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Master's thesis

Improving service performance through cooperation

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Improving service performance through cooperation

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Examiner: D.Sc. (Tech) Timo Pirttilä



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ABSTRACT

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Objective for this research was to analyse how the case company could improve its field service performance. The hypothesis was that the performance can be improved, by designing services that both deliver value for the customer and enable effective cross-functional cooperation. Qualitative research methodology was chosen for this research. Furthermore, the study applied a descriptive single-case design, and data was collected through semi-structured interviews and a survey.

The study revealed that the case company has taken actions to integrate performance of the functions working within their field service (FS) process. However, several misalignments and deficiencies prevent individuals from realizing the benefit of cooperation. Furthermore, the daily operations are not effectively coordinated, which limits individuals' ability and willingness to cooperate. Finally, the FS structure and environment are not holistically designed to maximize value for the customer and efficiency for the case company.

This research identifies three main development areas for the case company: *information sharing*, *performance management* and *communication*. Firstly, a process for sharing order specific information must be standardized and implemented. Secondly, both individual and function level performance management systems must be aligned with the case company's objectives and with the systems of other stakeholders within the FS process. Thirdly, the case company needs to define a process for communicating towards the customers, to ensure that all relevant stakeholders can be kept informed throughout the FS process.

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<p>Tämän tutkimuksen tavoitteena oli tunnistaa yhteistyötä tukevia menetelmiä, joiden avulla kohdeyritys kykenee parantamaan kenttähuoltoprosessinsa tehokkuutta. Hypoteesi on, että tehokkuutta voidaan parantaa kehittämällä palveluita, jotka lisäävät asiakkaan kokemaa arvoa sekä mahdollistavat tehokkaan toimintojen välisen yhteistyön. Tutkimuksen tueksi valittiin kvalitatiivinen tutkimusmenetelmä. Diplomityössä toteutettiin kuvaileva tapaustutkimus, johon tietoa kerättiin puolistrukturoitujen haastatteluiden ja kyselyn avulla.</p> <p>Tutkimuksen perusteella kohdeyritys on pyrkinyt integroimaan kenttähuoltoprosessissaan työskentelevien toimintojen välistä toimintaa. Prosessiin liittyy kuitenkin ristiriitoja sekä puutteita, jotka estävät yksilöitä huomaamasta yhteistyön hyötyjä. Tämän lisäksi päivittäisiä toimintoja ei koordinoita tehokkaasti, joka laskee sekä yksilöiden kykyä että halukkuutta tehdä yhteistyötä. Tämän lisäksi kenttähuoltoprosessia ei ole holistisesti muotoiltu maksimoimaan asiakasarvoa eikä kohdeyrityksen suorituskykyä.</p> <p>Tutkimuksen avulla voidaan tunnistaa kohdeyritykselle kolme pääkehityskohdetta: <i>tiedon jakaminen, suorituskyvyn johtaminen ja kommunikointi</i>. Kohdeyrityksen tulisi standardisoida ja implementoida prosessi, joka käsittää yksittäisiin tilauksiin liittyvän tiedon jakamisen. Tämän lisäksi kenttähuoltoprosessissa toimivien yksilöiden ja toimintojen tulostulosjärjestelmät täytyy yhtenäistää sekä yrityksen strategian että toistensa kanssa. Lisäksi kohdeyrityksen tulee määrittää asiakasviestintäprosessi, jotta asianomaiset sidosryhmät kyetään pitämään ajan tasalla kenttähuoltoprosessin aikana.</p>	

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Helsinki, November 2018

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ABBREVIATIONS

AM	Account manager
EQ	Expected quality
FS	Field services
FSC	Field service coordinator
GM	General manager
KPI	Key performance indicator
OE	Operational excellence
PI	Performance indicator
PMS	Performance management system
PQ	Perceived quality
SSE	Sales support engineer
WOW	Way of working

1 INTRODUCTION

This thesis examines methods for improving service performance. The focus relies on two distinct entities: service design and delivery. “Service design helps to innovate (create new) or improve (existing) services to make them more useful, usable, desirable for clients and efficient as well as effective for organisations” (Moritz 2005). In this thesis, service design covers the structural part of the service process. Service delivery is studied through cross-functional integration and coordination. Integration and coordination increase individuals’ ability and willingness to cooperate, which improves the organizations performance (Swink and Schoenherr 2015). By combining these approaches, organizations can improve their internal performance, while creating value for the customer. The introduction chapter presents the motivation for research, the case organization, and the scope as well as the structure of this thesis.

1.1 Research motivation

Motivation for this thesis derives from the need to improve the case company’s field service process. Through informal discussions with the key stakeholders of the case company’s field service process, it became apparent that the field service operations are not producing the desired outcome in terms of customer value and profitability. Poor information flow is identified as one of the root causes. Unstable information flow in the beginning of the process leads to increased variability in the planning and delivery phase (Lampret and Potočan 2014). These challenges have a negative impact on the profitability of the field services. Hence, the researcher in this thesis is motivated to identify methods for improving the performance, since the examined topic has an impact on the financial performance of the case company.

The informal discussions implied that the unstable information flow is a result of insufficient cooperation during the beginning of the service process. Recent literature claims cooperation is achieved through integration (Swink and Schoenherr 2015) and coordination (Lavikka et

al. 2009). This research combines relevant theory of integration methods and coordination mechanisms to understand how the case company could utilize them in improving their field service performance.

This thesis is conducted for the case company's Operational excellence (OE) team. Operational excellence is embedded in the case company's culture. By applying lean theories and methodologies, the OE team aims to improve internal efficiency, while maximizing value for the customer (Company material 2018a). Service design theory was chosen to connect the internal efficiency with the customer value. This research aims to create an understanding of service design fundamentals and how the case company could apply them to increase process efficiency and customer value.

Poor information flow is identified to originate in the beginning of the field service process. To address this issue, the focus of this thesis relies on the pre-service phase, which occurs before the execution. Voorhees et al. (2017) call this stage *pre-core service*. According to Voorhees et al. (2017), literature on pre-core service is scarce. This research aims to narrow the gap in relevant literature.

1.2 The case company

The case company offers market leading smart lifecycle solutions for its customers. It has three key business areas: marine, energy and services for customers in both markets. The case company is a global organization aiming to maximize the environmental and economic performance of their customers' vessels and power plants. With its flexible production and supply chain management, the case company constantly seeks new ways to maintain high quality and cost efficiency – often in collaboration with customers and leading industrial partners. (Company material 2018b)

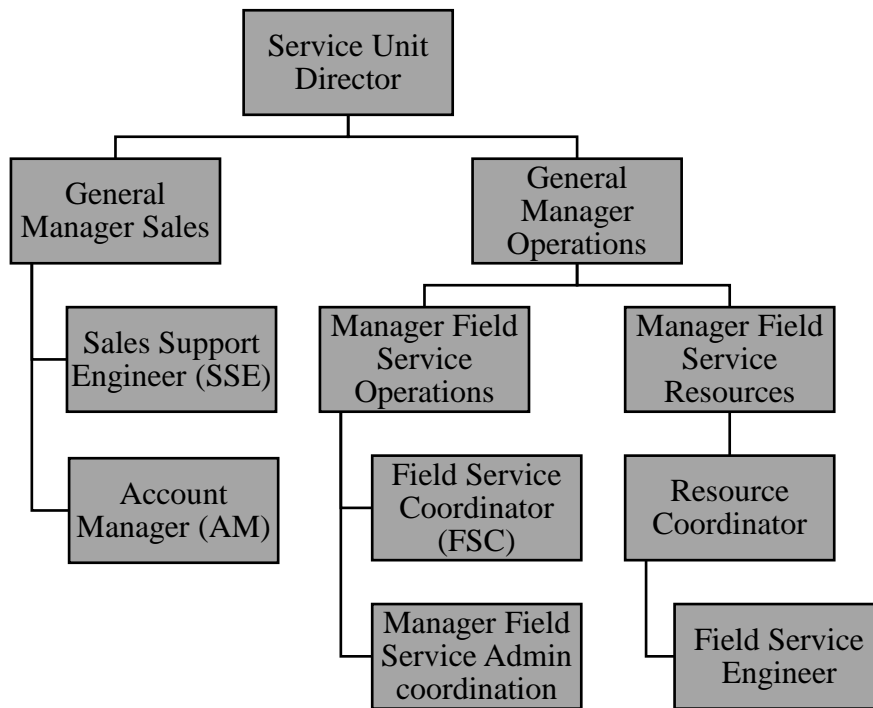


Figure 1. Service unit organization in the case company

The focus of this thesis relies on the field service operations of the case company. The service division is geographically divided into four areas. The four areas are further divided into service units. Figure 1 provides an example of service unit's organizational structure. Among other things, the service unit is responsible for offering and delivering field services (FS) to its customers. FS operations are typically performed for customers at their site or in specific workshops. FS activities involve maintaining and repairing customer owned equipment. (Company material 2018c)

The FS process involves employees from distinct functions (Figure 1). The account manager (AM) is the first point of contact for the customer, since this role is responsible for selling case company's solutions. The sales support engineer (SSE) reports to the same general manager (GM) as the AM. The SSE's responsibility is to craft offers for the customer and support the AM in securing the orders. The field service coordinator (FSC) has a project manager's role, he or she is responsible for planning and delivering customers' orders.

The manager field service admin coordination is responsible for the administrative process, which involves invoicing, for example. The resource coordinators are responsible for the field service engineers, who perform the actual job. In conclusion, the FS process is dependent on several distinct functions, who have distinct vertical reporting lines. The presented organizational structure (Figure 1) is not exhaustive, but variations exist in different service units of the case company. (Company material 2018c)

The FS process has a centralized owner. The FS central team owns the global field services process and is responsible for the global field service business. Their responsibilities involve developing the global processes and monitoring the performance. (Company material 2018c)

1.3 Research scope and objective

Kaplan and Norton (1996) suggest that managing performance between cross-functional business units is a significant source of constraint for organizations today. The case company identifies the same issue in their field service process, which is dependent on several distinct functions. Cross-functional integration (Lavikka et al. 2009) and coordination (Mintzberg 1979) are studied to understand how the case company could increase their employees' and functions' willingness as well as ability to cooperate. On the other hand, the aim is to maximize customer value, while improving efficiency.

Service design is studied to understand how the case company could improve their field service process to both maximize customer value and foster cooperation (Moritz 2005). Design aims to create a successful service experience (Voorhees et al. 2017) for the customer. The research focuses on creation of the *pre-core* service experience, since the case company identified, that challenges arise in this change. Pre-core phase includes the timeframe prior to the actual execution or delivery (Voorhees et al. 2017). The research aims to answer the following research question:

How can the case company improve its field service performance through cooperation?

To structure the research certain supportive research questions are required. The following section identifies the supportive research questions:

1.1. How is successful pre-core service experience created according to relevant literature?

1.2. How is cross-functional cooperation achieved according to relevant literature?

Supportive research questions 1.1 and 1.2 are analysed and answered by conducting a literature review. These questions need to be answered to understand how the topics are recognized and applied in relevant literature. Based on the synthesis a conceptual framework is created to support the case study. To understand how these theories are currently utilized in the case company, the following supportive research questions need to be answered:

2.1. How are facilitators of integration currently utilized in the case company's field service operations?

2.2. How does the case company utilize cross-functional coordination currently?

2.3. How are the fundamentals of service design applied in the case company's contemporary pre-core field service process?

A qualitative case study is conducted to understand the current situation in the case company. The case study answers the supportive research questions from 2.1 to 2.3. Finally, the results of the case study are compared to the findings of the literature review. Based on this comparison, the research creates suggestions on how to improve the case company's field service performance. This answers the main research question.

The scope of research is limited to the study of operational business, which occurs daily or in connection to single transactions (Kaplan and Norton 1996). Strategic management is a facilitator of operational level integration (Lavikka et al. 2009), since strategy should guide the daily activities to the desired direction (Kaplan and Norton 1996). However, relationship of strategic management to operative management is not further studied. Furthermore, the case company's field services are maintenance services and thus the scope of this study is limited to investigate services that involve maintaining customer owned equipment. In addition, the research focuses only on certain roles within the case company to control the sample size. Roles that are most active and involved during the pre-core field service process are included in the case study.

1.4 Research methodology and process

The research starts with a literature review. Based on the findings from the literature review, a conceptual framework is created. The conceptual framework contributes to the aim of this thesis by recognizing methods for improving service performance. The conceptual framework serves as a basis for the qualitative case study. "Qualitative case study methodology provides tools for researchers to study complex phenomena within their contexts" (Baxter and Jack 2008). The qualitative research is conducted as a *descriptive single-case study* (Zainal 2007) in one of the case company's service units. Descriptive case study allows the researcher to describe a phenomenon in a specific dataset (Yin 1984). Hence, the aim is to describe the existence and utilization of facilitators of integration, coordination mechanisms and service design fundamentals within the case company.

Data for this thesis is collected through interviews and a survey. The interviews are conducted in one of the case company's service units. The interviewees are chosen based on their role in the pre-core field service process. The interviewees are divided into three distinct groups. Group 1 consist of the operative roles, that are most active during the pre-core phase. Group 2 includes their supervisors as well as the sales and field service general managers. Finally, Group 3 includes two employees of the central field service team, since their team owns the global field service process (Company material 2018c).

In addition to the interviews, a survey is conducted to analyse the generalizability of the interview findings. The case company is a global organization and thus it is imperative to understand whether the findings are universal. The survey is distributed to sales support engineers and field service coordinators of other service units within the case company. Through the interviews and the survey, the case company's current arrangement is analysed to identify methods for improving the case company's field service performance.

1.5 Structure of the thesis

This thesis consists of seven chapters. Figure 2 presents the structure and relevant contents.

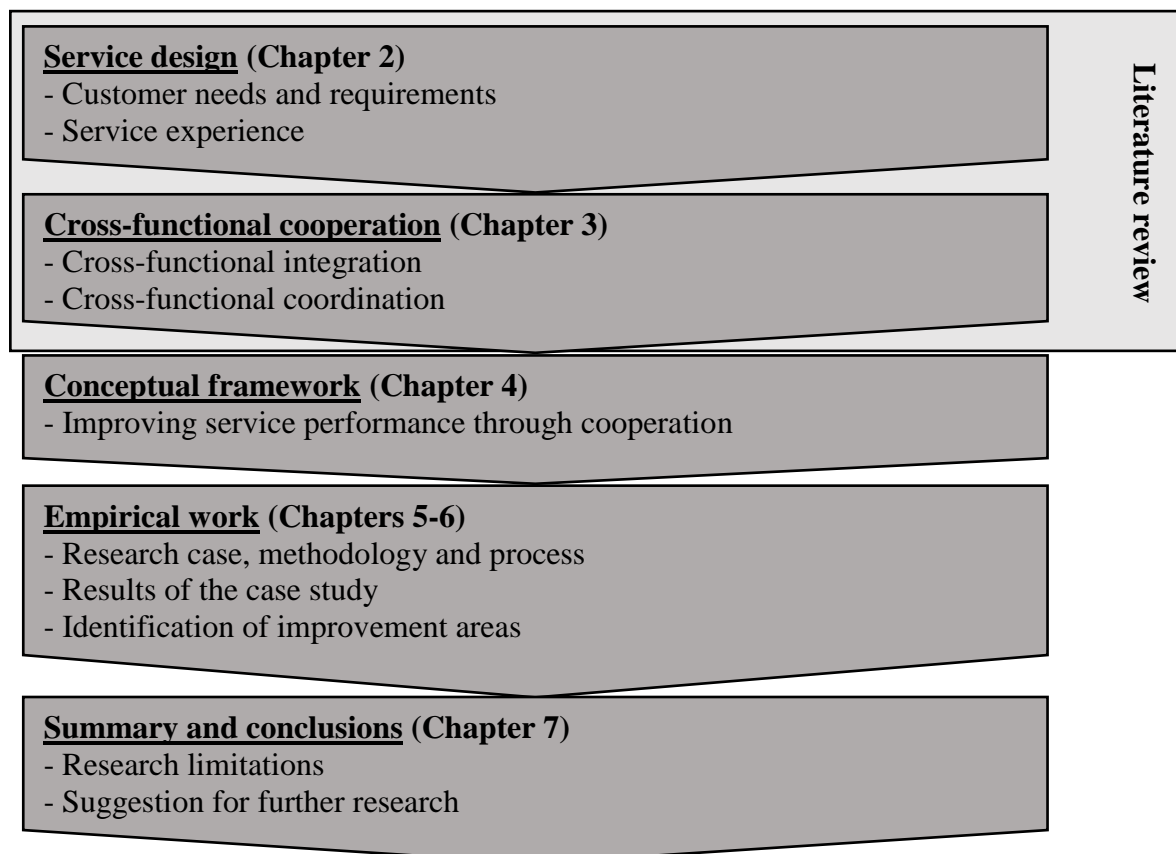


Figure 2. Structure of the thesis

The thesis begins with an introduction chapter, which is excluded from Figure 2. The literature review is divided into two distinct chapters. First theory chapter covers topics

related to service design. Typology for customer needs and requirements are studied, since all service design efforts should start from identifying what customers truly want (Grönroos 2000). Furthermore, service design fundamentals (Stickdorn and Schneider 2011) are connected to the creation of pre-core service experience (Voorhees et al. 2017). By combining the theories, this thesis analyses how maintenance services should be designed to maximize customer value and internal efficiency.

The second theory chapter covers methods for enabling and improving cross-functional cooperation. Lavikka et al. (2009) suggest that to foster cooperation, organizations first need to integrate operations of distinct functions, and then apply coordination mechanisms to guide the daily work. Integration is achieved on the structural level (Foerstl et al. 2013), and it requires that functions have, among other things, mutual understanding, common will, common strategy and common goals (Lavikka et al. 2009). Coordination aims to align processes and tasks on operational level to support cooperation (Lavikka et al. 2009).

Chapter four introduces the conceptual framework created based on the literature review findings. The framework guides and structures the case study. Chapter five introduces the research case, methodology and process. The data collection methods are also covered in this chapter. Chapter six introduces the results of the qualitative case study. This chapter describes the case company's current utilization of concepts presented in the conceptual framework. In addition, the sixth chapter presents the improvement suggestions for the case company. Finally, chapter seven includes the summary and conclusions of this research. This chapter summarizes the analysis and the answers to all research questions. Additionally, research limitations and suggestions for further research are presented.

2 SERVICE DESIGN

This chapter examines service design. The first step is to understand why designing service models is important for organizations. The second step is to understand the science behind customer satisfaction, since providing excellent service is a driver for customer satisfaction and thus competitive advantage (Johnson et al. 2001). Later in this chapter, the structure of customers' service experience is studied and methods for creating customer value through service design are identified (Voorhees et al. 2017). Even though the focus relies on studying the creation of pre-core service experience (Voorhees et al. 2017), the service must be first examined as a whole to holistically understand the related contents and theories.

2.1 Scope of service design

Moritz (2005) states, that services “are complex experiences that happen over time”. Therefore, creation of value-generating services needs special consideration (Moritz 2005). Mager (2009) argues, that the aim of service design is to make services “useful, usable and desirable from the client’s point of view and effective, efficient and distinctive from the supplier’s point of view”. Moritz (2005) claims, that service design involves creating complex and interactive experiences, processes and systems.

Service design starts from recognizing that the customer has a problem they need a solution for (Moritz 2005). Then a service is designed to solve that problem, and to shape the state of the receiver (Moritz 2005). It can be stated, that the outcome of service design should be a service model that drives customer satisfaction. Furthermore, if customers are continuously satisfied with the experience, service design can create a competitive advantage for the service provider.

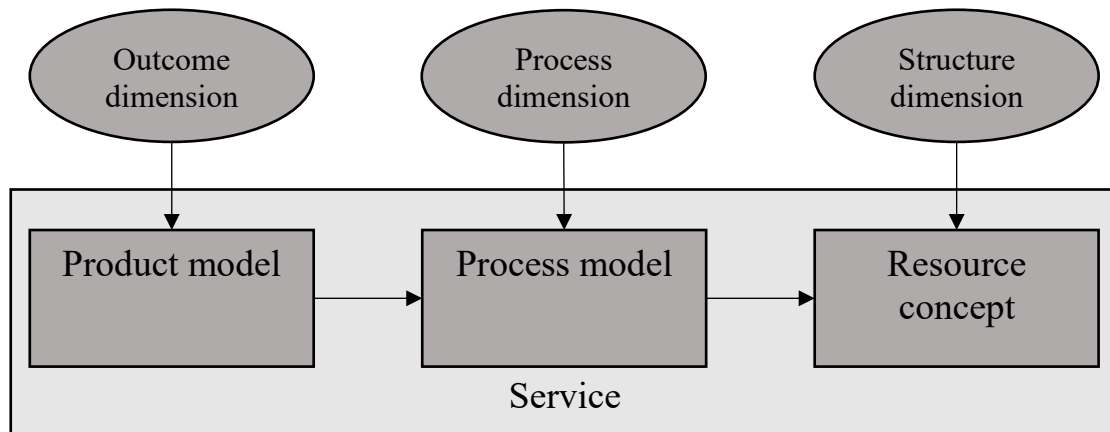


Figure 3. Service concept (Bullinger et al. 2003)

Bullinger et al. (2003) recognize, that a service can be divided into three distinct dimensions: *outcome*, *process*, and *structure dimension* (Figure 3). The outcome dimension refers to the tangible and intangible consequences that the service leaves the customer with. Product models include the outcomes of the service – *what* customers receive from the consumption. The process dimension includes both customers’ and service providers’ processes that enable delivery and consumption of the outcome. Process models describe *how* a service is delivered. The structure dimension involves the service provider’s ability to provide a service. Resource concepts are the human resources, materials and systems that are needed for delivering a needed outcome. Arguably, all these dimensions need to be considered when designing a service model. The process and structure dimensions are examined later, in the form of service experience creation and cross-functional resources needed for delivering a service. The upcoming sections focus on the outcome dimension by studying how customers perceive consumption experiences. (Bullinger et al. 2003)

2.2 Fundamentals of service design

Stickdorn and Schneider (2011) establish a set of fundamentals that all the different service design projects should consider. These fundamentals should be considered when creating service models as well as when delivering services. According to Stickdorn and Schneider (2011), services and service design are customer-centric, co-creative, sequencing, evidencing, and holistic (Figure 4).

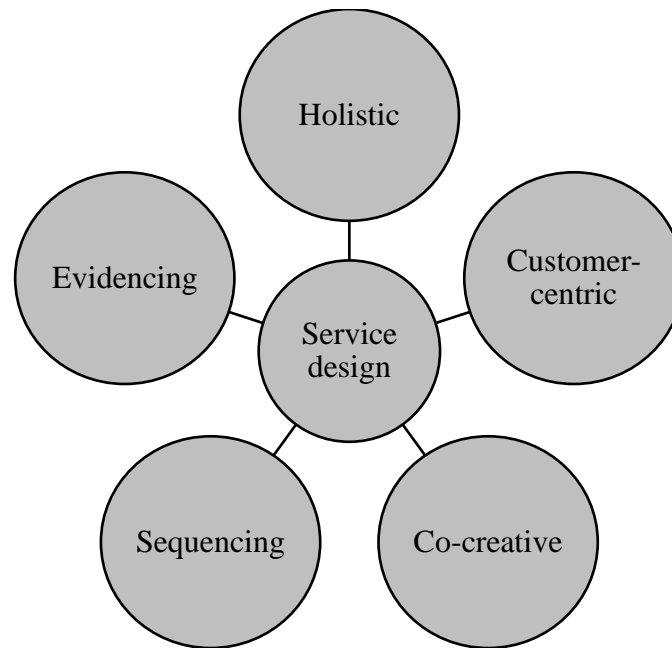


Figure 4. The fundamentals of service design (Stickdorn and Schneider 2011)

Services are *inseparable*, meaning that consumption and production of the service are simultaneous (Parasuraman et al. 1985). It can be stated, that service delivery is dependent on close interactions between the producer and the customer. Thus, service design should be *customer-centric* (Stickdorn and Schneider 2011). Understanding *what* the customers truly want and *how* they perceive services (Grönroos 2000) is essential for designing and delivering customer-centric services. Therefore, customers need to be involved in designing the service they eventually consume. In addition, Oakland (2014) claims that most of today's professional services are dependent on several distinct stakeholders. *Co-creativity* implies involving all relevant stakeholders in the design phase (Stickdorn and Schneider 2011). Co-creative service design ensures, that processes and transactions are designed to be beneficial and comfortable for all the stakeholders (Stickdorn and Schneider 2011).

Service delivery process consists of certain encounters between the customer and the service provider, often referred to as *touchpoints* (Voorhees et al. 2017; Stickdorn and Schneider 2011). Basically, a touchpoint can be any medium or event, that connects the customer to the service (Stickdorn and Schneider 2011). Touchpoints need to form a logical journey and a resonating rhythm to ensure a pleasant consumption experience (Voorhees et al. 2017). In

conclusion, service design should consider the *sequence* of interrelated touchpoints to create a successful experience for the customer (Stickdorn and Schneider 2011).

Services are often characterized as *intangible* experiences (Parasuraman et al. 1985). However, tangible artefacts may be vital for some services (Stickdorn and Schneider 2011). *Evidencing* service design involves exploiting any tangible artefacts to improve the overall consumption experience (Stickdorn and Schneider 2011). Evidence can be used for promoting positive feelings or for highlighting the signals customers receive (Berry et al. 2002). On the other hand, evidence is used for highlighting the invisible parts of the service (Grönroos 2000).

Service design pursues to *holistically* consider all aspects of consumption. Although the sequence of different encounters is mapped out, the customers might not act sequentially, which imposes the customers to new touchpoints. During the consumption, customers sense by seeing, hearing, smelling, touching and tasting. All these aspects ought to be considered when designing holistic services. (Stickdorn and Schneider 2011)

The fundamentals should be both considered during the design process and embedded in the output (Stickdorn and Schneider 2011). Every design process involves recognizing customer's needs and requirements (Stickdorn and Schneider 2011). Therefore, the upcoming paragraphs focus on identifying typology for customer needs.

2.3 Customers' needs and requirements

Customers' needs and requirements stem from a requirement to accomplish a certain job, which they need certain input from the supplier (Christensen 2012). Supplier's task is to identify the customer's problem and offer a solution for it (Moritz 2005). Whether the solution is useful and usable as well as able to fulfil customer's quality and value expectations, is the determinant of successful service (Johnson et al. 2001). Johnson et al.

(2001) argue, that literature regarding customer satisfaction is divided into two distinct entities: transaction-specific satisfaction (satisfaction related to single products or services) and cumulative satisfaction (overall satisfaction of a relationship). This research focuses on transaction-specific satisfaction, since the study revolves around operative environment, which is transactional and short-termed.

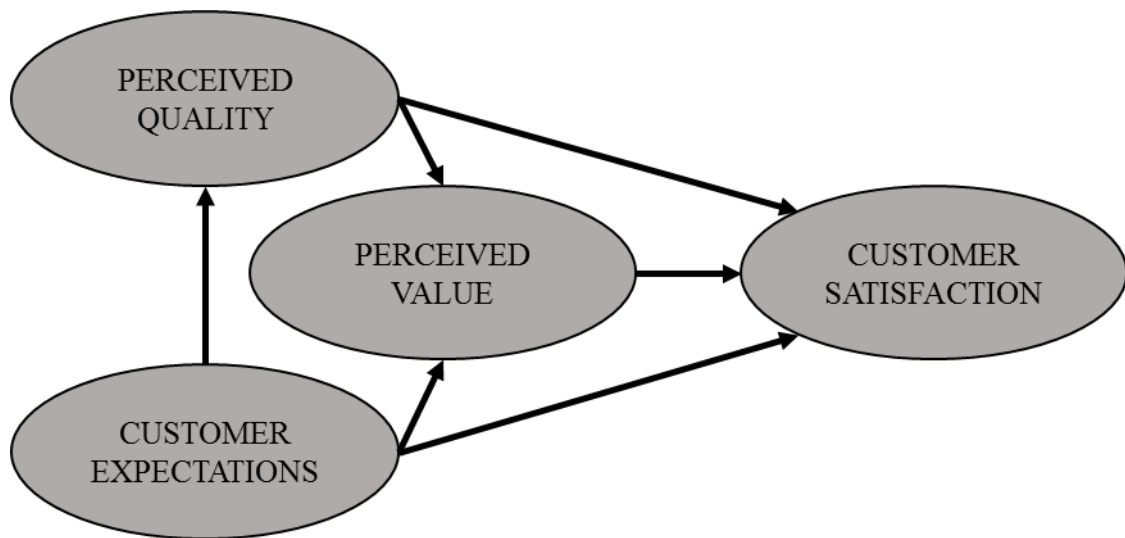


Figure 5. The customer satisfaction model (Fornell et al. 1996)

Fornell et al. (1996) recognize, that customer satisfaction has three antecedents: *perceived quality*, *customer expectations* and *perceived value*. Figure 5 illustrates the connections between the antecedents. Perceived value is influenced by perceived quality of the service (Fornell 1996). The quality of the offered solution creates value for the customer when consumed as a part of their own value-generating processes (Holbrook 2006). Moreover, perceptions of both quality and value are rationalized by customer expectations (Fornell et al. 1996). In conclusion, customer satisfaction is formulated by comparing the perceptions of quality and value to the expectations. In the upcoming sections, all the determinants are discussed separately to understand the typology and dynamics.

2.3.1 Perceived quality

“Quality is often used to signify ‘excellence’ of a product or service” (Oakland 2014). According to Grönroos (2000), the service quality has two dimensions; *technical or outcome dimension* and *functional or process-related dimension*. The outcome quality includes *what* the customer is left with after the consumption process is over (Grönroos 2000). In turn, the process quality refers to *how* the service is delivered to the customer (Grönroos 2000). To establish management practices for controlling customers’ perceptions, the quality dimensions needs to be divided into components (Parasuraman et al. 1985). Based on extensive literature and research, Grönroos (2000) isolates a list of seven criteria of good perceived service quality (Table 1).

Table 1. The Seven Criteria of Good Perceived Service Quality (Grönroos 2000)

Criteria	Explanation
Professionalism and Skills	Required skills and knowledge for delivering the service in a professional manner. (Outcome)
Attitudes and Behaviour	Involves the overall politeness, respect and consideration of service provider’s employees (Parasuraman et al. 1985). (Process)
Accessibility and Flexibility	Approachability (convenient location) and ease of contact (Parasuraman et al. 1985). Additionally, service provider’s ability to flexibly adjust to customer demands and wishes. (Process)
Reliability and Trustworthiness	Consistency of performance and dependability: performing first time right, accuracy of billing and documentation, and schedule accuracy (Parasuraman et al. 1985). (Process)
Service Recovery	How appropriately service provider reacts to service failures, includes both communication and actions taken to fix a problem. (Process)
Servicescape	How the physical evidence (facilities, appearance of employees, tools, equipment et cetera) contribute to the overall service experience. (Parasuraman et al. 1985) (Process)
Reputation and Credibility	Service provider’s trustworthiness, values, and ability to deliver value for money. (Image)

Evaluations of all criteria eventually contribute to the total perceived quality (Grönroos 2000). Table 1 indicates that only one criterion is outcome-related: *Professionalism and Skills*. Professionalism and skills are needed to provide the desired output (Grönroos 2000). Furthermore, one criterion is influenced by the organization's image: *Reputation and Credibility*. Reputation and credibility are formed based on organization's image, and they have an influence on how customers evaluate the performance. Rest of the quality criteria are related to the functional quality dimension. This implies that the design and performance of the service process are essential for creating quality service.

Parasuraman et al. (1985) suggest, that *total perceived quality* results from a comparison between what the customers expect and what they receive. In other words, total perceived quality can be calculated by subtracting expected quality (EQ) from perceived quality (PQ). If EQ is greater than PQ, the service did not fulfil the expectations, resulting in poor perceived quality. If, EQ is equal to PQ, the service is satisfactory. Superior service is delivered when the results exceed the expectations (PQ is greater than EQ). (Parasuraman et al. 1985)

2.3.2 Customer expectations

Customer expectations are beliefs a customer has towards the performance of a service. These beliefs act as standards, which the customer then compares his or her perceptions of the performance towards. Zeithaml et al. (1993) identify, that customers' expected level of service can be divided to two distinct levels: *desired service* and *adequate service*. Desired service is defined as what the customers anticipate, that they should receive from consuming the service. By contrast, adequate service is something that the customer is willing to settle for. Between the two levels lies the *zone of tolerance*, which indicate how much variability customers are willing to accept in the service level. (Zeithaml et al. 1993)

Expectations are formed based on every cue the customers receive related to the service (Zeithaml et al. 1993). Cues can derive for example from word of mouth and advertisements (Grönroos 2000). Furthermore, Andersson and Liedman (2013) suggest that previous experience is the dominant source of expectations for industrial services. Another significant source is the sales process, which includes the sales and marketing efforts. Both have a strong influence on customers' *explicit expectations*. Explicit expectations are conscious desires or wishes that are formed based on previous knowledge of the service. In addition, Zeithaml et al. (1993) argue that explicit expectations are also influenced by service providers service promises such as price and value proposition. (Andersson and Liedman 2013)

2.3.3 Perceived value

According to Vargo and Lusch (2004), value is something that the customers perceive rather than something the producers embed into their offering. Value is co-created in customers' own processes and realizes as value-in-use (Vargo and Lusch 2004). Producers are merely able to make value propositions (Grönroos 2000; Vargo and Lusch 2004). According to Payne et al. (2017), value proposition is a tool that organizations use to communicate their ability to share resources and deliver superior value for their customers. It can be stated, that value proposition can be used for distinguishing one's offering from those of competitors. As stated earlier, customer satisfaction is influenced by the perceived value (Fornell et al. 1996) – what was expected versus what was delivered. Hence, value proposition has a significant strategic purpose because it has an impact on value expectations.

Traditional definition for value is getting more than you paid for (Zeithaml et al. 1993). Furthermore, Woodruff (1997) states, that value perceptions are made based on a trade-off between what the customers receive (e.g. utility, worth, benefits, and quality) and what they give up acquiring the product or service (e.g. price, other sacrifices). Holbrook (2006) argues, that customer value can be divided into four distinct categories: *economic value*, *hedonic value*, *social value* and *altruistic value*. Economic value derives from consuming a service, which serves instrumentally or functionally further end purposes of the consumer. For example, *efficiency* (increased operating efficiency of overhauled equipment) or

excellence (overhauled manufacturing equipment produces less scrap) deriving from a consumption. Hedonic value is pleasure deriving from the consumption, which is appreciated as such and serves a self-justified end. Social value stems from consuming a service, which improves consumer's social status. Lastly, altruistic value is value created for others, for example, donating to charity. (Holbrook 2006)

Total perceived value derives from a comparison between what is expected and what is delivered. The expectations are formed based on the value proposition, marketing communication, word of mouth, previous experience and price (Woodruff 1997; Grönroos 2000). It can be concluded, that customer satisfaction is formed by total perceived quality and total perceived value. The previous paragraphs have identified the psychological elements that influence the customers' perceptions and evaluations of service. After recognizing the typology of customer satisfaction, the study focuses on the creation of service experience, which drives customer satisfaction and improves the service provider's internal efficiency.

2.4 Service experience

The term 'service experience' is used for describing the holistic experience that customers go through when consuming a service (Voorhees et al. 2017). The service experience consists of all the interactions or *touchpoints* between the customer and the service provider (Stickdorn and Schneider 2011; Voorhees et al. 2017). Voorhees et al. (2017) divide the service experience into three consecutive phases: *pre-core*, *core* and *post-core service*. *Pre-core service* includes all activities, transactions and processes occurring before the execution phase or *core service*. *Post-core service* includes all actions needed to complete the single service experience, and efforts to enforce customer retention. Berry et al. (2002) further describe the service experience as a sum of all the clues related to the service that shape the customers' state. (Voorhees et al. 2017)

Vargo and Lusch (2004) suggest, that value is co-created in the service process, which realizes as value-in-use. According to Sandström et al. (2008), value-in-use is influenced by the evaluations of different clues that the customer is exposed to during the service experience. Berry et al. (2002) state, that the evaluation of the service experience, is likely to create a preference for a particular service. Hence, organizations need to recognize and manage the clues to enforce customer retention. Ultimately, a preferred service experience can create a competitive advantage for the service provider.

Voorhees et al. (2017) emphasize the need for research on the pre-core and the post-core service. They claim that extensive literature has focused on describing service experience during the core service. To address the gap in relevant literature, this research focuses on the pre-core service experience.

2.5 Pre-core service experience

Voorhees et al. (2017) divide the pre-core service into four areas of customer engagement: *customer information search*, *initial contact*, *onboarding activities*, and *communication*. *Customer information search* occurs both before the purchase and after it. Information search includes all the clues (Berry et al. 2002) that the customer manages to obtain prior to purchase, through websites, previous experience, WOM, service catalogues, et cetera. *Initial contact* can occur during the information search period and it might occur between humans, between a human and a computer, or between computers. *Onboarding* activities include all activities related to ensuring the purchase. *Communication* refers to all the formal and informal messages and conversations between the customer and the service provider during the pre-core phase. Communication includes the joint planning of the service prior to core service. (Voorhees et al. 2017)

2.6 Creating a holistic pre-core service experience

To further understand the creation of a successful pre-core service experience, this thesis examines the topic through the service design fundamentals (Stickdorn and Schneider 2011). The fundamentals should be embedded into the service model, to ensure a holistic service experience. Therefore, the pre-core service experience should be *customer-centric*, *co-creative*, *sequencing*, *evidencing* and *holistic*. Upcoming paragraphs aim to understand successful pre-core service experience creation for maintenance services. The focus is aligned with the scope of this thesis and allows a more detailed examination of the topic.

Services should be *customer-centric*, since value is co-created in service processes (Vargo and Lusch 2004). The touchpoints of the pre-core service need to support active customer participation, since value co-creation occurs when customers have a chance to personalize their experience (Bolton et al. 2014). Furthermore, Saxena (2010) argues that there is a positive relationship between customer participation and perceived quality, implying that customers are more satisfied when they assume the role of a co-creator (Saxena 2010). Hence, the service offering, and the content of each order should be customizable for the customer. Grönroos (2000) emphasizes that all parts of the service should be designed to create value for the customer. Thus, customers should participate in planning the delivery phase. Common planning meetings and review sessions are examples of customer-centric pre-core service (Bolton et al. 2014).

Bolton et al. (2014) claim that services are usually co-produced by different service providers and distinct functions within the organization. Therefore, engagement and involvement of all relevant stakeholders should be emphasized during the pre-core service. *Co-creative* planning ensures that everyone has the possibility to voice their requirements (Stickdorn and Schneider 2015). Collaboration decreases the likelihood of concise plans and sub-optimization (Oakland 2014). Furthermore, common planning meetings can be used for familiarizing customers with all relevant stakeholders, thus, improving communication during the beginning of execution (Stickdorn and Schneider 2011). In case the involvement is limited, different stakeholders at least must be kept informed of the dialogue with the

customer. This ensures that the stakeholders can both utilize the information created in the discussions and convey aligned message to the customer (Grewal et al. 2009). Grewal et al. (2009) claim, that the consistency of the message between customer engagements is imperative for ensuring coherent service experience.

Stickdorn and Schneider (2011) recognize that service experience is a *sequence* of interrelated touchpoints. The rhythm in which these interactions occur has an impact on customers' perception of the service experience (Stickdorn and Schneider 2011). Touchpoints need to befall in a chronological order for the journey to be logical to follow (Bolton et al. 2014). Rawson et al. (2013) argue that creating a logical journey is far more important than optimizing single interactions. Coherency of communication has a significant impact on the logicity of the journey. Complexity of maintaining a sound dialogue increases when several functions are involved (Rawson et al. 2013). Information needs to be captured and distributed between functions to ensure coherent information flow towards the customers (Lavikka et al. 2009). On the other hand, the information provided by the customer should be analysed and shared accordingly to ensure the utilization in further processes. Essentially, potential customers need to be identified and placed on a designed journey to ensure that the service experience follows a predefined and controllable path. (Rawson et al. 2013)

Evidence is used in service design to both provoke positive emotions and make hidden parts of the service visible (Stickdorn and Schneider 2011). Grönroos (2000) notes that backstage processes should be considered as value-generation opportunities. Therefore, backstage processes should be made visible through evidence. During the pre-core service phase customers need to gain a holistic understanding of the content of the service, schedule and involved stakeholders. To increase the awareness, tools such as visualisation and documentation can be used (Tregear 2015). Naturally, continuous and open communication is also essential for reducing uncertainties and ambiguities.

Holistic service experience indicates that customers are exposed to all kind of clues (Berry et al. 2002), that are both inside and outside of service providers' control (Verhoef et al.

2009). These trivial details shape the customers' perceptions of the total service (Berry et al. 2002). In addition, holistic design implies considering all the above-mentioned fundamentals (Stickdorn and Schneider 2011). What service providers can control are the touchpoints' servicescape (Grönroos 2000) and performance of their service representatives (Bolton et al. 2014). The representatives should be trained to deal with customers in such a manner that the desired emotional responses are achieved (Bolton et al. 2014). Naturally, the servicescape should be designed to provoke same emotions (Grönroos 2000). In conclusion, the controllable clues should be designed to create a holistic journey for the customer and to minimize the impact of uncontrollable factors. Furthermore, the emotions that the service provider wants to provoke should be in line with the key message and value proposition associated to the offering.

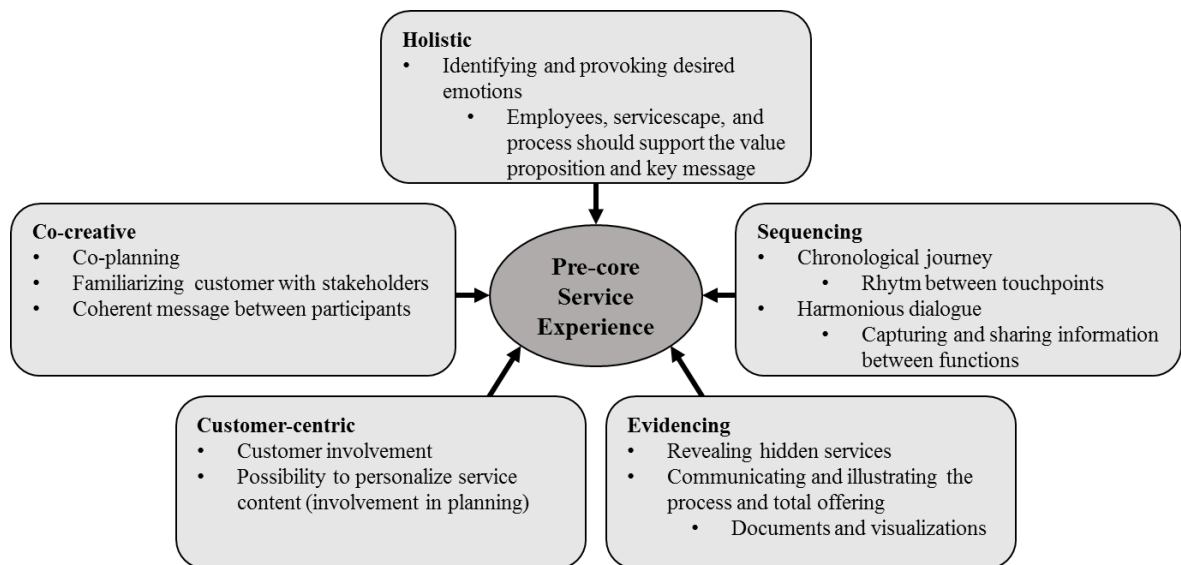


Figure 6. Holistic pre-core service experience

Figure 6 present a summary of details, that should be considered designing the pre-core phase of a maintenance service. The upcoming chapters focus on the structure dimension, which includes organization's capabilities and processes (Bullinger et al. 2003) needed for creating a successful service experience. As stated in the previous sections, most of the customers' quality perceptions relate to the process (Table 1). The process involves both employees' performance and structure of the process (Grönroos 2000).

3 CROSS-FUNCTIONAL COOPERATION

This chapter covers theories and methods that organizations can utilize to efficiently deliver services that depend on resources from distinct functions. Oakland (2014) argues, that most of today's professional services are dependent on several distinct participants. The organization functions as a system which includes several components (Oakland 2014). Systems are collections of elements including their relations (Baines et al. 2009). According to Oakland (2014), performance of individual components and how they interact together defines the system performance. Thus, organizations' performance is dependent on the performance of its distinctive functions and the way they manage to cooperate.

3.1 Cross-functional integration

According to Fabbe-Costes and Jahre (2007), there are four types of integration within supply chain management context: flows (material, information), processes and activities, technologies and systems, and actors (structures and organizations). Improved information flow allows functions to gather and process information more agilely, which eliminates uncertainty and advances decision-making capabilities (Swink and Schoenherr 2015). Naturally, information flow is significantly dependent on information systems' ability to analyse, store and distribute relevant information (Lavikka et al. 2009). Integration of processes has the potential to increase process efficiency through more complete goal alignment and resource optimization (Swink and Schoenherr 2015). Streamlining cross-functional processes reduces organizational redundancy and duplicated efforts (Swink and Schoenherr 2015). Resources can be assigned to other value-adding activities (Modig 2016).

According to Foerstl et al. (2013), cross-functional integration aims to improve collaboration between distinct functions. Integration pursues to increase unity of distinct functions by aligning their objectives and ways of working (Lavikka et al. 2009). It can be stated, that integration aims to provide a structure, which supports functions' cooperation in daily activities. It needs to be recognized that integration does not occur self-contained, but it

requires considerable investments of time, effort and trust to overcome any barriers (Richey et al. 2010). According to Richey et al. (2010) successful application of cross-functional integration is significantly dependent on managers. Effective managerial support and incentives facilitate individuals' and teams' willingness to collaborate with other functions (Lavikka 2009).

Study carried out by Swink and Schoenherr (2015) reveals that cross-functional integration has the potential to improve supply chain efficiency through waste reduction and improved decision-making capabilities. Furthermore, improved process efficiency has a positive relationship to the profitability of the organization, which is often realized as increased return on assets (Swink and Schoenherr 2015). Additionally, the cumulative effect from increased efficiency yields better margins, since streamlining reduces overhead costs associated to information processing and coordination (Swink and Schoenherr 2015). Furthermore, collaboration during pre-core service (Voorhees et al. 2017) is likely to improve the effectiveness and stability of plans, which eventually reduces the cost of correcting failures, such as rework (Swink and Schoenherr 2015).

3.2 Barriers to cross-functional integration

Song et al. (1997) recognize four types of barriers to cross-functional integration: *demographic factors*, *unclear responsibilities*, *reward systems* and *physical barriers*. *Demographic factors* shape the way individuals think and act, which can lead to misalignment and lack of communication and trust (Song et al 1997). After all, foundations for cross-functional relationships are mutual understanding and trust, which are not achieved without shared values and open communication (Lavikka et al. 2009). *Unclear roles and responsibilities* indicate, that processes are not standardized (Mintzberg 1979), which complicates the alignment of targets and tasks. Therefore, it can be stated, that roles and responsibilities should be clearly defined and communicated to all stakeholders to support cooperation.

The role of *reward systems* is two-fold, they can either function as barriers or facilitators of cross-functional integration (Song et al. 1997). According to Näslund and Hulthen (2012), jointly aligned reward systems are a prerequisite for integration. If individuals' goals and reward systems are not aligned with shared objectives, system wide performance does not reach its full potential (Näslund and Hulthen 2012). Instead, individuals and separate functions aim to drive their own agenda, which limits the willingness to cooperate (Näslund and Hulthen 2012). Furthermore, Ellinger (2000) suggests, that in the case of highly interdependent functions, it is rather counterproductive to evaluate, and reward employees based on individual performance. The evaluation should be done with indicators that measure the extent and quality of individuals' engagement with other functions (Ellinger 2000).

Physical barriers, such as distance, can function as a barrier, if tools and methods are not assigned to overcome the issue (Song et al. 1997). Information systems must support agile and rapid information sharing. Otherwise, a siloed structure begins to form (Swink and Schoenherr 2015). Distance between employees forces them to establish systematic and structured communication methods, since possibilities for ad hoc and unscheduled information sharing are limited (Lavikka et al. 2009).

3.3 Antecedents of cross-functional integration

In their study Lavikka et al. (2009) recognize seven distinct antecedents for integration: *common will, mutual understanding, common development projects, internal customership, communication, common profit goals and aligned strategic plans* (Table 2).

Table 2. Antecedents of cross-functional integration

Antecedent	Examples
Common will	Common will originates from the objectives and strategy of the organization. Common will and values guide employees to cooperate towards a mutual target. (Hannus 2004)
Mutual understanding	Mutual understanding is achieved through experience, communication and open information sharing (Hannus 2004). Understanding processes, roles and responsibilities aid employees to comprehend the benefits achieved through cooperation (Swink and Schoenherr 2015).
Common development projects	Common development projects build unity and allow individuals to influence and change their environment and processes (Lavikka et al. 2009).
Internal customership	Functions operate in a common value chain, gradually adding value to the offering. Each function should produce optimal input for their internal customer to maximize the value chain's performance. (Oakland 2014)
Communication	Communication is a pre-requisite for cooperation, since it builds trust and mutual understanding. (Lavikka et al. 2009)
Common profit goals and objectives	Common targets guide actions to desired direction. Functions might serve a same end-customer, but fail to coordinate their actions, because the function specific objectives are misaligned (Lavikka et al. 2009).
Aligned strategic plans	Strategic alignment facilitates integration of operational tasks. (Foersti et al. 2013)

Table 2 illustrates that most of the integrative factors are related to building common apprehension of organization's strategy, vision, and way of working. Richey et al. (2010) suggest that managers need to be committed and encourage individuals engage in cooperation. Furthermore, leadership is needed for creating a supportive environment and structure (Lavikka et al. 2009). The environment and structure eventually support creation of antecedents requiring individuals' efforts and compliance such as communication, common will and mutual understanding (Lavikka et al. 2009). Increased communication and

sharing of information, knowledge and resources build trust among personnel, which fosters even tighter cooperation (Swink and Schoenherr 2015).

Foerstl et al. (2013) identify that performance management can also be used for creating integration and supporting cooperation. Russel and Taylor (2011) define performance management as setting up targets, as well as, monitoring and comparing actual progress towards the targets. According to Moses and Ahlström (2008), performance management balances performance of interrelated functions and aligns interrelated processes with the organizations' strategic objectives. Performance management improves transparency of the interdependencies between functional processes, thus supporting collaboration (Foerstl et al. 2013). Performance management includes the individuals' evaluation methods and reward systems.

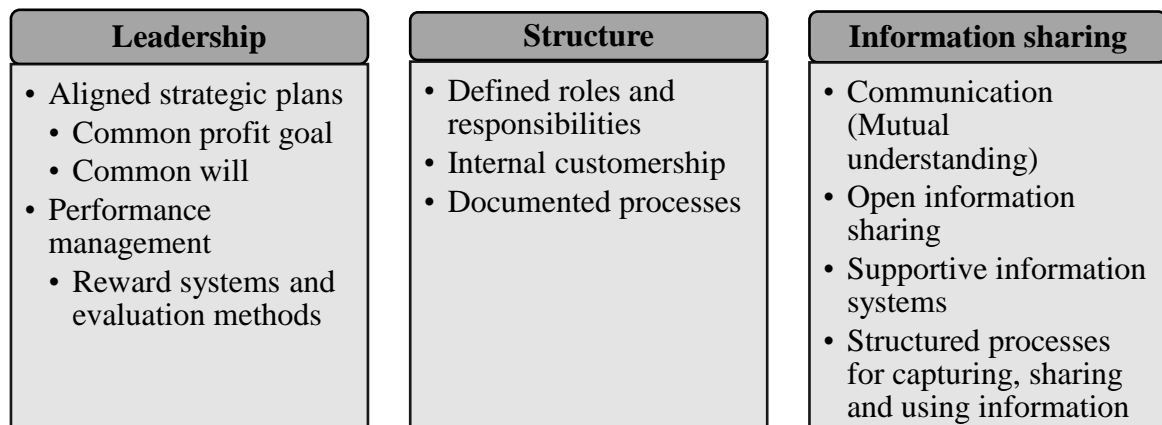


Figure 7. Facilitators of cross-functional integration

Figure 7 captures the facilitators of cross-functional integration as identified by the author of this thesis. Essentially, this research recognizes the facilitators of integration as necessities for creating a structure that supports cooperation in daily processes. The facilitators are allocated to three distinct categories: *leadership*, *structure* and *information sharing*. Integration creates the supportive structure and environment, but coordination is needed to guide the daily tasks (Lavikka et al. 2009). The following paragraphs focus on coordination mechanisms.

3.4 Cross-functional coordination

Coordination has the same purpose as integration – to support cooperation, but the methods are different. This thesis separates coordination from integration according to the following definitions:

- Integration aims to create a supportive environment and structure for cooperation (Foerstl et al. 2013).
- Coordination involves mechanisms that support and guide cooperation in daily processes (Lavikka et al. 2009).

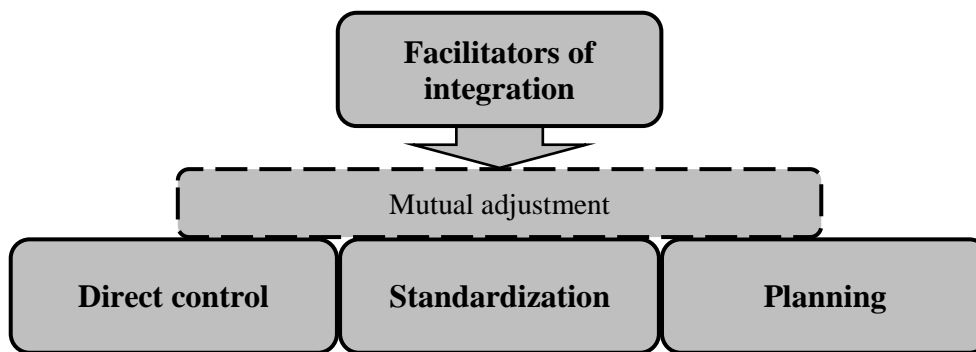


Figure 8. Coordination mechanisms

Based on previous research (Thompson 1967; Mintzberg 1979), Lavikka et al. (2009) recognize four types of cross-functional coordination mechanisms: *mutual adjustment*, *standardization*, *planning* and *direct control*. Of these four mechanisms, *mutual adjustment* stands out as rather self-evident and general. Mutual adjustment refers to individuals' ability to adjust their performance with others (Mintzberg 1979). Communication, unscheduled meetings and ad hoc discussions are forms of mutual adjustment (Lavikka et al. 2009). Basically, mutual adjustment supports cooperation when no other mechanisms guide activities (Mintzberg 1979). Upcoming sections cover rest of the coordination mechanisms in the order presented in Figure 8. The *facilitators of integration* are included in the Figure 8, since “integration supports cooperation and facilitates coordination” (Lavikka et al. 2009). Mutual adjustment is excluded from the examination, since mutual adjustment is the

coordination mechanism that should exist in all processes with more than one stakeholder (Mintzberg 1979).

Lavikka et al. (2009) suggest, that each coordination mechanism is suitable for only certain kinds of environments. However, according to Mintzberg (1979), organizations seldom use just one coordination mechanism, but rather a mix of all of them. Aligned with Mintzberg's notion, this research assumes that coordination mechanisms are not exclusive, but they can be applied as combinations. When combined, these mechanisms should effectively support cross-functional cooperation.

3.5 Direct control

Direct control shifts the accountability of decision-making from several individuals to a single person (Mintzberg 1979). Essentially, direct control involves supervisors coordinating the work of their subordinates. According to Mintzberg (1979), direct control creates process efficiency, since complex decisions can be escalated to managers, rather than having several functions investing time to resolve issues. Direct control starts from compliancy and supervision (Mintzberg 1979), but later on, the role of the supervisor should change to a more supportive one (Lavikka et al. 2009). Furthermore, Ellinger (2000) suggests, that "collaborative behaviour is based on cooperation (willingness), rather than compliance (requirements)." This indicates that managers should support and help their subordinates to cooperate not force the practice.

Besides supporting and fostering cooperation, managers' responsibility is to ensure that their team's efforts are aligned with the organizations' strategic goals (Mintzberg 1979). The line of supervision creates the organizational hierarchy, which connects the functions and business units to the strategic apex of the organization (Mintzberg 1979). Therefore, it can be stated that using direct control as a coordination mechanism can be justified from either bottom-up or top-down perspective. Direct control fosters cooperation, while ensuring that

the functions' activities are aligned with the organization's objectives. Upcoming paragraphs present methods for using direct control in various manners.

3.5.1 Coaching

It can be stated, that coaching is an essential part of direct control (Lavikka et al. 2009), since cooperation is achieved through willingness rather than compliance (Ellinger 2000). Coaching is a form of leadership, that focuses on improving the performance of individuals to eventually improve the performance of the system (Stout-Rostron 2014). Stout-Rostron (2014) suggests that business coaching creates results through a dynamic relationship between a coach and a client. Under direct control, *the coach* is the supervisor, who pursues to improve cooperation between employees in different functions, *the clients*. Coaching is an effective tool to influence individuals' thinking and behaviour (Stout-Rostron 2014). The aim of coaching is not to directly tell individuals what to do, but to facilitate, support and enable their individual development (Stout-Rostron 2014). It can be stated, that coaching is an essential part of *talent management* (Foerstl et al. 2013). Giunipero (2006) suggest that managers should be able to train, educate and coach their subordinates to develop the necessary soft (communication and emotional skills) and hard (technical skills) needed for cooperation.

“To be successful, business coaches require an understanding of organizational systems and complexity, as well as an informed ‘hands-on’ familiarity with psychological theory” (Stout-Rostron 2014). A vital part of coaching individuals is to identify what motivates them. According to Stout-Rostron (2014), motivators are both intrinsic (client's own values, beliefs and feelings) and extrinsic (business targets, reward systems, relationships). Successful leaders should be able to utilize incentives alongside supportive coaching methods to unlock the full potential of their clients. This includes mentoring, assisting with tasks and leading by example. (Stout-Rostron 2014)

3.5.2 Conflict resolution

According to Mintzberg (1979), an advantage of direct control is the rapidness of decision-making. The advantage is achieved when intricate decisions are escalated to supervisors rather than negotiated among functions with diverging opinions (Mintzberg 1979). Planning for service delivery is an instance where managerial intervention can be utilized. Despite the depth and quality of planning, forecasting the future state is bound to have uncertainty and ambiguity to some extent (Goretzki and Messner 2016). This indicates that the employees need to agree on a level of uncertainty that they are content to proceed with (Goretzki and Messner 2016). There are two approaches that can be taken to resolve such a problem: the decision is escalated to managerial level (Mintzberg 1979) or the members involved utilize their collective judgement (Goretzki and Messner 2016). It can be stated, that managerial support is suitable for situations with significant levels of ambiguity. If members involved are not able to see eye to eye, it is best to speed up decision-making by resorting to help of supervisors. Collective judgement is examined under coordination by plans.

Having the possibility to resort to managerial intervention fosters cooperation, since employees can avoid conflicts and disagreements, which would eventually reduce the willingness to cooperate (Mintzberg 1979). As identified, the role of a coach includes supporting individuals' ability and willingness to cooperate (Stout-Rostron 2014). Therefore, resolving and preventing conflicts is an essential part of being a coach. Preventing conflicts requires a hands-on leadership style from the managers, since they need to be close to the action, to identify situations leading to conflicts (Hauptman and Hirji 1999).

3.5.3 Performance management

According to Neely et al. (1995) the aim of performance measurement is to quantify and measure efficiency and effectiveness of actions. Furthermore, performance management utilizes the information from performance measurement in decision-making (Neely et al. 1995). On the other hand, performance management pursues to align organization's operations with the strategy (Foerstl et al. 2013). Performance management systems (PMS)

should cascade the strategic targets into tangible objectives and measures on the operational level (Kaplan and Norton 1996).

Performance management systems consist of indicators used for quantifying and measuring processes (Neely et al. 1995). Key performance indicators (KPI) measure performance of critical processes. KPIs can be broken down to performance indicators (PI) that can be used for measuring performance of any system or process. PIs and KPIs can either be leading or lagging. Leading indicators observe and forecast future state of things. Leading indicators should issue warnings of performance conditions in advance. Whereas, lagging indicators measure the outcome of completed activities. (Parida and Kumar 2009)

It can be stated, that performance management can be utilized to guide employees' actions towards the desired direction. Foerstl et al. (2013) argue that performance management makes process interdependencies and related value contributions understandable. This enhances cross-functional cooperation, since individuals realize the value of cooperation (Foerstl et al. 2013). Like individual bonus schemes and targets, indicators should be designed to support cooperation between functions (Ellinger 2000). Moreover, PIs and KPIs should be designed to measure the performance of complete processes rather than limited functional areas, to avoid sub-optimization (Oakland 2014).

Kaplan and Norton (1996) suggest that measuring efficiency of cross-functional processes is imperative, since inefficient handovers between functions and slow response processes are significant constraints for organizations. According to Ellinger (2000), alignment can be achieved by designing indicators that quantify the performance towards the customer. Examples of such indicators are customer satisfaction, lead times, availability, reliability and resource utilization (Parida and Kumar 2009). Most of these are lagging indicators (Parida and Kumar 2009). During the pre-core service phase (Voorhees et al. 2017), leading indicators, such as information accuracy and risk assessments, can be utilized (Parida and Kumar 2009).

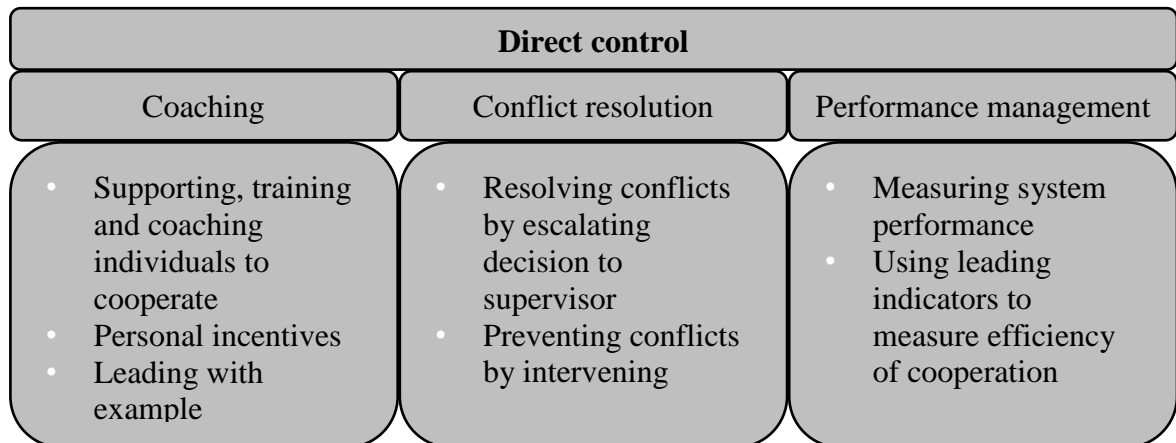


Figure 9. Coordination mechanism: direct control

Figure 9 combines the methods that supervisors can use to support and encourage cross-functional cooperation. The direct control approaches are coaching, conflict resolution and performance management. These approaches should not be interpreted as exhaustive (Mintzberg 1979), but rather complementing each other.

3.6 Standardization

According to Mintzberg (1979), *standardization* is a method for coordinating actions during the process design phase and thus limiting the need for ad hoc coordination during the execution. It can be stated, that standardization reduces the need for *mutual adjustment*, since employees know what they receive as an input and how to transform that to a needed output. Mintzberg (1979) identifies that standardization can be applied in three different dimensions: *standardization of work processes*, *standardization of outputs* and *standardization of skills*. Standardization reduces variability of the process and output (Valminen and Toivonen 2007). On the other hand, standardization is likely to create process efficiency and increase profitability, since time and cost needed for clarifying uncertainties and correcting defects are reduced (Swink and Schoenherr 2015; Goretzki and Messner 2016).

3.6.1 Standardization of work processes

Standardization can be applied to processes that are relatively stable and repetitive (Thompson 1967). “Work processes are standardized when the contents of the work are specified or programmed” (Mintzberg 1979). Standardization involves establishing a set of routines and rules (Tregear 2015) that the process should always obey and follow. Tregear (2015) argues that effective business process standardization does not rigorously pursue to standardize every process but defines the most critical parts and requires employees to perform those parts flawlessly. This is achieved by documenting the processes in significant detail (Tregear 2015) and training the employees to comply with the agreed way of working (WOW). To achieve the full potential of work process standardization, the instructions should also describe the roles and responsibilities, needed to perform a certain process, in significant detail (Haroun and Duffuaa 2009; Tregear 2015).

It can be stated, that making the documented instructions and WOWs easily available, is essential for increasing the utilization. Therefore, information systems (Tregear 2015) and visualization (Veryard 1986) should be utilized. Information systems are valuable for two reasons (Tregear 2015). Firstly, information systems provide an environment and structure and for standardizing processes, since rules and WOWs can be implemented inside them. Secondly, information systems enable global distribution for the documents. (Tregear 2015)

Visualization is used for concretizing, clarifying and simplifying processes (Tuominen et al. 2015). Visualization improves the relationship between people and systems (Veryard 1986). It helps people to concretize and structure ambiguous phenomena (Tuominen et al. 2015). In other words, visualising processes, allows people to comply with and control them, since they are more likely to understand the cause and impact of their actions (Veryard 1986). By connecting visualization with the documentation of processes, it can be hypothesized, that visualizing complex and significantly detailed processes is of utmost importance, since those are the critical processes (Veryard 1986; Tregear 2015). Furthermore, understanding and remembering each step of highly detailed processes can be challenging. Therefore, visual aids are useful, since they constantly remind people of the process.

3.6.2 Standardization of outputs

Standardization of outputs applies for processes that have a clearly defined end state, but actions needed to produce the output are not defined (Mintzberg 1979). For example, dimensions of a product or outcome of a service is defined, but methods for creating them are optional (Mintzberg 1979). Standardization of output can also indicate that a certain financial result is needed from a business unit (Mintzberg 1979), but they can choose the methods for delivering the desired result. Mintzberg (1979) further notes that the handovers and deliverables for distinct process phases can be standardized. In addition, Lavikka et al. (2009) suggest, that internal customership supports integration. Therefore, previous stage in the process should serve the next phase and produce outputs, that fulfil the quality and value requirements of the internal customer. Arguably, standardizing the output for each process phase suits for complex services, which involve several handovers between distinct roles.

Kaplan and Norton (1996) label inefficient handovers as a significant constraint for cross-functional processes. Inefficient handovers signify, that previous stage in the process either provides poor input or communicates the input poorly for the next stage. Efficient and effective handovers reduce uncertainty and ambiguity, since accuracy and understandability of information increases (Kaplan and Norton 1996; Veryard 1986). Furthermore, improved information flow drives process efficiency, which has a positive influence on organizations' profitability (Swink and Schoenherr 2015). To improve handover performance, required deliverables need to be defined and described in significant detail (Tregear 2015). It can be concluded, that describing, documenting and visualizing the outputs of a process is as important as for standardized work processes. Furthermore, standardization should apply for both tangible (material) and intangible (information) deliverables.

3.6.3 Standardization of skills

“Sometimes neither the work nor its outputs can be standardized, yet some coordination is required” (Mintzberg 1979). It can be stated, that standardization of skills suits for customizable services, where both the process and the output are heterogenous.

“Standardization of skills achieves indirectly what standardization of work processes or of work outputs does directly: it controls and coordinates the work” (Mintzberg 1979). Essentially, standardization of skills gives significant responsibility to individuals. To add control over the system, other coordination methods, such as direct control and planning, can be utilized (Mintzberg 1979). By standardizing skills, employees are expected to produce a desired output without predefined instructions. Standardization of skills is rarely the only utilized coordination mechanism (Mintzberg 1979). In most cases service processes have certain blocks that are predefined and standardized (Tuominen et al. 2015). Usually, parts of the process that are not standardized, are defined during the planning for service delivery, which coordinates the delivery phase like standardization would (Goretzki and Messner 2016).

Arguably, distinct functions of the organization are specialized to perform a certain part of the service process. Therefore, needed skills and knowledge significantly vary between roles. To achieve standardization of skills, the responsibilities associated to a certain role should be defined clearly (Haroun and Duffuaa 2009). After defining roles and responsibilities, talent management (Foerstl et al. 2013) can be used to select and train employees to perform the process. To achieve standardization of skills, employees need to be trained continuously (Mintzberg 1979). Therefore, talent management should be a constant process to ensure continuous learning and development (Foerstl et al. 2013; Stout-Rostron 2014). Essentially, standardization of skills reduces the need for mutual adjustment and ad hoc coordination, since employees know that their colleagues possess the skills to provide the needed input. Thus, standardization of skills is a coordination mechanism that should be utilized in all service processes.

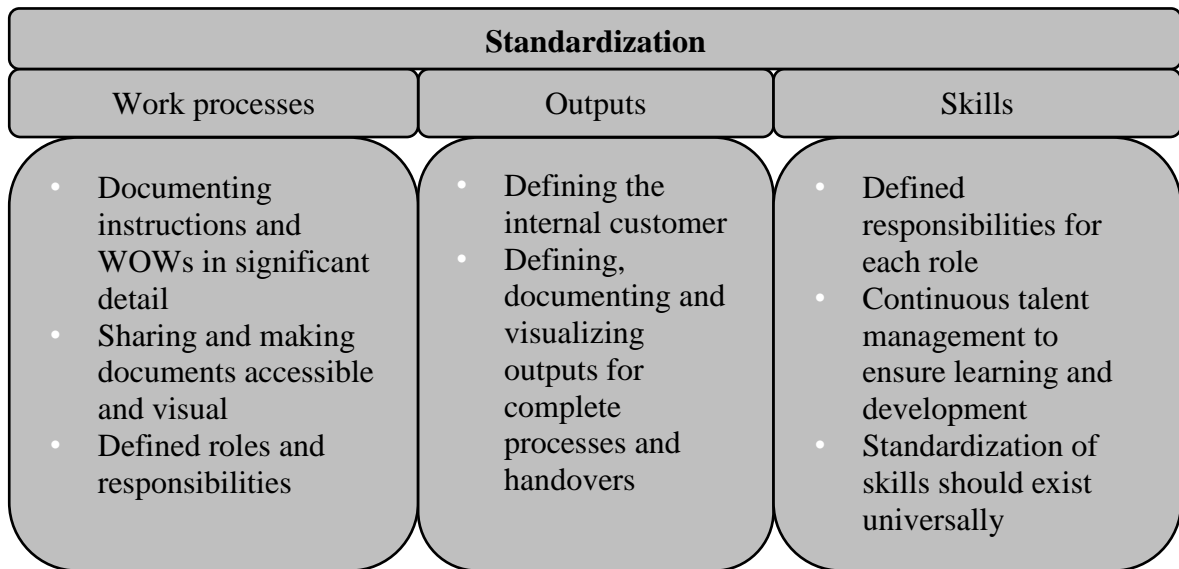


Figure 10. Coordination mechanism: standardization

Figure 10 illustrates the methods for achieving cooperation through standardization. Mintzberg (1979) argues that seldom do organizations opt to use only one of the coordination mechanisms. It can be argued, that direct control is needed for ensuring compliancy for the standardized processes and outputs. In addition, *planning* is a coordination mechanism, that structures and rationalizes those parts of the process that can't be standardized (Lavikka et al. 2009). The next section addresses utilization of planning as a coordination mechanism.

3.7 Planning

“Coordination by plan involves the establishment of schedules for the interdependent units by which their actions may then be governed” (Thompson 1967). In other words, plans are created to control activities and to efficiently and effectively manage organizations' resources (Al-Fares and Duffuaa 2009). Plans are created based on forecasts and assumptions of the future state of things (Al-Fares and Duffuaa 2009). Arguably, coordination by plans suits for dynamic situations, where the variance between tasks is high. Like standardization (Mintzberg 1979), coordination by plan establishes a predefined structure and process, which the members should comply with to reduce the need for mutual

adjustment and ad hoc coordination. The fundamental difference is, that plans must be created again each time.

3.7.1 Planning under uncertainty

In uncertain environments organizations often resort to revising plans and ad hoc decisions on where to allocate resources (Goretzki and Messner 2016). As identified earlier, members involved in planning can either escalate the decisions for managers (Mintzberg 1979) or resort to collective judgement (Goretzki and Messner 2016). Goretzki and Messner (2016) suggest that *collective sensemaking* among cross-functional teams is perceived as a method to limit and control uncertainty and ambiguity. Sensemaking refers to a process in which participants use collective judgement to structure and rationalise uncertain and ambiguous events. Uncertainty refers to situations where the decision-makers lack ideal amount and quality of information to make a holistic decision. Ambiguity exists in situations where the participants use diverging knowledge and information to judge events. (Goretzki and Messner 2016)

In sensemaking meetings, the members gather to discuss and align their actions towards a shared goal. Goretzki and Messner (2016) claim that sensemaking meetings are not a mechanism for removing uncertainty and ambiguity completely. Ultimately, members involved in the meeting “must rely on their collective judgement and decide to go for a particular interpretation or course of actions despite their imperfect knowledge of the future” (Goretzki and Messner 2016). The key is to reach a state, where all participants acknowledge, that further planning is neither profitable nor necessary, and possibility of running into operational complications is low enough. Essentially, employees agree on a certain course of actions and share the accountability of results. (Goretzki and Messner 2016)

Goretzki and Messner (2016) suggest that using sensemaking meetings as coordination mechanism might be rather resource-intensive and time consuming. Thus, decision-makers should have a method for *filtering* and *prioritizing* events that truly need collective

sensemaking (Goretzki and Messner 2016). Goretzki and Messner (2016) conclude that sharing information regarding needed decisions prior to the meeting is another method for streamlining the process. Filtering and knowledge sharing should be given as a responsibility to a single person, who is also responsible for leading the sensemaking meetings (Goretzki and Messner 2016). The person needs to possess sufficient hard (technical) and soft (communicational) skills (Giunipero 2006) to make the filtering judgements and to lead the meeting.

3.7.2 Pull scheduling

Ballard and Howell (2002) introduce a hands-on concept for creating sound plans, called *pull scheduling*. “The purpose of pull scheduling is to produce a plan for completing a phase of work that maximizes value generation and one that everyone involved understands and supports” (Ballard and Howell 2002). The pull scheduling starts from working backwards from the target completion date (Ballard and Howell 2002). This ensures that completing previous step releases the work for the next step (Ballard and Howell 2002), which is the basic principle for “pull” methodology (Latzko and Saunders 1995). Following the plan ensures that work does not get stuck in the process and create inventories of work in process (Latzko and Saunders 1995).

Pull scheduling supports cooperation in the sense that interests of all functions are protected (Ballard and Howell 2002). Functions are forced to cooperate towards a mutual goal (Lavikka et al. 2009), which limits the likelihood of sub-optimization. Pull scheduling involves documenting all parts of the process and defining inputs needed from previous steps (Ballard and Howell 2002). Then tasks should be laid down according to a sequence, starting from completion to beginning, and respective durations are assigned for each task (Ballard and Howell 2002). After creating an ideal schedule, constraint analysis should be used to identify possible fail points (Ballard and Howell 2002). Then the team should decide whether more time should be assigned to the critical phases either by accelerating completion of previous tasks or by extending the release date (Ballard and Howell 2002). Arguably, identified constraints are the decisions that call for managerial intervention or collective

sensemaking. Once the team has agreed that the plan is detailed enough to proceed with, the plan should not be modified without everyone agreeing (Ballard and Howell 2002).

Learning plays a key role in planning (Ballard and Howell 2002). Previous plans should always be reviewed and reasons for possible deviations should be analysed (Ballard and Howell 2002). However, it is imperative to realize that variation exists in systems to some extent (Latzko and Saunders 1995). What should be analysed are the special causes of variation, not the common causes (Latzko and Saunders 1995). The source for any special cause should be identified and prevented from reoccurring (Latzko and Saunders 1995). Over time the amount of special causes decreases, and the area of common causes can be narrowed (Latzko and Saunders 1995). Naturally, stability of the system increases over time, when previously common causes are handled as special causes, thus less and less variability is passed on in the system. These learnings should be continuously utilized in the lookahead planning of activities (Ballard and Howell 2002).

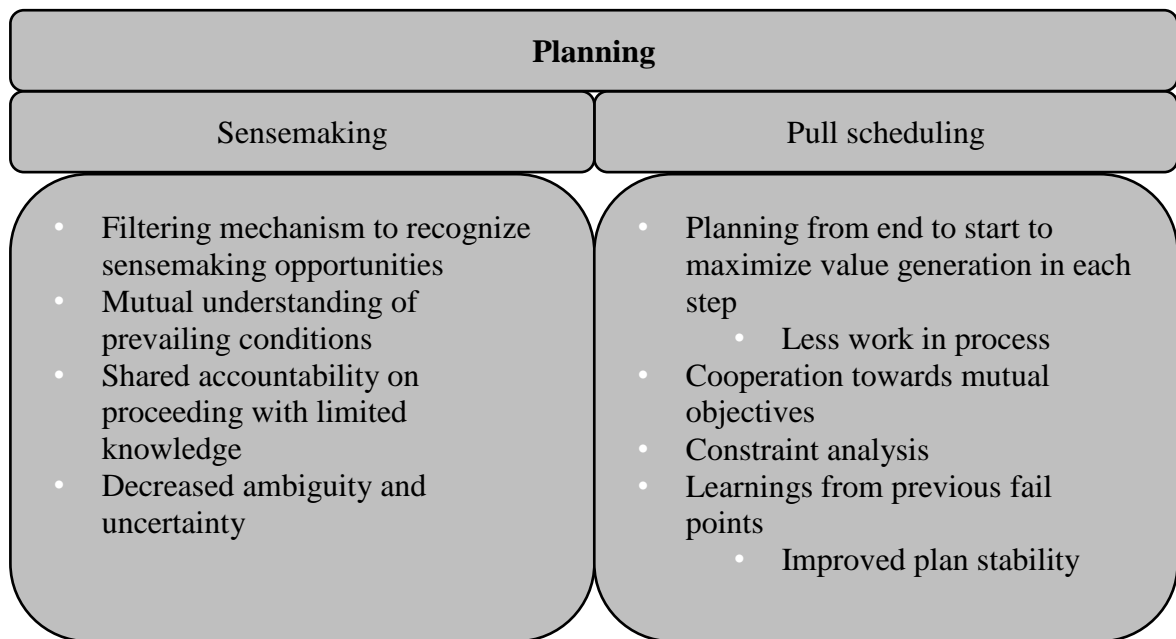


Figure 11. Coordination mechanism: planning

Figure 11 highlights two ways for utilizing planning as a cross-functional coordination mechanism. By combining the two methods, the quality of the plans is likely to improve. Firstly, pull scheduling enables creation of holistic and sound plan from start to end. Secondly, collective sensemaking ensures that the stakeholders have a mutual understanding of the prevailing conditions and the share the accountability for the consequences. Like standardization, pre-defining the path with plans limits the need of ad hoc coordination. Furthermore, planning fosters cooperation just by bringing the stakeholders together to discuss the possible actions.

4 IMPROVING SERVICE PERFORMANCE THROUGH COOPERATION

In this chapter, the literature review and relevant theories are summarized. Based on the implications a conceptual framework is created. The framework includes methods for improving service performance through both structure and process dimensions (Bullinger et al. 2003). Structure dimension involves service provider's resources and capabilities needed to perform the processes. Process dimension includes service provider's and customer's processes, needed to produce the desired outcome. Structure development is studied through cross-functional cooperation. Finally, process development is studied through service design and creation of the pre-core service experience. Upcoming sections summarize the relevant theories and introduce how they are combined in the conceptual framework. The conceptual framework creates the structure for the empirical work.

4.1 Facilitators of integration

Integration aims to break the siloed nature of organizations, where sharing of information and resources is limited (Näslund and Hulthen 2012). Essentially, cross-functional integration aims to create an environment and structure, that supports cooperation among functions, teams and individuals (Lavikka et al. 2009). Removing siloes within the organization improves the flow of information and resources, since tasks are more aligned, and functions begin to cooperate. Furthermore, integration enhances organization's decision-making capabilities, since timeliness of information improves, while uncertainties and ambiguities are reduced (Swink and Schoenherr 2015; Goretzki and Messner 2016).

Facilitators of integration are both enablers and drivers that this research identifies as essentials for achieving cooperation. The identified facilitators are divided into three different sub-categories: *leadership*, *structure* and *information sharing*. Richey et al. (2010) and Lavikka et al. (2009) emphasize the importance of managerial support in integration. Leadership is essential for establishing the other facilitators. Structural facilitators are

processes, rules and compliances that aim to control and guide individuals' performance (Lavikka et al. 2009). Information sharing involves both structures and processes, that improve information flow. Information sharing is essential for eliminating silos and for building mutual understanding.

4.2 Coordination mechanisms

Coordination mechanisms involve hands-on, operational practices needed to achieve and support cooperation in daily processes (Mintzberg 1979). Essentially, the facilitators of integration build the base for cooperation, while coordination mechanisms are tools that managers can utilize to enable, control and support cooperation in daily operations (Lavikka et al. 2009).

By analysing previous literature (Thompson 1967; Mintzberg 1979), Lavikka et al. (2009) isolate four types of coordination mechanisms: *mutual adjustment*, *direct control*, *standardization* and *planning*. Mutual adjustment is excluded from the research, since it is perceived as self-evident and universal coordination mechanism that should exist in all cross-functional processes. *Direct control* involves coaching, controlling and monitoring mechanisms used for improving the performance of individuals and teams (Mintzberg 1979).

Standardization coordinates tasks by predefining and designing the needed tasks and transactions (Mintzberg 1979). Standardization can be applied to work processes, outputs and employees' skills (Mintzberg 1979). Standardization limits the need for mutual adjustment, since employees collaborate according to a predefined path. *Planning* has the same focus as standardization, to establish a predefined structure and process for coordinating and controlling cooperation (Goretzki and Messner 2016). Furthermore, planning sessions subject employees to cooperate towards mutual targets already when designing the delivery.

4.3 Pre-core service experience

According to Berry et al. (2002), service experience consists of all service related clues that shape the customers' state. Essentially, service experience is what customers go through and experience when consuming a service (Voorhees et al. 2017). The service experience can be divided into *pre-core*, *core* and *post-core phases*. Research in this thesis focuses on the pre-core service experience, since literature on this phase is scarce (Voorhees et al. 2017), and the case company recognizes challenges in that part of the service. The service experience consists of interactions or *touchpoints* between the customer and the service provider. How customers perceive service during these touchpoints, eventually influences how they evaluate the service experience. Therefore, touchpoints need to be designed to meet customers' needs and requirements.

Service design is a discipline that aims to develop service models, that create successful service experience for the customer (Moritz 2005). Stickdorn and Schneider (2011) identify five fundamentals, that all services and service design processes should consider. According to Stickdorn and Schneider (2011), services should always be *customer-centric*, *co-creative*, *sequencing*, *evidencing* and *holistic*. By applying these fundamentals, this research analyses how the pre-core phase of maintenance services should be designed.

4.4 The conceptual framework

The conceptual framework is created by combining the *facilitators of integration*, the *coordination mechanisms* and the *pre-core service experience* (Figure 12). The assumption is that by improving cross-functional cooperation, organizations can better serve their customers, which leads to improved pre-core service experience. In addition, the service model should be designed to both support cooperation and create a holistic experience for the customer.

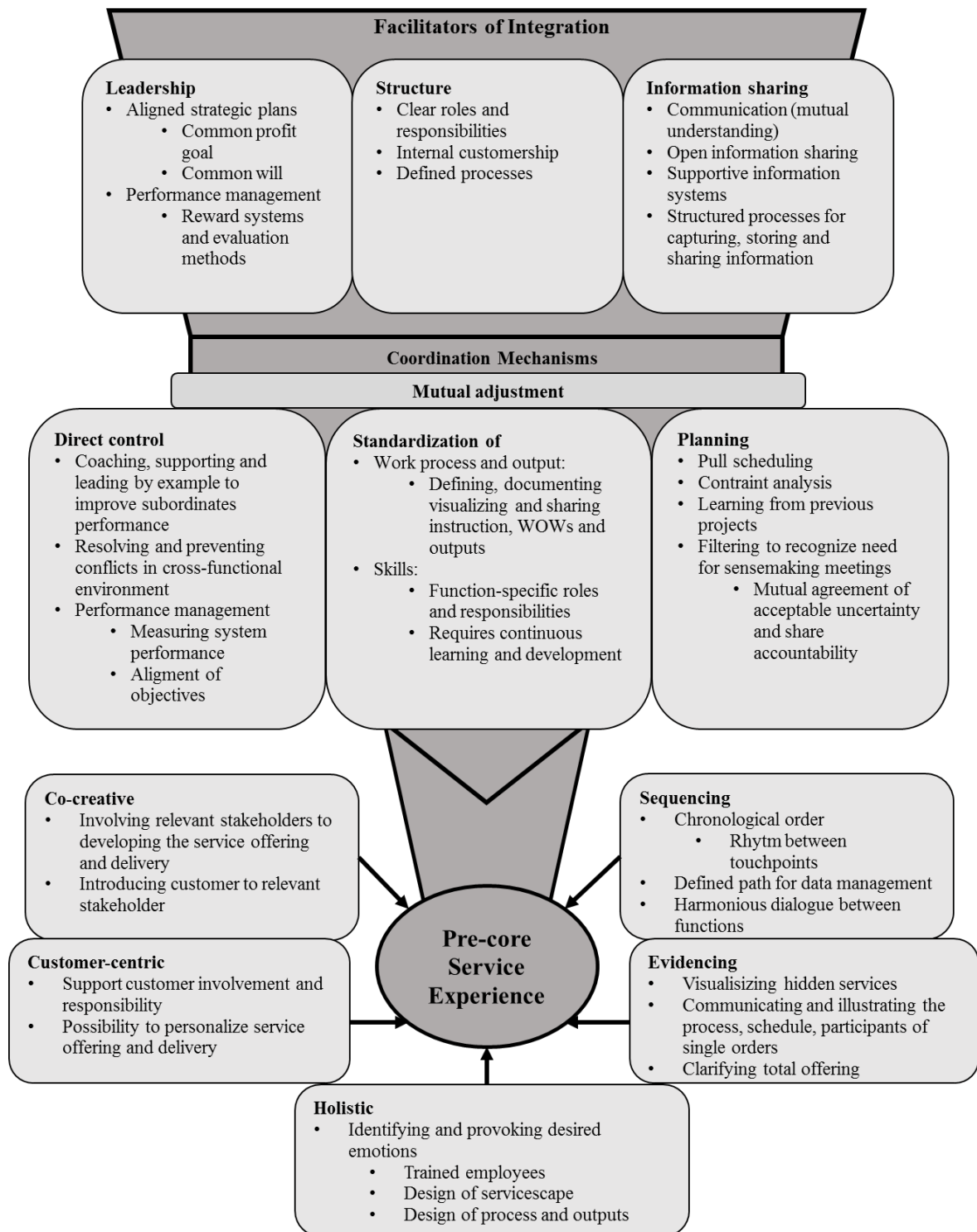


Figure 12. The conceptual framework

To understand the scope and target of the conceptual framework, Figure 13 explains how organizations' service performance is connected to cooperation and creation of pre-core service experience.

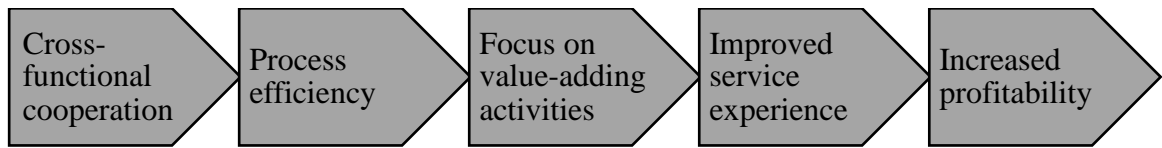


Figure 13. Improving service performance through cooperation

Integration and coordination enable, support and enhance cross-functional cooperation in daily processes. Cooperation has the potential to improve process efficiency by eliminating waste and streamlining processes (Swink and Schoenherr 2011). Increased efficiency derives from better deployment of resources and operational effectiveness (Swink and Schoenherr 2015). On the other hand, elimination of redundancies allows organizations to put more focus on the value-adding activities.

Modig (2016) suggests that higher focus on value-adding activities increases efficiency from customers' perspective. Efficiency for customers is determined by dividing value-adding time with waiting time (Modig 2016). On the other hand, improved efficiency has a positive impact on how customers perceive the service experience, eventually leading to increased customer satisfaction (Fornell et al. 1996). Berry et al. (2002) imply that positive service experience, is likely to create a preference for a particular service. Thus, creating competitive advantage for the service provider. Finally, Swink and Schoenherr (2015) conclude that process efficiency has a positive impact on return on assets and margins, which yields increased profitability.

In conclusion, Figure 13 indicates that improved service experience is influenced by organization's ability to cooperate. On the other hand, the improved service performance has a positive relationship to organization's profitability. The upcoming chapters analyse how the case company could utilize the methods presented in the conceptual framework to improve their service performance.

5 RESEARCH CASE, METHODOLOGY AND PROCESS

This chapter presents the research case, methodology and process. A qualitative research approach was chosen to describe and analyse how the case company is currently utilizing the methods identified in the conceptual framework (Figure 12). The aim is to identify opportunities for improving the case company's field service (FS) performance. FS operations involve servicing and maintaining customers' installed base. FS operations are typically performed at customers' site or in a dedicated workshop. (Company material 2018c)

5.1 Research case

The motivation for this research derives from the desire to improve the FS operations of the case company. Unstructured interviews with the key stakeholders of the FS process implied, that there are areas of improvement in the way distinct functions and units collaborate. Challenges related to collaboration were identified to originate during the pre-core field service process, which leads to uncertainties and ambiguities in the core delivery. The topic for this thesis was created together with the case company's Operational excellence (OE) team. The OE team aims to continuously improve processes to create value for the customer (Company material 2018a). The OE approach guides the research to identify process development opportunities, while improving value for the customer. The hypothesis is that increased cooperation creates process efficiency (Swink and Schoenherr 2015), which leads to improved service experience for the customer (Modig 2016; Voorhees et al. 2017) and increased profitability for the case company (Swink and Schoenherr 2015).

The empirical study strives to understand how the case company utilizes methods identified in the conceptual framework. Based on the case study findings, suggestions on methods for improving the field service performance are given to the case company. The case study is structured according to the conceptual framework, meaning that first the utilization of facilitators of integration are studied. Second, the use of coordination mechanisms is investigated. Finally, the design of the pre-core service is analysed.

5.2 Research methodology

A qualitative research methodology was chosen to gain an in-depth understanding of the case company's pre-core field service process. "Qualitative case study methodology provides tools for researchers to study complex phenomena within their contexts" (Baxter and Jack 2008). The qualitative case study allows the research "to go beyond the quantitative statistical results and understand the behavioural conditions through the actor's perspective" (Zainal 2007). Using qualitative research methods ensures that the phenomena is studied holistically from several perspectives, thus improving the generalizability and validity of the findings (Baxter and Jack 2008). Qualitative research is often applied to social studies (Mack et al. 2005), which implies that it is a suitable method for analysing individuals' ability and willingness to cooperate.

Zainal (2007) suggests that case studies "explore and investigate contemporary real-life phenomenon through detailed contextual analysis of a limited number of events or conditions, and their relationships". According to Yin (1984), researchers can choose between three categories of case studies: *explanatory*, *exploratory* and *descriptive*. Explanatory case studies aim to explain the existence of a phenomenon within the data (Zainal 2007). Exploratory case studies explore a phenomenon existing in the data (Zainal 2007). Descriptive case studies describe the natural phenomenon existing in the data (Zainal 2007). This research conducted a descriptive case study, since the aim was to *describe* the existence and use of facilitators of integration, coordination mechanisms and service design fundamentals within the pre-core field service.

The research was conducted as a single-case study in one of the case company's service units, referred to as "SU X" from here on out. Single-case design implies, that the research focuses on one unit of analysis, instead of multiple (Baxter and Jack 2008). Single-case design was chosen, since the aim is to gain a holistic understanding of the current arrangement in defined environment. Baxter and Jack (2008) suggest, that single-case design might prevent the researcher from making generalizable conclusions. However, Zainal (2007) suggests, that "one way of overcoming this is by triangulating the study with other methods in order to confirm the validity of the process". Therefore, to investigate generalizability of the findings, a global survey was conducted with other service units of the case company. In conclusion, the in-depth analysis was carried out as a descriptive single-case study but scaled to be a descriptive single-case design with embedded units (Baxter and Jack 2008) to increase the generalizability of the findings.

5.3 Data collection

This research involves two distinct methods for collecting data: interviews and a survey. In total nine interviews are conducted to gain an in-depth understanding of the case company's current arrangement. Furthermore, the survey is conducted to increase the sample size and to analyse, whether the findings of the interviews are globally occurring within the case company.

5.3.1 Interviews

According to Harrel and Bradley (2009), "interviews are discussions, usually one-on-one between an interviewer and an individual, meant to gather information on specific set of topics". Interviews are further described to be "the best methods to resolve seemingly conflicting information, because the researcher has the direct opportunity to ask about the apparent conflict" (Harrel and Bradley 2009). Interviews are characterised to be structured, semi-structured or unstructured (Gill et al. 2008). The interviews in this thesis were conducted as semi-structured, which allows "the interviewer or interviewee to diverge in order to pursue an idea or response in more detail" (Gill et al. 2008). In other words, semi-

structured design implies, that a set of questions is predefined, but the researcher can modify the questions during the interviews, to gain a more thorough understanding.

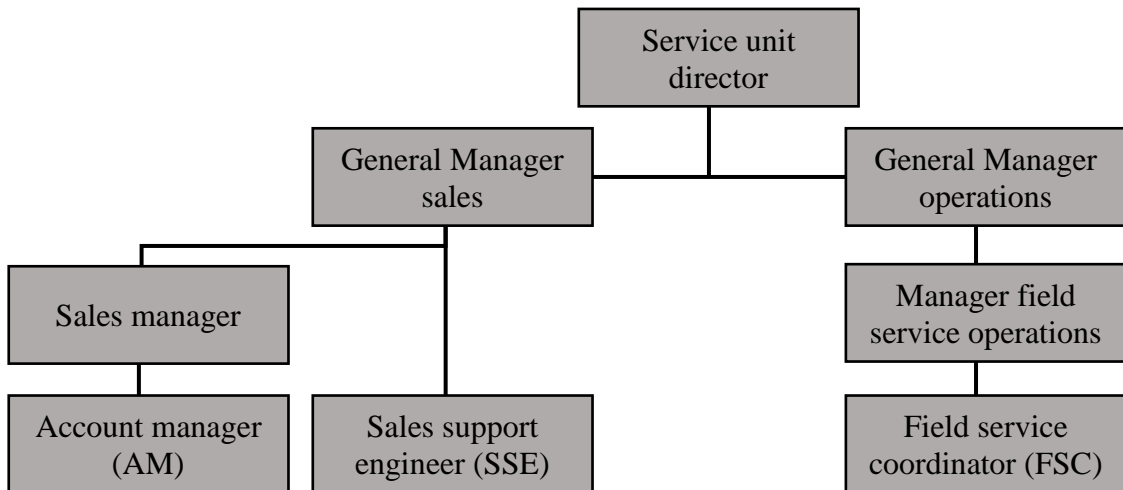


Figure 14. Organizational structure of the defined service unit

Figure 14 presents the organizational structure and the interviewed roles of the SU X. The service unit director was not interviewed, since the position had an interim director during the research. In addition to the depicted roles (Figure 14), the FS process has several other functions involved in the delivery. The AM, the SSE and the FSC roles were chosen for the interviews, since they are most involved in the pre-core FS process and thus most capable to analyse the current situation. To understand the managerial perspective towards cooperation and pre-core service experience, the supervisors of the three roles and general managers of SU X were also included in the interviews. In addition to the roles illustrated in Figure 14, interviews were conducted with two employees from the central field service (FS) team. The central FS team owns the field service process and is responsible for its development. The central FS team does not share a horizontal reporting line with the service unit, the two units are connected through the management team of the service division (Company material 2018c).

The interviewees were divided into three distinct groups. A specific set of questions were designed for each group, to address specific topics of each role. All the interviews included a brief introduction to the content of this thesis. Basically, the content of the conceptual

framework (Figure 12) was explained. The aim of the introduction was to ensure that the interviewees' understood the topics and the targets of this thesis. Tables 3, 4 and 5 introduce the three types of interviews. All the tables have colour codes, which indicate the unit of analysis the questions refer to. Grey colour indicates that the question concerns facilitators of integration, whereas blue colour indicates that the question concerns coordination mechanisms.

Table 3. The interview structure for operative roles

1.	Do you engage with people from distinct functions on daily basis? a. Do you believe that you have an internal customer?
2.	Does your supervisor support you to engage with other functions? a. Do your personal objectives (reward systems, DDs and KPIs) support the engagement?
3.	How do you share information to other functions? a. Is there a defined process for communication and information sharing? b. Are the information systems sufficient for open information sharing?
4.	Do you receive support from your supervisor related to daily tasks?
5.	How would you describe your teams performance management? a. How does it guide your daily tasks?
6.	How often do you use instructions, documents and WOWs related to FS jobs? a. Do you think that they are useful?
7.	How often do you receive trainings related to your position?
8.	Do you engage with other functions when plans for delivery are made?
9.	How would you describe decision-making processes related to FS jobs?
10.	How do you proceed with jobs that involve significant uncertainty?

The first set of questions was created from operational perspective and it was conducted among the AM, SSE and FSC roles, referred to as "Group 1". The structure of the interviews for Group 1 is presented in Table 3.

Table 4. The interview structure for the managers and general managers

1.	How would you describe your function's relationship to other functions?
2.	Do you believe that the daily activities are aligned according to a mutual strategic plan? a. How about functional objectives and targets?
3.	Do you believe that the FS process has clearly defined roles and responsibilities?
4.	How would you describe information sharing among distinct functions? a. Do you think that there is or should be a clear process?
5.	Do you ever engage in daily FS operations? a. Do you provide help to your subordinates?
6.	How do you guide the performance of your subordinates? a. Is it aligned with the performance management of interrelated functions?
7.	Do you believe that the FS process has clearly defined WOWs, instructions and documents? a. Are they easily accessible?
8.	How would you describe the role of talent management in your team?
9.	How would you describe the process for creating plans?
10.	Do you believe that the plans concern all relevant stakeholders? a. How should decisions be made?
11.	How do you think that uncertainties are tackled?

Second type of interview is created from supervisor's perspective. The interviewees were asked to describe how they guide and support their subordinates and how should they perform during the pre-core field service process. Table 4 indicates the interview structure conducted among the managers and the general managers (GM) of SU X, referred to as "Group 2".

Table 5. The interview structure for employees of the central FS team

1.	How does your team monitor the performance of the global FS processes? a. Do you have visibility to function-specific KPIs?
2.	How do you perceive that distinct functions cooperate?
3.	Do you believe the FS process has clear roles and responsibilities?
4.	Do you believe that instructions and WOWs are detailed enough to train the process to a new employee?
5.	Do you believe these documents are available and easily accessible?
6.	How should functions share information related to particular FS jobs?
7.	Do the existing IT systems sufficiently support information sharing in daily tasks?
8.	How would you describe the planning process? a. Who should be involved in planning?
9.	How would you suggest that significant uncertainties are tackled? a. How do we infuse those learnings in to the process?

Third type of interviews were conducted with the two employees from the central FS team, a GM field services and a GM field service operations. Questions were created from a process owner perspective (Table 5). This group is referred to as “Group 3” from here on out.

Table 6. The interview structure regarding pre-core service experience

1.	How would you describe the case company’s value proposition?
2.	How do you think customers perceive the case company’s service: a. Do you think customers have a profound understanding of the service offering? b. Do you think that customers know who to contact during the pre-core FS process? c. Do you think customers are able to customize the service they are buying? d. Do you feel that the FS process is logical for the customer? e. Do you think that customers are kept properly informed during the pre-core FS process? f. In your opinion, which functions should be introduced to the customer?

Table 6 illustrates a questionnaire, that analyses the structure of pre-core field service. These questions were presented to all the aforementioned groups. In total, nine interviews were arranged via Skype, which allowed the recording of the interviews. Detailed information about the interviews is presented in the Appendix 1.

5.3.2 Survey

Harrel and Bradley (2009) define surveys as “fixed sets of questions that can be administrated by paper and pencil, as a Web form, or by an interviewer who follows a strict script”. The survey was included in the data collection methods, since sets of “data are more likely to be generalizable if they are well sampled and collected by surveys” (Harrel and Bradley 2009). The survey was circulated to most of the FSCs and the SSEs within the service division of the case company. Prior to sending the survey, a permission was asked from each service unit’s operations and sales GMs. However, only ten out of seventeen service units agreed to collaborate and thus the survey was not circulated to all employees in the selected roles. These two roles were chosen for the survey, since they are most involved in defining the service scope and plans, which are the phases that require most cooperation.

The survey was circulated to 114 employees and the minimum sample size was set to 40 answers. This research accepts a low response rate, since the case company was going through a significant organization change. Turbulent environment was assumed to lower employees’ willingness to participate in the survey. In total, 44 answers were received.

Table 7. The structure of the survey

1.	What is your role?
2.	Which service unit do you work in?
3.	How would you describe your daily tasks?
4.	Does your daily tasks involve cooperating with other functions?
5.	Do you feel that your role and responsibilities are clear in each FS job?
6.	Do you feel that there is a clear process for sharing FS job specific information to other functions?
7.	Does your teams' performance management system support cross-functional cooperation?
8.	Do you feel that the documented WOWs and instructions (related to FS jobs) clearly define the way in which you should cooperate and align tasks with other functions?
9.	Do you feel that all relevant functions are involved, and their requirements addressed in the planning phase of FS jobs?
10.	What do you think is the biggest barrier to cooperation between functions?

Table 7 presents the structure of the conducted survey. This table has a colour coding, which indicates the unit of analysis the question relates to. Grey questions concern facilitators of integration, and blue questions concern coordination mechanisms. Questions without a colour code are general questions, used for gathering distinctive data from the respondents. Most of the questions have two answer options: "yes" or "no". However, question 3 and 10 are open-ended questions, which allows the respondent to describe a phenomenon in significant detail (Harrel and Bradley 2009). Additionally, questions 1 and 2 are multiple choice questions used for defining respondents position and the geographical organization they belong to.

Table 8. Geographical distribution of the survey answers

AREA	Number of survey responses
Americas	8
Middle-East and Asia	10
North Europe	13
South-Europe and Africa	13

Table 8 illustrates the geographical distribution of the survey responses. The overall sample size is rather low, but the geographical distribution is somewhat even, which improves generalizability of the findings from the case company's perspective.

6 RESULTS

The research case aims to describe the current utilization of facilitators of integration, coordination mechanisms and service design fundamentals in the case company's pre-core field service. The case study aims to answer the following supportive research questions:

- How are facilitators of integration currently utilized in the case company's field service operations?
- How does the case company utilize cross-functional coordination currently?
- How are the fundamentals of service design applied in the case company's contemporary pre-core field service process?

This chapter presents the analysis and results of the conducted interviews and survey.

6.1 Utilization of facilitators of integration in the case company

Figure 15 indicates that the facilitators of integration are divided into three different sub-categories: *leadership*, *structure* and *information sharing*. In upcoming the sections, the utilization of the distinct facilitators in the case company are described and analysed.

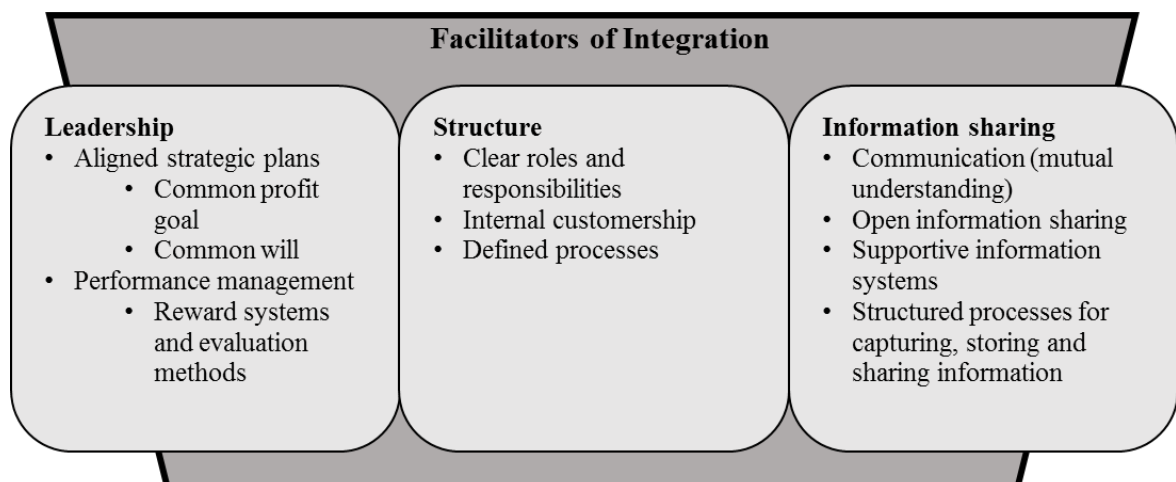


Figure 15. The facilitators of integration

The research focuses on the pre-core field service, which occurs before the execution. The interviewed operational roles are responsible for either sales activities (AM and SSE roles), including selling, offer creation and other onboarding activities or operations (FSC), which involve project management. Based on the interviews and the survey, it is evident that daily activities of the selected roles involve continuous cooperation with other functions. 98% of the survey respondents identify, that their daily activities involve cooperation with distinct functions. In correlation, all nine interviewees suggest, that their and their subordinates' roles involve continuous cooperation.

The functions of the SU X are lead according to a mutual strategic plan, and they all serve same end-customers. However, the interviews imply, that translating the strategic emphasis to concrete targets and measures is challenging for the case company. The sales function is concerned on revenue, whereas operations are concerned on margins and lead times. The misalignment has a negative impact on system-wide performance (Oakland 2014), since each function feel accountable only for their part of the process, leading to insufficient handovers, information flow and cooperation. Team level performance management is further under coordination mechanisms. Integration is further assessed from individuals' performance management perspective.

Interviews with Group 1 members reveal, that existing individual evaluation methods and rewarding systems do not facilitate cooperation on continuous basis. The supervisors in Group 2 recognize the same problem. People in AM role are lead based on revenue. In fact, their bonus scheme is dependent on revenue as well. By contrast, SSE and FSC roles do not have bonus schemes, but their individual performance is measured through profitability, work in process and lead times, especially time to invoice. As mentioned in the previous paragraph, there is a clear misalignment in function's performance management, which evidentially cascades on the individual level as well.

Despite the misalignment in continuous performance measurement, the respondents recognize, that they have cooperation enhancing targets, listed in their individual annual development plans, which are agreed with their supervisors. The annual development targets

are most often related to participating in common development projects. Lavikka et al. (2009) argue that common development projects have a positive impact on integration.

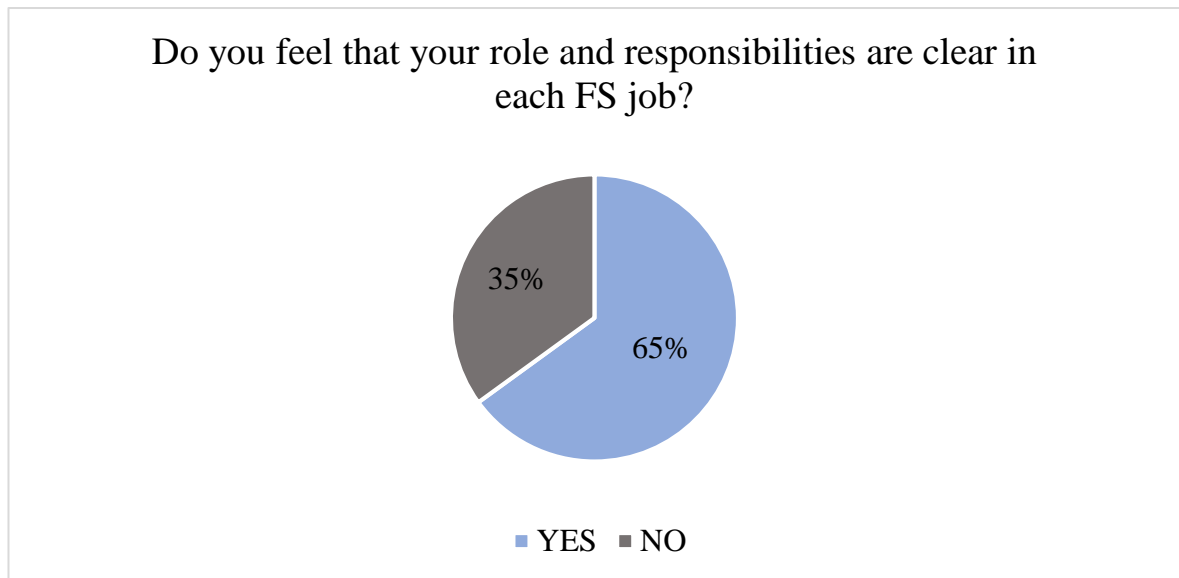


Figure 16. Survey responses regarding roles and responsibilities

Based on the interviews with both Group 1 and 2, internal customership is recognized and embedded in the case company's processes. Internal customership fosters cooperation, since functions feel obligated to deliver high quality output from their processes, to match the needs of the next function in line (Lavikka et al. 2009). All interviewees describe, that their role and responsibilities are mainly clear and correlating with the documented ones. However, the defined roles and responsibilities are not described detailed enough to cover all types of FS jobs. Most of the interviewees believe that complex FS jobs create variation in each functions' way of working, especially in jobs where rapid decisions are needed. Rapid decisions force employees to bypass the defined process and assume more responsibilities than intended. Based on the interviews with Group 3, the roles and responsibilities should be described more detailed in the future to increase the applicability on complex jobs. Related to the same issue, the respondents from Groups 1 and 2 feel, that process descriptions lack detailed handovers of responsibilities. Implying that employees do not know when their responsibility ends, and someone else's begin.

In contrast to interview findings, 65% of the survey respondents believe that the roles and responsibilities are clear in each FS job (Figure 16). Probable reason for the deviation is, that people in other service units may work in same facilities, which enables continuous communication and information sharing, enabling sufficient handovers. In turn, the interviewed employees work in separate offices, which limits the possibility of face to face information sharing.

Groups 1 and 2 describe that sharing of general information between functions and along hierarchical lines is on a sufficient level in SU X. The service unit has adopted a biweekly meeting structure, in which all functions are represented. In these meetings previous performance is analysed, and future insights are shared. General information sharing is also on the meeting agenda. However, information sharing after these meetings lacks standards and structure. The interviewees generally suggest, that information does not necessarily reach individuals who are absent from the meeting.

When asked how project related information is shared, the interviewees all agree that the case company lacks standard structure and process. The case company has implemented a customer relationship management (CRM) system, where relevant projects are managed. All the interviewed groups state that the CRM system should be the one source used for capturing and sharing information related to specific FS jobs. However, the interviewees recognize that the case company lacks compliance in utilizing the system. Challenges arise when all relevant information is not stored in the systems. Based on the interviews, the most common occasions are ad hoc discussions either face to face or via communication technology. Information created and shared in these discussions never reach the CRM system, where other stakeholders could read it from. According to both the interviews and the survey, another significant challenge stems from distinct functions using distinct systems, which do not share information with each other properly. The CRM system could serve as the platform for combining all the information streams, but the process is not defined nor implemented properly.

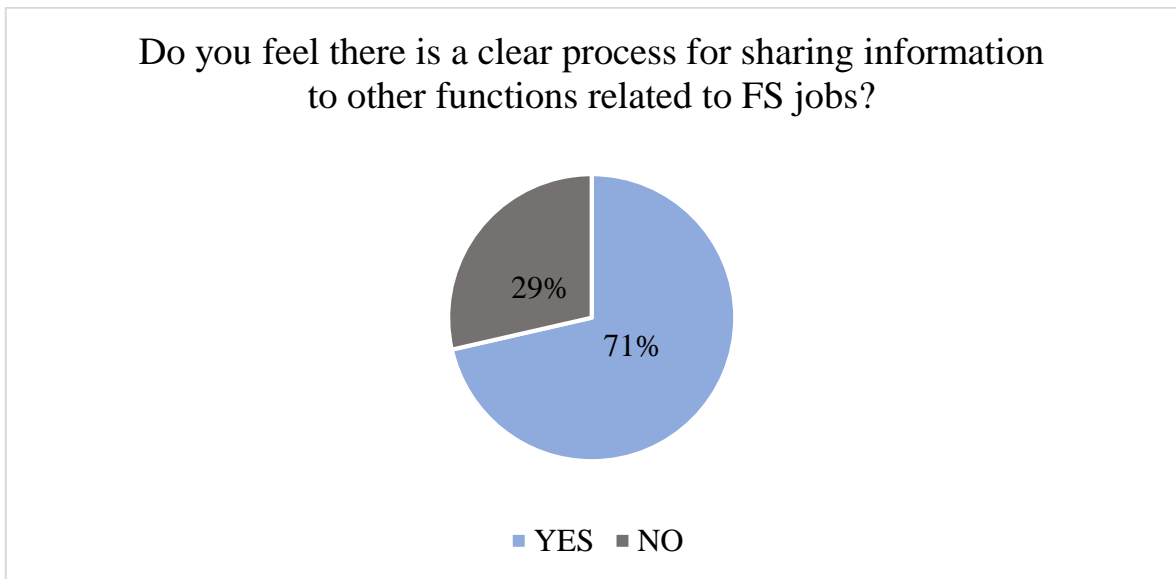


Figure 17. Survey responses regarding information sharing

Surprisingly, according to the survey, 71 % of the respondents feel that the information sharing process and structure is clear enough (Figure 17). This implies that information sharing is not a globally occurring challenge.

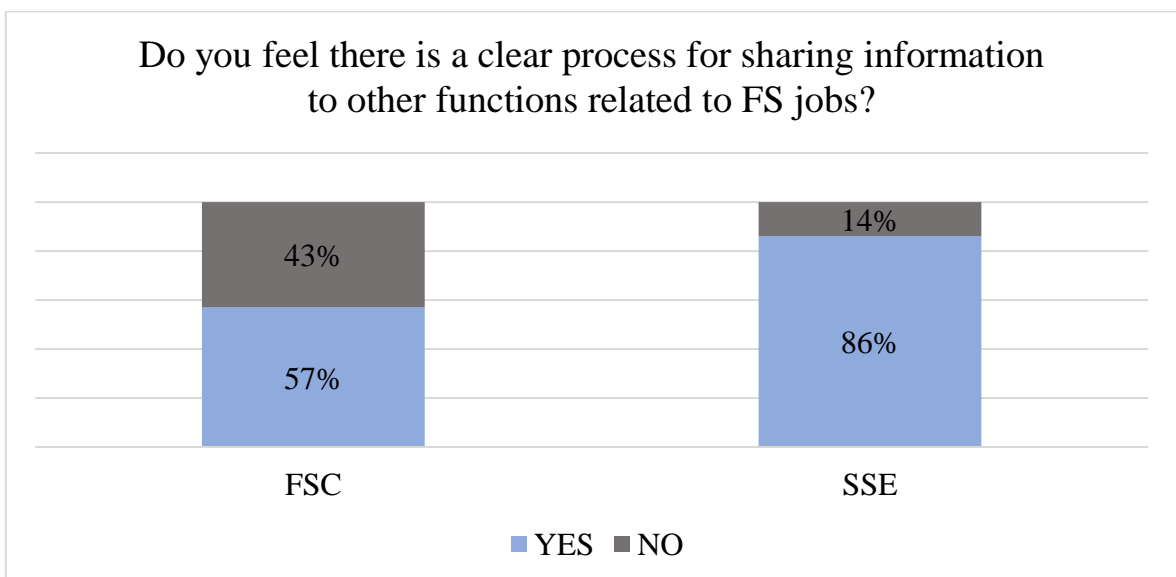


Figure 18. Opinion on information sharing between roles

However, when the answers are analysed between the two roles (Figure 18), it seems that the SSEs are more confident that a clear process for information sharing exists. The FSC role is more dependent on information produced by others, whereas SSE often creates the needed information together with the customer, meaning that the quality of information is depending on their own actions. Assumedly, the FSCs feel more frustrated with the information flow since they are less independent, and their likelihood of receiving poor input from others is higher than for the SSEs. Although the interview findings are not supported by the survey, the topic needs to be highlighted, since every information breakdown in one part of the process increases the distortion when inaccurate information is passed on (Lampret and Potočan 2014).

Table 9. Summary of findings related to the facilitators of integration

	Facilitator of integration	Findings of qualitative interviews	Supported by the survey findings	Supported by literature review
1.	Leadership	The functions of SU X are managed according to a mutual strategic plan	#N/A	Yes
2.		Individual measurement and evaluation systems do not support cooperation	#N/A	No
3.		Common development projects are used for fostering cooperation	#N/A	Yes
4.	Structure	Functions identify an internal customer	#N/A	Yes
5.		Defined roles and responsibilities have low correlation to different FS jobs	Not supported	No
6.	Information sharing	SU X has a process for sharing general information	#N/A	Yes
7.		Project related information sharing lacks standards. CRM is not used to its full potential	Not supported	No

Table 9 presents a summary of the relevant findings regarding the utilization of the facilitators of integration. The last column of the table indicates whether the finding is supported by the literature review. The findings that are not supported by relevant literature are recognized as areas of improvement for the case company, since they serve as barriers to integration and cooperation. Furthermore, the table summarizes whether the interview findings are supported by the findings of the survey. “#N/A” indicates that the survey did not include a question that addresses the topic.

6.2 Utilization of coordination mechanisms in the case company

Figure 19 illustrates the coordination mechanisms as recognized by Lavikka et al. (2009). Organizations can opt to use direct control, standardization and planning as mechanisms to foster and support cooperation in daily operations. This research perceives mutual adjustment as a self-evident prerequisite for cooperation that should exist in all processes. Thus, mutual adjustment is not further studied. This section covers the current utilization of coordination mechanisms in the case company.

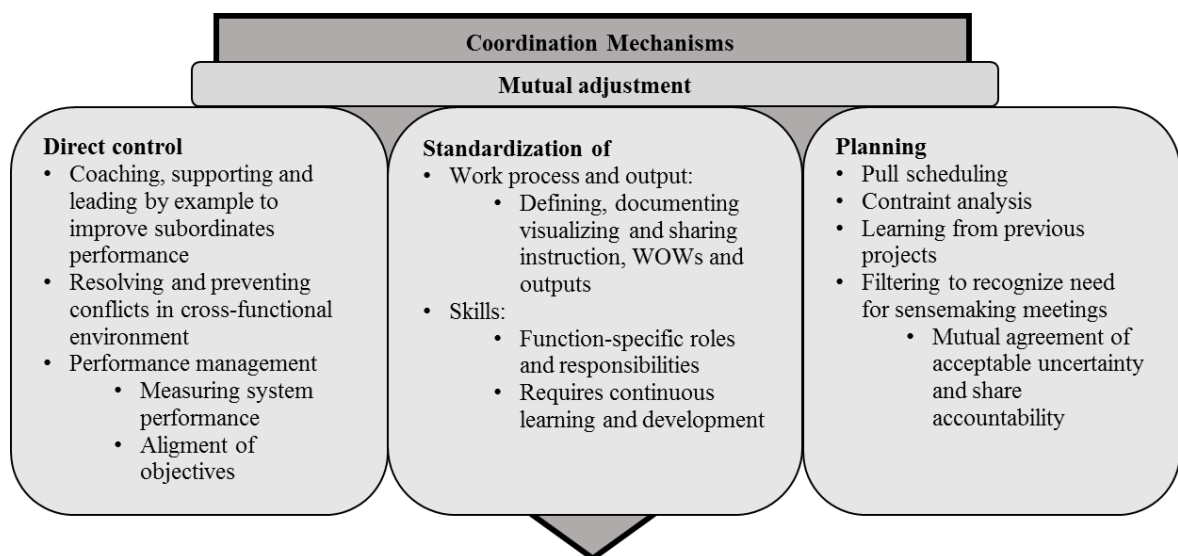


Figure 19. The coordination mechanisms

6.2.1 Direct control

Only one person from Group 1 believes, that supervisors provide sufficient support in job execution related topics. This is mainly resulting from highly differentiated positions, which require specific technical knowledge. In other words, the supervisors are not capable to provide help in specific technical issues. Moreover, the employees from Group 1 identify distance as a barrier for effective cooperation with their supervisors. However, all individuals from Group 2 claim that they would provide support when complex decisions are needed. This implies that supervisors are willing to intervene to resolve and prevent conflicts. However, it seems that the employees in Group 1 do not recognize this possibility.

When asked to describe the alignment of functions' performance management, all respondents from Group 2 believe, that measurements used for evaluating functional performance are unaligned. The interviews with Group 1 members confirm this concern. Based on the answers, the case company faces two distinct challenges. Firstly, indicators and targets are too general, and should be broken down to functional and individual targets. Secondly, the targets and measurements between sales and operations are not aligned. As stated earlier, sales functions focus on revenue, whereas operations functions are more concerned with profitability and invoicing effectiveness. The misalignment creates sub-optimization, which is realized as low quality output from sub-processes. Essentially, sales function focuses only on selling new jobs, which they then handover for the operations. After the handover cooperation ends, and the accountability shifts for operations. Essentially, this causes the FSC re-evaluate and reshape the plans, since they do not receive sufficient input and information from previous phases.

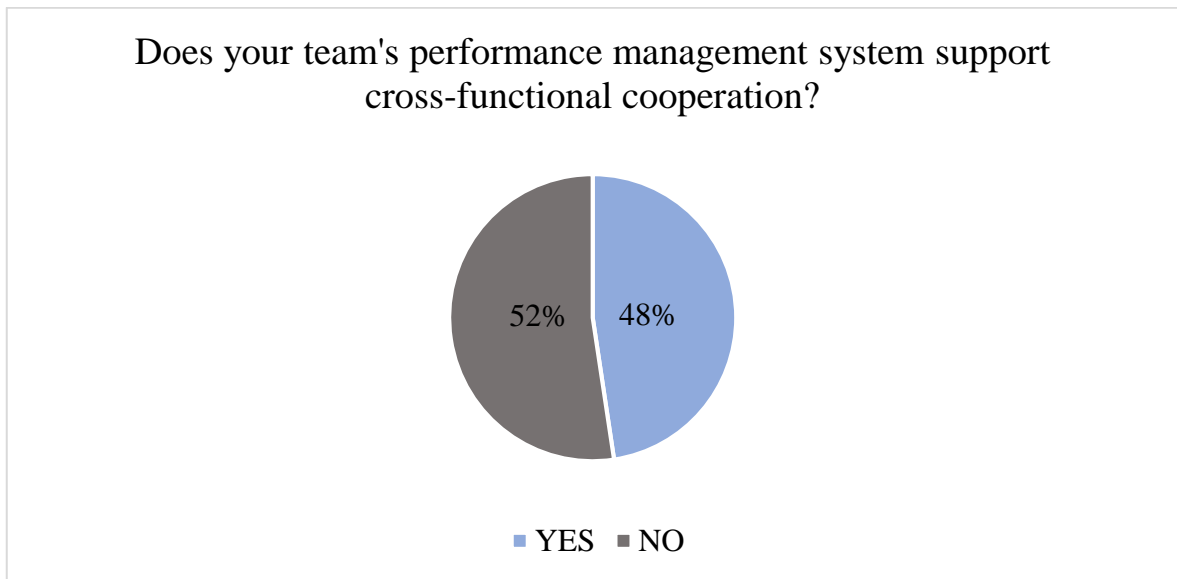


Figure 20. Survey responses regarding performance management

Figure 20 indicates that the misaligned performance management systems are a global issue in the case company. Less than half of the survey respondents believe that the targets and evaluation methods of their team support cooperation with other functions. When asked to describe the most significant barrier to cooperation, couple of respondents describe that the measurement methods are neither specific or detailed enough to foster cooperation among functions nor aligned with measurement methods of other functions.

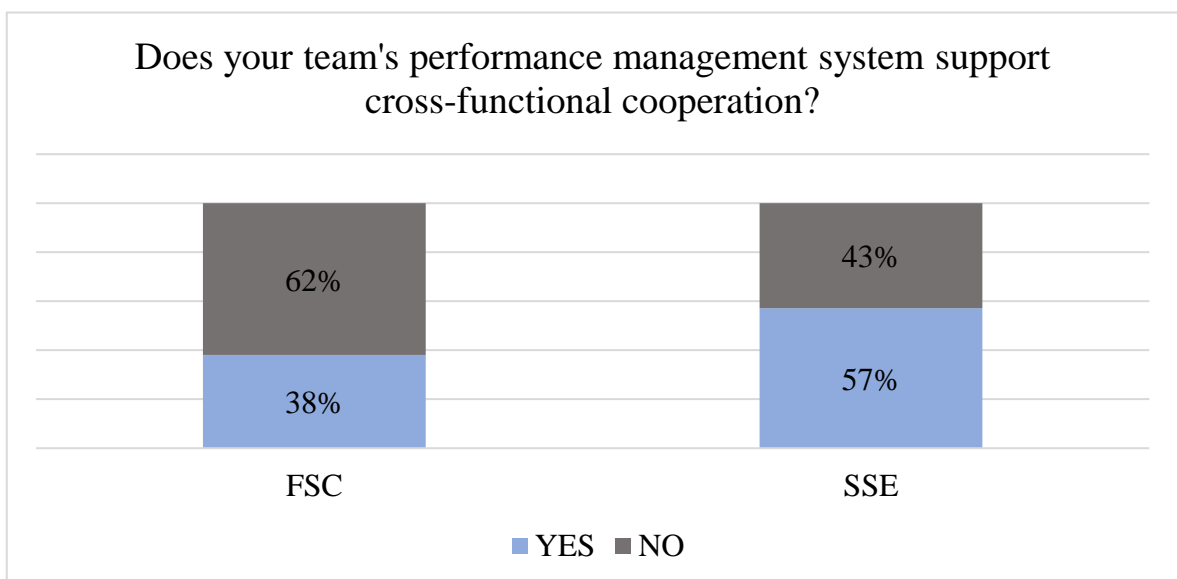


Figure 21. Performance management between the selected roles

Interestingly, the results deviate from each other when answers are analysed between the selected roles (Figure 21). Majority of the SSEs believe that their team's performance management system (PMS) supports cooperation. By contrast, majority of FSCs suggest that their PMS does not support cross-functional coordination. This deviation is most likely caused by the differing nature of these two roles. The SSEs have a rather clear agenda and output for their work – assist in selling and create an offer. This part of the process involves limited amount of cooperation, which makes the SSEs believe that their teams' PMSs are aligned with the objectives of the system and with other functions' PMSs. On the other hand, the FSC role is responsible for the project management, which involves cooperating with significantly larger number of stakeholders. The FSCs probably view the issue similarly as the interviewees – PMSs are misaligned between functions, which limits cooperation.

Deviation caused by the data collection method is another likely reason for the results. The interviewees were introduced to the topic, ensuring a profound understanding. Furthermore, in qualitative interviews the “researcher is able to go beyond the quantitative statistical results and understand the behavioural conditions” (Zainal 2007), leading to more profound analysis. Assumedly, the survey respondents' interpretation of the questions may vary. The SSEs might have interpreted the question in a different manner than the FSCs, for example.

Table 10 presents a summary of how the case company currently utilizes direct control to coordinate the performance. The last column of the table indicates whether the findings were supported by relevant literature.

Table 10. Summary of findings related to direct control

	Coordination mechanism	Findings of qualitative interviews	Supported by survey findings	Supported by literature
1.	Direct control	Group 1 does not receive close support from their supervisors	#N/A	No
2.		Supervisors are willing to participate in conflict resolution and prevention	#N/A	Yes
3.		Performance management between distinct functions is misaligned. Sales are concerned with revenue, whereas operations focus on profitability and lead times	Yes	No

6.2.2 Standardization

The interviews revealed that standardization of output exists partially in the case company. The outputs are tied to relevant roles, but the content of the output is neither standardized nor characterized detailed enough. When the outputs are not standardized, the variability of the process increases. This decreases the performance of the system (Oakland 2014), which on the other hand results in decreased profitability (Swink and Schoenherr 2015). Unstandardized outputs are realized as varying accuracy of information. This issue relates to both the information sharing processes and the instructions. Information is not stored properly in the CRM system and detailed handovers are not specified for the FS process. This means that although information exist somewhere, it does not always reach the relevant employees. Furthermore, the instructions for creating certain outputs are not described in detail. For example, an employee from Group 3 describes, that the offer creation is missing holistic instructions. Valuable information regarding job execution might not be included in the offer, since the standard template lacks specified spaces for certain information. For

example, details and responsibilities related to scaffoldings and logistics. Employees from Group 1 identify the same issue.

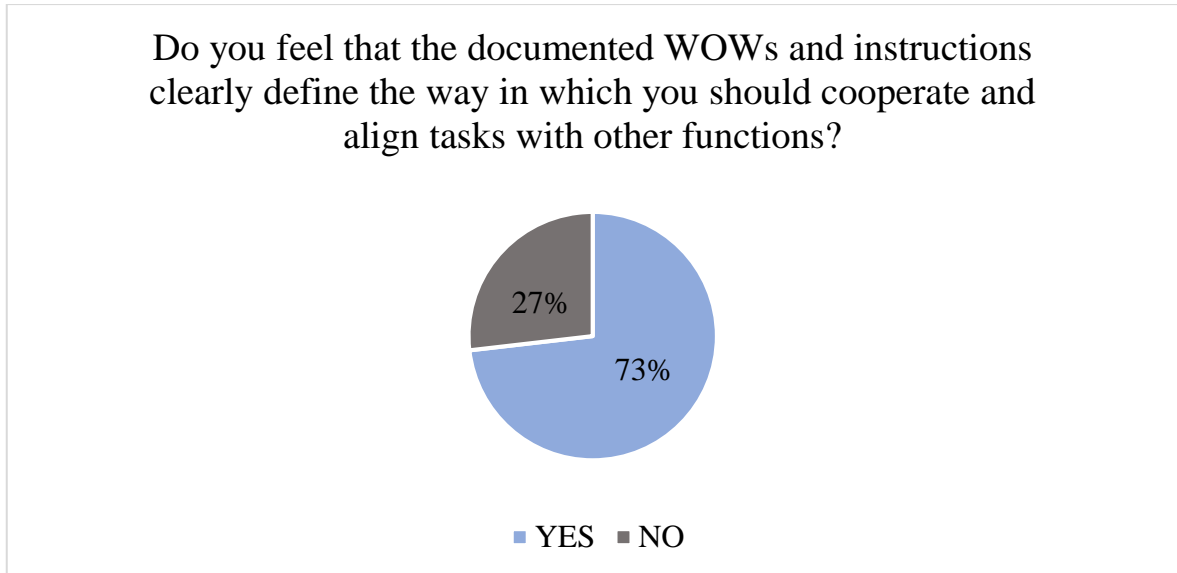


Figure 22. Survey responses regarding standardization of processes

Based on the interviews and the survey, the documented ways of working (WOW) and instructions are defined and documented detailed enough to foster cooperation (Figure 22). However, interviewees from all groups noted that they cover only standard FS jobs. When the complexity of the job increases, the applicability of the predefined instructions decreases. All Groups identify that the accuracy and detailedness of the instructions should be increased for two reasons. Firstly, the low correspondence of the instruction creates significant variability in the process. Secondly, the processes are highly interconnected with the use of IT systems, and the instructions do not sufficiently cover how the systems should be used, which creates variability in the utilization.

In general, the interviewed people feel that the availability of the documents and instructions is sufficient. However, few of the interviewees admit that they have not used them, nor could they find them easily. This implies that the instructions are not made visible nor accessible enough, which limits their usability in daily processes. Interviews with Group 3 imply, that challenges related to the availability and the detailedness are well recognized and something

the case company shall focus on in the future. These issues have led to the situation, where local service units have created their own processes and instructions. This limits the ability to develop the processes on a global scale, since variation in ways of working exists between similar functions.

Based on the interviews with Groups 1 and 2, standardization of skills exists when new employees are introduced to the organization but is limited afterwards. Employees from Group 1 noted that their learning is mainly based on experience after the initial trainings, but some function specific trainings are arranged annually. However, trainings related to cooperation is seen as a valuable opportunity to improve cross-functional cooperation. The interviewees recognize that trainings related to project management, in which all the relevant functions would participate, could be great opportunities for creating mutual understanding and improving cooperation.

Table 11. Summary of findings related to standardization

	Coordination mechanism	Findings of qualitative interviews	Supported by survey findings	Supported by literature review
1.	Standardization	Outputs are attached to specific roles, but the defined content is not detailed enough	#N/A	No
2.		Instructions and WOWs cover standard FS jobs	Yes	Yes
3.		Instructions and WOWs are not detailed enough to cover complex FS jobs or use of IT systems	Not supported	No
4.		Availability of instructions and WOWs is not sufficient	#N/A	No
5.		Standardization of skills is sufficient when new people are hired, but the intensity decreases afterwards	#N/A	Partially

Table 11. highlights the findings related to utilization of standardization as a coordination mechanism in the case company's current situation. Standardization is not on the desired level in the case company. Standardized processes and output cover most FS jobs, but when the complexity increase the applicability of documents decreases.

6.2.3 Planning

All interviewed groups describe the planning process as being divided into two distinct phases, one during the offer creation and other one after the order is received. During the offer creation, a preliminary scope is created in joint effort with the customer. After order receipt, a detailed plan for delivery is created. During the first phase the responsibility is shared between the AM and the SSE roles. The FSC is the accountable in the second phase. Based on the interviews and the survey, both phases are carried out in isolation with limited communication among the functions. This notion is aligned with the findings related to performance management – unaligned performance management systems hinder cooperation. This drives the case company to situations where the customers are confused since the project delivery differs from what was agreed in the offer. These instances are caused by limited information sharing between functions, meaning that FSC is not holistically aware of what was agreed on with the customer in the offer. Accountability for the plans is not shared among the different functions, but only one person takes the accountability. Mutual sensemaking is not involved in most of the SU X's FS jobs.

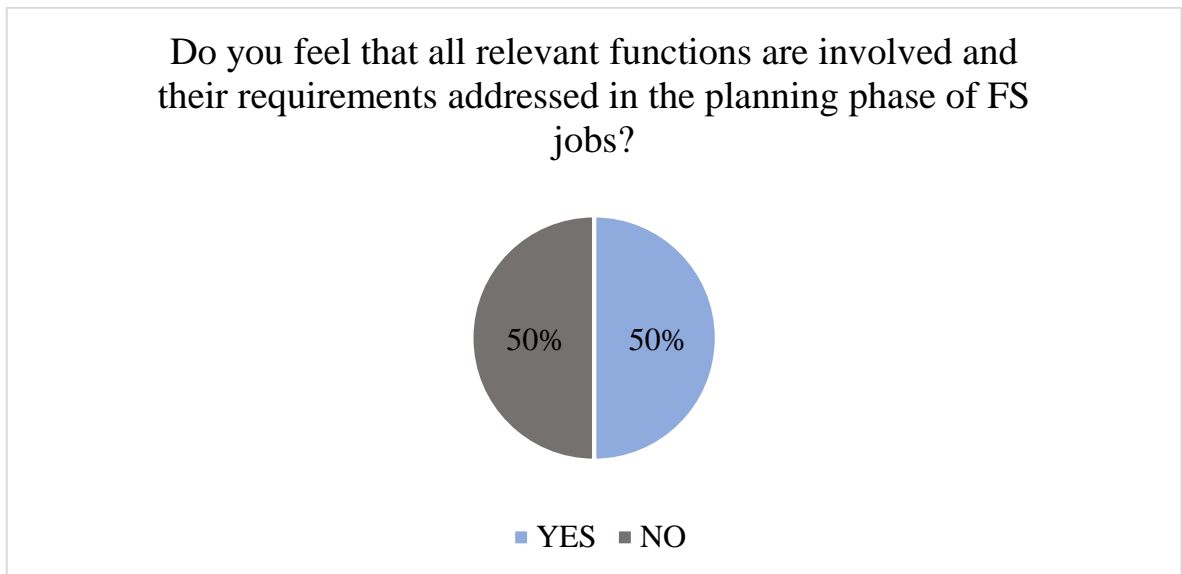


Figure 23. Survey responses regarding planning

Interviewees from Groups 1 and 2 describe that the planning phase lacks standard agenda and way of working. Plans are created in silos, with limited information and knowledge interchange. This is a root cause for possible customer disputes, if the delivered job does not match with the offered one. Furthermore, this creates process inefficiency since stakeholders are obliged to make decisions based on limited information (Swink and Schoenherr 2015). Figure 23 highlights that this is a globally occurring issue, since half of the respondents believe that relevant stakeholders are not involved, nor their needs addressed in planning.

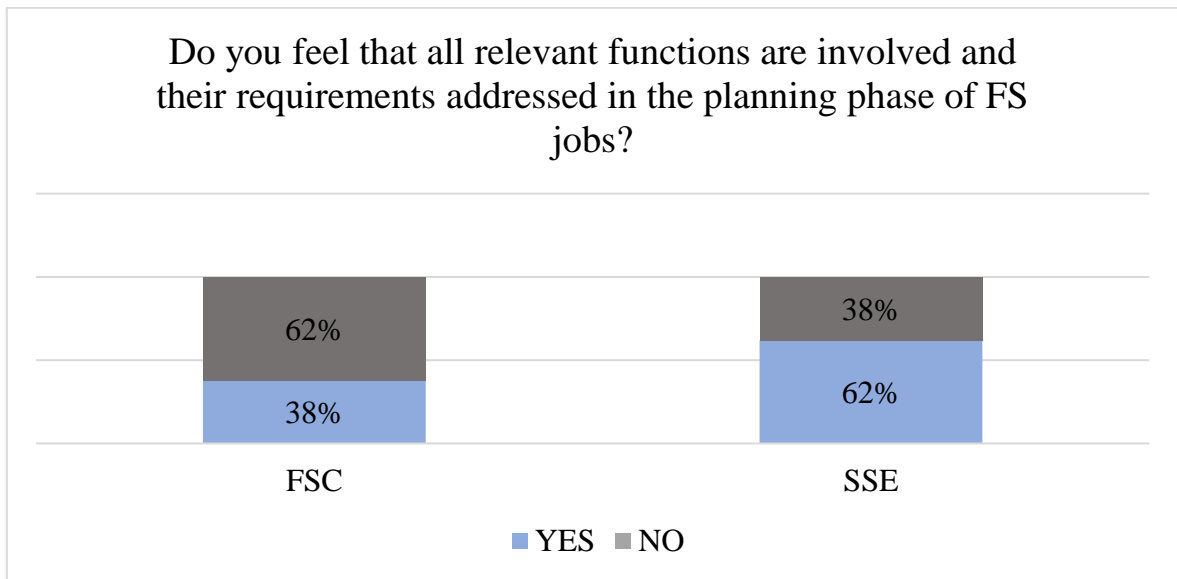


Figure 24. Opinion on planning of FS jobs between roles

Interestingly, the results are not aligned when analysed between the two roles. Figure 24 indicates, that majority of the SSEs believe that relevant employees are involved in the planning phase of FS jobs. In turn, majority of the FSCs believe that relevant employees are not involved. The deviation is most likely caused by responsibilities attached to both roles. The SSEs are only involved in the first planning phase, where they create a preliminary scope with the AM. While, the FSCs are accountable for creating the plans for execution, which involves booking of resources and ordering spare parts, for example. The SSEs' responsibilities are less ambiguous and require less cooperation. By contrast, the FSCs face significant interdependencies and ambiguities in their process, which makes them believe that the involvement and support of other functions is not sufficient.

When asked how FS jobs with high uncertainty are managed, the interviewed persons have diverging opinions. Group 1 describes that these situations are managed as any other project. In turn, Groups 2 and 3 identify that these jobs should be recognized and categorized as complex FS jobs, and project management fundamentals are applied. The organization has a process for managing complex FS jobs, but the challenge is identifying these instances. The practice for filtering complex FS jobs should be improved. One method for improving the practices is improving utilization of learnings from previous projects. By ensuring that the employees are familiar with lessons learned, the case company can use that knowledge

for filtering FS jobs that are complex and need collective sensemaking. When similar FS jobs emerge in the future, employees could identify that certain kinds of challenges or special characteristics emerged the last time the case company executed that job. Based on the answers given by Group 3, the case company has a process for collecting lessons learned but lacks the ability to utilize them in upcoming orders. Employees from Group 3 identify, that the CRM and other utilized IT systems do not support this practice in the current situation.

Table 12. Summary of findings related to planning

	Coordination mechanism	Findings of qualitative interviews	Supported by survey findings	Supported by literature review
1.	Planning	Accountability of plans is not shared	#N/A	No
2.		Mutual sensemaking is not used	#N/A	No
3.		Creation of plans does not involve all relevant stakeholders	Yes	No
4.		The case company has a process for managing complex FS jobs	#N/A	Yes
5.		Filtering mechanisms for identifying complex FS jobs, which would need collective sensemaking, is not utilized effectively	#N/A	No

Table 12 highlights the findings related to the case company's utilization of planning as a coordination mechanism. The plans are often created by individuals, and the accountability

is not shared. This creates an issue with FS jobs involving ambiguity and uncertainty – all relevant stakeholders are not consulted.

6.3 Design of the pre-core service

Macintyre et al. (2011) state, that service design projects should start from identifying the emotions that the service provider wants to provoke in the customer and the key message that should be conveyed. When asked what the case company's value proposition and key message in regards of field service offering is, all interviewees identify quality and competence. In addition to quality, most of the interviewees suggest that speed and flexibility are also attributes that the case company wants to highlight. Essentially, the service experience should be designed to convey a similar message. Figure 25 indicates that services should be customer-centric, co-creative, sequencing, evidencing and holistic (Stickdorn and Schneider 2011).

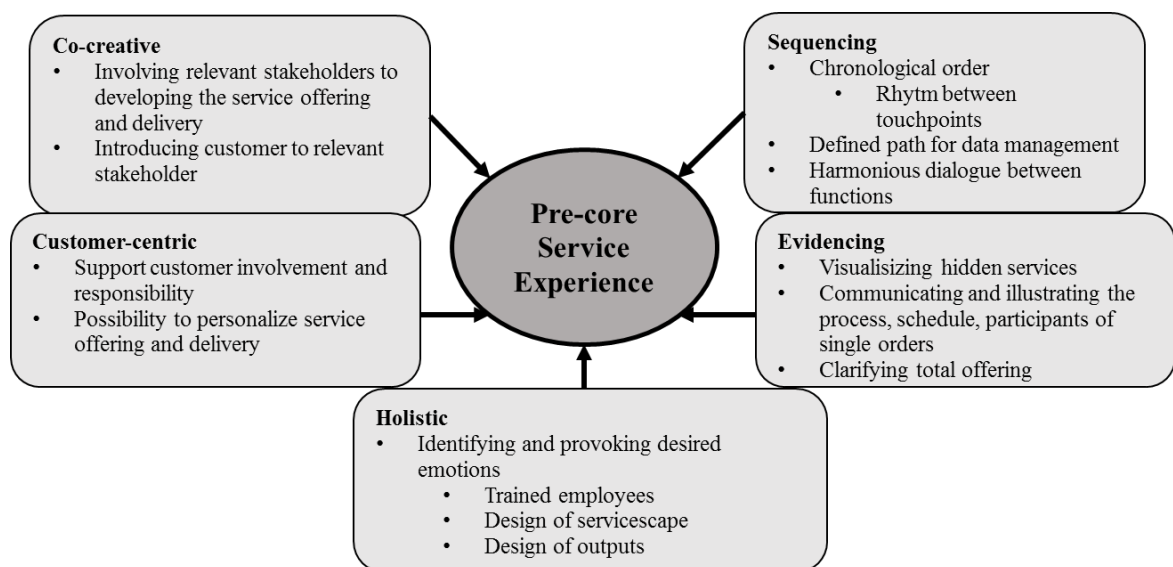


Figure 25. The pre-core service experience

Based on the interviews, customers are highly involved in creating the initial scope for their orders. However, according to the sales function, the duration of sales meetings is finite, which leads to limited discussions about the content of the service. This implies that details

need to be further clarified for the final plans. Based on the interviews, this can cause a fail-point in the process, since communication between the operations and the customer is not as frequent as between the sales and the customer. In some instances, the uncertainties and ambiguities are clarified only within the case company, which leads to confusion in the customer's end when content of the delivery might not equal to what the customer expected. The interviewees state that the case company needs to define a process for involving the customer in the planning process.

The interviews imply that the process for familiarizing the customer with the relevant stakeholders is sufficient in the current situation. Due to the nature of the FS jobs, the customers meet the site manager usually just before the core service, which was identified as a minor area of improvement. Resourcing should occur earlier in the process to increase the involvement of site managers. Although relevant stakeholders are introduced, challenges emerge from customer's uncertainty of who to contact during the pre-core phase. Based on the interviews, the customer often has a preferred point of contact – usually the AM. Essentially, the customers share irrelevant information to their preferred point of contact, creating unnecessary dialogues in the process. Moreover, this puts pressure on the case company's information sharing processes. Arguably, this complicates the efforts to maintain a harmonious message between all functions.

As recognized in the previous sections, the planning for delivery is often not co-creative. The accountability for creating plans is allocated to single employees, which prevents co-creative design. This can have a negative impact on the holisticness of the service, since all needs and requirements are not necessarily addressed.

All in all, the FS process has a clear chronological order according to the interviewees. However, some coordination gaps emerge from insufficient communication towards the customer (Lavikka et al. 2009). According to the employees of the sales function, the customer often contacts them to verify the status and stage of their order during the pre-core phase. This issue stems from both the customer's and the case company's information sharing processes. As identified earlier, information is not holistically shared via the CRM

system, which prevents information from reaching relevant stakeholders. Similar gaps exist on the customer's side, meaning that the information is not passed on between functions and business units. For example, the customer's site manager and the case company's FSC might agree on scope changes, which never reach the sales organization of the case company or the administrative personnel of customer. In conclusion, the case company does not have standards or predefined processes for keeping all relevant employees on customers' end informed.

When asked about evidence used for clarifying the field service offering, the interviewees concluded that customers are not familiar with the case company's total service offering. The case company has taken actions to improve the visibility by developing online platforms, but the utilization is not on the desired level yet. When asked about customers' understanding of single orders, the opinions varied between groups. Group 1 believes that customers have a profound understanding of the agreed content, whereas Groups 2 and 3 believe that customers do not holistically understand the content of their orders. Group 1 is naturally closer to the customer, which may lead them to think that their point of contact on the customer's side has a proper understanding. However, poor information sharing may limit the understanding in the customers' end when all relevant employees are considered. Groups 2 and 3 argue that poor understanding stems from inability to highlight the sub-services required in the delivery, for example scaffoldings and logistics. The problem is that this kind of information is not included in the contract. Both parties assume that these details are carried out in a similar fashion as in previous jobs. With complex jobs this might create confusion and eventually customer disputes, since the circumstances are not described in the contract.

The aim of holistic service is to identify the emotions that the customers' desire from the experience (Macintyre et al. 2011). All parts of the service should then be designed to provoke same emotions (Grönroos 2000). This involves creating a value proposition and key message. As identified earlier, the interviewees agree that the case company's field service process creates value through quality, flexibility and speed. Essentially, the case company should deliver excellent field service in a customer-centric and flexible manner, while being

rapid at the same time. When combining and analysing the results from the interviews and the survey, it seems that individual parts of the process can reach the desired outcome, but from system perspective the case company has areas of improvement. For example, gaps in keeping customers informed do not signal professionalism and quality. In addition, limited customer involvement in planning for the delivery does not signal customer-centricity and flexibility. These gaps often occur during complex FS jobs. The implication is that the case company needs to improve processes and management practices for complex FS jobs. Additionally, these instances need to be effectively identified, which calls for filtering mechanisms.

Table 13. Summary of findings related to the pre-core service

	Service design fundamentals	Findings of qualitative interviews	Supported by literature review
1.	Customer-centric	Customers are not sufficiently involved in creating plans for delivery, which limits customizability	No
2.	Co-creative	All relevant stakeholders are not involved in designing the FS delivery	No
3.		Relevant stakeholders are properly introduced to the customer	Yes
4.	Sequencing	Communication between customer and distinct functions of the case company is not structured nor harmonious	No
5.		Customers do not know who to contact during the FS job	No
6.	Evidencing	FS offering is not clear to the customer	No
7.		Content of orders is often communicated sufficiently, but under extraordinary circumstances uncertainties emerge	Partially
8.	Holistic	The FS process does not holistically convey the key message of “quality, speed and flexibility”	No

Table 13 summarizes the findings related to the pre-core service experience. The table highlights how different service design fundamentals (Stickdorn and Schneider 2011) are applied in the case company's FS process. The survey was not designed to ask questions that would support the findings.

6.4 Discussion

The qualitative case study reveals that the case company has several deviations in their current arrangement compared to the findings from relevant literature. This research embarked to understand how the case company could improve its field service performance, by improving cooperation and designing the service model to increase both customer value and internal efficiency (Moritz 2005). This section presents the implications based on observations and analysis of the case study.

Facilitators of integration are meant to create an environment that supports cooperation (Foerstl et al. 2013). Regarding leadership, the most relevant finding concerns the individual level targets and evaluation methods. The individual's development targets are already designed to support cooperation, which is a positive finding. However, individuals' continuous performance management systems (PMS) do not support cooperation. Firstly, the individual PMSs are not aligned among apposite functions. Secondly, the measures do not quantify performance related to cooperation. The case company should design shared measures that are universal to all the individuals involved in the FS process and quantify the performance of the total process.

Another facilitator of integration, information sharing, is also recognized to have a negative influence on cooperation within FS jobs. The case company has a CRM system, which could potentially combine and distribute all relevant information related to FS jobs, but the utilization is not a standard way of working. This gap needs to be highlighted to the central process owner and line managers. Firstly, a standard CRM process needs to be defined and documented in significant detail. Secondly, the process needs to be implemented, which

involves detailed training and active follow-up. The daily FS operations are highly connected to the use of the CRM system and thus, the use should be standardized, since it is a key process for the case company.

Coordination mechanisms aim to guide daily tasks to a desired direction and foster cooperation (Lavikka et al. 2009). Misalignment on team and function level performance management is a key finding regarding direct control. Team and function level PMSs have the same issue as individual PMSs, the sales functions are lead with revenue, whereas operations functions are guided with margins and lead times. The misalignment creates limited accountability of the overall results. All in all, the current arrangement creates variability in the information flow and output, which decreases the performance of the complete process. This finding is supported by the survey, implying that it is a globally occurring challenge. The solution is to introduce indicators that quantify performance towards the customer (Ellinger 2000). For example, customer satisfaction, margin deviation and schedule accuracy could be included in the PMSs of all functions. It needs to be recognized that the sales function is not directly able to influence the schedule accuracy, but they can influence the agreed schedule. Hence, the sales function would focus on selling FS jobs that match the available capacity and schedule.

Regarding standardization, the common implication is that the documented instructions and WOWs cover most of the FS jobs. However, when the complexity of the FS jobs increases, the usability of the standard documents decreases. This research gives two suggestions for the central FS team regarding standardization:

- Instruction for creating certain outputs need to be described in significant detail
- Standard processes need to be described more detailed

To increase the stability of outputs, the process for creating them needs to be defined. For example, offer creation needs to be described in significant detail, so that all relevant information is included. This limits the likelihood of customer disputes, since relevant details are clearly described in the offer and contract. To increase the usability of standard process descriptions, the tasks need to be described in detail, and responsible roles defined. Especially the use of different IT systems needs to be included in the documented ways of

working. Additionally, the availability of the standardized documents and instructions needs to be improved, to ensure the usability.

The interviews and the survey reveal that coordination by plans is not effectively used in the case company. Plans are usually created in isolation and all relevant stakeholders are not consulted. Collective sensemaking is not used, which creates challenges related to complex FS jobs. However, the case company has a distinct process for managing complex FS jobs. However, the difficulty is recognizing the instances in which collective sensemaking and project management methods would be required. What the case company needs is a filtering mechanism (Goretzki and Messner 2016). The FS central team (Group 3) agrees that including lessons learned (Ballard and Howell 2002) to the CRM system would be a appropriate first step for improving the filtering. The employees would be notified of any unusual circumstances that similar FS jobs have included. These notifications would then imply that this particular instance needs collective sensemaking and project management methods.

The most significant challenge, related to the design of the pre-core FS process, is communication towards the customer. Distinct functions are not able to maintain harmonious dialogue with the customer. The issue stems from two root causes. Firstly, the poor utilization of the CRM system limits internal information sharing, implying that stakeholders are not aware of the discussions other employees have had with the customer. Secondly, according to the interviews, the customers have similar challenges related to information sharing. The case company cannot be certain, that information shared with one contact person reaches all relevant employees in customer's end. Process and standards for keeping customers informed need to be defined. Another identified issue in the process design is the customer's involvement in customizing the content of the service. The customers are involved in defining the preliminary scope, but once the final plans are created, the customer is less involved. This challenge could be resolved by including review session with the customer to the process. Common sense can be used to define whether the session is necessary in every instance.

7 SUMMARY AND CONCLUSIONS

This chapter includes the summary of this thesis and relevant conclusions. The first section summarizes the answers to all research questions. The second section describes the research limitations. Finally, in the third paragraph, suggestions for further research are given.

This research aimed to identify methods that the case company could utilize to improve its field service performance, while enhancing customers' service experience. The research process began with a literature review. The literature review is divided into two chapters: *service design* and *cross-functional cooperation*. Findings of the literature review are analysed and combined in the fourth chapter. Based on the analysis, a conceptual framework was created. The conceptual framework is used as a supportive tool for the qualitative case study. The case study is used for understanding how the findings of relevant literature are currently applied in the case company. By analysing the findings of the case study, suggestions on methods for improving the case company's field service performance are given. The following paragraphs indicate how different research questions are answered.

7.1 Overview of research questions

The supportive research questions were created to structure the research in this thesis. By analysing answers of the supportive research questions, the main research question can be answered. The first two supportive research questions were answered by conducting a literature review.

1.1. How is successful pre-core service experience created according to relevant literature?

Service design was chosen as the approach for creating a successful service experience, since Mager (2009) suggests that service design aims to make services more useful and desirable for the customer and more efficient for the producer. Stickdorn and Schneider (2011)

establish a set of fundamentals that all services and service design projects should follow. They suggest that all services should be *customer-centric*, *co-creative*, *sequencing*, *evidencing* and *holistic*. Voorhees et al. (2017) divide the service experience into three consecutive phases: *pre-core*, *core* and *post-core service*. Research in this thesis focused on the creation of the pre-core service experience. The fundamentals of service design are combined with theory on pre-core service experience, with the aim of establishing typology for creating a successful pre-core service experience. The typology was created for maintenance services (Figure 12), to increase to applicability for the case company. This typology answers the supportive research question 1.1.

1.2. How is cross-functional cooperation achieved according to relevant literature?

Cross-functional cooperation is achieved through cross-functional integration (Lavikka et al. 2009; Foerstl et al 2013; Swink and Schoenherr 2015) and cross-functional coordination (Mintzberg 1979; Lavikka et al. 2009). According to Lavikka et al. (2009), cross-functional integration aims to create an enabling environment, mechanisms and structures for cooperation. Coordination aims to guide daily tasks and activities to support cooperation (Lavikka et al. 2009). Coordination mechanisms are mutual adjustment, direct control, standardization and planning (Mintzberg 1979; Lavikka et al. 2009). In conclusion, cross-functional integration enables cooperation, whereas coordination supports and facilitates cooperation in daily operations.

The upcoming sections cover answers for supportive research questions 2.1 - 2.3. These questions describe how the findings from relevant literature are applied in the case company's current arrangement. The questions were answered by conducting a qualitative case study.

2.1. How are facilitators of integration currently utilized in the case company's field service operations?

Leadership is partially used to facilitate integration in the case company's current set-up. The functions of the SU X are lead according to a mutual strategic plan. On the other hand, employees' individual objectives and evaluation methods do not sufficiently support cooperation. The overall *structure* facilitates integration, but function specific roles and responsibilities dissolve during complex FS jobs, which makes functions bypass predefined processes and act independently. The case company faces challenges related to *information sharing*. General information is shared according to a mutual process. However, information sharing related to particular FS jobs is not effective. Utilization of supportive systems is not sufficient.

2.2. How does the case company utilize cross-functional coordination currently?

Direct control is not used effectively as a coordination mechanism in the case company. Firstly, the interviewed employees suggest, that they do not receive close support from their supervisors in function specific challenges. Secondly, the performance management systems of distinct functions are misaligned. In other words, performance management does not support cooperation. *Standardization* is widely used in the case company. However, standardization of processes and outputs does not apply for all kinds of FS jobs. Standardization of skills is achieved when new employees are introduced into the organization, but the talent management loses focus after induction period. *Planning* is not effectively used to coordinate cross-functional tasks. Process for creating plans does not involve collective sensemaking. Furthermore, the interviews and the survey suggest that all relevant stakeholders are not involved in planning. Complex FS jobs are challenging for the case company since shared accountability is limited, which creates inefficient handovers and information breakdowns.

2.3. How are the fundamentals of service design applied in the case company's contemporary pre-core field service process?

The interviews imply that the pre-core FS process is not customer-centric enough. Customers' ability to influence and customize the delivery decreases after the order is signed. The FS process has also imperfections regarding co-creativity, since all relevant functions are not involved in the planning phase. Deficiencies regarding both sequence and evidence relate to poor information sharing. The case company is not able to keep the customer properly informed during the process, nor is it able to properly communicate the service content in all instances. All these deficiencies imply that the FS process is not holistically designed to consider all customer needs.

The main research question was answered by comparing the findings of the literature review with the findings of the case study. Managerial implications are covered thoroughly in the section labelled *Discussion* (section 6.4). The upcoming section summarizes the synthesis of the main research question, by highlighting the development suggestions that the author of this research prioritizes.

How can the case company improve its field service performance through cooperation?

The case study reveals that the case company has areas of improvement regarding both cooperation and pre-core service experience creation. The most significant areas of improvement are information sharing, performance management and communication towards customers. Improving the utilization rate of the CRM system in FS job related information sharing would improve the accuracy and relevance of information used in decision-making (Swink and Schoenherr 2015).

Performance management between functions is misaligned, which reduces individuals' willingness to cooperate. Functions' evaluation methods should be designed to quantify the

performance towards the customer. Holistic measurement ensures that individuals feel accountable for the whole service process, which facilitates them to cooperate towards common goals. The alignment should be implemented on both individual and team level.

To improve communication towards the customers, the use of CRM system must be standardized and trained to ensure that all relevant stakeholders possess accurate information. In addition, a process for communication needs to be created. This process should describe responsibilities and ways of working for keeping customers sufficiently informed throughout the FS process. Basically, the instructions should define, that which are the points of contact from the customer's side and who from the case organization is responsible for informing them and at which stage of the process.

7.2 Research limitations

During the data collection phase, the case company was going through a structural change. Due to the situation, the interviewed and surveyed employees were experiencing uncertainty of their upcoming roles, which might have influenced the way they handled the research topics. The organizational change is the probable reason for the low sample size in the survey as well. It needs to be recognized that the low sample size weakens the generalizability of the findings. In addition, the design of the survey has an influence on the generalizability of the interview findings. The survey was designed with a more concise scope to ensure that the target group would not perceive the survey as too cumbersome. Hence, all interview findings could not be compared to the survey results. Furthermore, the survey respondents did not have as complete understanding of the research topic as the interviewees, since they did not receive any introduction to the topic.

This thesis did not study the existence and influence of barriers to integration (Song et al. 1997). Song et al. (1997) recognize demographic factors as a barrier for integration. One of the survey respondents, in the role of field service coordinator, suggested that the most significant barrier to cooperation is lack of common language with sales. The literature

review findings do not suggest a mechanism for overcoming this barrier. This barrier should not influence the interview results, since the employees have a common business language, but it might influence the survey responses. Most of the service units consist of several nationalities, which increases the possible impact of demographic barriers.

7.3 Future research

Research in this thesis focuses on the pre-core field service. Future research should investigate whether the findings are generalizable for core and post-core phases as well. This research would be of benefit to the case company. The case company should also investigate the financial impact related to the implementation of the suggested development topics. Study carried out by Swink and Schoenherr (2015) implies that improved cross-functional integration should yield better margins.

Performance management was identified as a relative area of improvement for the case company. The challenge is aligning functions' and individuals' targets and evaluation methods to support cooperation. Future research should focus on designing performance management systems to understand how function specific evaluation methods can be effectively aligned. Ellinger (2000) suggests that in supply chain context alignment between functions can be achieved by designing indicators that quantify the performance towards the customer. It would be intriguing to understand, which kinds of performance management systems are suitable for various functions, processes, organizations and industries.

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APPENDICES

APPENDIX 1

Conducted interviews

Position	Group	Date	Duration	Method
Account Manager	1	10.10.2018	46 min	Skype
Sales Support Engineer	1	11.10.2018	1 h 01 min	Skype
Field Service Coordinator	1	8.10.2018	1 h 00 min	Skype
Manager Field Service Operations	2	10.10.2018	54 min	Skype
Sales Manager	2	9.10.2018	1 h 06 min	Skype
General Manager Operation	2	8.10.2018	1 h 05 min	Skype
General Manager Sales	2	11.10.2018	1 h 34 min	Skype
General Manager Field Service Operations	3	9.10.2018	57 min	Skype
General Manager Field Service	3	10.10.2018	1 h 20 min	Skype