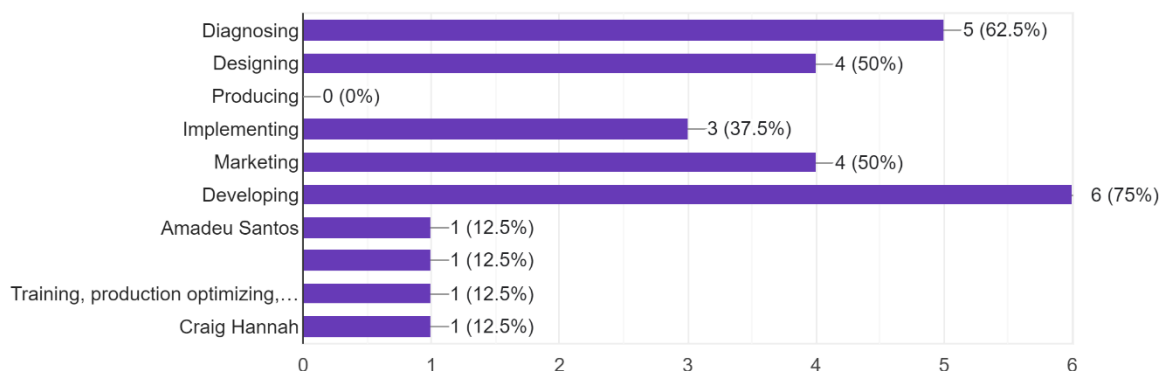


Figure 15: Response to Question 03 in the questionnaire survey

It is important that Company X includes actors such as key suppliers, customers, agents and employees in multi-level activities to ensure more functionality in pro-activeness

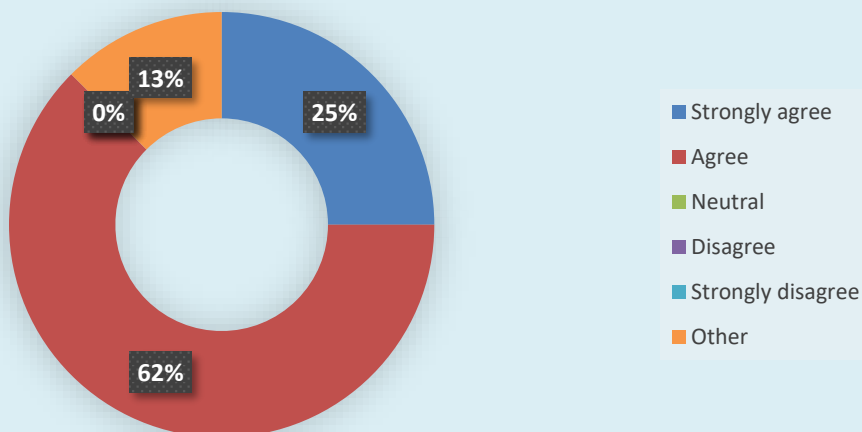


Figure 16: Response to Question 05 in the questionnaire survey

Continuous interactive activities are also required from different actors such as key suppliers, customers, agents and employees in multi-level activities to encourage co-creation of future solutions and services.

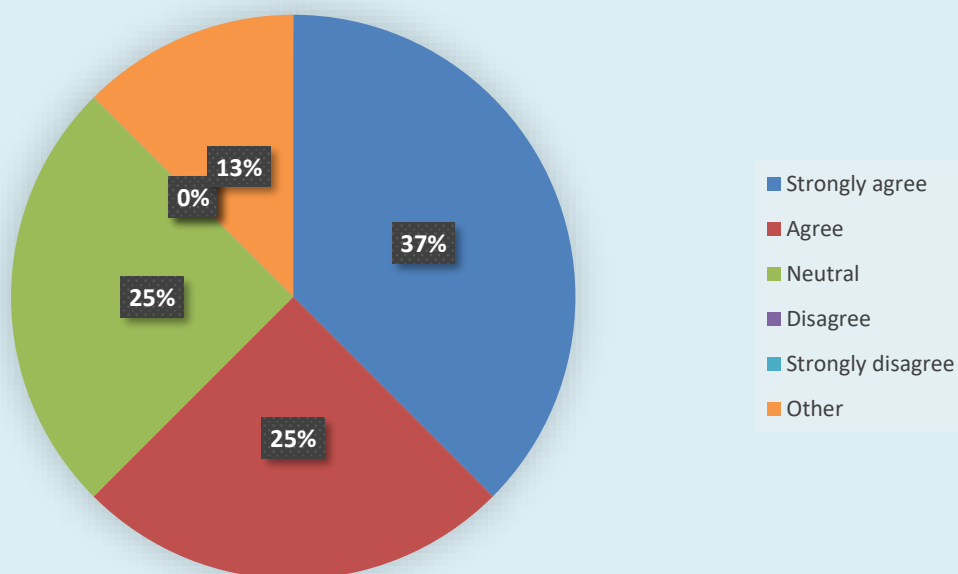


Figure 17: Response to Question 06 in the questionnaire survey

Which of the following actors are important in the co-creation process? (Please check all that applicable, you may add more contributors in "Other" option)

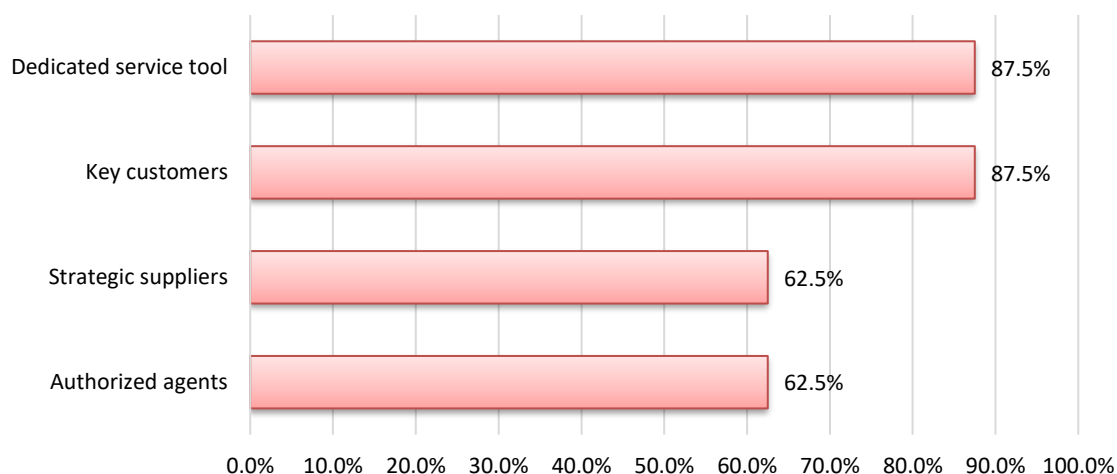


Figure 18: Response to Question 07 in the questionnaire survey

Detailed and systematic feedback from the different partners (e.g. key suppliers, customers) are important for product and service development.

8 responses

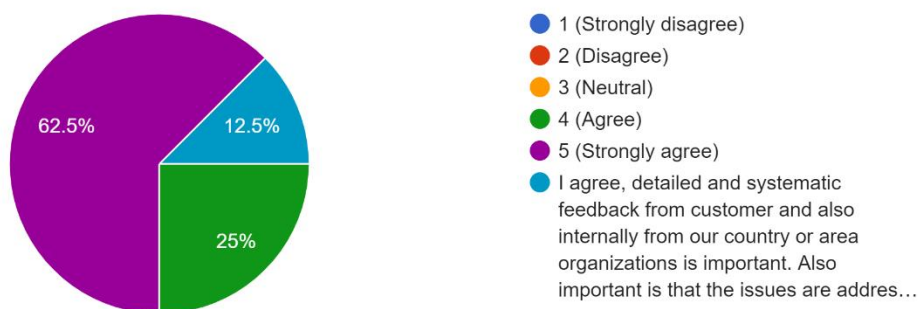


Figure 19: Response to Question 08 in the questionnaire survey

Current system tools cannot fully support co-creation process of Company X services.

8 responses

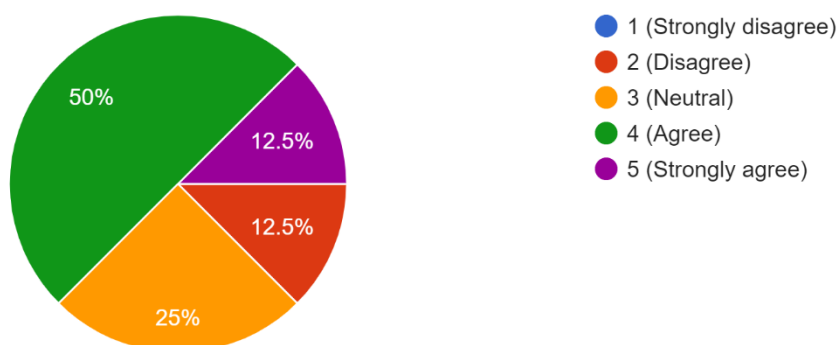


Figure 20: Response to Question 10 in the questionnaire survey

Current communication level is not sufficient and structured enough to build co-creation process of Company X measurement services.

8 responses

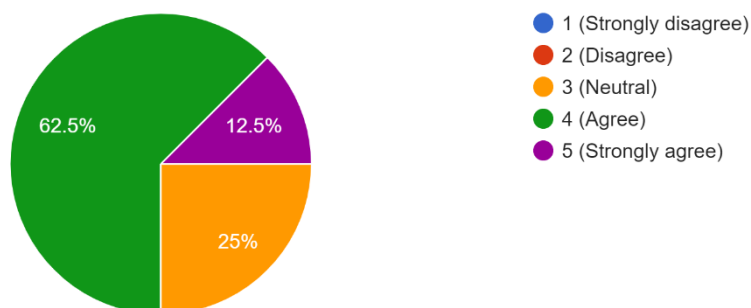


Figure 21: Response to Question 11 in the questionnaire survey

Collaborative creation (Co-creation) of solutions and services with strategic customers and suppliers can lead to the creation of a sustainable c...uring R&D, prototyping in addition to pilot testing)

8 responses

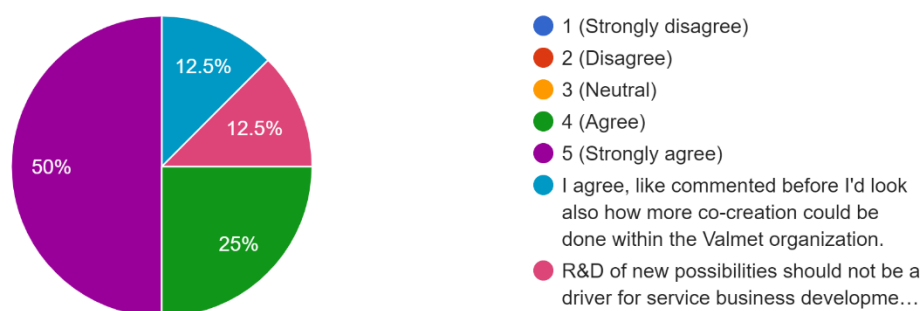


Figure 22: Response to Question 12 in the questionnaire survey