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Service modularization: Decomposing and standardizing an existing service offering to enable further service development

Master's thesis in Quality and Operations Management

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Abstract:

Servitization is a concept which has grown in popularity among organizations which seek to expand their value offering to customers and gain an edge over competitors through differentiation. Increase in servitization also leads to increased need to organize the service offering of an organization and in doing so increase the efficiency in the service offerings. A balance between customization and standardization in a service offering is required to ensure the customer receives a service which fits their needs. At the same time, the while the supplying organization needs to make the service as effective and resource efficient as possible as to be able to earn the maximum return on their efforts. This in turn has led to organizations and researchers beginning to research the subject of service modularity, as a way to achieve a balance between these two attributes. The thesis looks into how an organization can effectively modularize an already existing service offering, by utilizing service decomposition and breaking down the service to later modularize it.

The thesis was performed at a case company which needed assistance with their service offering in relation to coaching dealerships, which was not properly mapped and had issues with their organization of services. The service offering was decomposed, modularized, and considerations for when re-integrating the modularized services into the organization was produced. The research identified five different coaching modules for the case company, which are then used to organize the service offering of the organization. The thesis produced a framework which is intended to be followed when decomposing and modularizing a service offering, a framework which was followed for the case study. Learnings from this framework is further presented in the thesis, and takeaways for implementation of this framework is given. The potential benefits of a modular service offering are presented, the challenges which exist when utilizing the framework is discussed, and future research recommendations is provided.

Keywords: *Service modularity, Service decomposition, Customer centricity, Customization versus standardization.*

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Contents

1 Introduction

This introductory chapter introduces the thesis project and presents its underlying reasoning and rationale. The chapter begins with a background into the subject which the thesis aims to address, followed by purpose and research questions, delimitations, and a disposition of the thesis.

1.1 Background

Servitization is a concept that has grown in popularity among companies to expand their value offering to the customer and gain a competitive edge over competitors through differentiation (Mahut et al. 2017, Oliva and Kallenberg, 2003). It is based on the notion that a customer wants the function of a product rather than the product itself. One of the more famous examples states that people do not buy quarter-inch drills because they want them, but because they want quarter-inch holes.

The literature highlight that to successfully increase their service offering companies require a certain company culture, organizational structure, supportive structures, and qualified personnel (Neu et al., 2005, Schroeder et al., 2022, Baines et al., 2009). Without this the company risks falling into the "service paradox" (Gebauer et al. 2005), which is when the cost of the service offering is greater than its revenue resulting in less profitability. Before a company chooses to increase their service offering it is therefore important that they consider three aspects. The first one is to have a strong understanding of why they do it, meaning that they must form their service concept based on their strategy (Neu et al., 2005). The second aspect is to have an infrastructure that allows the company to leverage customer-centric capabilities to develop the service together with the customer (Schroeder et al., 2022, Baines et al., 2009). Customer-centricity is defined as focusing on the customer interests, active prioritization of customers and having a perceived customer centricity indicator (Habel et al., 2019). Lastly, the services must be continuously monitored to improve customer relations and operational efficiency (Neu et al., 2005).

First, in industry, services were for a long time seen as a necessary evil complementary to marketing and getting products sold (Baines et al., 2014, Oliva and Kallenberg, 2003). This led to companies not prioritizing services in their strategy, other than for marketing purposes. However, servitization has lately gained popularity due to increased competition and companies wanting to become more customer centric (Mahut et al., 2017, Zhang et al., 2022). To formulate an appropriate strategy, management must have adequate access to information. Therefore, it is important that companies that choose to increase their service offering have an established information flow that is used to formulate their strategy. Otherwise, they risk falling into the "service paradox", which will be discussed later in the report.

Secondly, in the automotive industry, services in the form of aftermarket sales such as spare parts stand for a large part of the revenue (Baines et al., 2014). The purpose of other services has been to enhance the vehicle features or support vehicle availability and reliability. However, servitization has not historically been recognized as a relevant source of competitiveness and profitability and thus lacked strategic and managerial support (Baines et al., 2014, Neu et al., 2005, Schroeder et al., 2022). This can be related to the customer-centric infrastructure of a company. To create such an infrastructure, which is an infrastructure that can leverage customer-centric capabilities to support an understanding of "local" needs and wants to provide customers with an appropriate service (Baines et al. 2009; Neu et al., 2005). The key structural factors of a customer-centric infrastructure are collaboration between business units and integration of their responsibilities and decentralized decision-making authority (Oliva & Kallenberg, 2003) along being able to customize the service offering to a certain degree (Skačkauskienė & Vestertė, 2020). Collaboration and integration of responsibilities are included since it forces business units to collaborate to continuously improve the capabilities based on the business units' different experiences. Decentralized decision making is important for the infrastructure to allow for customization based on local customer needs. When these structural factors are in place a company can leverage customer-centric capabilities to develop the service together with the customer.

The third concept is that of measuring and evaluating the services. Being customer-centric is not only related to physical capabilities and having a perfectly adaptable service offering. It is also important that the customer perceives the company as being customer centric (Habel et al., 2019). To find this out, the company must actively measure the performance of the service in terms of the customer satisfaction together with employee satisfaction and business success (Oliva and Kallenberg, 2003; Schroeder et al., 2022). Employee satisfaction and business success are needed to create a sustainable and long-lasting service operation where employees want to stay and perform, while still being financially sustainable.

As servitization is of growing interest for many previously product focused organizations, there is an inherent need for services to be understood more clearly and for the process of moving into a more service-oriented organization to be understood. Current research is mostly focused on companies moving from product-centricity to service-centricity (Gebauer et al., 2005, Oliva and Kallenberg, 2003, Baines et al., 2009) and not focused on companies that have an existing service offering that they want to map, decompose, modularize, and improve.

This thesis will be based on an empirical study in an automotive company that has started its journey on expanding its service offering and increasing its revenues from services. It is interesting in the sense that they are an automotive company with a strong managerial and strategic support for servitization. The report will investigate their current coaching service offering and analyze it

based on their overall strategy and service modularization (Gremyr et al., 2019).

1.2 Purpose and Research Question

The case company currently provides several services to its dealerships, which they want to map, decompose, modularize, and improve. Thus, it is a relevant case for contributing more insight to the service modularization, development, and management research fields. When it comes to the size of the organization, it operates in several countries with different cultures, languages, and market conditions. This influences the company's balance between thinking globally and acting locally, which will impact the results of the case study.

The purpose of the thesis is to study the following:

How can existing service offerings be retrospectively modularized and assigned needed resources and infrastructure to continuously add value to the customer as well as provider?

This will be done by mapping the current coaching service offering based on interviews with internal and external stakeholders and observations. The collected data will be analyzed in relation to the company strategy, infrastructure, and attributes to decompose, modularize, and to suggest improvements of the current service offering.

To address the purpose, an understanding of service mapping and service modularization is required. Two research questions are therefore used:

- *RQ1: How can services be mapped and decomposed into modules?*
- *RQ2: How can service modularization be used to decompose and standardize an existing service offering to balance customization and efficiency/standardization in a multinational organization?*

1.3 Delimitations

There are some delimitations to the project which need to be considered. Due to services being a large area that can be applied in many parts of a global automotive group the Master's thesis is limited to coaching services for dealerships. There will only be one case organization and only two of its markets will be studied. No formal benchmarking against other organizations on how they deal with service development will be conducted and the implementation of services will not be included in the scope due to time limitations.

1.4 Disposition

Chapter 1 – Introduction
The introductory chapter describes the thesis project, presents the chosen research questions, and specifies the scope of the thesis.

Chapter 2 – Theoretical framework
The theoretical framework presents the relevant background for the project which stems from a literature study on subjects relevant to the report. The areas covered include servitization, service decomposition, service modularity, coaching and mentoring, aftermarket support and after-sales service.

Chapter 3 – Method
This chapter describes the methodology, which was chosen for the project, motivates it and describes the actions taken. The chapter presents the research strategy and design, data collection and data analysis, research quality assurance, and ethical considerations of the thesis project.

Chapter 4 – Empirical findings
The empirical findings from the data collection through literature studies, empirical studies, observational studies, and document analysis, are presented in this chapter.

Chapter 5 – Analysis
Analysis of the empirical findings, putting the findings into context and analyzing it in the context of the theoretical framework.

Chapter 6 – Discussion
The empirical findings and the following analysis is discussed with the findings of the project being presented and being put into context. Managerial and theoretical implications as well as potential future research subjects are presented.

Chapter 7 – Conclusion
The final chapter presents the conclusion from the thesis project, answering the research questions.

2 Theoretical framework

This chapter introduces the theoretical framework which is the basis of the analysis of the empirical findings. The theoretical framework emanates from the purpose and research questions and presents relevant information and methodologies which has been gathered through the literature review.

2.1 Servitization

Servitization has recently grown in interest for many manufacturing companies. There are several explanations for this, Huang et al. (2022) show that it increases sales and makes a company more distinguished in an increasingly competitive market. Mahut et al. (2017) and Oliva and Kallenberg (2003) found that it expands companies value offering to the customer and makes them gain a competitive edge over competitors through differentiation and Fang et al. (2008) showed that a service-centric approach improved firm performance in an era of competition. For a company to invest and focus more on services also comes with risks. A company can end up in the service paradox, which will be explained further. It should not be understated that creating a service offering that both caters to a variety of customers while at the same time being profitable and aligned with a strategy is difficult to establish.

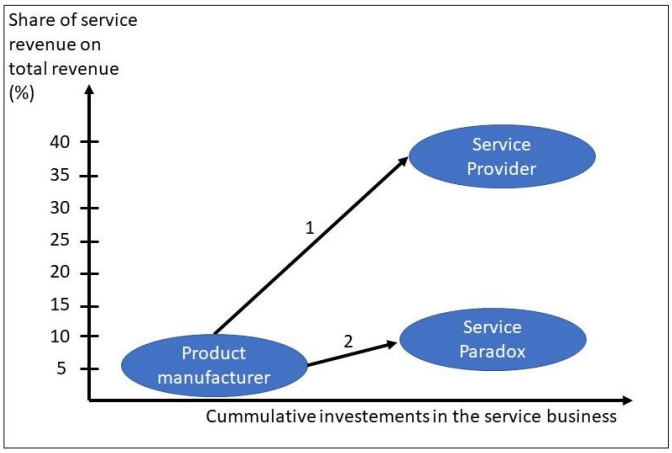
2.1.1 Definition of Servitization

Servitization is defined as "a process of building revenue streams for manufacturers from services" (Baines et al.,2017). As the definition suggests the term is based on increasing a service offering. Services offered by manufacturers can be broadly divided into three different categories: base, intermediate, and advanced services (Baines et al., 2017). Base includes services such as selling spare parts, intermediate services regard training, maintenance, and helpdesk while advanced services are customer support agreements and outcome contracts. Advanced services are the most researched category.

2.1.2 The Service Paradox

Gebauer et al (2005A) summarizes the rationale for servitization as financial, marketing and strategy. However, there are studies that show several examples of companies experiencing the "service paradox", meaning that profits decrease rather than increase as they invest more in their service offering (Gebauer et al. 2005A), which questions the financial reasoning. This is due to several factors including that it is expensive to extend and uphold a service offering and that it requires a certain company infrastructure (Fang et al., 2008; Gebauer et al., 2005A). The marketing rationale is connected to distinguishing a company in a

competitive market and the strategy rationale with expanding the value offering. Gebauer et al. (2005A) coined the term “the service paradox” and visualizes it as shown in Figure 1. The figure shows two scenarios a product manufacturer can end up in when increasing its service offering. Either it becomes a service provider making services a large part of the value creation or it ends up in the service paradox where the service revenue does not correspond to what it costs financially. This can be hard to balance since some of the mentioned advantages with an increased service offering is harder to measure than financial return, for example: customer satisfaction. Therefore, ending up in the service paradox does not necessarily mean that extending the service business was a failure, since there are many other aspects in a business than financial return.



1: Manufacturing companies successfully exploit the financial potential of an external service business.
2: Manufacturing companies struggling to exploit the financial potential of an extended service business.
PM: Services as an add-on to the product, service revenue is low, main share of the value proposition stems from the product and a few services such as installation, documentation, spare parts,...
Service Provider: A major part of the total value creation stems from services, many services including product-related services and customer support services such as maintenance contracts, consulting, financial services,...
Service Paradox: High investment in extending the service business leads to increased service offering and higher costs but does not generate expected higher returns.

Figure 1 – Transition Line and Service Paradox (based on Gebauer et al., 2005a)

2.1.3 Implementing the Service Offer

For a company to avoid the "service paradox" there are three main aspects described by the literature to consider. The first one being, understanding why the company wants to focus on servitization and how it is reflected in the overall company strategy (Neu et al., 2005). The second aspect is for a company to create an infrastructure that can utilize the voice of the customer in creating and improving the services (Baines et al., 2009; Rabetino et al., 2017; Baines et al., 2011). The third and last aspect is to continuously monitor the service based on the reason for implementing it (Neu et al., 2005; Oliva & Kallenberg, 2003). The full breakdown of areas surrounding implementing the service offer can be seen in Table 1.

Table 1 - Breakdown of service offering

Area	Description	Key factors	References
Servitization in company strategy	The strategy must be based on customer needs and organizational capacity	Access to information about competitors, customer needs, market size and maturity to avoid strategy misalignment.	Neu et al. (2005)
		Analyzed strategy based on cost, benefit and synergies between products, services, and customer needs.	Schroeder et al. (2022) Rabetino et al. (2017)
Customer-centric infrastructure	The infrastructure needs to support an understanding of "local" needs and wants to provide customers with an appropriate service	Collaboration between business units and integration of their responsibilities and decentralized decision-making authority.	Neu et al. (2005)
		Make an explicit decision about the degree of standardization of the service to achieve a balance between the transferability of services across markets vs customization for individual end-users.	Oliva and Kallenberg (2003) Gremyr et al. (2019) Skačkauskienė & Vesterté (2020)
Measuring the service performance	The service needs to be measured and evaluated based on its performance	Focus on customer satisfaction by measuring perceived customer centricity, since this is linked to customer loyalty and sales revenue.	Habel et al. (2019)
		Create employee satisfaction through employee pull effects, to avoid capacity bottlenecks.	Gebauer et al. (2005A)
		Focus on business success by assessing resource capacity, market demand and by reaching the "critical mass".	Fang et al. (2008)

First, to formulate an appropriate strategy, management must have adequate access to information. Valuable information is information about the market they are in, such as competitors, customer needs, market size and maturity, from both from internal and external sources. Without this information and the understanding of how to use it, management risks misaligning the strategy with the market (Neu et al., 2005). To use the information the company must base its analysis on cost versus benefit (Schroeder et al., 2022) and the strategic logic of synergies between products, services, and the customer needs (Rabetino et al., 2017). It is, therefore, important that companies that choose to increase

their service offering have an established information flow that they utilize to create a service strategy aligned with both the customer needs and the company capabilities.

Second, the company needs to have an infrastructure that supports an understanding of "local" needs and wants to provide customers with an appropriate service (Neu et al., 2005). Key structural factors to support the infrastructure are collaboration between business units and integration of their responsibilities and decentralized decision-making authority. When these structural factors are in place a company can leverage customer-centric capabilities to develop the service together with the customer. An additional structural factor that is related to the service offering is the level of customization of a service. Gremyr et al. (2019) argue that standardization is advantageous in that it reduces costs and complexity, increase interoperability, and enables faster delivery of services. It also removes the possibility of customization, which can be costly and time-consuming. However, customization allows for services which are tailored to individual customer needs and preferences. Therefore, the use of a standardized service offering with the help of modularization to also provide customizability to the customers would allow an organization to reap the benefits of both variants (Skačkauskienė & Vestertė, 2020). To handle this, Oliva and Kallenberg (2003) argue for the importance of a company making an explicit decision about the degree of standardization of the service to create an appropriate balance between the transferability of services across markets vs customization for individual end-users.

The third aspect is measuring and evaluating the services and its performance. Important factors are customer satisfaction, employee satisfaction and business success (Baines et al., 2009; Gebauer et al., 2005A). When it comes to the customer, being customer-centric is not only related to physical capabilities and having a perfectly adaptable service offering, like mentioned in the introduction. It is also important that the customer perceives the company as being customer centric since this is linked to customer loyalty and sales revenue (Habel et al., 2019). For the employee satisfaction it is more about the managers creating an environment with pull factors for the employees, such as higher income, freedom, or educational opportunities. According to Gebauer et al. (2005A) this is to mitigate the effects of resource bottlenecks that can occur when expanding a service offer or if employees leave the company. If employee satisfaction is high, the retention rate of employees becomes higher leading to more customer-centricity knowledge staying inside the company. When relating services to business success, Fang et al. (2008) shows the effect servitization has on firm value and highlights measurable aspects that manufacturing companies must consider to get positive effects on firm value. Firstly, a company must have adequate resources to devote towards the services. If this is not the case the service operations will be at the cost of their production or other services creating suboptimal results. Secondly, the time must be right for the company. If a company is in a high demand situation it is most important to produce a high number of products rather than complementing them with services. If the situation is turbulent, for example if

customer needs are changing or if new products enter the market, adding a service can help to distinguish the company and increase customer satisfaction and financial returns. Lastly, is to reach the "critical mass", which is when services stand for around 20-30% of a company's sales (Fang et al., 2008).

2.2 Service Modularization

As services develop and become ever more encompassing, the complexity and the difficulties in managing the services increase. The need to strike a balance in meeting the needs of each individual customer with being efficient enough in the deployment of one's services is a hard balance to achieve (Carlborg and Kindström, 2014). One strategy to achieve this balance is service modularity, where one separates the parts of a service into several standardized modules which can be combined in different ways to form services which are fit to the customer needs (de Blok et al., 2010; Bask et al., 2011; Gremyr et al., 2019). Through this method the modules may be independently managed and developed, while a common interface ensures the services being compatible with one another (Baldwin and Clark, 1997). The advantages with a modular service system can be broken down into five key aspects, adapted from Böttcher and Klingner (2011):

1. Reduction of efforts – Allocation of resources, pricing, and management of monolithic services can by using modules be simplified and require less resources.
2. Configuration – Having the customer choose which parts of the offering they want will in turn make the service customized to their needs and wants, while still offering the opportunity for the service to be standardized internally from the supplier.
3. Improved transparency, reduced complexity – By using a service module system, the service portfolio becomes easier to grasp and manage as the modules can be handled as singular entities.
4. Enhancements and improvements – the lack of interdependencies between modules will in turn make the improvement of singular modules easier.
5. Reuse – Reuse of service module offer a great opportunity to make use of economies of scale, as a new service offer does not need to be produced for each customer.

2.2.1 Service Modularity Frameworks

Service modularity as a concept has been applied to a multitude of different industries, with researchers studying its implementation to characterize and further understand the concept. It's been studied in Information, Communication and Technology (ICT) services (Hyötyläinen and Möller, 2007), logistics (Lin et al., 2010), banking (Moon et al., 2010), healthcare (de Blok et al., 2010) to name a few. This plethora of implementations and studies have given place to several frameworks which may be used to judge or otherwise interpret the implementation and effectiveness of a modular service system.

Bask et al. (2011) proposes a general framework, as can be seen in Figure 2, which can be used to evaluate the modularity and customization of a service and provides examples of how it can be applied to service offerings, service production, and service production networks. As Bask et al. (2011) focuses on the automotive industry the framework becomes particularly interesting for this thesis project, as it should be adapted to the attributes and situations of the case company. Böttcher and Klingner (2011) focuses on the process of composing the service modules which make up the service offering. They propose a method which can be used to describe the different modules in a modular service offering, something which they argue is important for the eventual success of a service. From their literature review they also identify three aspects which is needed in the process of modularizing a service: an architecture which describes the service system's structure, an interface which explains interactions between service modules, as well as standards for testing how well a module conforms to the design rules which have been set (Böttcher and Klingner, 2011). The first and second of these aspects tie in with the degree of customization (adapted from Bask et al., 2011) when designing a modular service offering, as both the service system structure and the interfaces describing the interactions between modules are dependent on where on this modularity versus customization scale the service will fall. Should there be a high degree of modularity, the interface and structure will need to accommodate the interchanging of service components.

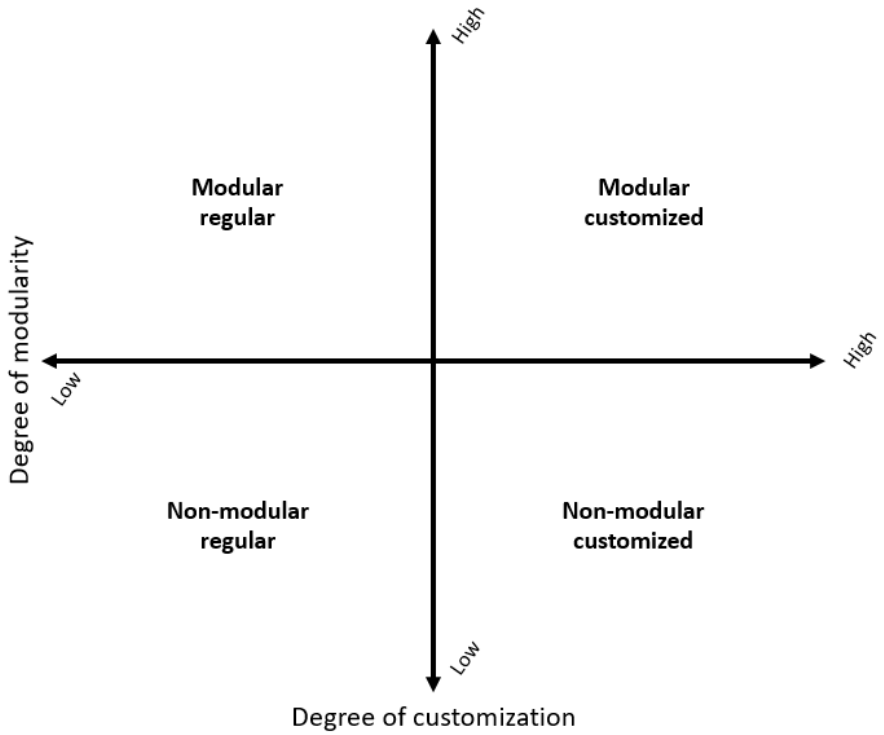


Figure 2 - Framework of modularity and customization (adapted from Bask et al. (2011))

2.2.2 Service Modularity Doing

There are two approaches one can take when designing new service modules (Böttcher and Klingner, 2011): create new service modules that can be

integrated into the service offering (creation); or segregate existing monolithic service offerings into service modules (decomposition). De Mattos et al. (2021) describe the steps of decomposing existing services, which is the focus of this thesis (based on the works of Lubarski and Poeppelbuss, 2016) in table 2:

Table 2 - Modularization phases (adapted from de Mattos et al., 2021)

Phases	Description	Phases output
Information capturing	Gathering detailed information on the status quo of offers and service processes and/or identifying customer needs through interviews, observations, and analysis of existing documents and data	Service models
Decomposition	The information collected in the previous stage for the development of a new service or about an existing service is decomposed into elements, which will be used to create independent modules.	Unstructured elements
Structuring	Elements are categorized according to their interdependencies, using matrices, classifications or a combination of both	Structured elements
Module creation	From the structuring, the modules are built, with high internal cohesion and loose coupling, using grouping algorithms, heuristics or subjective aggregation.	Group of modules
Interface definition	The interface definition must allow interaction between the service modules, making the outputs of a module compatible with the expected inputs of the subsequent module.	Configurable modules with pre-defined interfaces and configuration rules
Testing	Testing the modular architecture (modules, interfaces, and rules), evaluating whether the combinations generated are desirable, excluding undesirable combinations and comparing the current time and resources needed with the previous status quo.	-

Voss and Hsuan (2009) defines the service architecture as a decomposition of a service systems' components into individual functional elements which together combine to the total service offering. These components include modules, resources, interfaces, standards, and boundaries of the system (Iman, 2016). The hierarchical decomposition of systems was first conceptualized by Simon (1962), which argued that decomposing systems will lead to a reduction in complexity, a subject which has been subject of research since then. The decomposition into modules is described and analyzed extensively by Eissens-van der Laan et al. (2016), where they provide three partly iterative steps for service decomposition from reviewing academic research on the subject leading up until 2014: defining the boundaries of the services which are to be decomposed; determining to which degree the decomposition will examine the current service offering; and lastly to identify the interdependencies between the modules and isolating them. de Blok et al. (2014) focuses instead on what they call the two distinct levels of service decomposition with the first being the level of the service components which together build the complete offering, and the second analytical level concerns the service package and the interactions and interfaces between service components.

de Blok et al. (2014) propose four modular service provision interfaces which can be distinguished from one another. The first of these four is O-C interfaces (open-customer flow), where the interface supports the customer flow between the components by enabling components of the service to be changed according to the individual customer's needs. The second is C-C interfaces (closed-customer flow) where the interface guides the customer from

component to component in a predictable manner while managing the interdependencies between the different services. The third is O-I interfaces (open-information flow) where the interface facilitates in bringing service providers together and enables the exchange of information concerning package configuration in an efficient and streamlined manner. Lastly, the fourth category of interfaces is called C-I interfaces (closed-information flow) which supports the information flow by limiting the need for information exchange between the services, standardizing the information needing to be exchanged and therefore making the interactions predictable. The findings of de Blok et al. (2014) indicate a need for increased amount of communication between the stakeholders when comparing the interfaces in service modular systems to the interfaces in product modular system.

In summary, when modularizing a service there is a need to consider all different components of the new service. The modules themselves need to be designed in a way which allows for them to be a module, something which can be switched out for another module if needed for the intended purpose. The interfaces can be designed in many different ways (de Blok et al., 2014) depending on which the aim of the service is. The decomposition of an existing service, which is the focus of this thesis, need to be based upon detailed information previously gathered to allow the decomposition to capture all the nuances of the existing services, as to ease the subsequent modularization phases (see Table 2).

2.2.3 Service Blueprint

Service blueprint is an approach which is utilized when analyzing a customer journey map to understand the touchpoints for the customers and how these touchpoints are handled from the supplying organizations perspective such as which internal processes exist etc. (Lewrick et al., 2018). Bitner et al. (2008) argue that service blueprinting can be utilized to exploit commonalities between different services as well as a tool for innovation of new services, which makes it a tool applicable to this thesis.

Visually, the service blueprint is a diagram that breaks down the process of a service delivery, by listing the activities and what roles are involved in them. The matrix visualizes the flow of actions and what roles carries them out. The service blueprint allows the user to evaluate the service and its relationship between onstage and backstage actions. Bitner et al. (2008) suggest there are five components of a typical service blueprint: *customer actions, onstage/visible contact employee actions, backstage/invisible contact employee actions, support processes*, and *physical evidence* (see Figure 3). Between the actions in a service blueprint are arrows connecting to any actions which follow as a response to the first action, for example a customer requesting a room at a hotel would be classified as a *customer action* which would create the response of the personnel at the hotel to book the room, classified as the *invisible contact employee action*, and these two actions would be linked with an arrow in the service blueprint (Geum and Park., 2011). The vertical axis of the service

blueprint therefore divides the processes into distinctive service areas, while the horizontal axis separates the actions chronologically.

Physical evidence	
Customer actions	*Line of interaction* ↘
Visible contact employee actions	*Line of visibility* ↘
Invisible contact employee actions	*Line of internal interaction* ↘
Support processes	

Figure 3 - Service blueprint components (inspired by Bitner et al. (2008))

For mapping the blueprint, Gibbons (2018) describe a four-stage process:

1. **Set up the session.** The service blueprinting is utilized most effectively by having a cross-functional team work together to ensure the blueprint is collaborative and unbiased. The team members work together through the process to ensure that as many nuances as possible are included in the final service blueprint.
2. **Map customer actions.** The customer actions are mapped in sequence from start to finish, mapping all touchpoints customers may have with the organization supplying the service.
3. **Map employees' frontstage and backstage actions.** Input here should be from actual employee accounts grounded in how the service is offered to the customers. The mapping of these actions is of utmost importance and should be validated by internal research in the organization.
4. **Map support processes and evidence.** Adding the processes' which the customer relies upon when interacting with customers. The support processes may involve personnel or system which do not directly interact with customers directly or are not thought of as typical customer services.

Following these steps, one should be able to develop a clear service blueprint for the service one offers. Gibbons (2018) also suggest best practices to ensure the process and results are indicative of the service reality, such as limiting the scope to one core service per blueprint, iterating the service blueprint process, and root the service blueprint in research from primary data sources such as firsthand employee accounts. Shostack (1984) argue that performing service blueprinting will ensure that the inefficiencies which exist in services are able to be minimized, and by performing service blueprints the organization makes their services more structured and enables the organizational learning, leading to better services for the customer.

2.2.4 Customer Centricity

Following a literature study on customer involvement in B2B markets, Oinonen (2014) propose three factors which determine the efficiency of customer

involvement in the co-development: Customer selection - making use of lead users and selecting customers who can in different ways help in the development phase; Management of co-development - building the network and collaboration between the stakeholders and getting buy-in from all stakeholders; Internal co-development capabilities - making use of internal resources to enhance the process. Focusing on these three factors when co-developing services with customers, one will be able to obtain the maximum value from the process.

When dealing with services, Gwinner et al. (2005) emphasize the employees' role in the customization and personalization of a service. The human factor between not only the employees of the organization supplying the service but also the employees of the organization consuming the service makes the couplings and connections between the different service elements quite loose at times. This will in turn make the connections between and within service modules different at times compared to that of a modular product system, as it will need to be adapted to the individual situations to a larger extent (Voss and Hsuan, 2009). This is further accelerated as there is no stocking or warehousing of services, as they are consumed at the same time as they are created for the customer, thus increasing the collaboration and cooperation needed between the stakeholders.

2.3 The Learning Organization

The learning organization is described as an organization that creates, acquires, and transfers knowledge efficiently and that changes its behavior based on reflections of that knowledge (Garvin, 1993; Matic 2022). It is also an organization in which employees create the results they really want, continuously increase their capacity and competencies, adopt new thinking styles, and learn how they will learn together (Saglma and Iyigun, 2022). This makes becoming a learning organization relevant for all companies that operates in today's business environment with increased globalization and competitiveness.

The literature mentions two main methods related to organizational learning. First, we have Peter Senge in the book *The Five Elements of a Learning Organization* (1990) that discuss five disciplines that a company can use to advance its organizational learning. The other method that is widely referenced is the Socialization, Externalization, Combination, and Internalization-model (SECI-model) by Ikujiro Nonaka and refined by Hirotaka Takeuchi (Nonaka, 1991) that explains how tacit and explicit knowledge turn into organizational knowledge.

Senge's five disciplines are systems thinking, personal mastery, mental models, shared vision, and team learning (Senge, 1990). Systems thinking means that management must understand the interrelations in the company and how training and learning are fundamentals for making the company run and evolve. When managers formulate a strategy which emphasizes and support learning, the organization becomes more effective (Matic, 2022). This leads to

the next discipline which is personal mastery. That is down at an employee level and highlights that employees must feel that they grow regardless of the company growth. Mental models says that companies must be aware of generalizations and assumptions and focus on self-awareness to change for the better. Building a shared vision is about transitioning to a learning organization by creating a vision that all employees can follow and that motivates and encourages learning. The final discipline is team learning which is the process of aligning and developing the capacities of a team to create the wanted results. According to Sari (2022), Senge is still very relevant for creating a basis for a learning organization model. Downsides are however that the model was created following the developments of an uncertain, complex, volatile, and ambiguous world that can be seen today. Therefore, parts like team learning might be difficult to fulfill to an appropriate extent since employees are more specialized today (Sari, 2022).

The SECI-model is based around four modes of knowledge conversions called socialization, externalization, combination, and internalization which creates the spiral of knowledge, seen in Figure 4 (Nonaka 1991). Socialization is the knowledge transfer from tacit-to-tacit knowledge which is when someone learns through interaction and observation. The next step is externalization, which is the process of making tacit knowledge explicit by writing it down, quantifying it or articulating it, making it the basis of creating new knowledge. Combination is combining implicit and explicit knowledge to create new knowledge within the organization. Last is the internalization which is making explicit knowledge tacit. This is when the explicit knowledge is reflected upon by the organization or individual and internalized. This new tacit knowledge then creates a new process of knowledge conversion creating a spiral of knowledge. Saglma and Iyigun (2022) shows the importance of creating knowledge or increasing a company's intellectual capital since it positively impacts the learning organization and organizational ambidexterity.

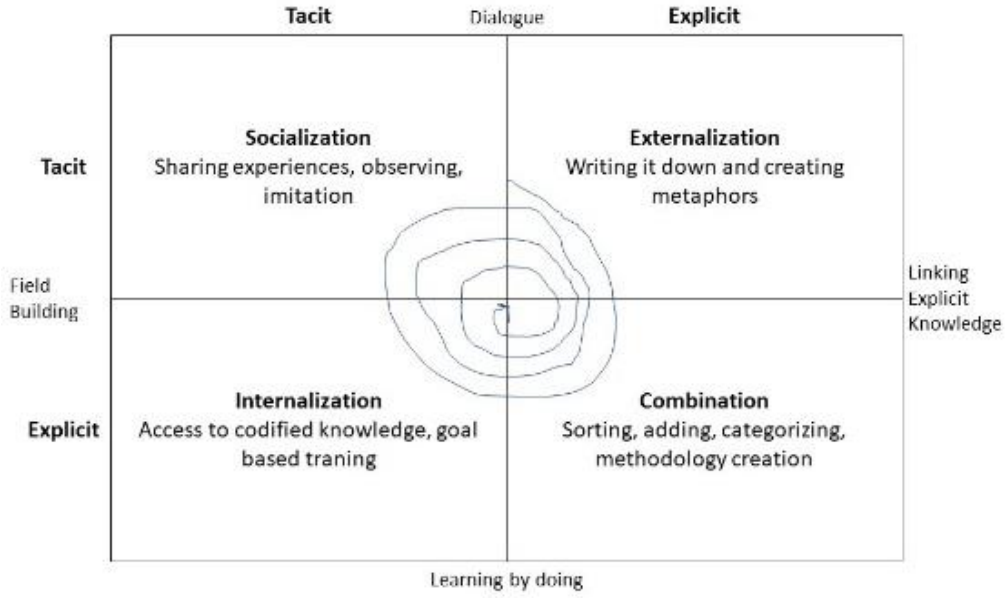


Figure 4 - SECI model (Nonaka 1991)

Both models mention the importance of management creating an organizational culture where knowledge is shared, and learning is encouraged. While the five disciplines focus more on how an organization can advance its organizational learning the SECI-model is more focused on how knowledge transfer should be viewed to create the spiral of knowledge that continuously improves the organizations learning. The SECI-model is more of a tool that can be used in the environment created by the five disciplines.

When a company increase its service offering it is faced with several challenges where organizational learning plays an important part. Like mentioned in the "implementing the service offer" part of the report, there are three aspects to consider when implementing services. These are strategy, a supportive infrastructure and measuring the results. To form an effective strategy a company must have an established information flow to align it with customer needs and organizational capabilities. Here socialization and combination from the SECI-model are important so that information is shared and combined to become more nuanced. To have an appropriate infrastructure, business units must collaborate, which emphasizes the need for the 5 disciplines' shared vision, so that business units can relate to each other and unit under a common vision. Lastly is the measuring of the service performance where employee satisfaction is one of the three aspects. Increasing the service offer can lead employee bottlenecks which makes it imperative that employees are experiencing personal mastery. This means that they must feel like they are growing regardless of company growth and that staying at the company will result in becoming smarter and better at their job.

2.4 Conceptual Framework

The concepts which the thesis is built upon have been explained throughout Chapter 2 with Servitization, Service modularization, Learning organization as well as the conceptual background for the case study. The conceptual framework for the thesis is summarized in Figure 5, with the different methods and concepts applied to the project. The first framework, labelled Framework for research process, describes the process for identifying, decomposing, re-composing, and integrating a service into a modular service. The second frameworks, based on Breakdown of service offering (Table 1) and Degree of customization (Figure 2), are used to evaluate the service offerings after modularization.

Area	Description
Servitization in company strategy	The strategy must be based on customer needs and organizational capacity
Customer-centric infrastructure	The infrastructure needs to support an understanding of "local" needs and wants to provide customers with an appropriate service
Measuring service performance	The service needs to be measured and evaluated based on its performance

Figure 5 - Conceptual framework for the thesis

Framework for research process

The first step in the process is to understand the situation, which is covered in the information capturing phase. The current services are mapped using a service blueprint by studying the organization and the process, formal as well as informal, which exist. To be able to modularize and improve the organizations service offering, one must first have a clear picture of the current reality of the situation.

The second step is that of service decomposition, where the service is decomposed to a level suited for the situation. Looking at the current service portfolio one may decompose the service dependent on the interfaces it utilizes, the customers it faces or other attributes (Brax et al., 2017). At the end of the service decomposition phase, one should be left with unstructured elements which will later be structured in the structuring, module creation and interface creation phase described in Table 1 (De Mattos et al., 2021). The modularity versus customization framework is utilized to pinpoint where the organization wants its services to be designed, which can be utilized in both the decomposition and the modularization phases.

For the modularization phase, the definition of the service module components such as interfaces, architecture and individual modules is important to be able to visualize the service offering. It is also utilized when developing or enhancing the current offering, as the interfaces puts constraints on the modules capabilities and functions as to ensure the modules conforms to the full-service portfolio.

For the final phase of integrating service modularity into the service offering of an organization there are several challenges to deal with. The first concerns the implementation and buy-in within the organization, as if the system is not embraced by the organization the effectiveness of the system will greatly diminish. As discussed previously, the need for collaboration between stakeholders is important to ensure that optimal results are attained. Working towards becoming a learning organization should be prioritized here as well, to ensure that the service offering is built upon the knowledge that exist within the whole organization. Knowledge integration within service modularity and customer co-creation is of high importance, as it is one of the factors which determine the effectiveness of the service offering (Oinonen, 2014).

Frameworks for evaluation

The framework for evaluation is based upon the theoretical findings which are detailed throughout Chapter 2. The first of the two evaluating frameworks is detailed in Chapter 2.1.3, regarding how to breakdown a service offering. The second framework is detailed in Chapter 2.2.1 and is based upon Bask et al.'s (2011) framework for evaluating customization versus modularization. These two evaluating frameworks were the basis for evaluating and analyzing the findings which are uncovered through the literature study and case study.

To fully grasp the subject, there were also a literature review regarding the subjects of coaching and mentoring as well as aftermarket support and sales.

The theoretical background for these subjects is presented in the case specific background.

2.5 Case specific background

The focus of this thesis involves a case study of the aftermarket logistics (AML) department at a multinational heavy-duty vehicle manufacturer, therefore an introduction and background to the relevant literature surrounding the specific business areas which are to be studied follows in this chapter.

2.5.1 Coaching and Mentoring

Coaching and mentoring are two terms which are often used interchangeably in literature. Garvey et al. (2010) explain that coaching comes from task focused development during a set time horizon to reinforce or change behavior of the coached individuals, and mentoring stems from a more mutual development where both parties exchange information all the while the mentor possesses some additional information or experience regarding a subject. Garvey et al. (2010) argue that while the origins of the two terms differ, they are in modern context used in the same way with much of the same influences and terms and the differences are today very minuscule to the point of there being no discernible differences in the way organizations and individuals use the two concepts. Parsloe and Leedham (2016) describe coaching and mentoring activities as conversations with the aim of providing support, being the source of change, and further development and improvement of an individual, teams or department. The dynamics behind coaching or mentoring, as it deals with individuals and people with different outlooks, makes it so that there is no one solution fits all within these areas. Nevertheless, there are some commonalities between different events of coaching and mentoring, Serrat (2017) categorizes these as:

1. Establish clarity and rapport, agree upon the goal for the coaching.
2. Discuss and come to consensus on the current reality which the coach will then use to adapt their methods and tools used.
3. Explore available options.
4. Identify and commit to a course of action in line with shared expectations.
5. Client executes the plan by implementing the actions agreed upon with support from the coach.
6. Review of the activities and result to gain knowledge which can be applied to future projects.

2.5.2 Aftermarket Support and After-sales Services

The aftermarket sales have historically been a business of low importance for Original Equipment Manufacturers (OEM's) business models (Wagner et al., 2018). This despite aftermarket sales contributing up to 30% of an organization's revenue (Bundschuh and Dezvane, 2003) and up to double the

profits compared to the primary products (Ashenbaum, 2006). Since the 1990's there has been an increase in the focus that after-market sales receive, as it is vital for an OEM to stay profitable and keep customers (Durugbo, 2020).

After-sales is classified as "period of time during which the seller or manufacturer guarantees the buyer assistance, maintenance, or repairs of what has been purchased" (Díaz and Márquez, 2014, p. 3). The after-sales activities of a company can be classified in four different categories: spare parts distribution, field technical assistance, customer care and accessories sale (Saccani et al., 2007; Cshulze et al., 2012). These four different categories all come with different challenges and opportunities, but they all try to serve the purpose of assisting or otherwise creating value for the customer while using the product they have purchased.

Aftermarkets are on the other hand a market for complementary products to the initial product purchased. The difference is that there is an increase in competition from manufacturers other than the OEM which may sell products or services which enhance the value of the primary product (Durugbo, 2020). Aftermarket support is defined by Durugbo (2020, p. 3) as "a network of resources (material, people, and infrastructure) for after-sales services, secondary market transactions and product recovery processes". This definition tries to encapsulate all the different stakeholders which are a part of this process such as customers, OEMs, suppliers, competitors, services connected to the maintenance of the original product, logistics companies etc.

As previously stated, aftermarket sales and services are a growing area of focus for many organizations and the importance of it was argued for already in the early 1980's (Lele & Karmakrar, 1983). From previously been seen by many organizations as a necessary expenditure to keep customers happy, it is today often a profit driver and a point of focus and development for organizations. Organizations have also found it to be a great area in which to increase the customer satisfaction (Fard and Hosseini, 2015; Gaiardelli et al., 2007), as the correlation between quality of after-sales service and customer satisfaction have been proven in several studies. The increase in customer satisfaction using aftermarket services and sales in turn also increase the customer loyalty, showing the importance of a well-functioning aftermarket sales and services network (Díaz and Márquez, 2014).

3 Method

This section presents the chosen methodology for this thesis. The research strategy is explained and detailed, the case study is explained in further detail and motivated, the data collection methods are presented, the quality of the research is argued for, and ethical considerations of the study are presented.

3.1 Research Strategy

Bell et al. (2022) emphasize the difference in methods and outcomes for quantitative and qualitative research. Quantitative research generally makes use of deductive reasoning, with the ideas for the research being inferred from the theory which builds a hypothesis which is then tested. Quantitative research focuses on quantitative data and aims to use this quantitative data to prove or disprove the hypothesis based upon previously accepted theory. Qualitative research on the contrary often makes use of inductive reasoning, wherein new theory is instead generated out of the research and its findings. As this research explores service modularization and service decomposition accompanying a case study at a large multinational organization, the study and research of this thesis is of a qualitative nature.

3.2 Research Design

Bell et al. (2022) describes the steps which are a part of a qualitative research project. The initial step is forming the general research questions, which in the case of this project is presented in Section 1.3. The next step is to select the relevant site(s) and subjects to enable the research to reach its highest quality. For this research project a large, multinational organization within the automotive industry was chosen. The organization is currently undergoing an increased strategic push to increase its service offering as well as increase its revenue generated from services. Large parts of the current service offering are built upon services developed centrally in the organization during the 1990's, and since then these services have grown and changed without much effort to standardize the offerings centrally, leading to ad hoc solutions tailored for each market. Increased efforts are being made to standardize and improve their services towards their customers, but at this time there is no complete mapping of the service which are being offered. This leads to services being neglected, performed without any actual charge for the customer, being lost when personnel change roles or jobs etc. Therefore, the potential upsides of service modularization and service mapping is high, as the findings would produce an as-is mapping of the services the organization is offering and this mapping could then be used to standardize and modularize the services. As the case organization is a large, multinational business, it enables examining different markets and geographic differences which exist within the organization, allowing the research to be put into multiple contexts and increasing the quality of the conclusions being made. This type of case study is characterized as a single embedded case study (Yin, 2009).

The design of the research project was of an abductive nature, as the aim and methods of the research was continuously re-evaluated and put into context with the empirical findings of the study. As Dubois and Gadde (2002) describes it, the continuous matching between the framework of the research, theory, the empirical world, and the case study leads to a greater understanding than if one were to do these in succession. A framework inspired by this systematic combining of Dubois and Gadde (2002) can be seen in Figure 6. Bell et al. (2022) describes the abductive methodology as a third alternative trying to overcome the shortcomings of the two more classical inductive and deductive reasonings. Abductive is described as trying to solve the puzzle which there is no current detailed explanation to, and to use a back-and-forth process between theory and reality to try and make sense of the puzzle.

The case company of this thesis, a multinational heavy-duty vehicle manufacturer, provides an ample study for answering the research questions and putting the theory surrounding the subject into an empirical context, as the large organization allows for researching different aspect within the organization and compare findings in differing departments (Yin, 2009). The choice to not sample additional organizations and perform a cross-sectional study came down to limitations in the time frame of the project, as the cross-sectional study would require additional resources (Bell et al., 2022) which were not available to the thesis.

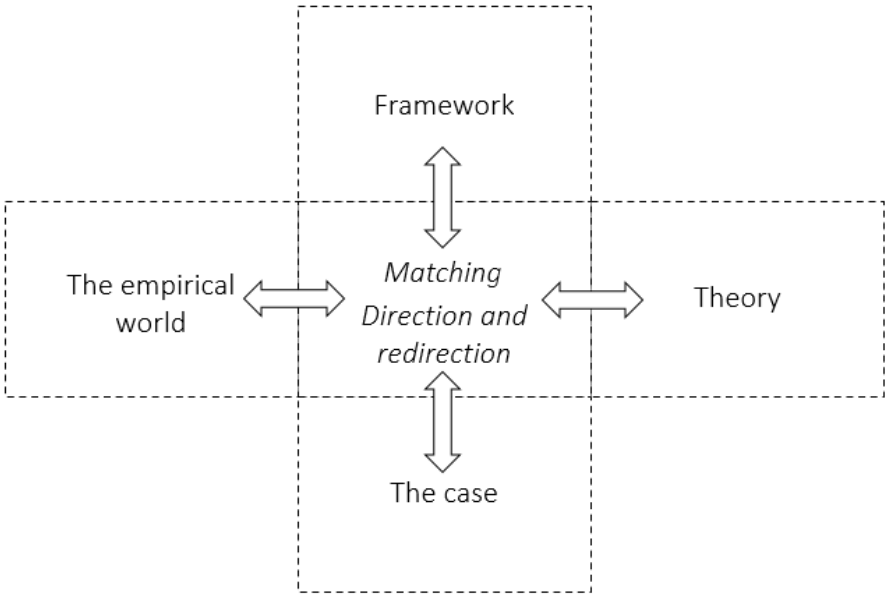


Figure 6 - Systematic combining (inspired by Dubois and Gadde (2002))

The choice of a case study design is based on several reasons. As the time horizon of the thesis was six months, a singular case study design was deemed be the best option for the study. The option of a cross-sectional study which examines multiple cases and draws knowledge from the similarities and context between cases (Bell et al., 2022) would not allow for in-depth conclusions and findings to be made, and the results produced were then going to be high-level. On the contrary, the singular case study then allows for a deep

dive into an organization, optimizing the learning of the organizational context of the case study, while not being optimal for making generalizable conclusions (Stake, 2008). The learnings from deep diving into a case study and its situation was therefore deemed to be of higher importance than to make the findings as general as possible.

3.3 Research Process

The research started with an initial literature study, as to increase the understanding in the thesis subject and form the basis of the theoretical framework which is to later be applied into the context of the empirical world and case study. The initial literature study was continuously revised and extended as new insights from the case study and empirical findings were to be explained or understood, as is the norm with abductive research (Bell et al., 2022). This allowed for continuously evaluating potential explanations of the data and the social world which the case study presented to be understood without limitations of knowledge being the deciding factor. An example of this in the research project was the theory and academic research which existed surrounding learning organization, which was not something which was planned to be implemented from the outset of the research. The thesis continued by initial unstructured interviews with selected key members at the case organization, as to gain an insight in the organization and its structures and processes.

An overview of the research process can be seen in Figure 7. The initial literature study and unstructured interviews with selected personnel at the case company were combined to gather an understanding of the project at hand. The literature study and unstructured interviews were then combined with a study of internal documents, processes, and interfaces both internally as well as externally toward customers within the case company. These activities combined were then used to formulate the two research questions which are stated in the introduction to the Master Thesis. The purpose and research question lay the foundation for the continued literature study, as this allowed for more thorough and detailed analysis of relevant literature which is presented in Chapter 2. The purpose and research question also laid the foundation for the semi-structured interview guide which was used when interviewing stakeholders within the case company as well as external stakeholders which is described in Figure 7 as *Second round data collection*. The findings in the literature as well as findings from the qualitative study of the case company were then combined to draw new conclusions or provide new avenues which were important to answer the research question. As the research is of an abductive nature, iterations of literature study and data collection was utilized to ensure the most trustworthy and authentic findings possible (Bell et al., 2022).

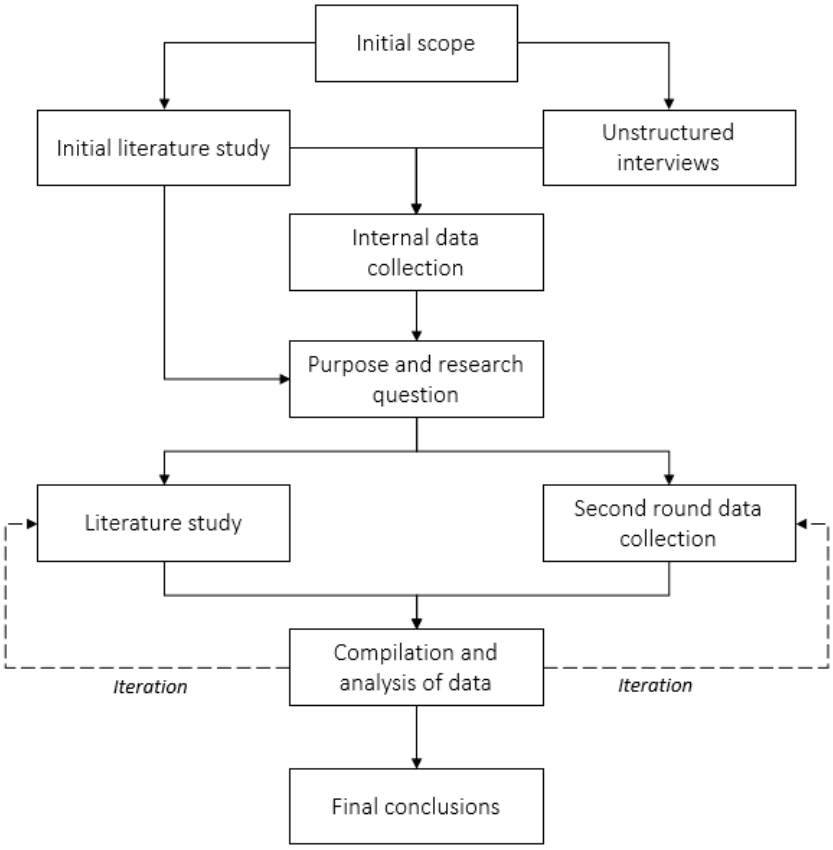


Figure 7 - Research process

3.4 Data Collection

The data collection of this study consists of two main parts: a literature study as well as an empirical study. The empirical study is based on several different data collection methods, such as interviews, observations, focus groups, and analysis of internal documents and processes at the case company. These data collection methods provided material for analysis of the research questions, providing a clear answer and explanation of the questions. The data collection of the study is of an iterative nature, as is the norm for many qualitative research projects (Bell et al., 2022). As the study will be performed in an abductive fashion, where the data collection builds new questions, which are then answered or explained by new theories, which then in turn might give way to new questions, which may be answered with further data collection and so on, the literature study and empirical study was performed concurrently throughout the duration of the study (Dubois and Gadde, 2002).

3.4.1 Literature Study

The literature study of the project was, as previously explained, performed continuously throughout the project as new findings lead way to new material needing to be understood. The literature study was performed by exploration of material with the help of Chalmers Library webpage and archives, searches

performed of Google Scholar and other databases for scientific journals. The recommendation and guidance of the assigned supervisors at Chalmers will also provide literature recommendations, especially in the start of the project to thoroughly grasp the subject at hand. The literature study concluded with four main categories which were studied and researched, with different iterations of search terms for these categories being explored. The main categories which were studied in the academic literature were *servitization, service modularity, service blueprinting,* and *learning organization*. Main points from the different types of literature which were used was noted and compiled into a spreadsheet to be able to draw conclusions in the contents of the material as well as the similarities and differences in the material, providing a thematic analysis of the material (Braun and Clarke, 2006).

3.4.2 Empirical Study

The case company of this thesis was a large, multinational heavy-duty vehicle manufacturer. The case company allowed access to its internal documents and processes as well as allowing the researchers to interview multiple stakeholders from several different departments within the organization as well as its subsidiaries and market companies. The case company provided an opportunity for all types of data collection apart from the literature study.

Interviews

The empirical study of this thesis involves a case organization, with qualitative interviewing and analysis of relevant material provided by the case organization forming the basis of the empirical study. The sampling of the interviews utilized a theoretical sampling strategy, as in qualitative research it allows a deep and holistic understanding of the research purpose and research questions (Creswell and Creswell, 2018). For the research project at hand the sampling originated both organically through interviews, where the interviewees suggested other personnel within the case organization to interview regarding the subject, as well as through review of which departments would be most likely to have input into the research subject. This made for a high quality and high trustworthiness of the interviewees, as they were experts in the field and worked with it day-to-day. The theoretical sampling strategy also brings with it some risks, as researchers may miss important details or stakeholders as there is not as thorough of a process surrounding the interview subjects (Bell et al., 2022). This was taken into consideration, and there were several times throughout the research process the interviewees were examined and revised to ensure the researchers minimized the risk of information being missed. The qualitative interviews were mostly of a semi-structured fashion (the interview template can be seen in Appendix A), as to allow a coherent sample of interviews without excessive standardization hindering the process of gathering interesting and useful data from the participants (Bell et al., 2022). Although, at the start of the project the members of the research team conducted informal, non-standardized interviews with certain employees at the case company to allow the project participants to get a greater understanding of the organization, its challenges, and opportunities in dealing with issues related to the thesis' purpose. As Qu

and Dumay (2011) state, the use of non-standardized interviews allows for the researchers to have an open mind and allow the interviewee to talk about a subject and the interviewers to stop and ask questions regarding subjects that they deem important to further understand. Bell et al. (2022) argue that the use of unstructured interviews is useful when attempting to genuinely and truly understand the interviewees points of view on a topic, which was the case at the start of the research project. Table 3 shows an overview of the roles the respondents had and the duration of the interviews in the unstructured interviews which were had in the start of the project. The initial round of interviews was performed within the Operations Excellence department within aftermarket logistics as this was a central department with large insight into the whole organization, making the department the ideal starting point.

Table 3 - Overview of initial unstructured interviews

Interviewee	Role	Duration
A & B	Employee & Manager	90 min
A	Employee	60 min
C	Employee	30 min
D	Employee	30 min
E	Employee	30 min
F	Employee	45 min
F	Employee	60 min

The semi-structured interviews which were performed later in the research project followed a question template which allowed the interviewers some freedom in the nature of the interview as to not be too rigid, but also allowed for comparison of data between interviews which is important in the analysis of the data (Bell et al., 2022). The question template used was crafted with inspiration from the methodology of design thinking, such as asking open ended questions to allow the interviewee to give a richer response as opposed to a yes or no question (Perales, 2018). This was done as to make it easier to get to the root cause of why some processes are structured the way it is, and as to allow the researchers to gain a broader understanding of the subjects discussed. The interviews started with a shorter segment with the interviewees being free to talk about their previous roles within the workforce, how they eventually found their current role, and their day-to-day tasks. Following this, the interviewee was asked questions regarding their involvement with services being offered by the case company as well as what connections they have with internal and external stakeholders regarding these services. To finish of the interview the interviewee was asked shorter standardized questions to ensure nothing had been missed in the interview. The duration of the interviews differed, but mostly fell within the 45–60-minute range. All the interviewees that participated in the semi-structured interviews are summarized in Table 4. The participants were from different parts of the central organization, as well as some interviewees within the different markets of the case company. The breadth of interviewees allowed for gathering of data which came from different viewpoints within the organization, allowing for a heterogenous data set.

Table 4 – Semi-structured interviews

Interviewee	Role	Organization	Duration
A	Coach Lean principles	Central	45 min
B	Manager Customer Service	Central	60 min
C	Manager Supply Chain dev.	Central	60 min
D	Employee Packaging	Central	60 min
E	Manager Brazil market	Market	60 min
F	Manager Coaching services	Central	60 min
G	Manager Lean principles	Central	60 min
H	Employee Dangerous Goods	Central	60 min
I	Manager Customer Service	Central	60 min
J, K, L, M	Manager, Employee, Employee & Employee: UK market	Market	60 min
N	Manager Reverse logistics	Central	60 min
O, P	Manager, Senior Manager: Swedish market	Market	90 min
Q	Employee Brazil market	Market	60 min
R	Manager Lean principles	Central	60 min
O	Manager Swedish market	Market	60 min
S	Employee Lean principles	Market	60 min
M	Coach UK market	Market	90 min
R	Manager Lean principles	Central	60 min
T	Employee Lean principles	Market	60 min
U	Coach Swedish market	Central	60 min

Focus groups

The empirical study also features a focus group consisting of experienced and relevant stakeholders within the case organization. The participants of the focus groups were picked in collaboration with the supervisor at the case company as to ensure that the expertise of the case company was utilized to a high degree. Most of the participants of the focus group had previously been interviewed in the qualitative semi-structured interviews, and this allowed the researchers to present their findings about their areas of expertise and if there were any attributes missed the participants could interpolate and give their view of the issue. The focus group was put through a workshop for 90 minutes, where a problem formulation regarding the current coaching services was provided and the focus group brainstormed and provided attributes to consider when designing coaching services, as well as some issues which currently exist within the case company and their service development. The use of a focus group provides the thesis with an opportunity to validate the findings as well as provide a platform for deeper discussion regarding the thesis findings and subject, which according to Carter et al. (2014) is a key aspect which should be considered when utilizing focus groups.

Document review

The observational study of the research project utilized several methods of collecting data, the main one being document analysis. The document analysis regards the current infrastructure to support services within the case

organization, what services are currently being offered and to what extent. As Bowen (2009) states, document analysis is often an efficient method which provides a large coverage of the material analyzed. In this thesis the document analysis was utilized to gather a broader understanding of the current situation of the case organization to allow a high-quality decomposition and modularization of the current service offering. Among the documents analyzed are training manuals, organizational reports, internal presentation material, mapping of services, and organizational structures.

Internal observations

There were other data collection methods which are classified as an observational study, such as observations from internal meetings which the researchers were apart of and observation of day-to-day work within the organization. There were also visits to sites of the case company's customer which utilize the services which are de-constructed and modularized. There were two customer visits through the duration of the research project, with both being between 2-3 hours. The visits and concurrent dialogues and meetings with personnel at the case company's customer was utilized to ensure that the true customer voice was taken into consideration as opposed to only the customer requirements which the interviewees at the case organization described which can otherwise be the case (Griffin and Hauser, 1993). Utilizing the customer and their feedback in turn also helps in the creation of new service or products, as the interactions create innovation opportunities which should not be overlooked (Cooper and Dreher, 2010).

3.5 Data Analysis

The data analysis stage of the research brought with it the need for methodologies to interpret and communicate the results in a trustworthy and authentic manner (Guba, 2011). The main source of data for the research came from interviews conducted with stakeholders in the case company, and as these interviews were of a qualitative nature there were large amounts of data to interpret (Bell et al., 2022). The interviews therefore were subject to notetaking during the interviews from one of the researchers, while the other handled the interviewing such as asking questions and asking for explanations. This allowed for a quick way to get the high-level contents of a specific interview after the interview was finished. Interviews were also recorded and transcribed using the automated transcription tool which exist in Microsoft Teams, a cloud-based collaboration software which was used within the case company. This allowed for analysis of the qualitative data after the interview was conducted, and more detailed analysis of the content communicated in the interviews (Bailey, 2008). The interviews were analyzed through thematic coding using NVivo, which is a qualitative data analysis software to organize and analyze data. Interviews and quotes were catalogued if they were important to the context of the research, and after the data gathering was complete this gave a mapping of the interviews and information gathered. Categories included among other *co-creation, coaching, direct contact with dealerships, improvement proposals, modularity.* This mapping allowed the researchers to gain an oversight into what was said during the interviews in

larger detail, revealing any gaps within the analysis and if there were any gave the researchers the opportunity to discover this and ask follow-up questions to relevant personnel within the case company.

The analysis of data gathered during the literature review was synthesized in a spreadsheet available to the researchers, with main points of the articles and other research publications being produced and categorized. This allowed the researchers to draw upon the academic literature when needed by having an organized library of relevant articles from multiple subjects surrounding the research questions, making the literature review a within-study literature analysis (Onwuegbuzie et al., 2012). If there any time during the data analysis stage were any discrepancies or gaps in the researcher's knowledge this was complimented with further literature studies, as is the norm for abductive research (Bell et al., 2022).

3.6 Research Quality

Quantitative research is argued to offer a more precise way of validating the research, as there are numbers, statistics, and calculations which motivate the findings (Bell et al., 2022). Traditionally, the attributes which are used to evaluate qualitative research were at first heavily linked to the attributes which evaluate quantitative research, reliability, and validity (LeCompte and Goetz, 1982; Kirk and Miller, 1986). This has since developed and made way for the criteria proposed by Lincoln and Guba (1985), trustworthiness and authenticity. It is on these criteria which the qualitative research is judged and therefore the Master's thesis aims to satisfy these criteria in its presentation of the research project and reasoning behind the theories and conclusions which are presented. Trustworthiness is made up of four sub-criteria, with each being having an equivalent criterion in quantitative research (Lincoln and Guba, 1985):

Credibility
Credibility is equivalent to internal validity. It considers the possibility of several social realities, dependent on the viewpoint of who you are asking. Common techniques for ensuring credibility of research are respondent validation and triangulation (Bell et al., 2022; Jung and Ro, 2019). Respondent validation was utilized by presenting service blueprints and service attributes back to the subject of previous interviews, to ensure the findings matched with the social reality of the interviewee. Triangulation was performed with the help of focus groups, as a form of face validity to ensure credibility of the research (Cavanagh, 1997).

Transferability
Transferability is equivalent to external validity. As qualitative research often studies a small number of individuals with a limited scope, the problem of research being specific to that single location and time surfaces. To combat this, making use of thick descriptions (Geertz, 1973) and explanation of attributes which influence the research allows for others being able to draw conclusions and utilize the research in the future.

Dependability
Dependability is equivalent to reliability. The idea is for peers and others who are involved in the subject is allowed access to notes, transcripts, decisions etc., which are taken during the research to be able to act as auditors and ensure the research was conducted in an orderly fashion (Bell et al., 2022). This was utilized by allowing the supervisors of the research, both at Chalmers University and at the case company to be engaged and take part in the process of the research.

Confirmability
Confirmability is equivalent to objectivity. Having complete objectivity within qualitative research is extremely hard, as the choices and personal values of the researchers will play a part in the process and outcome of the research. To combat this, the use of auditors, such as supervisors for this specific research, ensures that the researchers have acted in good faith (Bell et al., 2022).

While validity and reliability assume that only one account of social reality is feasible, trustworthiness and authenticity consider that the social reality may be ambiguous and differing depending on the viewpoint one take and the experiences of the people involved and is therefore a better tool for evaluating qualitative research (Lincoln and Guba, 1985). Elo et al. (2014) produce a checklist for validation of qualitative research (see Appendix B), which has been applied in this study to ensure that the trustworthiness of all steps is of a high level. This checklist was taken into consideration while designing the research question, preparing the semi-structured interviews, the analysis of the data gathered, and the presentation of the findings.

The authenticity criteria contain five sub-criteria by which the authenticity of the research is judged (Guba, 2011):

- *Fairness*: The extent to which all competing constructions of reality have been accessed, exposed, deconstructed, and taken into account. This sub-criterion is considered the most important when dealing with authenticity.
- *Ontological authenticity*: How well the individual respondents and inquirers (in the case of this master thesis, the interviewee, and the interviewers) understanding of the subject is enhanced by the process.
- *Educative authenticity*: How well the respondent can consider the views and situation of others outside of their own stakeholder group.
- *Catalytic authenticity*: To which extent the actions taken during the research stimulates and facilitates the inquiry process.
- *Tactical authenticity*: To which degree the participants are encouraged or otherwise empowered to act upon the issues brought up by the inquirer.

3.7 Ethical Considerations

When conducting any type of research, one needs to take into consideration the ethical aspects of the research and its methodologies. Bell et al. (2022) suggests

researchers to consider ethical aspects in all stages of the research to increase the integrity of the study. The four ethical principles which one should ensure to consider when conducting business research is: *avoidance of harm, informed consent, protection of privacy through confidentiality,* and *preventing deception* (Bell et al., 2022). Questionnaires and semi-structured interviews may not be the worst culprits when it comes to breaking ethical considerations of research, as opposed to covert research or research making use of deception, there is still a need for this type of qualitative research to review their methodologies to ensure they are ethical. This is ensured by following guidelines laid out by Bell et al. (2022) and Orb et al. (2001).

Avoidance of harm relates to the persons who are, in the case of this research, answering questions during interviews, end users of the services which have been studied and modified at the case company, any related departments or personnel at the case company which may encounter the research in their work etc. This was ensured by making the answers of the respondents anonymous outside the research project, ensuring to the extent possible that the information and findings of this report and case study is of as little harm to others as possible by following the guidelines laid out by Bell et al. (2022).

Informed consent is achieved by informing all research participants and stakeholders to the research what the aim of the research is, who will be taking part of the results, what the procedures are during the research, and that their participation is voluntary (Miller and Bell, 2012). In the case of the qualitative interviews during the project the participants were informed of all these attributes and when recording interviews, the participants were informed and asked for consent to record and transcribe their interview for further analysis.

Protection of privacy through confidentiality is ensured by anonymizing the data which is collected through interviews and meetings with stakeholders. Any identifying information is removed from the report and the interview transcripts and videos are destroyed at the end of the research project. This also ensures that current legislation surrounding personal data is followed (Bell et al., 2022).

Preventing deception is achieved by being open with the methodologies used to arrive at the findings in the research, as well as motivate the methodologies used. By grounding the research in academic literature, the aim is to increase the clarity and by doing so decrease the risk of any deception to the reader of the study.

4 Empirical findings

In this section the findings from the data collection and analysis are presented. Each section is a compilation of the major themes that emerged from the analysis based on interviews, internal documentation, observations, and focus groups.

4.1 The Case Company

The case company (CC) has a vision of increasing its revenue from services and solutions to 50% of the total revenue by 2030. The different departments have now started to investigate their current service offering, what they can offer in the future and what new challenges they will face if the vision is to be met within the time frame.

The department for aftermarket logistics (AML) is a central department and is not connected to a certain brand or market. AML has a large service offering divided into three categories available for both private and CC owned dealerships and other departments within the company. The three categories are parts availability, reversed logistics and circularity and support and coaching. All these categories are related to spare part logistics making it the most important responsibility for the department. This area is crucial for the CC operations since spare part availability is critical to the end customer when their vehicle breaks down or comes into the dealership for a service appointment. Spare part sales are also one of the major income sources for the CC. These factors make AML important in terms of keeping customer satisfaction high and securing income.

When it comes to the topic of the Master Thesis, AML's service offer includes coaching services to the dealerships. In all three mentioned categories of services there are elements of dealer coaching and not only in the support and coaching category. AML offers coaching services both directly and indirectly through different channels such as digital platforms, the market companies, dealership visits, etc. The most mature services are the direct coaching services offered by the customer service centers and through the dealer inventory management (DIM) concept. Indirect coaching services are offered by AML regarding dangerous goods and preparation and packaging.

There are several different ways that the dealers receive the services through. There is a digital platform where e-learnings are uploaded by different actors and where the CC controls what educations the dealerships must attend. The dealer is responsible for making sure that their employees attend the courses, and the CC incentivizes this with a financial bonus system.

In figure 8 below the information flow for the coaching services towards dealerships from the different departments mentioned in this section are visualized. The visualization is a simplified version, and some information flows are more complicated and explained in more detail in the findings chapter.

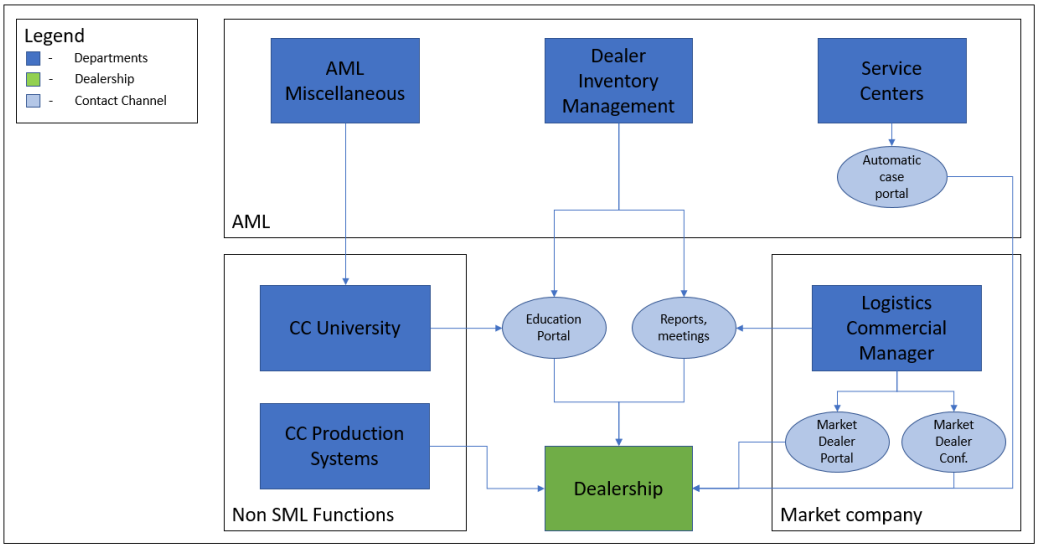


Figure 8 - Information flow for coaching services

4.1.1 AML Strategy

In the AML department strategy, there are parts that are related to the dealer. Dealer simplicity, end-to-end (E2E) control and perform to develop are the three most relevant points in the strategy for the thesis. The dealer simplicity point is about simplifying all processes between the dealer and AML. Some examples of processes are orders and returns of spare parts, preplanning, and spare part availability at the point of need. E2E control means that AML wants to stay ahead of customer needs and become better at optimizing the processes from the start at the supplier to the end at the customer. The last point is the perform to develop point meaning that focusing on performance by using the Case Company Production System department as help and leveraging new technology will lead to development.

4.1.2 Markets

In the Master thesis two markets have been studied to gain more insight in how market companies and dealerships operate based on different market requirements and how they interact with the central department AML. The markets chosen are the Swedish and Brazilian market.

The market company plays an important role when it comes to contact with the dealerships. The local market dealer portal is one of those places of contact where the Logistics Commercial Manager (LCM) uploads important information, such as new offers, current issues and guides to processes and systems. Information that AML provides the market can also end up on this platform making it an additional indirect one-way point of contact.

Logistics Commercial Manager

Although the Logistics Commercial Manager (LCM) does not work for AML, and instead the market company, it is still a vital role for several coaching services

offered by AML. In the DIM concept the LCM works as a filter for incoming question from dealers about the concept. This makes it possible for the DIM coach to focus on coaching and monitoring dealerships that have more acute issues with the concept. Procedural questions aimed at Customer services, for example, system related questions, are also filtered through the LCM.

The LCM creates an additional direct contact channel between AML and the dealer when hosting Dealer conferences. AML is then invited by the LCM to inform the dealer about new developments and current events which is valuable for both parties. Although the LCM supports the dealers in many ways, a lot of knowledge is shared within the dealership groups. If larger educational needs appear the dealer turns to the LCM or the Customer service. Since there only exists limited education material from AML in how to follow AML procedures the LCM becomes a key person in keeping the knowledge level at a functioning level at the dealerships. This makes the process of a dealer increasing its knowledge in Aftermarket procedures an ad-hoc process where the only dealers that receive help are those that ask for it or that perform poorly. The only monitoring done by AML is in the DIM concept where warehouse metrics are monitored based on stock levels and automatically or manually filled stock. If these metrics are considered bad by the LCM and DIM coach the dealership will be asked to educate themselves in the concept. What is considered good or bad is specified by the DIM organization for each dealership. The organization calculates what warehouse values are optimal and therefore the DIM coach and LCM only have to consider the dealerships that deviate from their optimal values.

In an interview with an AML employee, it was expressed that the Swedish LCM is very mature in his role and has a background in parts logistics. His logistics knowledge and many contacts within the company is not a representative standard for the role at other markets. AML and dealers in the Swedish market are therefore able to utilize the LCM in more ways and more comprehensively than AML and dealers can in other markets.

Swedish market

The Swedish market was chosen mostly due to simplicity since it is where the company headquarters is located. The company is established in the market with a large market share of over 40%. In terms of the world the market is the 13th largest by number of heavy-duty vehicles sold, but 4th largest in the world by parts sales meaning that customers have high loyalty and wants CC original parts. Their current focus is spare part availability to reduce time spent waiting for spare part delivery. The main issue with the market is that since it has had a strong market position for a long time, departments tend to work in silos in comparison to markets where the brand is less established. This is since the CC has built up procedures over time, making adjustments and changes more difficult. The Swedish market lacks a common vision that projects are based on. The interviews with different AML personnel show that there are few common principles other than general department strategy, such as dealer simplicity and E2E control, that projects aimed at the dealerships are based on. This

creates many small initiatives that aims to do the same thing which is making sure that the dealerships can focus on selling new trucks and tending to old ones in their workshops rather than initiating larger cross-functional projects.

Brazilian market

The Brazilian market was chosen since they have conducted a large project aimed at improving dealerships since 2017 based on co-creation and lean management. This has made them mature in the practice of customer centricity. Co-creation, design thinking and service blueprints are some practices and tools that have been used in the project. The market is the second largest market by trucks sold and spare part sales and currently holds a 25 % market share for heavy duty trucks. The brand is therefore not as established as in the Swedish market and have more competition which has forced them to focus on the customer journey. The now 5-year-old project has involved several departments and employees with different expertise. The projects foundation has been the principles safety, customer flow and parts management and has been led by the CC production system department. The focus on dealerships has led to better safety for the employees in the workshops, decreased pit stop durations and employee satisfaction and engagement at dealerships and increased customer satisfaction. This was done by training dealerships in lean principles such as 5s and value stream mapping and continuously monitoring them through measurements and meetings. Examples of measurements used are work injuries, warehouse data and workshop lead-times. Training dealerships in becoming more efficient and end-customer focused has demanded the input from many departments such as lean coaches for the workshop improvements and AML personnel for improved warehouse logistics, customer service communication and backorder recovery.

4.1.3 AML Departments

Within AML there are departments that play an essential role when it comes to coaching the dealerships. These are the dealer inventory management concept (DIM), customer service (CS), dangerous goods (DG), and Commercial packaging. In this section they and their context in the research are explained.

Dealer Inventory Management

At AML the DIM concept is one of the few direct contact points that AML has with the dealerships. The DIM concept is a bundle of services that has been active since the 1990's. The main services are to manage the warehouse inventory and buy back parts that have been pushed to the dealer and have not been sold. The concept is available for both private and CC owned dealerships and aims to keep spare part availability high while also managing the dealers warehouse stock levels efficiently. The spare part availability is important for the CC end customer while efficient stock levels reduce the dealerships tied up capital. DIM consists of two departments, an analysis department called supply chain optimization and a coaching department called dealer coaching. The supply chain optimization department set individual measurements and stock

policies for each dealership to assess their performance. The coaches send out the measurements to the dealerships that they are responsible for and use them to monitor their performance. Each coach is assigned one or a few markets and works in close contact with the market company in supporting, educating, and coaching the dealer in the DIM concept. Each coach can have as many as 100 dealerships and therefore trains the LCM for the market as well in the concept. The coach and the LCM go through the measurements and intervenes if needed.

Customer Service Centers

The customer service (CS) centers are call centers that dealerships can contact either through an automatic case portal or by e-mail and phone if no previous solution exists in the portal or if it is more complex. The centers are responsible for regions consisting of several markets. The regions are based around which central warehouse they are closet to. The main questions that they can answer is regarding parts availability. The CS have more contact possibilities and access to systems for locating essential parts and finding information on production. Currently the department spends the majority of its time on reactively answering questions. A CS manager expressed in an interview that "90-95% of the time is spent on reactively solving dealer issues", such as parts availability and wrong deliveries. The CSs have started investigating to increase automatic case handling and more proactive solutions, for example, analyzing data for patterns in the market and spot dealer issues. When it comes to coaching services the CS control some unstandardized education material that they can share with dealerships and CC personnel. The material is usually in the form of a PowerPoint and about local procedures in different markets and regions.

4.1.3.1 After Market Miscellaneous

The findings from the AML departments that supply dealerships indirectly with coaching services are presented here. These are the quality and environment subdepartments dangerous goods and commercial packaging. They mostly update dealerships with information regarding their field through education platforms and through the market company.

Dangerous Goods

DG are a part of the quality and environment department at AML and handle internal practices regarding handling, transporting, and storing parts that are considered as dangerous goods. Some examples of this are lithium batteries, paint, and engines. DG works together with the internal competence department CC University to create and update educations in the digital learning platform to spread new information in the field. They create the material based on laws, feedback from third-party auditors and knowledge from government certified personnel. The department has come into more focus as more and more electric trucks are sold while the end-of-life procedures are still being discussed.

Commercial packaging

Commercial packaging is responsible for creating the packaging solutions for CC parts. The solutions are based on input from the market company regarding branding, size, amount, and content per package together with technical and tolerance input from the technology department and dangerous goods. The information is shared through different platforms depending on if it is shared with third-party logistics companies, suppliers, and dealerships. In the case of the dealerships, there is a portal where information is shared regarding spare part function and how to pack them. Dealer feedback is received through surveys and questions, which are rare, and are forwarded by customer services. Therefore, there are no direct links between the dealerships and commercial packaging.

4.1.4 Non-AML Departments

There are also departments and functions outside of AML that are important in the context of the Master thesis. These are the dealerships, the LCM, Case Company Production Systems, Case Company University and Core. In this section they and their context in the Master thesis are explained.

Dealerships

Dealerships are the retailers and workshops of the CC making them the ones that are in most contact with the end-customer. There are both CC and privately owned dealerships and both kinds receive a lot of information from the CC. AML is mostly in contact with the dealerships regarding spare parts and procedures around them. These procedures are sometimes of interest to other CC departments and functions making them important in the context of the Master thesis.

Case Company Production Systems

Case Company production systems is a department responsible for continuous learning and improvement by implementing lean practices. The department focuses on cross-functionality and end-to-end alignment in all processes with customer needs as a foundation. When it comes to the context of the Master thesis the department has initiated a project that aims at implementing lean practices at the workshops and warehouses of the dealerships through coaching and monitoring. The project is a sort of internal consulting and auditing process which has forced them to create cross-functional teams to get input from all effected CC departments. The project has come far in the Brazilian market and other markets in South America and AML is heavily involved in the spare part logistics and warehouse part of the project. AML has not been as involved in the project in other markets such as Sweden or other European markets.

Case Company University

CC University (CCU) works with competence development within CC. They create educational material such as e-learnings, teacher led courses and combinations based on the knowledge from other departments. Educating the dealerships is not within their scope but there are instances when dealership personnel encounter CCU material. This happens mostly for mechanics when they are trained in new service and technical procedures but can also happen on request from the business area if they see a need for training in the operations and sales areas.

Core management

The final non-AML department that is relevant regarding dealership coaching is the Core concept which makes it possible for dealers to return old parts and get back a sum of money. Other dealers then have the possibility to purchase these old parts when they have been remanufactured. This makes it possible to give old parts a prolonged life and a new sale. In terms of dealership coaching, the parts that are brought back to the core hubs must reach certain requirements so that they can be reused.

4.2 Definition of Identified Service Modules

Throughout the data collection phase there were many different services which were identified. As the services were all closely linked to the connection between the CC and the dealerships, there were many similarities between these services. This was made apparent by the similarity and confusion in language between the services, as if one mentioned *education of dealerships* there would be many different definitions based on the interviewees position within CC. The interview process was therefore made more difficult, as if the interviewees had not been explicit in their definition of the existing service but instead had just said that a service was a type of education, the data could not be fully trusted. The interviewees were therefore asked to explain services in detail, as to minimize the confusion during interviews and ensure the quality of the gathered data.

From the gathered qualitative data, it became apparent that there were five different types of services which could be classified as coaching between the CC and its dealerships. These services were all on a scale, ranging from simpler and more reactive measures to proactive services. The services were defined as:

Support

Supportive services were classified as the most reactive and often simplest services. These could most often be seen in the customer service division which were the division with most frequent contact with the dealerships. During the research project, a supportive service was defined as Reactive answering to dealership questions. A support module would therefore be more in direct

contact with the dealership and would enable the dealership to continue with their day-to-day work after receiving the information from CC.

Education

Educational services were services which were more proactive than support services, but the event which sparked the interaction would more often than not be lack of information at the dealerships as opposed to developing and improving the capabilities which already existed. Educational services can take place in many ways, historically these were performed as workshops at an individual dealership. This would make them quite work intensive for CC, as the education would have to be led by someone knowledgeable which would have to be on site for the education. In recent years, CC have transferred to a model where many of these educational services are provided via an online platform, making the education much more scalable and less resource intensive for CC. This transformation was well on its way, and since the Covid-pandemic, this work has only been sped up. Educational services were therefore defined as training or information sharing based on a standard material via either physical meeting or online resources.

Audit

Audit services were not as apparent as the first two types of services, support, and education, within CC. Audits for the purpose of this research project were defined as routine or random evaluation of a process based on a standard. For the interactions between CC and the dealership, there were no direct audits from personnel of CC. The only formal audits that took place were instead done by a third party as to ensure the dealerships followed procedures regarding freight of DG. These were the only audits performed at this time, the potential for audits in the future made it a valid category to consider.

Consulting

Consulting services may be similar in nature to that of coaching, explained further later in the text, and education. Consulting services were defined as reactive or proactive intervention to solve an issue during a limited time frame. Consulting services differ from education by being adapted to the specific situation to a greater extent and does not follow a standardized procedure. Consulting services adapt to the situation at hand by taking into consideration size of dealership, previous training or knowledge, scope from the dealerships point of view etc.

Coaching

Coaching services are the most proactive of all services identified and require the most resources to achieve a good outcome. Coaching services were defined as proactive intervention and monitoring to achieve improvement within a specific field.

For CC coaching services were most apparent in their DIM system and division. The system, which had been active since the 90's, is a push-based system for ensuring that appropriate stock levels are kept at each individual dealership. This system required a change in how the dealerships ordered their stock, how they managed their warehouses etc. For the system to be as effective as possible and the buy-in at the dealerships to become as large as possible, CC employed coaches which helped the dealerships in managing these systems. These centrally employed coaches would guide the dealerships in how to use the system and would later on in the systems lifetime help the dealerships in maximizing the value and effectiveness of the system, which was positive not only for the dealerships but also CC which increased its customer satisfaction and its sales. The coaching way of working would throughout the years prove to be a concept which was greatly appreciated both internally and externally, showing the possible value coaching services could have within other areas of the CC.

4.3 Modularized Coaching Service Offer

The five service archetypes proved to be the base of which all the services relating to coaching or knowledge exchange between the AML division and the dealerships. The existing services could therefore be broken down as containing one or several of the service archetypes within its service offering. This allowed for de-modularizing of the existing services, breaking them down into their components to get a clearer picture of the service offering from CC. The service offering was identified as containing three main service modules which were significantly separated from one another. In Chapters 4.3.1-4.3.3 these three will be detailed.

4.3.1 Dealer Inventory Management Service Modules

The DIM service module is the service and function which is most separated from the other services within the service offering. It contains both supportive, educational, and coaching service archetypes within its offering, as to give a full-fledged solution to the dealerships. The DIM system has dedicated coaches, which is something that sets it apart from the rest of the service offering. The system having dedicated coaches is motivated by the increased earnings for both CC as well as the dealerships, with the CC's earnings being larger than the cost associated with employing the coaches. The service modules which were found within the DIM service is support, education, and coaching. The DIM concept is visualized in figure 9 below using a service blueprint.

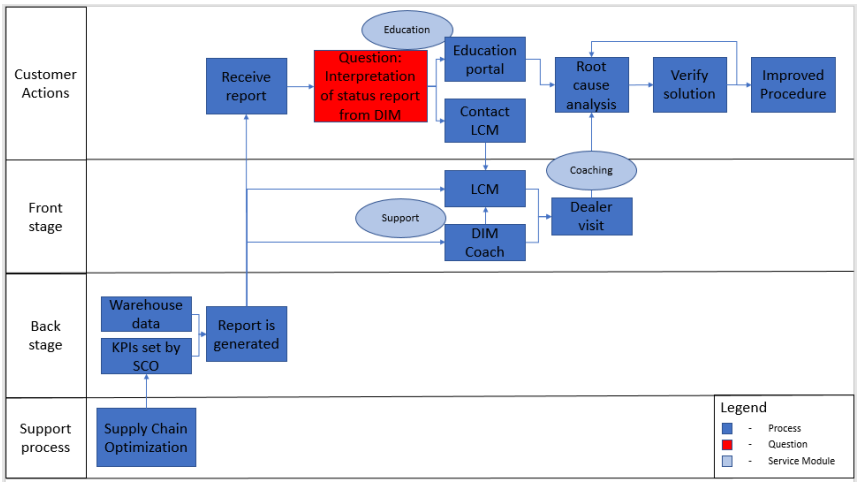


Figure 9 - Service blueprint DIM.

Service blueprints are used as the main mapping tool and is also the base for the definitions of the coaching service modules. Each blue box represents a process performed by either the dealership, the case company, or other stakeholders. Red boxes are what the customer wants to find out and light blue ellipsis are identified coaching service modules.

Support

For support services there exist a filter between the DIM coaches and the dealerships. The LCM of the market was often the first point of contact for dealerships and would answer any questions the dealerships had that they would know the answer to. If this was not the case, any questions regarding the DIM service would be redirected to the DIM coaches and the answer would then be relayed through the LCM. This diminished the workload of the coach and also utilized the DIM-coaches to the maximum, as they did not have to deal with recurring issues regarding procedures as often.

Educational

For the educational services within the DIM module there are educations both online and offline. Online educations were administered through online platforms of CC, which all dealerships using the DIM services were connected to. Here basic methodology of the DIM service and its functions were explained, such as when the DIM system places automatic orders, why it does, which order classes it uses etc. There was other information regarding the DIM system which need teaching, such as how to place regular orders, how to issue returns etc. These more hands-on processes were taught on-site at the dealership, either by internal training at the dealership or the responsible market company of CC would train them through their personnel.

Coaching

For coaching services relating to DIM there were the dedicated DIM coaches which were responsible. These DIM coaches would monitor the individual dealership in their geographical area, which would range between 40-150

dealerships located in up to 7 countries. As the DIM coaches were located at CC headquarters, there were often instances of the DIM coach for a specific region did not speak the language of the region. If no common language was shared between the DIM coach and the dealership of the region, all communication would be handled through the regional market company's LCM. This in turn led to a train-the-trainer approach from the DIM coaches, as this was the only possible way to conduct the coaching. Train-the-trainer was also an approach which was common even if there was no language barrier, as this diminished the workload of the DIM coach and instead pushed it onto the LCM. One DIM coach described it as such:

"Yes, we coach, but we mostly coach the market. It is a train-the-trainer type of coaching."

The work of the DIM coaches consisted of ensuring that the dealerships meet their targets regarding parts availability, healthy stock levels etc. set by supply chain optimization. This was done by providing the dealerships with information about which factors affect the measurements and how to achieve the targets. The coach can do this either by directly contacting the dealership or by going through the LCM. Sometimes deviations from the target values have other causes than poor performance, such as issues with their customers, which in turn is reflected poorly on the DIM statistics. If this is the root-cause, there are no reasons for change. If the root-cause is that they are overriding the systems and ordering excessive amounts of aftermarket parts, the coach steps in and gives recommendations for how they should use the system instead. When choosing what dealerships to pay extra attention and perform visits or talks to the DIM-coaches work together to pick the dealerships which would be of the biggest significance on the bottom line of that market. As one DIM-coach put it:

"We coach where there is a need, and where it would make the biggest difference. As you can have up to 150 dealerships, you can't expect to visit them all. You pick the ones which would improve the bottom line of the market company the most."

The dealerships also receive weekly reports about their performance regarding their KPI's in DIM, what stock items they are able to/ should return to the main warehouse of CC, what items they had in stock which were going to be replenished automatically the upcoming week etc. This type of report made it possible for the dealerships to monitor their own performance and act if their results started to worsen without the intervention of a DIM coach having to contact them regarding it. Possible drawbacks with this report were there being no feasible ways to ensure all dealerships worked thoroughly with this report, as was apparent in interviews with dealership personnel. This issue could in the future be tackled by extra coaching on the importance of this report, or education in the system and process.

4.3.2 Customer Service service Modules

The customer service of CC was, as opposed to the DIM service, more engaged in strict support services. Within the customer service division there were little to no coaching, auditing, or consulting toward the dealerships, as this was not within their duties. The main tasks of the customer service department were to solve logistic issues for the dealerships which were part of the aftermarket sales, such as spare part shipment or returns to the central warehouses. These types of issues were not part of the scope of the case study, as it only examined the information knowledge exchange between CC and dealerships. The services which fit into the scope of the research was classified as either support or education, with support being the majority of them. This is visualized in the service blueprint in figure 10.

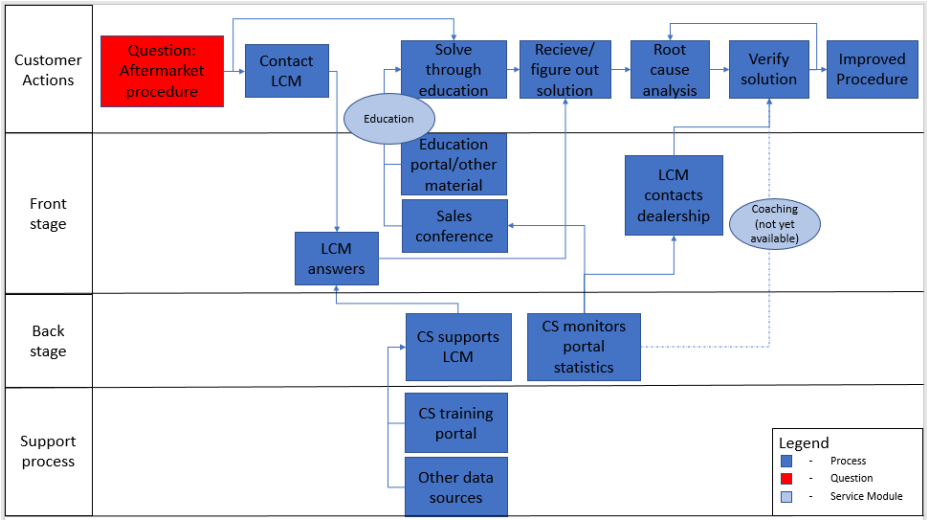


Figure 10 - Service blueprint customer service department

Support

As with the DIM service, much of the support services were filtered through the markets LCM, who would answer simpler questions. If there were any uncertainties from the LCM's side, they would contact the CS and get the answer from them, then forward the information to the dealerships. There would also be some procedural issues from the dealerships which came in through the case management tool which they also got logistics issues in, and they would then solve these issues ad hoc. As the support tickets were not classified in any way if they were logistics issues, procedural issues, non-conformity issues etc. it was hard to distinguish how large part of the issues could be seen as information exchange, but in talks with customer service personnel the procedural issues were only a small part of these support tickets.

Education

The services which were seen as educational were a small part of the work which the customer service personnel performed, as they were forced to be very reactive as their work was to fight issues which the dealerships could not solve themselves. The customer service centers have received feedback from the dealerships that there is a lack of knowledge in how to handle and work in the case management tool of CC, as one CS central manager put it:

"Many pointed out that they today experience there is no good educational material today when it comes to the process"

"We are thinking about if, looking at it from a large scope, if there is need for educating the dealerships in the case management tool. Today it is done by selective measures."

This is something which the CS managers brought up as being a hindrance in their work, where being proactive in education could diminish the number of tickets they receive in the long run and allowing them to produce more value for the customer. This is a project which is already being talked about internally in the organization, and as one CS manager put it:

"We have talked about creating material with PowerPoint or digital meetings… to reach out to the dealerships."

In several of the interviews customer service employees talked about the opportunity of having a closer collaboration and more frequent contact with dealers. The contact would have educational purpose in portal procedures and information finding regarding spare parts. This could lead to better handling of the portals and fewer cases which decreases the burden on CC in the long run, as well as providing value to the dealerships.

4.3.3 Aftermarket Logistics Miscellaneous

As there were other divisions of the AML department that has services which can be classified as information exchange with the dealerships, these were also examined. These services were classified together as an AML Miscellaneous module. This module contained all the service modules apart from consulting, as the scope of this module was very wide with many internal stakeholders. The AML miscellaneous services can be seen in the service blueprints below with commercial packaging in figure 11 and dangerous goods in figure 12. Commercial packaging only contains one service module, which is education. The education they performed is mostly forwarding information about packing specifications to departments responsible for the education platform, such as CC university.

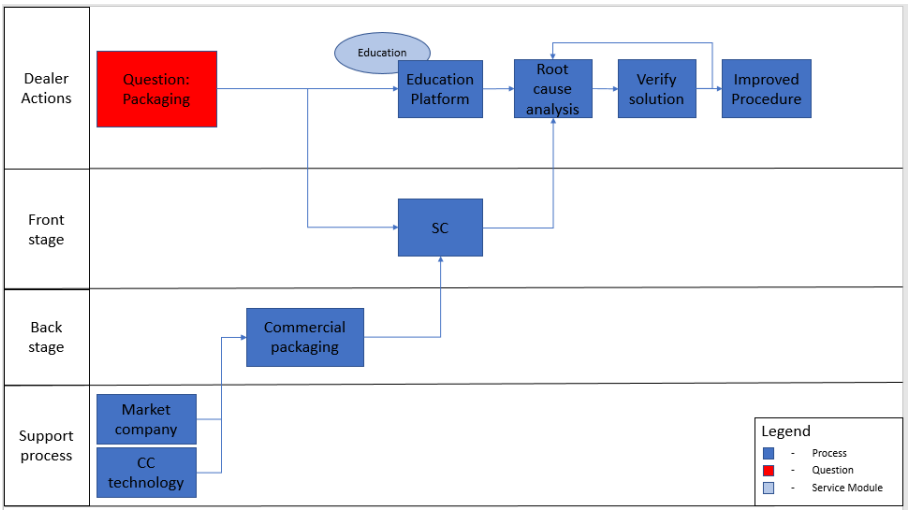


Figure 11 - Service blueprint commercial packaging

Dangerous goods include more service modules meaning that coaching services are a larger part of their operation in relation to commercial packaging. The coaching services are, however, not as comprehensive as for DIM or CS.

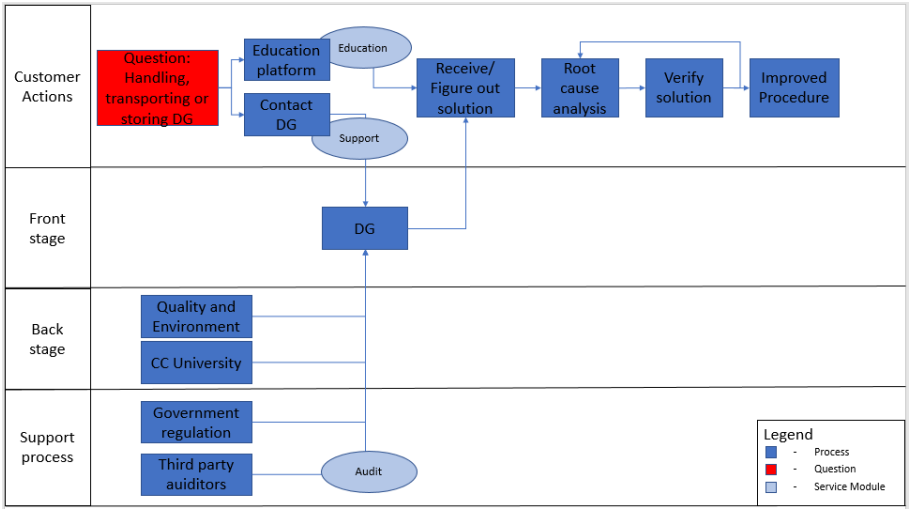


Figure 12 - Service blueprint dangerous goods

Support

Instances of supportive services within the AML Misc. module were often filtered through the market company's LCM, as many of the CC's services were performed at a basic level through the LCM. The LCM would turn to the CC or guide the dealership to the CC in case there were issues which they had no previous knowledge in how to fix. Such issues could be tied to the return services which the CC offered, how the dealerships should re-package specific parts to ensure there were no issues in the return flow. Services like these were often a combination of support and education, with education being the start when launching a new class or e-learning and the support coming in later stages if there are any questions regarding the procedures. At least this is the supposed structure but may not be fully reflected in reality. Many of the support services from the CC would not be necessary if all procedures had been

followed and employees at dealerships had received the training they are expected to have. This is unfortunately not the case, leading to support functions being utilized more than necessary, leading to unnecessary work being performed both by the CC as well as the LCM of the market company. As one employee at a dealership put it:

"There is not the same learning curve when starting at a dealership nowadays, previously you had time to learn the systems. Nowadays you're expected to be up and running in a week."

Educational

Educational services were seen in the multitude of e-learnings, procedural guides etc. which were apparent from the AML organization meant to be aimed at dealerships. The origin of the educational services differs depending on the reason for developing the service. As an example, transportation of dangerous goods is supervised and controlled from the AML division. This entails educating and training all personnel handling the CC's dangerous goods such as chemicals and lithium-ion batteries at the dealerships. This training is today administered by the AML central division through online e-learnings which features the information for the dealerships as well as a test to meet the demands which are required by law. Other instances of educational content are the abundance of demands which exist from a logistic perspective, how things should be packaged when returning the parts to the central warehouses, which things are allowed to be shipped and which need special labeling and additional information when passing through tolls etc. This work falls upon the AML division as well as the market companies, most often through the LCM, and they collaborate to ensure there is sufficient information at the dealerships.

Audit

Audits were as previously mentioned not a large part of the findings in the case study. The audits which were uncovered were yearly audits regarding the management of dangerous goods, which were legal demands to ensure the operation were dealing with dangerous goods in a satisfactory manner. As the responsible for dangerous goods handling at the AML division put it:

"On these Swedish sites we bring in external firms who help with dangerous goods revision. Then we have an audit and once a year go through the documents, check for education levels, how it looks when they package and ship the dangerous goods. After this an inspection protocol is written" … "and a yearly report is produced which shows discrepancies, observations, possible improvements etc."

The reports produced at these audits are then the basis of the work to be done next year in regard to the handling of dangerous goods, providing a basis for continuous improvement regarding the handling of dangerous goods.

Coaching

Pure coaching from the AML department outside of the DIM coaches is something which was not uncovered through the case study. While a coaching service would have potential to be value adding above the potential costs of such a position, there are currently no capabilities at the AML division. When speaking with personnel at the AML division it became apparent that these ideas are already being floated around within CC. As one employee at the AML division put it:

"We need coaches that better understand the interactions between the services so that they can provide the correct training to the dealer"

Having coaches which understand the full picture of what AML offer to the dealerships could in turn allow for a more customizable and more encompassing service offering to the dealerships.

5 Analysis

In the Analysis chapter the findings and insights that were gained throughout the research project is analyzed based on the literature.

5.1 Servitization in Company Strategy

One of the main aspects when it comes to creating a service offer, that was identified in the theory chapter, is to identify how it is aligned with the company strategy. This consists of two parts, the company's access to information and how the strategy is formed based on that information.

5.1.1 Service Providers Access to Important Information

Neu et al. (2005) express that access to information, such as information about customer needs, market size and maturity, is important to avoid misalignment between strategy and customer needs. The service bundles *DIM, customer service* and *AML miscellaneous* consists of coaching service modules which are based on several information sources. The sources identified range from anecdotal stories from dealerships to continuous monitoring of key performance indicators. While anecdotal stories from dealerships can be highly relevant, especially when it comes to issues for individual dealerships, they can be misleading if the mitigations to them are applied at other dealerships. The types of information sources that Neu et al. (2005) mention are quantifiable and relatively easy to measure and monitor. The *service bundles* have a few information sources that are of the same type, which are warehouse data, monitoring of legislation and dealership surveys. However, they also utilize anecdotal evidence as a major source of information since many aftermarket issues regard individual deliveries or batches, in which case this kind of information is sufficient to solve the issue temporarily. In this section these sources are analyzed based on quality and relevance for the task that the CC is solving.

Warehouse data is the most frequently used source since it is the main monitoring tool of the *DIM* concept. Based on the values of the data the *DIM Coach* and the *LCM* can intervene and depending on the severity of the values they can also prioritize the dealerships that are most critical. The monitoring of data allows for being able to formulate appropriate responses to measurable changes, which creates alignment between the CC and dealership. The weakness of the monitoring is that there are instances where what is considered poor values are acceptable. Larger dealership groups that have workshops in several cities can move parts between each other which is not registered by the *DIM concept* resulting in misleading warehouse values. However, this can often be solved through personal and direct communication, meaning that the monitoring of data must be combined with communication to result in a proficient information source as described by Neu et al. (2005).

The *Dangerous goods* department monitors a different information source which is legislation. Unlike *DIM, DG* does not conduct any coaching and instead focuses on supporting CC departments and updating education material. It is, therefore, up to the department manager to make sure that they follow the regulations, which is a growing area when more electric vehicle batteries are required. In accordance with Neu et al. (2005), legislation is an important information source, but it must also be combined with monitoring of how legislation is followed internally. However, *DG* does not have the necessary information sources to adapt the material based on the receiver's knowledge level which results in the risk of *DG* misaligning themselves with the CC departments and dealerships.

Gebauer et al. (2005 B) explains that understanding how services fit into the customer's overall experience is important for a service to be successful. An information source that has the potential of containing such information is the dealer surveys. Not many *AML* departments mentioned this as a primary source of information. The risk is that services are created without important data point being considered, such as data about the dealerships experiences of using the coaching services.

In between the quantitative information sources, such as warehouse data and surveys, and anecdotal sources, such as intuition and assumption, there is a combination. An example of this is the *Customer service centers* who offers some education material. In interviews with personnel from the department it was discovered that no one at *CS* was responsible for keeping this material updated and relevant. However, the educational needs that exist are often met with ad hoc educational material sent upon request from a dealer. This is in line with both Gebauer et al. (2005 B) and Neu et al. (2005) in that the education material is distributed based on a need directly from the customer. However, since it is up to the customer to decide whether they need education or not, the risk is that resources are spent on the dealerships that are most eager to learn rather than the ones that need it the most. The opportunity here is to map the unstandardized material that is sent out to update the current material.

Lastly, the *CC* has information sources that are based on anecdotes and intuition where the *LCM* is utilized. Like mentioned in the findings chapter, the *LCM* works as a filter for questions between the dealerships and the *AML departments*. The information that is passed on through such a source is dependent on the knowledge level and availability of the markets *LCM* which was clear when markets were compared. Even though, an experienced filter function is beneficial when it comes to quick measures there is a risk of important information regarding customer needs is lost. Customer needs are central in creating a successful service as expressed by both Neu et al. (2005) and Gebauer et al. (2005 B) and when the filter is based on intuition and experience, there is a risk of human error. Departments within *AML* have also based service developments on inspiration from other departments such as *DIM* creating concise video material based on inspiration from *CC University.* The risk here is that they create and spend resources that there is no need for.

5.1.2 Service Connection to Department Strategy

AML management sets the strategy for the entire department, meaning that the service offer bundles *DIM, CS* and *AML miscellaneous* must adapt the services based on the strategy. Schroeder et al. (2022) and Rabetino et al. (2017) argue that the strategy of a company should be set based on the information available and the abilities of the company, rather than departments having to adapt their abilities based on the strategy set by management. This forces the service bundles to adapt their abilities both downstream based on customer needs and upstream based on the strategy set by management, since they have limited influence over the strategy. Adapting in this way is more complex and might lead to misalignment between capabilities and customer needs rather than only adapting based on the customer like Neu et al. (2005) argues for. However, the *AML* strategies, which are *dealer simplicity*, *end-to-end control* and *perform to develop*, all have the customer in focus.

Dealer simplicity is a strategy that aims at ensuring that a dealer can spend the majority of their time doing what they are good at, which is serving and selling vehicles, rather than on CC procedures. Rabetino et al. (2017) argues that a strategy should be based on synergies between services and customer needs. By having a strategy that aims at making sure that the dealerships can focus more on their customers it creates a synergy between the services from *AML* and the customer which in this case is the dealer. The strategy *end-to-end control* is a strategy about staying ahead of customer needs and *perform to develop* aims at meeting customer needs through operational stability. None of the strategies inherently goes against dealership interest but rather encourages *AML departments* to listen to the customer and become better at adhering to customer needs.

5.2 Customer-centric Interfaces

As the advantages of customer centricity is becoming more apparent for organizations, the efforts they take to achieve this has increased (Crecelius et al., 2019). Lee et al. (2015) discusses the factors which play a part in the efficiency and effect of customer-centric efforts within an organization and find that customer-centric efforts may not achieve the advantages an organization strives for. As an organization adapts to become more customer-centric, the cost-benefit equation may not align to make the customer-centric efforts worth it in the long term. The findings of Lee et al. (2015) show that for smaller organizations competing in few markets, the efforts and costs associated with adapting to customer centricity will outweigh the advantages. For larger corporations which compete in multiple diverse markets, such as CC, the efforts are often a beneficial investment. Habel et al. (2020) found in their study that the price point of the supplying company has a large effect on the outcome of a customer centricity initiative. Their findings indicate that a company which is perceived by their customers to have higher price and quality than their competition has a larger advantage with their customer centricity efforts. This

in turn is yet another reason for CC to focus on their customer-centric initiatives, as their focus in on the more premium market segment.

The interfaces toward their customers should therefore reflect their position, as CC could gain large advantages in increasing customer centricity in their service offering. What was discovered during the case study of CC was that interfaces toward both their customers and internally had been neglected at times by not having a considerable resources or planning being allocated to them, allowing them to grow organically and often towards being more inefficient, making any customer centric initiatives much less likely to achieve their goals. Many of the services were not specified, and those who were did not always have the customer at the center of attention or had not considered the customers experience in using the services.

5.2.1 Interfaces Between Services

A large difference between modular service systems and their counterparts in modular product systems is the need for interconnectedness and symbiosis of the different modules in modular service systems (de Blok et al., 2014; Gremyr et al., 2019). This in turn puts additional emphasis on the interfaces between the modules, as these need to enable the continuation of services from one module to the other. To put it in other terms, the customer should be encouraged to move from one service to another when the original service has run its course. For the AML division of CC, the most suitable interfaces toward their customer model would be either an open-customer flow interface, where the interface support the customer flow between service modules with the modules being interchangeable according to each individual customer's need, or a closed-customer flow interface, where the interface guides the customer through the service offering from module to module while managing the interdependencies between the different services (de Blok et al., 2014).

Making use of intrafirm collaboration has a positive effect on the customer centricity when developing services and service modules (Neu et al., 2005; Oinonen, 2014). Intrafirm collaboration enables the services which are developed to share common resources and infrastructure, making the services more efficient. For this case study there were situations where the intrafirm collaboration was nurtured, and others where it was hindered by the organization of CC.

In the cases where intrafirm collaboration was utilized, the respondents within the case study experienced that a lot of valuable intel and insight was gained, which is something they were lacking before the collaboration. One of the clearest examples of this is when developing, evaluating, and improving services for the dealerships. For dealerships, the main touchpoint regarding AML services were the LCM, which was employed by the market company, but many of the services they were using were developed and administered by the CC central organization. When personnel from the central AML division collaborated with LCMs or collaborated internally regarding the services they offered, the result was often positive. Such collaboration between the two

parties would allow for solutions which were more closely tied to the customer needs, producing higher quality services as a result. The effects of intrafirm collaboration, with improved infrastructure in the service offering and a clear direction of the services developed, could therefore be seen clearly in the projects or services which made use of it, confirming the findings of Neu et al. (2005).

When there was a lack of intrafirm collaboration regarding services developed, there were often a sub-optimization of the service development process. An example of this is within the educational or supportive services which were developed by the customer service division of AML. The customer service employees occasionally developed material for how to use the systems which connected the dealerships with CC. This material was developed ad hoc within the different regions when the customer service center of the specific region found a lack of knowledge from the dealerships. This could be manuals on using systems or how to label different requests. As this was performed ad hoc at a regional level, there were often similar work performed at multiple locations at the same time. In situations like these, a centralized and standardized service development making use of intrafirm collaboration to find such service opportunities would in turn diminish the resources needed, making use of economies of scale (Voss and Hsuan, 2009; Sundbo, 2002)

When decomposing the services which were currently being offered at CC, there were large confusion within the organization to what their services actually were, and how they interacted with one another. This became increasingly clear the longer the data collection process went on, as some individuals within the organization had a partial view of the offering but there was no complete view. As per Böttcher and Klingner (2011), one of the critical aspects of modularizing a service is an architecture which explains the interaction between service modules, which was not apparent within the case study. This had the effect that the interfaces between the services were not specified and had to be managed in an ad hoc manner, where the interface and connection between services had often been ignored as there were no connection between the services, another aspect which Böttcher and Klingner (2011) argue is important for modularizing services. This in turn worsen the opportunities for developing a service offering where the services interact with each other and develops a common interface which would increase the customer value of the service offering (Neu et al., 2005). One of the most important parts for being able to develop a functional service offering with interfaces in the case study therefore became the initial mapping of existing services, gathering as much data as possible to be able to produce a concise picture of the current state.

5.3 Standardization vs Customization in Services

For any service offering, there is an inherent tradeoff between standardization and customizability which exists (Carlborg and Kindström, 2014). If the tradeoff is not considered, the risk of it becoming non-optimal for the situation increases since attributes for the specific situation is not considered. For the

CC, there is an inherent need for customizability in the service offering, as the services will be deployed within a multinational organization which operate in many different cultures, legal requirements, languages, sizes of customers etc. Any coaching/education/support offers will therefore need to be adapted to each market to work effectively, something which is today handled through the market companies of CC. Currently, the CC leans very heavily into the customizability of this information exchange, as it is often up to the individual markets to produce or translate the material and adapt it to the specific market. But the lack of central standardization of the material has become a problem, as the individual markets material and capabilities have overtime become very different. The lack of standardization from the start of the service therefore made the mapping and the succeeding efforts to standardize the service offering a much larger task than if there had been some efforts to increase standardization between the markets from the beginning. The lack of standardization has also produced an environment where much of the information within the CC organization is not tacit organizational knowledge, but instead the knowledge is often limited to one or a few persons. This in turn makes the efforts of standardization harder, as the knowledge for what the services offered entails is not widely known within the organization, which makes the information sharing within CC harder (Saglma and Iyigun, 2022).

While a lack of standardization has made the service offering of AML differ between markets, the customization for the customers has allowed for solutions which offer the most value for certain customers. The Brazilian market showed how top management focus on customer co-creation has entailed services which are much more suited for the dealerships within its region and has made the services more in-tune with the needs of the market, which coincides with the findings of Oinonen (2014) which argue co-development is a powerful tool when it comes to customer satisfaction. As the Brazilian market became an organizational leader when it came to customer centricity, the CC's central organization as well as other markets began looking at what could be learned from the Brazilian market. During the attempts and studies to translate what the Brazilian market had done well to the rest of the organization, there was a large hinderance of translating the learnings. The lack of standardization within CC had also made the transferability of the knowledge and processes within the Brazilian market very low. Oliva and Kallenberg (2003) also touch upon this subject, as the lack of standardization makes it much harder to translate the findings in one market as they have widely different attributes and starting points. Should the services been standardized from the beginning, the process to incorporate some of the findings from the Brazilian market may have been easier. At the same time, while interviewing personnel in the Brazilian market emphasized that while their findings may be transferable in some way to other markets, that might not be the optimal way to incorporate service improvements. The Brazilian market have during this process focused heavily on customer involvement, which in turn means that their services have been customized to fit their situation. Their situation and solutions might therefore not be directly transferable to any other markets situation. This is yet again a weakness in the lack of standardization, that much

of the work which has been made within one area of CC cannot be directly transferred without requiring rework.

5.3.1 Decision on Standardization Levels

When studying CC, there were as previously mentioned a lack of mapping and general view of the total service offering from the AML division. This in turn made it difficult to decompose the service offering, as the mapping of services had to be made first. An issue which surrounded CC was what type of services they wanted to offer their dealerships. The current situation with the service offer differing a lot dependent on which market the dealerships operated in had led to situations which were tailored to the specific markets, which brings with it advantages and disadvantages (Bask et al., 2011). The service offering within the markets are heavily standardized, with the same service offer being available to all dealerships. Within each market company there was a heavy focus on being autonomous, with the central organization from CC and the brand being in a supporting role to the market company and its dealerships. A standardized service offering from CC's AML division to the market companies and dealerships is a possible path forward, but this would entail a switch in the current strategy regarding standardization vs customization which exist in the AML division. Offering a centrally standardized service offering would bring with it a more rigid system which was less adaptable to each specific customer needs and specific situation (Sundbo, 2002), but would produce a service portfolio which would be very cost efficient and will make greater use of common interfaces and resources.

This is where a choice would need to be made internally within the AML division as they pursue to modularize their services. For each service bundle offered there would need to be consideration as to where on the scale of standardization vs customization the service bundle should place, as to balance the transferability of the service bundle across markets and the customization for the individual markets (Oliva and Kallenberg, 2003). Examining the service modules within the AML division regarding coaching, they range from being fully reactive, support services, to being mostly proactive, coaching services. The needs for standardization and customization will differ depending on the service bundle, which service module it contains, who/what divisions will deliver it, who is the intended recipient, among other attributes.

As per Gremyr et al. (2019), the standardization levels of service modules will also depend on how the services were developed initially. Many of the services which are apparent in the AML division are based upon practice-based innovation, as opposed to a strategic-based innovation, leading to them being low in interconnectedness and standardization (Gremyr et al., 2019). The practice-based innovation follows from the CC organization for a long-time not putting a large effort into services, leading to services being developed ad hoc instead of from a top-down strategic perspective. With the CC's recent push toward services and service development, standardization and interconnectedness between services is therefore the first step into optimizing their services offering. The one exception to the coaching services which were

developed through practice-based innovation is the DIM services, which was developed from a top-down perspective. The interconnectedness of the different services which made up the DIM services were clearly defined; they all filled a function which ensured the dealerships had the capacity and knowledge to gain most of the DIM system. The DIM services have been functioning for a long time, soon up to 30 years, and have been successful with satisfied users throughout its lifespan. While this top-down approach might not be suitable for all future service development, its advantages with high standardization and interconnectedness should be utilized to a larger degree than it is currently being utilized within the AML division.

For any organization trying to decide to what extent they prioritize standardization vs customization, there will always be tradeoffs which will need to be taken into consideration (Kasiri et al., 2017). Looking into the reasons for choosing a standardized service approach there is the advantages of improved service efficiency (Kasiri et al., 2017), improved transferability between markets (Oliva and Kallenberg, 2003), and a more cost-effective service (Sundbo, 2002). The advantage of customization as opposed to standardization is the ability to tailor the offering to the specific customer, and by doing so being able to offer precisely what the customer requests. In contrast to standardized services, this quickly becomes expensive, as the amount of work needed for each service increases (Kasiri et al., 2017). Ding and Keh (2016) conclude that where an organization should position itself depends on how the customer aims to use the service, with consumers with a utilitarian goal tend to prefer a standardized service while those with a hedonic goal prefer a customized service. As the services which have been investigated in this case study are of a B2B nature, often the scales tip in favor for a more standardized approach to produce a service as efficient as possible. At the same time, for a multinational corporation such as CC there is a need to customize its offering dependent on the market and its condition. This is where service modularity brings its largest advantage, being able to efficiently standardize a service offering while enabling customization within the different modules dependent on market or customer needs, which gives the opportunity to increase the customer value in the service (Eissens-van der Laan et al., 2016).

6 Discussion

In this chapter, the two research questions which were presented in Chapter 1 will be discussed. Following this theoretical as well as managerial implications for the research which has been conducted is presented.

6.1 Research question 1

How can services be mapped and decomposed into modules?

Throughout the duration of this research, the mapping of service and their eventual decomposition into modules has been evaluated. From the case study, it became apparent that for an organization to begin considering service modularity and develop their current service offering, there needs to be a clear picture of the current situation. The as-is picture needs to be clear regarding not only how the services are currently composed, but also what the internal capabilities of the organization are and where their strengths lie (Neu et al., 2005). This could be achieved by several different methods such as service blueprints or process mapping, as long as the mapping is clear and concise regarding the current situation. This initial mapping is crucial for understanding the environment which the service is operating in and to be able to later on decompose the service offering. The level to which one should decompose the service depend on many attributes, but the research confirms the findings of Eissens-van der Laan et al. (2015) of the main attributes to consider being modularization aim and service routineness. The theoretical framework produced by Eissens-van der Laan et al. (2015) regarding steps to take during the decomposition phase was also found to be very beneficial to use, as it gives guidance to a process which may otherwise feel overwhelming. The steps to decompose an already existing service (defining boundaries, identifying subsystems, and analyzing interdependencies) proved to be an efficient and comprehensive way to ensure the decomposition broke down the service to the optimal levels, which in the case study of this research proved to be the five identified service modules and how they can combine into different service bundles depending on the desired outcome.

The findings of the research also confirm the findings of Skačkauskienė and Vestertė (2020) regarding the decomposition steps to initially consider, where the authors argue that the most important steps to take in the beginning of a service modularity project is to analyze the customer which use the service, the internal capabilities of the organization, as well as defining what the service aims to achieve. For the case study these three steps aided the analysis by identifying which level of standardization/customization the different service bundles needed, which aided in the design of the service modules for the individual service bundles.

For the mapping of services, there is an inherent need to consider viewpoints of all stakeholders of the service, such as customers and not only the producing organization (Oinonen, 2014). During the case study, it became apparent that internally at CC there had oftentimes been service development in a top-down

manner, where the customer needs had been perceived, or received through a third party, instead of confirmed through direct customer involvement. There were several reasons for this, but CC's organizational setup was a large contributor to this as there were hindrances for direct customer involvement, as there were many stakeholders who would have to approve of any direct contact with dealerships for any type of involvement in design processes. No direct customer involvement had in some cases made the services misaligned with the customer needs, confirming previous findings regarding benefits with customer involvement (Oinonen, 2014; Gebauer et al., 2005b; Carlborg and Kindström, 2014). During the literature review of existent research regarding service decomposition and service modularity there was a lack of consideration regarding the risks and disadvantages of implementing modular services. The same conclusion had been drawn by Dörbecker and Böhmann (2013) who argue a more balanced treatment of the subject may be beneficial to service modularity as it would help explore the trade-off between integral and modular architectures for services.

6.2 Research question 2

How can service modularization be used to decompose and standardize an existing service offering to simultaneously achieve both customization and efficiency/standardization in a multinational organization?

The current service modularity literature contains many examples of service modularization efforts within organizations (Gremyr et al., 2019; Bask et al., 2011; Eissens-van der Laan, 2016). De Mattos et al., (2021) produced a framework of the steps which are taken in a modularization effort (see Table 2) which aligned with the findings during the research during this thesis work. The six phases: *Information capturing, Decomposition, Structuring, Module creation, Interface definition,* and *Testing* are steps which should be considered when decomposing and modularizing an existing service offering. These six phases adequately describe the different issues and situations an organization may find itself in when modularizing their service offering. The thesis produced a secondary alternative to this framework, which can be seen in figure 5 in Chapter 2.4, which may be used when performing service decomposition and modularizing a service. As was first discussed in Chapter 6.1, the need of a proper initial mapping cannot be understated, as this will be the base of the entire service modularity efforts. Here an organization should consider the use of service blueprints to visualize their customers journey when using the service, as otherwise the organization may miss large gaps in their current offering and how their customers use their services. Service blueprinting may also serve as a way for exploiting commonalities between services as well as an aid in innovating new services (Bitner et al., 2008), something which service modularity also aims to accomplish, creating a positive synergy between the two methodologies.

Any service modularity effort should also consider the optimal outcome of the efforts, is the organization trying to become more standardized and by doing

so become more efficient, or is the organization trying to increase the customization for the individual customers? While this may seem an easy question to answer, it should be clear for all parties after the decomposition phase since this will affect all steps moving forward from that point on. The benefits of managing the customization vs standardization via modular services will not be utilized to its maximum in case the balancing between the two is not considered. Other factors to consider when weighing the standardization of modules is where the service will be offered. For a large, multinational organization such as CC, offering one fully standardized service to all markets will inevitably lead to a service which is poorly optimized and not fit to the markets. On the other hand, full customization of services for a multinational organization will instead lead to huge spike in costs and the transferability of learnings from the services will be very low (Oliva and Kallenberg, 2003) which in turn lead to diminished service quality. This balance between customization and standardization must be carefully considered, which parts should be up to the individual markets to customize, and which should be controlled centrally to allow the services to be as efficient as possible.

The findings gained during the case study of CC show that many of the service components which are being utilized by individual customers in a day-to-day fashion which require a more nuanced handling is optimal for a customized and less standardized service module. In the case study performed, this showed itself in the daily interactions which the customer had a personal relationship with the personnel supplying the service from CC. The personal relationship with the customer allowed the supplier to have a greater insight into the customers business, allowing for customization for each customer at a large scale. What was discovered was that the services which were routine and very iterative in nature often benefited from the standardization. This is possible when services are produced centrally, allowing for them to be automated or otherwise optimized without losing value for the customer. Therefore, it is important when modularizing a service to know where on the scale of customization and standardization the service would ideally fall and design the service modules accordingly.

6.3 Theoretical Implications

With the purpose of investigating what was needed to decompose a previously existing service offering and modularize it to ensure a balance between standardization and customization, it was discovered much of the existing literature on service modularization concern this subject. The literature which was reviewed focused largely on the benefits of service modularity, many which were in-line with the findings of this study such as increased efficiency (Carlborg and Kindström, 2014) and increased customization (Bask et al., 2011). An area which was lacking regarding the current academic literature is the drawbacks of a modular service system, as much of the research concerns mainly the positives. This is identified as a gap in the current research, which might be explained by service modularity is, compared to its counterpart in modular products, quite a new subject which still needs considerable research.

During the case study there were inclinations from the case organization that there might be financial risks to implementing a modular service system that they may not be willing to take, but in the existing literature there were no studies reported which tried to concretely measure the advantages of service modularity, in terms of profitability, customer satisfaction or similar attributes.

The thesis also confirms the notion of customer centricity being of the large importance when developing or supplying services (Neu et al., 2005; Carlborg and Kindström, 2014). Any efforts should be connected onto the customers viewpoint, how they will utilize and benefit from the service. Something which is lacking in the current literature is the definition of who the customer for the supplying organization is. This was uncovered during the case study of the thesis, where the customer for the case organization was not the end customer, but the customer simply supplied service to another customer. For this case study the customer of the case organization, the dealerships, was viewed as the sole customer. This research would have improved in regard to academic trustworthiness if such there were any theoretical basis for which customer to choose in this regard, but there were no such sources to be found. The thesis adds to the existing research by producing a framework which can be utilized when decomposing a service offering and later producing a modular service offering. The framework (see Figure 5 in Chapter 2.4) combines input from several sources to ensure there are no missed steps when decomposing the services. It could further provide a framework to evaluate the services once modularized.

6.4 Managerial Implications

When an existing service offering is modularized four steps must be considered, which are information capture, service decomposition, modular service and integrating modularized services into the current offering. To get the desired outcome of the service offering adding value to the company and the customer there are implications that must be considered.

During the information capturing step the current service offering must be mapped and evaluated based on the value it offers the company and the customer. Here the customer and stakeholder are the most critical parts to consider. To understand how a service functions and what it provides to one or several customers and it is important to identify what the customer wants to get out of using the service. To reap the benefits of modularized service offering the services in themselves must be desired by the customer. Otherwise, any changes or improvements done to the service will not matter since the customer still does not get what they want. Starting with identifying customer needs will aid in creating a better service offering that adds value to both the company and the customer. Stakeholders are also important to consider. The services might affect several department, employees, and managers within the company, so it is important to get the mandate and approval from these stakeholders. If they are not considered in the process the risk is that a service offering is created that is not supported internally which can lead to poor

performance of that service. Stakeholder management is a process that must take place during the entire project since they can change and to ensure that they are pleased with the service updates.

The second aspect is the service decomposition and here the degree of modularity versus customization of the service offering must be considered. Modularity versus customization includes what kind of standards must be kept within the modules and how the modules interact between each other. It is important to decide on these aspects to create an even quality standard for all modules and to create appropriate interactions between them that makes it possible to combine modules without repetition or loss of functions.

The third aspect is the modular service where the module components are decided on. When these are structured, elements are categorized based on their interdependencies, meaning that they are grouped together depending on how similar their functions are. These are then used to create modules that are discernable and have different functions. What is most complex here is to create modules that can be combined to create a more comprehensive services while at the same time being complete on their own. In the case of the coaching services support, education, auditing, consulting, and coaching, offering all might not be beneficial depending on what the customer needs. While support and education is more fundamental audits, consulting and coaching are more comprehensive and requires more resources, meaning that they can individually be a complement to the other two coaching services.

The fourth aspect is to integrate the modularized services into the current offering. Here the customer is central, so the previously identified needs must be considered to create a service offering that gets them what they expect. This includes monitoring financial performance and customer satisfaction to create a knowledge base to be used for improvements. Examples can be customer surveys, number of complaints and customer outcomes. Stakeholders are also a group to consider here since the decisions on what to do with the current offering affects them. In the end, it boils down to focusing on what the customer needs and then convincing the stakeholders to perform the changes necessary to fulfil them so that the services are carried out in an efficient manner bringing value to the company and the customer.

6.5 Limitations and Future Research

The major limitations come from the thesis being based on a single case study with only two markets being analyzed during the limited time frame of six months. Based on the limitations, future research areas were identified that can complement the findings of this thesis.

The thesis being based on a single case study, making the findings restricted by the conditions of the automotive industry. While it being a mature and widely spread industry, areas such as the relationship between the *CC,* the dealerships

and the end customers are unique. A service offering between a company and its dealership differs a lot from the service offering between a company and its end customer. This, in turn, could make the mapping, decomposing, and modularizing of a service offer differ depending on the type of industry the case company is in. Future research should complement with findings by comparing other industries in how existing service offerings can be modularized. Single-case or multiple case studies can be utilized to create a foundation of findings to draw conclusions from. Other limitations with the framework produced in this research regard how applicable to framework is to situations other than the ones in the case study presented in this thesis. The process would be different if the organization which was studied was more organized, as the initial mapping and later integration to the organization would have been easier. Due to the conditions of the case study, the framework is tailored to a situation where the service offering of the organization is not mapped correctly, and if it were to be applied in a more organized setting the information capturing and integration phases would be handled differently.

The single case study also only included two out of several markets due to the short timeframe. In the multinational *case company* markets differ depending on brand maturity, market size and culture. The two markets that were analyzed differed in several areas. The Swedish market being brand mature, has a large market share and has a traditional way of running its operations, while the Brazilian market is larger in size and open to new concepts within servitization, but the brand had a smaller market share and was less mature. In future research these aspects of the market can be taken into consideration to find appropriate ways of creating a service offering that is assigned the correct resources and infrastructure to add value to the customer and provider in that market.

7 Conclusion

The purpose of this thesis was to evaluate how an existing service offer can be modularized retrospectively and what needed to be done to ensure the services received the resources and infrastructure it needed to continuously add value to the stakeholders involved in the service. The thesis with its case study and literature review has delved into this topic and has provided important attributes to consider when modularizing an already existing service offering. Firstly, the initial mapping is deemed to be of great importance and is something which should be prioritized and given the time it needs. All later stages will build upon the understanding of the service offering, so gathering viewpoints from all stakeholders to the service is of importance. Something to consider when gathering information regarding services is the inherent bias of the source, which will skew the information gathered from sources.

Placing the customer in the center of the service should give an advantage when later modularizing the service. Taking the customer viewpoint, which can be done through the help of service blueprints, should give an indication as to where the interaction with the supplying organization occurs and where any gaps in the services is located. This will help develop the service as to be as customer centric as possible, and by doing so increase the value of the service to the customer. This will in turn also help the supplying organization understand how the customer views the service, what the customer expects and needs. This might previously have been lacking, especially if these have been part of a strict and standardized service offering to start with.

Developing the services with a clear intent as to the result is important. When having gathered information regarding the services and decomposed these services to the appropriate level, the re-modularization should take into consideration where on the customization versus standardization scale the service should fall. Services which are standardized to a large extent may become too rigid and not fit the customers' needs, while services which are completely customized to the customer may become inefficient and the service and learnings from it may not be transferable to other situations, making it harder to learn from others and implement functioning concepts into the service once deployed. Service modularity aims to strike the balance between these two attributes and gain the advantages of both but when modularizing a service and its interactions, interfaces, and modules there still needs to be a focused efforts on balancing these two attributes for the individual service modules. This allows for optimal services which fits the customer and is still efficient and able to provide value for all stakeholders.

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Appendix A

NAME:
TITLE:
SERVICE AREA:

What is your current role at Case Company what is your history at Case Company?

- What are the main responsibilities of the department you work at?
- What are your main tasks?
- What information/input are you dependent on to perform your role and where does that information/input come from?
- What is your output in that role?
- Which stakeholders do you interact with, both externally and internally?

What is your relationship to the dealerships?

- What types of services do you offer them in your role?
- How do you interact with them/through what channels do you interact with them?
  - Support / training / coaching / auditing / others?
- Do you usually solve their issues?
- What are the main strengths and weaknesses in your relationship to the dealerships?

Closing questions

1. What services would you say you offer the dealership?
2. Are there any services that you would like to provide in the future?
3. Is there anything you want to elaborate on?
4. Do you have any data/educations/documentation we can gain access to, to help us understand your department or your work?
5. Is there someone else you think we should talk to about the given subject of this interview?
6. Can we come back to you again to verify our understanding, either through an interview or e-mail?

Appendix B

Checklist for validation in qualitative studies (Elo et al., 2014)

Phase of the content analysis study	Questions to check
Preparation phase	Data collection method
	How do I collect the most suitable data for my content analysis?
	Is this method the best available to answer the target research question?
	Should I use either descriptive or semi-structured questions?
	Self-awareness: what are my skills as a researcher?
	How do I pre-test my data collection method?
	Sampling strategy
	What is the best sampling method for my study?
	Who are the best informants for my study?
	What criteria should be used to select the participants?
	Is my sample appropriate?
	Is my data well saturated?
	Selecting the unit of analysis
	What is the unit of analysis?
	Is the unit of analysis too narrow or too broad?
Organization phase	Categorization and abstraction
	How should the concepts or categories be created?
	Is there still too many concepts?
	Is there any overlap between categories?
	Interpretation
	What is the degree of interpretation in the analysis?
	How do I ensure that the data accurately represent the information that the participants provided?
	Representativeness
	How to I check the trustworthiness of the analysis process?
	How do I check the representativeness of the data as a whole?
Reporting phase	Reporting results
	Are the results reported systematically and logically?
	How are connections between the data and results reported?
	Is the content and structure of concepts presented in a clear and understandable way?
	Can the reader evaluate the transferability of the results (are the data, sampling method, and participants described in a detailed manner)?
	Are quotations used systematically?
	How well do the categories cover the data?
	Are there similarities within and differences between categories?
	Is scientific language used to convey the results?
	Reporting analysis process
	Is there a full description of the analysis process?
	Is the trustworthiness of the content analysis discussed based on some criteria?

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