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Customer Segmentation from a Supply Chain Service Perspective

A Case Study at Volvo Penta

Master's Thesis in Supply and Operations Management

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Department of Technology Management and Economics
CHALMERS UNIVERSITY OF TECHNOLOGY
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Abstract

Several years ago, Volvo Penta experienced an expansion from serving one market with standardized products, towards a presence in two markets. This meant that the product variety increased and the customer needs became more complex. The standardized market allowed for one single set of supply chain services offered to all customers, in order to gain from economies of scale. However, due to the increased complexity of customer needs, Volvo Penta sees the possibility to develop a differentiated supply chain strategy in order to fulfill the customer needs and deviate from the current one-size-fits-all strategy. Therefore, this thesis aimed to propose a customer segmentation structure for Volvo Penta, in order to match different customer needs with supply chain services. Additionally, the study also aimed to examine how the customer segmentation could be made applicable to Volvo Penta.

The proposed segmentation structure was accomplished by analyzing both segmentation processes and customer characteristics. Through analysis of segmentation processes, important knowledge of the impact from a segmentation for Volvo Penta was gained. Additionally, by analyzing different customer characteristics, an understanding of how to distinguish different customer needs was achieved. The analysis was based on findings from interviews, an internal questionnaire, and secondary data.

During the study, three segmentation attributes were identified to have an impact on the customer need for supply chain services; product variation, business value, and purchasing pattern. By identifying two different levels for each attribute a segmentation structure was achieved. For each suggested customer segment, a set of services was proposed in order to fulfill the customer needs. The eight different segments were also branded in order to increase the applicability. With the segmentation, customers with different needs can be met with appropriate and beneficial supply chain services. Thereby, customer satisfaction and resource usage can be optimized. Additionally, from the proposed segmentation, Volvo Penta has now the opportunity to develop a differentiated supply chain strategy that both understands and manages different customer needs.

Keywords: Customer Segmentation, Customer Needs, Supply Chain Services, Supply Chain Strategies

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Mathilda Gärdesmed & Josefin Koppel, Gothenburg, June 2019

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1
Introduction

This report constitutes the Master's Thesis within customer segmentation, performed during the spring of 2019 at Volvo Penta. The introduction chapter aims to give the reader an understanding of the underlying problem after which the aim of this Master's Thesis is formulated. The chapter concludes with reading directives for the remaining part of the thesis.

1.1 Background

Volvo Penta develops, manufactures, and markets engines and power systems for marine and industrial heavy vehicles, and has identified a need for customer segmentation with regards to supply chain services. Several years ago, as the company only served the marine market, one standard set of supply chain services was offered to all customers in order to gain from economies of scale. However, as Volvo Penta expanded into the industrial market, new customer needs and behaviors emerged. Throughout the history of Volvo Penta, the focus on meeting each customer need has been strong and it has been one of its most important competitive advantages, but the expansion into a new market increased the complexity of understanding each customer. Over the years, the company has conquered the challenge of meeting different customer needs from a product and performance perspective. Still, the standard set of supply chain services are now in the need to be renewed in order to maintain the high customer satisfaction.

Currently, a small number of unique and large customers get special supply chain services, developed after their special needs. For instance, a special supply chain service could mean that the customers' expectations of high quality and fast deliveries are met with express deliveries and temporary carrying of stocks. These services are, therefore, developed from case to case and are hence ad hoc solutions without regards to future expansion. Consequently, this means that the standard set of supply chain services deviates for some customers. The lack of structure and common view of which customers that should be offered certain services has, however, caused additional work for Volvo Penta. Therefore, a common view of how to approach different customers within the organization at Volvo Penta has been requested in order to match the customer needs with suitable supply chain services.

According to Hatton, Kolk, Eikelenboom, and Beaumont (2017), the strategy of having one set of supply chain services for all customers is called the one-size-fits-all approach. The authors mean that the approach is seen as a contributor to efficiency since all customer needs are seen as homogeneous. Hilletofth (2009) does, however, argue that the one-size-fits-all strategy is obsolete and an outlasting from the time when companies competed on a product basis only. Beck, Hofmann, and Stölzle (2012) further explain this by arguing how companies today are competing on a supply chain basis, where it instead is a question about the total solution rather than just the product. Therefore, both Hilletofth (2009) and Beck et al. (2012) argue that a Differentiated Supply Chain (DSC) should be developed in order to stay competitive.

Furthermore, Godsell, Diefenbach, Clemmow, Towill, and Christopher (2011) mean that the one-size-fits-all approach should be deviated from if it is possible to group customers with similar needs. To understand the customer needs is nevertheless a complex issue since needs can be both known and unknown to the customer (Hatton et al., 2017). In order to do a customer segmentation, that is grouping the customers, it is, however, necessary to understand the customer needs (Fill & Fill, 2004). The authors mean that a customer segmentation based on customer needs and behaviors eases the work of targeting different customers with different services. Additionally, Hjort, Lantz, Ericsson, and Gattorna (2013) argue that the lack of a formal customer segmentation leads to non-optimal resource utilization and potentially also poor customer experience.

With this in mind, Volvo Penta now demands to understand the customer need for supply chain services in order to match this with their supply chain offerings. By utilizing customer segments, tailored supply chain services can be developed and offered to the customers without losing scale, while still meeting the demand.

1.2 Aim

The aim of this study is to propose a customer segmentation structure for Volvo Penta, in order to match different customer needs with supply chain services. Additionally, the study also aims to examine how the customer segmentation can be made applicable for Volvo Penta.

1.3 Reading Directives

This sub-chapter describes the content of each chapter in this Master's Thesis. This to provide the reader with an outline of the thesis, which is illustrated below in Figure 1.1.

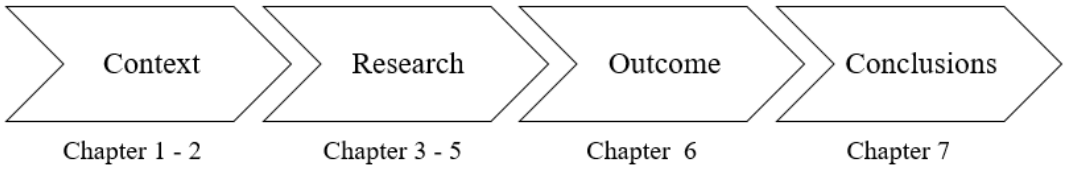

Figure 1.1: Reading directives for the thesis

Chapter 2 - Empirical Background

This chapter presents the background for this thesis. The chapter describes the case company, its organization, and processes, as well as the customer structure and how different customers are currently approached. Further, the chapter describes the different needs of supply chain services and different customers need.

Chapter 3 - Empirical Background

This chapter contains the theoretical framework. The chapter begins with presenting theory regarding supply chain strategies, how to understand the customer, and different types of relationships. Thereafter, theory of business to business is presented, followed by theory regarding process maintenance. At the end of the chapter, the research questions for this Master's Thesis are presented as well as a model for the application of the theory.

Chapter 4 - Methodology

This chapter describes the methodology used for this thesis. The chapter presents the research process, containing the research approach, data collection, data analysis, as well as verification and validation of results.

Chapter 5 - Empirical Findings

This chapter contains the findings of this thesis. The findings are collected from interviews and an internal questionnaire. At the beginning of the chapter, findings regarding supply chain services are presented, followed by segmentation attributes, and the internal view on customer needs. Lastly, data regarding measurable segmentation attributes are presented.

Chapter 6 - Analysis and Discussion

This chapter presents the analysis and discussion of this thesis. Firstly, the current supply chain strategy is analyzed, followed by an analysis of the proposed segmentation attributes. Further, an analysis and discussion of the fulfillment of needs within each segment is presented. Lastly, an analysis and discussion of the applicability of the segmentation is performed.

Chapter 7 - Conclusions

The last chapter of this thesis contains the conclusion of the thesis. Here, the research questions of this Master's Thesis are answered and the final recommendations to Volvo Penta are made.

2
Empirical Background

This chapter aims to describe the current situation at Volvo Penta, and thus the context for this Master's Thesis. The information described in this chapter is gathered from interviews with employees at Volvo Penta, the company's homepage, and other corporate materials.

2.1 Description of Volvo Penta

Volvo Penta develops, manufactures, and markets engines and power systems for the marine industry as well as the industrial market. The first engine was delivered in 1907 by Sköfvde Gjuteri and the name of the engine was Penta. Later, this company was bought and became Volvo Penta. Furthermore, the company has the ambition to be seen as a premium brand and there is hence a strong focus on both high-quality products and how they are perceived by the customers.

Furthermore, the company is a separate company, but also a part of Volvo Group, with its headquarter placed in Gothenburg, Sweden. The corporate group means that the companies do not compete with each other, but can instead benefit from shared experiences, technical know-how and the logistics infrastructure. Additionally, a part of the brand image for Volvo Penta origins from the corporate group.

Moreover, Volvo Penta has a global presence with sales in more than 130 countries. For most of these regions, Volvo Penta markets itself as a premium brand and it is important that the products are reliable and that the customer needs and requests are met. The vision of Volvo Penta is to *"Become the world leader in sustainable power solutions"*.

2.2 Business Areas of Volvo Penta

The business structure at Volvo Penta is organized with regards to two business areas and three geographical regions. The two business areas are called Marine and Industrial and these are considered to be widely different. Further, the geographical regions are called Europe, Americas, and International. The business areas and the related products will be further elaborated below. Additionally, all of Volvo Penta's products can be configured, which means that each product has a set of different

options in order to get the engine customized. This means that a configuration on component level makes the product structure complex.

2.2.1 The Marine Business Area

Both traditionally and currently, Volvo Penta possesses a strong position in the Marine business area. The business area is further divided into two sub-areas, Leisure and Commercial. The Marine business is hence broad, but the strong focus on productivity, uptime, performance, and sustainability is however common for all products within the business area.

Marine Leisure

The Marine Leisure sub-area offers engines to motor yachts, powerboats, and sailboats. The engines offered for these boats are presented below and also illustrated in Figure 2.1.

For the yacht solutions, there are two types of engines offered, namely the Volvo Penta IPS (Inboard Performance System) and Inboard Shaft. Looking at the engines offered to powerboat solutions, there are five different types; Volvo Penta IPS, Inboard Shaft, Aquamatic Sterndrive Gasoline, Aquamatic Sterndrive Diesel, and Forward Drive. For the sailboats, there are two different engines offered, namely the Saildrive and the Inboard Shaft.

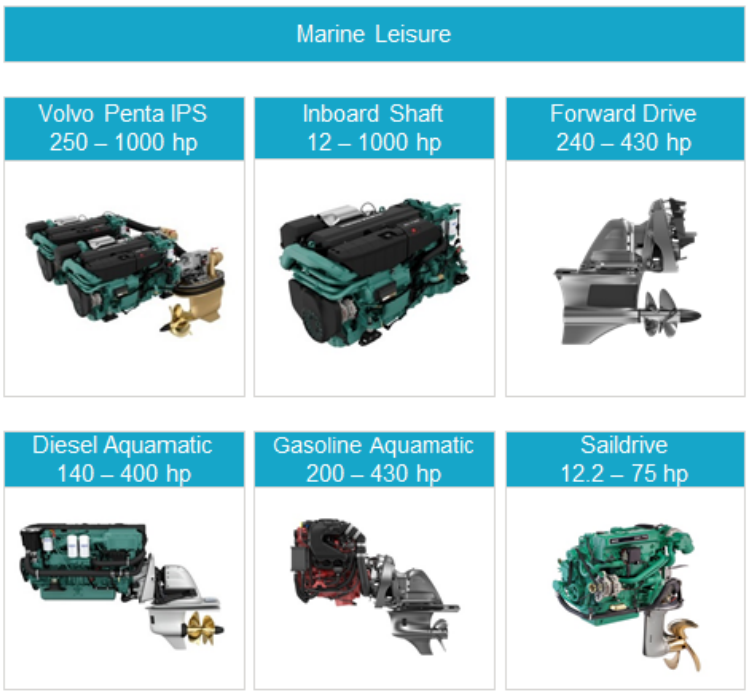

Figure 2.1: The different types of Marine Leisure engines offered by Volvo Penta

Marine Commercial

The Marine Commercial sub-area provides engines to more specialized boats that require more specific features and the segment is divided into three sub-segments, Propulsion, Marine Genset, and Auxiliary. Each sub-segment and its respectively offered engines are presented below in Figure 2.2.

The Propulsion sub-segment provides propulsion solutions to high-performance and heavy-duty applications, such as cost guards and tugs. There are three different types of propulsion solutions; IPS, Aquamatic Sterndrive, and Diesel Inboard. Further, the Marine Genset constitutes of engines which provide emergency electricity or diesel-electric propulsion. Lastly, the Auxiliary engines are designed to provide additional power when needed. The Marine Commercial sub-area does hence have a broad spectrum on type of performance, since the engines, for example, are used in both patrol boats, barges, ferries, and fishing boats.

Figure 2.2: The different types of Marine Commercial engines offered by Volvo Penta

2.2.2 The Industrial Business Area

The Industrial segment constitutes a majority of the sales and is the segment with the fastest growth for Volvo Penta. The products within the segment are called industrial power systems and are considered competitive thanks to features such as fuel efficiency, up-time, and cost of ownership. The segment can further be divided into Genset Engines (GE) and Versatile Engines (VE).

Genset Engines

The Genset Engines are used for power generation, where Volvo Penta supplies both standby power engines and prime power engines. The standby power engines are engines used under non-ordinary circumstances, for instance during peak hours or power outage. The prime power engines are used for supplying electricity more constantly, for instance at construction sites. The Genset Engine can be seen below in Figure 2.3.

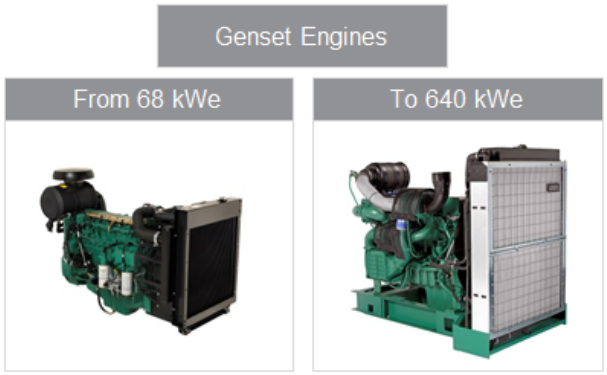

Figure 2.3: Genset Engines representing the lowest and highest crankshaft power

Versatile Engines

The Versatile Engines are used for off-road products, such as mining, forestry, agriculture, construction, material handling, and special vehicles. Among the different products, the engines to the material handling equipment constitute the majority of the sales. The Versatile Engine can be seen below in Figure 2.4.

Figure 2.4: Versatile Engines representing the lowest and highest crankshaft power

2.3 Supply Chain Footprint of Volvo Penta

There are today three wholly owned plants by Volvo Penta, located in Vara (Sweden), Lexington (USA), and Lingang (China). The plants in Vara and Lexington manufacture diesel and gasoline engines respectively, while the one in Lingang assembles diesel engines. The plant in Lexington is also manufacturing sterndrives. However, a majority of the engines are manufactured at other manufacturing plants owned by Volvo Group. All plants are shown in Figure 2.5.

Furthermore, the plants are located strategically in order to reduce the lead times to the customers, e.g. the assembly plant in Lingang results in shorter lead times for the surrounding area. Almost all of Volvo Penta's products are configured and **Make-To-Order** (MTO) to suit the customers' requirements. The reason for Volvo Penta using MTO is mainly because there would be too many product variants to keep in stock and the MTO strategy does hence reduce the number of obsolete products.

The distribution centers (DCs) are placed with regards to minimize the delivery time and optimize the supply to the globally spread customers (see Figure 2.6). Furthermore, there are three centers in Europe used for cross-docking, namely Bring Vara, Genas, and Krefeld, from which orders are sent with direct shipment to the regions where local adjustments can be made. All DCs are centrally coordinated from the headquarter in Gothenburg.

Figure 2.5: Illustration of the manufacturing footprint of Volvo Penta

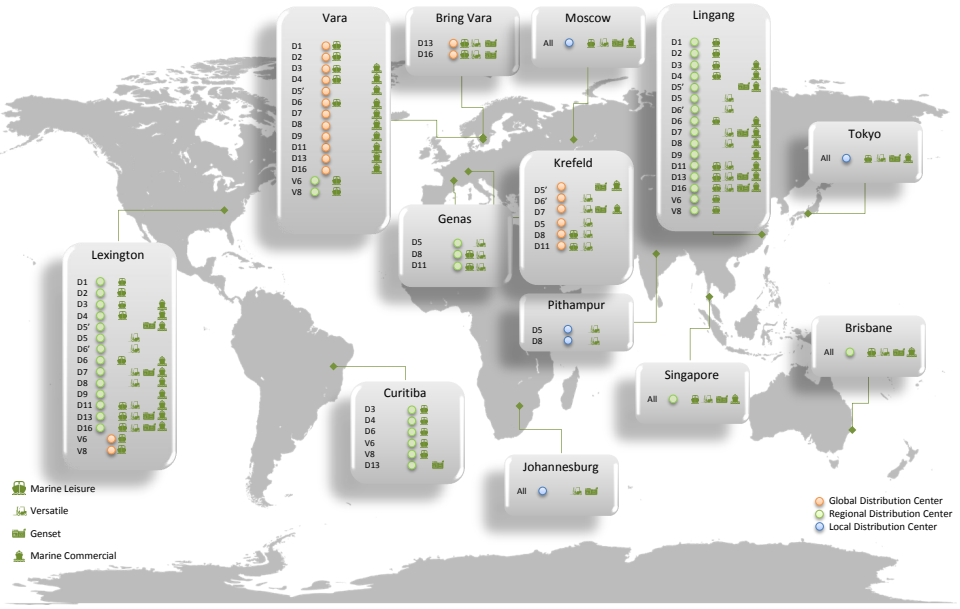

Figure 2.6: Illustration of the distribution footprint of Volvo Penta

2.4 Processes at Volvo Penta

The overall process from a new customer need to the customer delivery is considered to have four core processes; Develop Product and Aftermarket Product Portfolio (DVP), Market and Sell Total Offer (MAS), Produce and Distribute Products (PRD), and Deliver and Develop Customer Loyalty (DCL). The core processes are supported by nine management and support processes. The total process is shown below in Figure 2.7. The four core processes will be further described below, followed by a shorter explanation of the supporting processes.

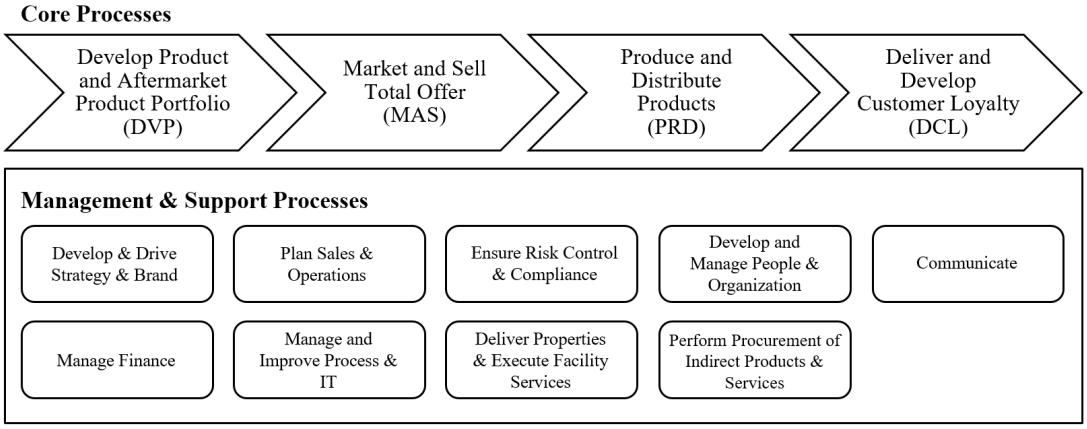

Figure 2.7: The core processes and the management and support processes at Volvo Penta

The DVP process aims to secure that Volvo Penta is maximizing the product portfolio profitability of new products on targeted markets. The work at DVP is based on customer needs and/or leads from the markets or the sales department. The result of the process is a total offer, consisting of both hard and soft products, and also preparation for the manufacturing, sales, and delivery processes. Further, the result of the DVP process becomes the input for the MAS process, whose purpose is to market and sell the total offer. The MAS, therefore, translates the customer needs and delivers a total offer and a lifecycle cost of ownership. The MAS is responsible for both short-term planning and execution from the development of the total offer to the order release. The third process, PRD, then aims to produce and/or supply and distribute the offers in order to fulfill the customer demand. The process does hence contain activities with developing plans to operate the supply chain, ordering or scheduling of deliveries. Lastly, the DCL process aims to develop the customer loyalty and perceived quality by delivering support.

While the core processes are unique for Volvo Penta, the management and support processes are similar within the Volvo Group. Furthermore, there are nine supportive processes, which are found in Figure 2.7, and these processes aim to enable the core processes to run smoothly.

2.5 Customer Structure at Volvo Penta

Currently, Volvo Penta has direct contact with approximately 4000 customers, out of which several customers purchase products from multiple sub-areas. This could, for instance, mean that a customer is active in both the Marine Leisure and Marine Commercial sub-areas. Consequently, the following numbers mentioned below for each sub-area will not sum to 4000 in total, since one customer can be in two sub-areas.

Among all customers, approximately ten customers constitute over 50 percent of the sales. Besides the sales of new engines, a large part of the total sales comes from the aftermarket, and it is therefore important to not exclude the customer's potential regarding aftermarket sales when evaluating a customer. This means that even though there is no formal segmentation of Volvo Penta's customers, informal segments of the customers have been carried out, where customers are treated differently. A problem with the informal segments is that there is not a common view within the organization regarding the different customer needs and what services should be provided to the different customers.

In order to understand the customer structure at Volvo Penta, this sub-chapter will firstly give the reader a definition of the customer from the perspective of Volvo Penta, followed by how the customer characteristics differ between the business areas.

2.5.1 Basic Customer Definition at Volvo Penta

The basic customer definition at Volvo Penta consists of four categories, namely business partners, indirect business partners, influencing parties, and end customers. The **business partners** purchase and resell products, parts, and services from Volvo Penta and include the everyday conception of the customer concept. Meanwhile, an **indirect business partner** is closer to the end customer than a business partner and they, therefore, typically have no direct relationship with Volvo Penta but rather with the business partners. Other parties, that is the **influencing parties**, are those that affect the sales. For instance, this could include authorities, insurance companies, boat designers, and classification societies. Lastly, the **end customers** are defined as private persons or organizations that use Volvo Penta's products. An illustration of the customer structure at Volvo Penta can be found below in Figure 2.8.

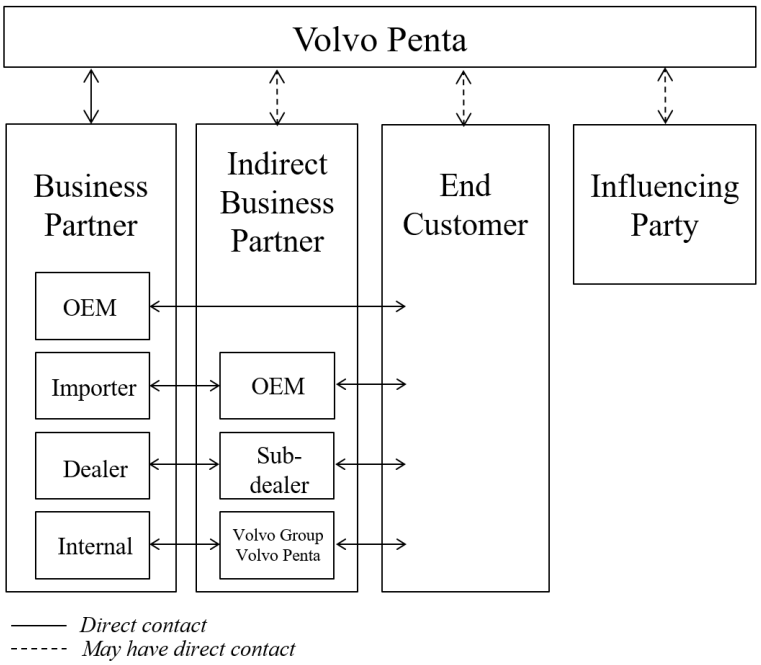

Figure 2.8: Illustration of the customer structure at Volvo Penta

Furthermore, as seen in 2.8, there are different types of business partner relationships. These are categorized into OEM (Original Equipment Manufacturer), importers, dealers, and internals. An **OEM** produces the finished products, for instance a boat, where Volvo Penta is the engine supplier to the OEM. Volvo Penta supplies approximately 1400 OEMs. The OEMs have their own sales channels and might, therefore, use both Volvo Penta's as well as competitors' products in their manufacturing. Further, an **importer** has contracted rights, in a country or at a market, to sell and distribute products from Volvo Penta. Volvo Penta has approximately 90 importers globally. A **dealer** is further a distributor, which may hold a group of sub-dealers to serve the end customer. A dealer may also serve as a hub in a geographical area for both other service dealers and OEMs. Currently, there are 2400 dealers working for Volvo Penta. The **internal** re-sellers are Volvo Penta, or Volvo Group companies, and there are 15 internal customers. Altogether, Volvo Penta has approximately 4000 business partners distributed all over the world. In order to become a business partner, there are several criteria that should be met, which are related to financial relationship, activity in the commercial network, and direct relationship. Since the business partners are in direct contact with Volvo Penta, unlike the other three categories of the customer definition, the business partners will henceforth in this study be called customers.

2.5.2 Industrial Customer Characteristics

For the industrial business area, the size of the customers varies greatly, considering both the customer company size and the spectrum of purchase volumes. The purchasing volume can vary from a few engines per year up to several thousand engines per customer and year. For both the Versatile and the Genset business area, the ten largest customers constitute roughly 50 percent of the turn-over.

Furthermore, a Key Account Manager (KAM) has been appointed to the industrial business area. The KAM is responsible to give key customers the requested amount of attention and also meet their needs with the right products and services. There are furthermore three criteria for an industrial customer to get a KAM. Firstly, the customer's current and potential purchase volume is considered and it should exceed a certain level. Secondly, the customer must be a producer, that is an OEM. Thirdly, the customer must have a global presence. Additionally, it is notable that even though key customers differ from other customers, the key customers do also differ from each other.

Genset Engine Customers

Currently, within the Genset sub-area, there are approximately 1000 customers. The Genset engine market is characterized by a high demand for short delivery times, meaning that customers demand to get orders very fast. As a result, these customers tend to have several suppliers. As has been mentioned before, the general production strategy of Volvo Penta is Make-To-Order (MTO), which means that most customers follow this logic. However, some unique and prioritized customers have got approval from the board of Volvo Penta to have Make-To-Stock (MTS) and so-called dedicated stocks, meaning that engines are put in stock at Volvo Penta but the engines are dedicated to a specific customer.

Versatile Engine Customers

At present, there are approximately 1000 customers of Versatile engines. These customers are generally not as demanding of short lead times as the Genset customers since the products often require more detailed configurations or bigger projects in order to meet the end-product requirements. Customers within this sub-area, therefore, often work closely together with Volvo Penta to develop products that suit the customer requirements.

2.5.3 Marine Customer Characteristics

For the marine business area, the spectrum of customers is wide with regard to sales volume and customer adaptation. The Marine Leisure has historically both a high and steady flow of sold engines, while the volumes for Marine Commercial are often smaller as these engines are related to customer adaptation and bigger projects.

Marine Leisure Customers

The Marine Leisure sub-area consists of 3500 customers and is unique with regard to that it is the end-customer that must approve of the product, while Volvo Penta only has a relation with the dealers or OEMs. It is mainly OEMs that Volvo Penta has direct contact with for the Marine Leisure area. The product characteristics within the Marine Leisure sub-area are relatively standardized compared to other sub-areas.

Marine Commercial Customers

In the sub-area Marine Commercial, there are 800 customers. In this sub-area, direct contacts with the customers are needed to a greater extent than in the Marine Leisure sub-area. This is the case since the customers most often require highly configured products, specially developed to suit the specific customer needs. The customer structure is further called YDO-model, based on direct contact with yards, designers, and operators. This model increases the customer need complexity even more since there are three parties with different focus areas to consider.

2.5.4 Customer Need for Supply Chain Services

As mentioned, Volvo Penta has a large number of customers, which also means that there is a large variety in the customers' sizes, industries, and purchasing patterns. It is the sales department together with sales engineers that approach the customers and are responsible for the relationship. The supply chain division at Volvo Penta does, hence, not have a direct connection with the customers and must, therefore, rely on the information from the sales personnel regarding the customers need of supply chain services. It has been stated during interviews that Volvo Penta is a product-focused company and that supply chain services are hence not put in focus during sales meetings. Therefore, since the needs for supply chain services are not discussed, it is unknown if the standard supply chain process is suitable for the specific customer. Additionally, it has been argued that it is the large and wide customer base of Volvo Penta that makes it difficult to get a deep understanding of all customer needs for supply chain services.

3
Theoretical Framework

This chapter presents the theoretical framework, which is based on previous research within the areas of supply chain strategies, customer understanding, customer relationships, and customer segmentation. At the end of the chapter, the theory application is presented together with the research questions. In this way, the framework aims to provide the reader with the most important knowledge necessary to understand both the research questions and the remaining part of the thesis.

3.1 Supply Chain Strategies

A supply chain strategy is defined by Perez-Franco and Phadnis (2018) as "*the pattern of decisions related to the supply chain activities of the business unit*". How to manage a supply chain strategy is further described by Madhani (2018) as the ability to adapt the dynamic capabilities of a firm to fit the customer needs. Moreover, Madhani (2018) argues that it is important to develop a supply chain strategy suitable to secure sustainable success for an organization. With this in mind, the following sub-chapters will describe two different supply chain strategies.

3.1.1 One-Size-Fits-All as Supply Chain Strategy

One-size-fits-all is an organizational approach, where customer needs and behaviors are seen as homogeneous for all customers (Hatton et al., 2017; Hjort et al., 2013). Hilletofth (2009) means that this implies that an organization with a one-size-fits-all approach only has one strategy for the supply chain management, which would mean that the supply chain setup, for instance, is either agile or lean.

Moreover, the one-size-fits-all approach has historically been seen as a contributor to efficiency, which means that the focus is on doing things right (Beck et al., 2012). Hilletofth (2009) adds that the approach is outlasting from the time at which economies of scale were in focus. However, the strategic focus for companies has today shifted towards effectiveness, which instead aims at doing the right thing. This leads to a one-size-does-not-fit-all approach, meaning that the supply chain should be differentiated with regards to the demand (Beck et al., 2012). Additionally, Godsell et al. (2011) argue that the opportunity of deviating from the one-size-fits-all approach should be used in order to increase the profitability, but only if the customers can be grouped with regards to different service requirements, the volume

of demand, and demand variability.

3.1.2 Differentiated Supply Chain as Strategy

As previously mentioned, Beck et al. (2012) mean that the supply chain strategy should be differentiated with regards to the demand, a method, and strategy that is called **Differentiated Supply Chain** (DSC). Hilletofth (2009) explains the need for DSC by addressing that companies today offer a wider range of products, which implies for a wider customer base and hence a wider range of demands. The author, therefore, means that a traditional one-size-fits-all approach where only a lean or agile strategy is applied cannot match all demands. Consequently, the supply chain strategy must be tailored in order to meet more specific needs. When reviewing the literature, it is hence clear from several authors that the one-size-fits-all approach is no longer valid in an environment that demands more customized supply chain strategies.

Furthermore, it has been suggested by Christopher et al. (2006) that the supply chain strategy should consider the predictability of the demand. For instance, the authors mean that the lean concept works better when the demand is relatively stable and, therefore, also predictable. The concept of agility, however, manages a volatile and hence also unpredictable demand and can in this way, therefore, be seen as more responsive (Christopher et al., 2006). Nonetheless, the authors mean that the two strategies can complement each other as a hybrid. A hybrid solution can, for instance, mean that the lean principles are utilized for predictable and standard products in the supply chain and the agile principle for more customized or special products (Christopher et al., 2006). All strategies can be found below in Figure 3.1.

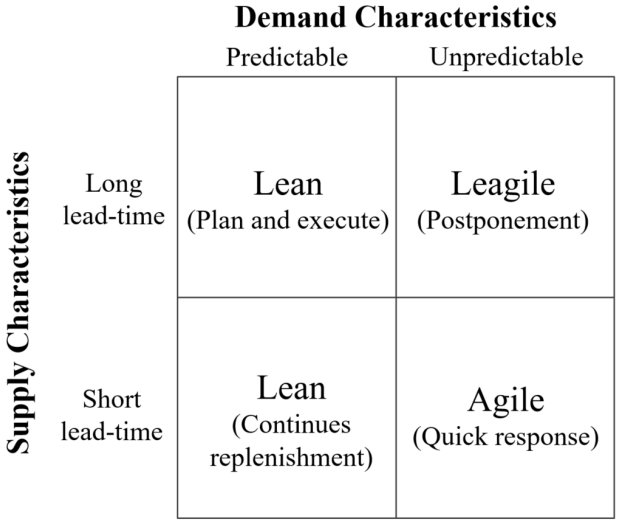

Figure 3.1: How demand and supply characteristics determine the supply chain strategy, inspired by Christopher et al. (2006)

By this strategy, the authors claim that different supply chain pipelines can be implemented for different demands, which is exemplified with high volume lean pipelines (high volume of standard products, stable demand and long lead time), top-up agile pipelines (standard products, volatile demand and short lead times), and innovative goods agile pipeline (special products, volatile demand and short lead times).

3.1.3 The Components of Supply Chain Services

According to Rushton et al. (2016), the components of supply chain services can be classified into two different categories: direct transaction-related elements or indirect support. The direct transactions emphasize the specific physical services, such as on-time delivery, whereas the indirect supports are related to the overall aspects of order fulfillment, for instance ease of order taking (Rushton et al., 2016).

Moreover, Rushton et al. (2016) mean that supply chain services can also be classified into multi-functional dimensions. The first dimension is **time**, which captures the order fulfillment cycle time. The second dimension is **dependability**, which is described to contain fixed delivery times of accurate orders. Thirdly, Rushton et al. (2016) describe **communication** as a dimension, characterized by order taking and effective queries response. The fourth described functional dimension is **flexibility**, which is the ability to recognize and respond to late customer order changes.

Customer Service Policy

According to Rushton et al. (2016), the customer needs must fall into a customer service policy, where services offered by the supplier to the customer are defined and matched with the identified needs. The authors explain how the services contain several different elements and that the policy, therefore, must clearly define these in order to handle complexity. Furthermore, Rushton et al. (2016) address how one product must be adapted to several customers since one customer can buy different products, by which the authors mean that the importance of a well-defined service policy increases.

3.2 Understanding the Customer

In order for a company to succeed, the customer need must be met by the internal and external capabilities of the company, which means that the needs must first be understood (Lukas, Whitwell, & Heide, 2013). This sub-chapter will hence explain why and how customer needs differ, how customer needs are identified, and different levels of customer orientation.

3.2.1 Different Kinds of Customer Needs

Hatton et al. (2017) explain how there are both **expressed** and **latent customer needs**. The expressed needs are explicit, clear, defined or conscious from the customer perspective, which means that also the supplier is most often aware of these needs. Contrary, the latent needs are implicit, unclear, undefined or unconscious, meaning that the supplier must identify these. Different levels of self-perception at the customer's site is, therefore, what makes different customers have different needs (Hatton et al., 2017).

Additionally, Kärkkainen, Elfvengren, Tuominen, and Piippo (2006) argue that customers in the business to business market have much more complex behaviors and needs comparing to the consumer market. The authors mean that this is due to the type of market, as this affects the purchasing behavior and type of relationship. Kärkkainen et al. (2006) therefore mean that also emerging or future needs must be considered, but that these needs are often latent for the customer.

3.2.2 Identifying Customer Needs and Improving Customer Satisfaction

According to Violante and Vezzetti (2017), every organization tries to improve customer satisfaction by improving the offered services or products, but is constrained by the limited resources. Kano et al. (1984) propose a model to clarify and prioritize different customer needs, a model which is known as the **Kano Model**. The authors mean that customer needs are dynamic, implying that the needs change over time, and that the relationship between the features of the offered product or service and customer satisfaction is non-linear. This means that various attributes of a service or product fulfill only the minimum needs or requirements of the customer, whereas other attributes generate a higher value (Violante & Vezzetti, 2017).

The Kano model is constructed to contain five different categories of attributes: must-be, one-dimensional, attractive, indifferent, and reverse (Violante & Vezzetti, 2017). The **must-be** attributes are expected by the customer, and nonexistence or poorly accomplishment of these, therefore, leads to extreme dissatisfaction. The **one-dimensional** attributes are characterized by a linear advancement of satisfaction. The **attractive** attributes, on the other hand, are usually latent needs from the customer, that unexpectedly have been fulfilled and hence result in great satisfaction. The **indifferent** attributes are of non-interest for the customer at this specific performance level. Lastly, Violante and Vezzetti (2017) explain the **reverse** attribute, which presence causes dissatisfaction. The model is presented below in Figure 3.2.

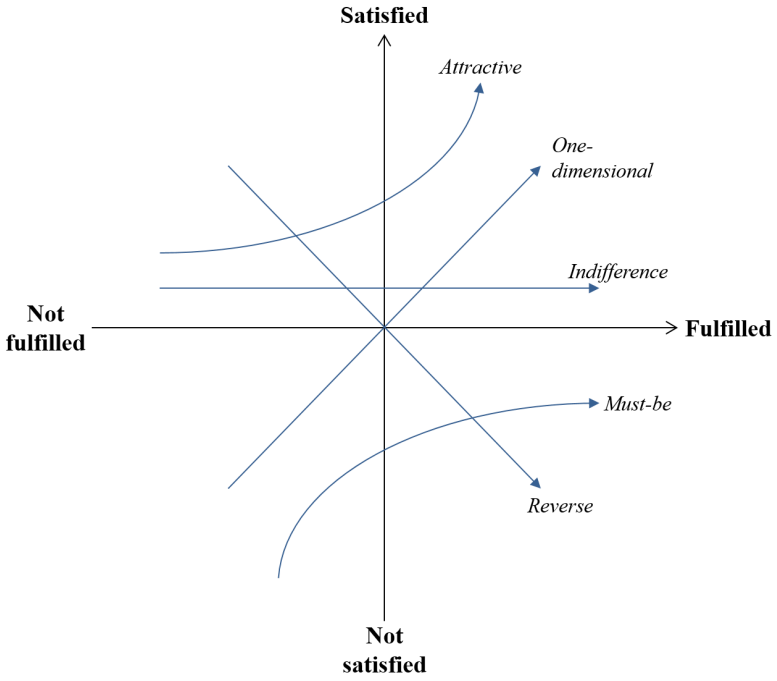

Figure 3.2: Illustration of the Kano Model inspired by Kano et al. (1984)

Violante and Vezzetti (2017) explain how the Kano model can be applied through three different steps: questionnaire, evaluation, and result. In relation to this, Williams and Buswell (2009) agree that questionnaires are effective in order to identify customer needs, but the authors also emphasize that the questions must be formulated in a proper way in order to avoid inaccurate answers. Additionally, Xu et al. (2009) state that the customer tends to be imprecise and ambiguous when describing its needs, which would hence have to be considered throughout the process. Also, Williams and Buswell (2009) mean that the customer needs are easily assumed if the customers are not approached and a customer investigation should, therefore, be performed in order to avoid the risk of making false assumptions.

Furthermore, **customer orientation** is defined as "*a set of beliefs that put the customer's interest first*" (Lukas et al., 2013). In other words, this means that an organization can prioritize customer needs as either very important or less important and the number of customers and the number of needs that are prioritized reflects the organizational customer orientation (Lukas et al., 2013). In this way, the authors mean that the customer orientation affects the result of the organizational culture as a culture can have either a strong or weak customer orientation. For a firm with weak customer orientation, a uniform approach is applied across the focal firm with only a little consideration to the product's capability of meeting the customer needs (Lukas et al., 2013). Likewise, the authors mean that a strong customer orientation and an ad hoc culture focuses on meeting the need of a particular customer.

Lastly, Hjort et al. (2013) mean that it might be easier and cheaper to see customer needs as homogeneous and thereby also deliver only one service level to all customers, but the authors also point out that this is not the most profitable strategy. Contrary, the authors argue that different needs should be approached with different products and services in order to maintain high customer satisfaction.

3.2.3 Understanding the Customer Need

According to Pirola et al. (2014), customer needs can be identified in a Business to Business (B2B) context by utilizing the method of **persona**. The method is most frequently used when developing products or services, where the persona represents a customer segment with fictitious, specific, and concrete needs and behaviors (Pirola et al., 2014). The authors mean that the persona is developed by firstly conducting semi-structured interviews in order to get a list of needs, followed by a questionnaire where the customers rank these needs, and an analysis where the persona, and also segments, are created. Pirola et al. (2014) argue that these definitions of segments are, therefore, fundamental in order to offer services that satisfy different customers with different needs.

Kärkkainen et al. (2006) further mean that the customer need can first be understood if also all relations of the chain are described, that is from the supplier to the end customer. The authors argue that this helps all the actors of the chain to get an understanding of how they affect customer satisfaction. After this, Kärkkainen et al. (2006) claim that the customer needs are identified by analyzing the links between the actors and lastly also traced to a specific customer.

3.3 Different Types of Relationships

Gadde and Håkansson (1993) explain how there is a relationship, or a connection, between suppliers and buyers, and that each relationship is an entity that cannot easily be generalized. The authors, however, mean that there are some characteristics and features that can be useful from a theoretical and pedagogical point of view when analyzing different types of relationships. The following sub-chapter will, therefore, explain different characteristics of relationships, why relationships tend to be complex, and lastly a model for analyzing customer loyalty.

3.3.1 Relationship Characteristics

According to Anderson et al. (2009), it is important to differentiate **transactional** and **collaborative customer relationships**. Transactional relationships are characterized by a strong focus on competitive pricing and low involvement. Contrary, collaborative relationships include parties with close relationships, where mutual benefits can be achieved (Anderson et al., 2009). The authors, therefore, argue that a customer segmentation can be used in order to cover a wider range of the transactional and collaborative spectrum, instead of only focusing on one

point.

According to Anderson et al. (2009), it is common that companies accept all types of orders from all types of customers, only focusing on short-term profits. Although, the authors emphasize the importance of **customer selection** and **order selection**, meaning not only selecting and investing resources in the most valuable customers, but also in the most valuable orders.

3.3.2 Relationship Complexity

Gadde and Håkansson (1993) state that the **complexity** of a relationship comes from the multifaceted contacts between the buyer and the supplier. The authors mean that these relationships often occur between different departments, for instance between the two planning departments at the supplier and buyer companies, and that the exact number of contacts, therefore, can be unknown. Even though problems are often solved independently of one another, it should be emphasized that the relations are interconnected.

Additionally, Elliott (2003) means that the complexity of supply chains has increased, which has also increased the complexity of contacts. The author thereby means that OEMs request **Single Point of Contact** (SPoC) in order to coordinate the supply chain services and lower the redundancies.

3.3.3 Customer Loyalty

Anderson et al. (2009) argue that the customers' behavior has a direct impact on the profit of the relationship towards specific customers. The authors, therefore, highlight the importance of understanding how beneficial a relationship towards a customer is and how this is dependent on several factors. Anderson et al. (2009) argue that there are different benefits of a relationship, where both the customer's loyalty and the organizational effort must be taken into account. An illustration of this is found in Figure 3.3.

The effort that the organization must put into the relationship towards the customer is described by Anderson et al. (2009) as the cost-to-serve, the transaction costs, and the profitability the relationship contributes to. A customer's position in the matrix can, therefore, be used to guide what kind of approach the organization should have towards the specific customer. Customers in the **most valuable customer** area can be met by joint investments, learning, and adaptations towards the customer needs. Further, for **partners**, where turnkey solutions often are used, it is important to serve these customers right, even though the relationship can be costly. This, since a lot of time and resources often are invested in this type of relationship. Furthermore, if the customer is not served properly, the risk of a lowered customer loyalty increases and the customer becomes an **undesirable customer** (Anderson et al., 2009). Additionally, customers can also be positioned in this area if organizations do not handle

customers in the **switcher** area properly. The switchers are especially important for the organization to recognize if they purchase large volumes. The company should then benefit from the relationship by establishing long-term contracts to increase the customer loyalty (Anderson et al., 2009).

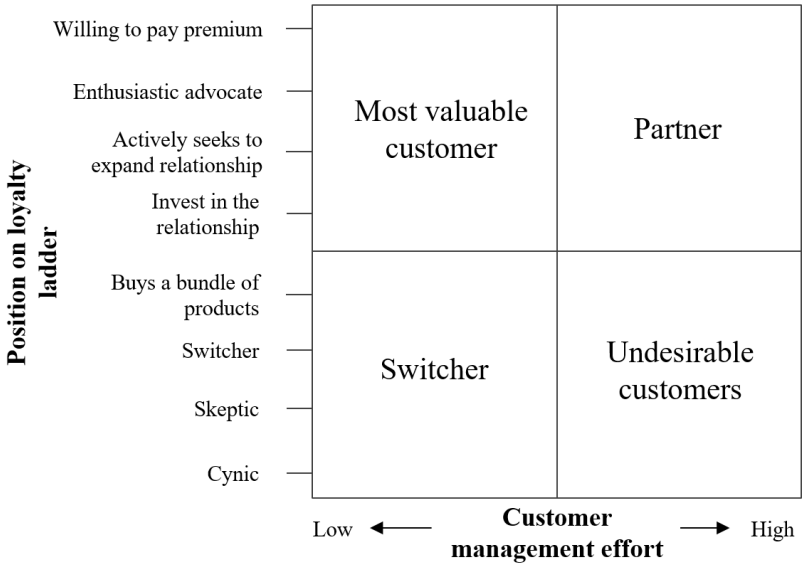

Figure 3.3: Illustration of the Customer Loyalty Ladder inspired by Anderson et al. (2009)

3.4 Business to Business Segmentation

As mentioned earlier, Hatton et al. (2017) claim that it is necessary to identify the customer needs in a business to business (B2B) market in order to decide what organizational approach that works best in each situation. The authors mean that companies tend to either have a standardized approach, where individual needs cannot be met, or a more ad hoc arrangement where each case is treated differently. Hatton et al. (2017) mean that neither of these two approaches is giving an optimal solution for the customer, but instead, companies should divide markets into different segments with regards to similarities or differences between customers, in order to better meet the needs between the different segments (Fill & Fill, 2004). With this in mind, the following sub-chapter will go in to further details about customer segmentation, where both methods and barriers for customer segmentation are described.

3.4.1 The Segmentation, Targeting and Positioning Process

Fill and Fill (2004) mean that a segmentation is justified if the characteristics within one segment differ from another and, thus, result in both better resource utilization for the organization as well as a better ability to meet the needs of the

customers. Hutt and Speh (2010) state the advantages of segmenting is enabling adapting and directing developments of product development, pricing strategies, as well as distribution channels, to suit the specific segments and the customers within them.

Moreover, Fill and Fill (2004) explain that the process of target marketing, often referred to as the **Segmentation, Targeting and Positioning process** (STP), consists of four main tasks, namely; identification of market mass, identification of various segments within the market, targeting the segments, and matching the available resources for the desired position. The process can be seen below in Figure 3.4, moving from the left to the right.

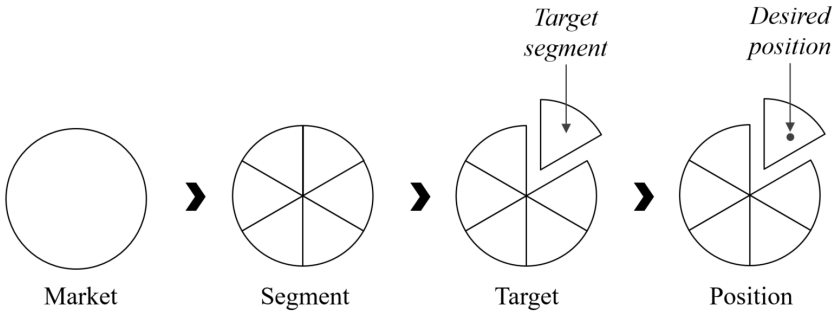

Figure 3.4: Illustration of the Segmentation, Targeting and Positioning process (STP) with inspiration from Fill and Fill (2004)

Furthermore, there are generally two main approaches for segmenting a business to business market; **breakdown method** and **build-up method** (Fill & Fill, 2004). The breakdown method is described as a method where the market is considered to have buyers that essentially are the same, meaning that there is a need to identify differences in order to cluster them into groups. Contrary, the build-up method deals with a diverse market where there is a need to identify similarities between the businesses. In parallel, Fill and Fill (2004) emphasize that the segmentation should not focus on the allocation of resources, but rather on the buyer needs and relationship requirements. Additionally, Fill and Fill (2004) stress that the identification of segments should be seen as opportunities, as the organization only has a limited amount of resources which should be used for the best possible outcome.

Validity and Reliability of Segmentation

In order to identify valid and reliable segments, there are a number of criteria which can be used as guidelines (Fill & Fill, 2004). The first criterion is that the segment should be **measurable** in order to ensure that all segments are easy to identify and measure. Anderson et al. (2009) add that this criterion is important in order to ensure that the size, growth and market potential of a segment can be measured. Secondly, all segments should be **accessible**, meaning that the buyers must be reached effectively. Thirdly, all segments should be **substantial**, implying that the

segments must be big enough to guarantee differences among them. Fourthly, all segments should be **actionable**, which addresses the organization's capability of reaching all segments. Lastly, all segments should be **compatible** with the current business strategy as well as the expected market conditions.

3.4.2 Bases for Segmentation

Markets can be divided with regards to many **segmentation attributes**, however, these factors can most often be categorized into two main categories; **macro** and **micro segmentation** (Hutt & Speh, 2010; Fill & Fill, 2004). Macro segmentation is seen as the first step of market segmentation, where the micro segmentation is performed with the macro segments as a basis (Hutt & Speh, 2010). Additionally, a more detailed approach called **nested approach** also exists, where the intermediate of macro and micro is not left out (Bingham et al., 2005). Both approaches will be further elaborated below.

Macro and Micro Segmentation

The macro segmentation can be divided into three categories (Hutt & Speh, 2010). The first category is the **characteristics' of the customer**, meaning size, geographical location, and how often the customer buys. The second category is the **product application**, which regards the customer's standard industry code (SIC) as well as if the added values provided by the product is high or low in the end-market. The last category described by Hutt and Speh (2010) is the customer's **purchasing structure**, referring to if the customer uses a centralized or decentralized structure.

The micro segmentation, which has the macro segmentation as a basis, aims to distinguish similarities and differences between the customers (Hutt & Speh, 2010). Therefore, the micro segmentation can be based on many different segmentation attributes. Nonetheless, seven attributes are described by Hutt and Speh (2010). The first attribute is the customers' **key criteria**, meaning what factor that is settling for the specific customer. Common key criteria are price, speed, and quality. The second attribute is the customer's **value strategies**, meaning if the customer uses the products to be innovative-focused, to compete in fast-growing markets, or if the customer exists in highly competitive market. The third attribute is the customer's **purchasing strategies**, reflecting the number of suppliers that the customer has for one product. The fourth attribute is the customers' **structure of the decision-making unit**, meaning what participants at the customer site that are involved in the buying process. The fifth attribute is **importance of the purchase**, this since a certain purchase can be seen as differently important with regards to a specific customer (Hutt & Speh, 2010). The sixth attribute is **organizational innovativeness**, meaning that the segmentation can be based on the customers' willingness to be innovative. The last and seventh attribute for segmentation is **personal characteristics**, meaning that the behaviors of the different customers result in that they are approached

differently.

Nested Approach

The nested approach consists of five different layers or segment criteria, which are; demographics, operating variables, customer purchasing approaches, situational factors, and personal characteristics of the buyer (Shapiro & Bonoma, 1984). The authors argue that this approach, in contrast to the macro and micro segmentation, captures the intermediate between macro and micro. The approach is illustrated in Figure 3.5, moving from the outer circle and inwards.

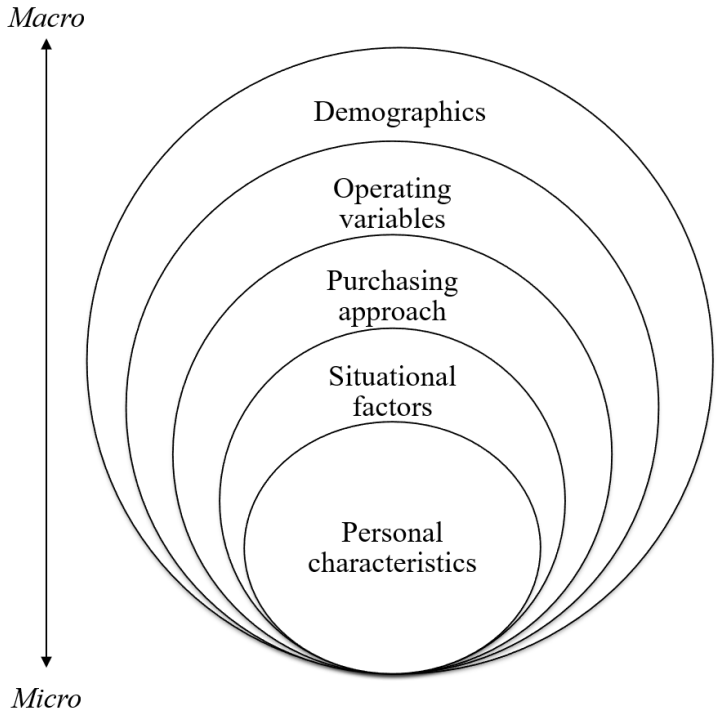

Figure 3.5: Illustration of the Nested Approach inspired by Shapiro and Bonoma (1984); Bingham et al. (2005)

The first layer, being **demographics**, is according to Shapiro and Bonoma (1984), setting the basis as it handles the general aspects such as industry, company size, and customer location. The authors mean that these characteristics are directly identifiable without visiting the customer, but still giving a general overview of the customer needs and usage patterns.

For the second layer, **operating variables**, a higher level of details are analyzed as the company technology, user-nonuser status by product and brand, and the customers' financial, operating, and technical capabilities (Shapiro & Bonoma, 1984). The authors argue that these factors add demographic segmentation to a more precise identification of current and potential customers.

The third layer, the **purchasing approach**, is consequently even more detailed and deals with the purchasing function organization, power structures, buyer-seller relationship, general purchasing policies, and purchasing criteria (Shapiro & Bonoma, 1984). The authors claim that this is the most neglected but valuable method as it gives a clear view of the company's philosophy.

The fourth layer, **situational factors**, then analyzes the factors of the urgency of order fulfillment, product application, and size of the orders. Clearly, this requires more detailed knowledge of the customers and Shapiro and Bonoma (1984) mean that the focus shifts from the customer grouping towards the purchasing situation.

Lastly, the fifth layer, **personal characteristics**, represents motivation, buyer-seller dyad, and risk perceptions (Bingham et al., 2005). This layer is hence very complex, as the characteristics concern people (buyers) and not a company, and the data collection is both expensive and difficult to perform (Shapiro & Bonoma, 1984).

3.4.3 Target Market Selection and Positioning

As follows from the STP process, the next step is to select suitable targeted segments representing the best business opportunities. The targeting should be based on a systematic analysis of the market with regards to both the market and the buyer characteristics (Fill & Fill, 2004). The authors claim that a firm with the aim to identify long-term segments needs to consider changes to the products and services, pricing requirements, alterations and investments in distribution channels.

Finally, the last step in the STP process is the positioning, which is described by Fill and Fill (2004) as the result of an activity sequence, creating the foundation of the business marketing strategy. The authors claim that it is not the physical nature of the product that matters, but rather how it is perceived by the buyer. Conclusively, the aim of the positioning is to enable the buyers and potential buyers to see the suppliers as a source of added value (Fill & Fill, 2004).

Flexible Marketing Offerings

According to Beck et al. (2012), there is a positioning opportunity in differentiating the supply chain and not only the purchased products or services. The authors argue that the whole supply chain, instead of only the focal company, must be optimized in order to gain real benefits. Furthermore, market segments can be used to target offerings in order to match the needs of the customers and the required resources (Anderson et al., 2009). If a segmentation is not applied, there is a large risk that some customers will get too much attention, and therefore be unnecessarily costly, while other customers will get too little attention, which might result in dissatisfaction. However, Anderson et al. (2009) mean that variation will always occur within a segment too, and that **Flexible Marketing Offerings** (FMOs) can be used to meet the specific customer needs in each

segment as much as possible. Further, Anderson et al. (2009) emphasize that FMOs are not similar to customization. Instead, the concept is based on a naked solution with options that the sales personnel can provide to the customer. This means that a service can be offered as a standard, an option, or not at all, in order to match the segments' needs and requirements. The application of FMOs is exemplified in Table 3.1.

Table 3.1: Examples of FMOs with inspiration from Anderson et al. (2009)

Market Offering Element	Transactional Segment	Strategic Segment
Product returns	standard	standard
Technical assistance	option	option
Single-Point-of-Contact	not offered	standard
Executive perspectives	not offered	standard
Price deals	standard	standard

Similarly, Heikka, Frandsen, and Hsuan (2018) state that it can be difficult for a supplier to match the provided services with a specific customer need, and that service modularity, therefore, plays an important role. Service modularity enables organizations to adjust the service offering to a customer in a cost-efficient way and thereby reduce the complexity (Heikka et al., 2018). According to Jancenelle (2017), service modularity further combines the benefits of both standardization and customization. Sundbo (2002) describes these benefits as economies of productivity and economies of expectations respectively, and the author, therefore, means that service modularity is both economically beneficial for the organization, as well as beneficial for the organization's customer satisfaction.

3.4.4 Barriers to Segmentation

According to Fill and Fill (2004), the main reason why the implementation of a segmentation fails can be derived from three different barriers; **infrastructure**, **process**, and **implementation**. The infrastructure barriers concern the resources, culture, and structure which can limit the process from starting or being completed. The process barriers are those reflected by lack of guidance and experience for how the segmentation should be carried out and managed. In addition, Bingham et al. (2005) mean that a common mistake is to only segment current customers, which means that customers that are left out at this stage are not targeted and potentially advantageous relationships might, therefore, be missed out. Lastly, the implementation barriers are more practical barriers for how to move towards the new model (Fill & Fill, 2004).

As mentioned earlier, Fill and Fill (2004) mean that there are a number of criteria that can be used in order to ensure valid and reliable segments (see sub-chapter 3.4.1). In addition to this, the authors argue that the barriers for segmentation

mentioned above can be overcome if the five different criteria are considered. In other words, Fill and Fill (2004) claim that the only way to conquer the potential barriers of a segmentation, is to ensure that each segment is measurable, accessible, substantial, actionable, and compatible.

3.4.5 Segmentation Maintenance

In order to further ensure that a segmentation is valid and up to date, Fill and Fill (2004) mean that a segmentation must be maintained. This, since customer needs are dynamic and change over time (Kano et al., 1984). Russell (2015) explains that the foundation of process maintenance contains seven different steps. The first step is to identify the process, meaning highlighting and explaining the process in order to assure that everyone understands the problem. The second step is to state potential problems in the process, this to not draw conclusions too fast. After stating problems, the third step according to the author is to list the problems that are seen as most likely, meaning searching for trends. Thereafter, the fourth step is to brainstorm and develop possible solutions to the most likely problems. Once solutions have been developed, the fifth step is to select and implement them. When the solutions have been implemented, the sixth step is to follow up the solutions and to review the effects of them. If the solution was seen as successful the seventh step is to standardize the solution, while if not other actions must be taken. Furthermore, Russell (2015) states that these seven steps can be described in a four-step model, the plan-do-check-act model, which is a continuous process. The author further describes that this model is a way to work with continuous improvements and use previous knowledge and lessons.

3.5 Research Questions

In order to achieve the aim, four questions with different areas of focus have been developed. To remind the reader of the aim of this Master's Thesis, it is presented below.

The aim of this study is to propose a customer segmentation structure for Volvo Penta, in order to match different customer needs with supply chain services. Additionally, the study also aims to examine how the customer segmentation can be made applicable for Volvo Penta.

In order to accomplish the aim of this study, the following questions will be answered:

1. How are customers currently approached with regard to supply chain services?
2. What segmentation attributes should the customer segmentation be based on, in order to differentiate customer needs of supply chain services?
3. What supply chain services should be accessible to the different customer segments, in order to match the customer needs within the segments?
4. What is needed in order to make the customer segmentation applicable?

3.6 Application of Theory

As a guide for the reader, this sub-chapter will now describe how the theoretical framework was applied in the Master's Thesis in order to answer the research questions and achieve the aim.

As seen below in Figure 3.6, the plan of the process for the project was to first examine and understand the current supply chain strategy at Volvo Penta. This was done with help from the theory of different supply chain strategies and also different customer needs. As has been mentioned earlier in the chapter, customer needs differ and therefore also the requirements that must be met in order to satisfy the customer. For this first step, a deeper understanding of the customer relationships at Volvo Penta was also needed in order to understand the background of the current supply chain strategy.

As a second step in the process, the project aimed to identify segmentation attributes. These attributes were identified with help from theory about B2B segmentation, which has been mentioned as the STP process earlier in the chapter, as well as theory of bases for segmentation. It was also considered as important that the attributes that were developed were measurable, so that the customer was positioned in the right segment. By having measurable segments, a higher degree of validity and reliability could be achieved and the possibility to overcome the barriers of segmentation also increased as the segmentation was not subjective.

The third step dealt with how the supply chain services should be matched with the identified segments. This was done by theory about the components of supply chain services as well as theory of Flexible Marketing Offerings (FMOs) and service modularity. These theories together with theory of customer needs from the first step acted as a base for developing a solid structure.

The fourth and last step of the project was to examine what was needed in order to implement and maintain the segmentation. In order to make the segmentation as useful as possible, the segments were also branded in order to improve the visibility and understanding of the customer needs. This meant that the different segments were given names, which was done with help from theory about personas. Additionally, the applicability of the segmentation analyzed and suggestions of a process was developed by theory from process maintenance, with a focus on continuous improvements in order to keep the segmentation up to date.

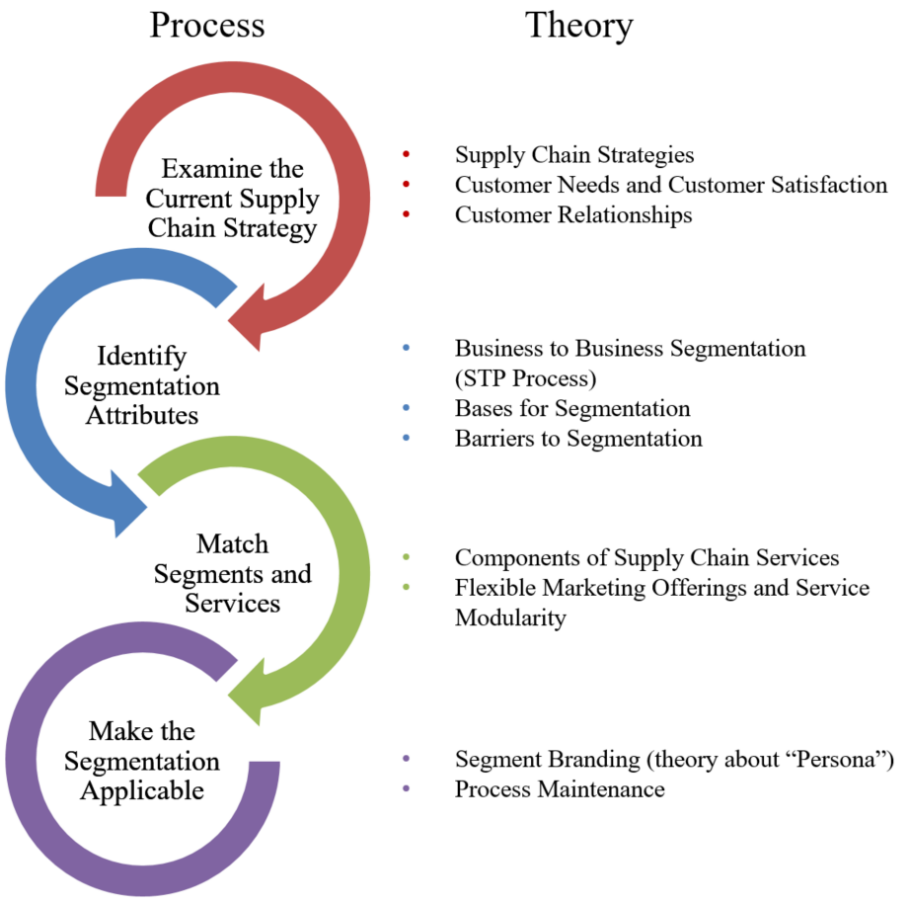

Figure 3.6: Illustration of how the theoretical framework will be applied in the project

4
Methodology

This chapter describes how the Master's Thesis project has been structured and what methods have been used. The methodology chapter, therefore, aims to give the reader a good understanding of the research process and also a detailed description and motivation for the choices of data collection methods.

4.1 Research Process

The process for this Master's Thesis has followed the structure suggested by Saunders et al. (2009), which is seen below in Figure 4.1. It should be emphasized that the process has been iterative, which is also confirmed by Saunders et al. (2009) to be normal as each revisit takes reflection in order to improve previous ideas. Thanks to the process being iterative, the project also became more clear over time. Additionally, the work of the thesis has been equally divided among the two researchers throughout the research process.

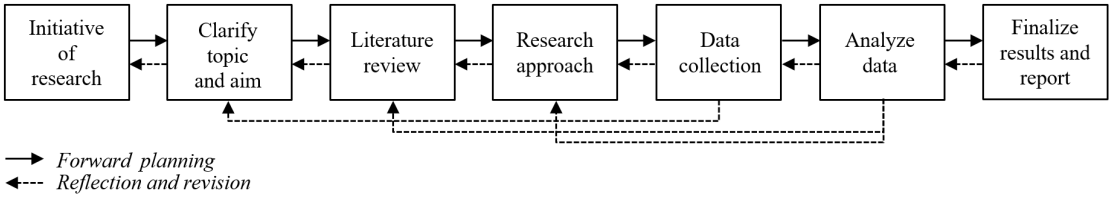

Figure 4.1: An illustration of the research process inspired by Saunders et al. (2009)

4.1.1 Initiation of Research and Research Approach

As seen in Figure 4.1, the process for the thesis started in the initiation of the research. The initiative was taken by Volvo Penta, who requested students for the project. As the project then started, a clarification of the research topic was made. Thereafter, previous research were reviewed in order to understand the relevance of the chosen topic. Further, the process continued in a critical review of the literature, which was found in databases such as Chalmers Library, Google Scholar, and Scopus. The literature was reviewed on criteria such as relevance, theory robustness, and argumentation quality.

Further on, understanding the research approach was in focus, which included a decision for what type of approach to use for the research. Different types of research approaches were analyzed and since the abductive approach is described by Kovács and Spens (2005) as a concern of the particularities of a specific situation that deviates from the general structure, and also where the usage leads to new insights for already existing phenomena, this approach was chosen.

4.1.2 Data Collection

As the research approach had been chosen, a series of data collections followed, which contained interviews, collection of secondary data, observations, an internal questionnaire, and samplings. For the collection of data, different methods where used depending on the type of data. According to Saunders et al. (2009), there are two types of data; primary and secondary data. Primary data is described by the authors as new data that is collected by the researchers for the purpose of the research, while secondary data has been collected for another purpose. For this Master's Thesis, the primary data has been collected through interviews and a questionnaire. The initial interviews were conducted with the aim to get a broad understanding of the organization as well as an in-depth understanding for the thesis' topic, which was why the predetermined questions where sometimes deviated from, and it was rather a discussion. This interview structure is, according to Saunders et al. (2009), called semi-structured interviews and the authors also confirm that the characteristics of the structure support the interviewers' understanding of the area. The samplings of participants for the interviews were done in accordance with the supervisors at Volvo Penta, who compiled a list of employees with a great and broad knowledge of the organization. The interviews were further recorded, but not transcribed. Saunders et al. (2009) mean that interviews should be recorded if allowed by the interviewee in order to allow the researchers to revisit important parts of the interview. The authors do however mean that transcribing is very resource demanding and that this should only be done if necessary.

Furthermore, as a broad understanding of the organization had been acquired, several participants from earlier interviews were met again, in order to concentrate on the specific topic of customer segmentation. Also this time, the interviews were semi-structured, meaning that questions were predetermined but could be deviated from if needed. This part of the data collection was especially important for the study, as crucial information for the segmentation attributes were gathered. Templates for the interviews can be found in Appendix A.

Thereafter, the intention was to collect data of the actual customer needs. The initial idea was to firstly perform interviews with the sales force in order to compile a list of potential customer needs from a supply chain service perspective and thereafter contact the customers directly with a questionnaire to map their actual needs. However, due to limitations in time and inconveniences in the

availability of the sales force, this could not be done. Instead, an internal questionnaire for employees at Volvo Penta was conducted, where employees with good customer knowledge were contacted. In this sense, the questionnaire was performed in order to identify different patterns of what the employees at Volvo Penta thought were the customer needs that should be fulfilled. The questionnaire was, therefore, designed with ten questions, where the first question concerned the employee's department. This enabled the researchers to create an idea of the response distribution. After that, eight questions followed by the eight segments that had been worked out in the study. Each of the eight questions then described the characteristics of a segment and the participant was asked to fill in the needs that the customer was considered to have. On each question, eight potential needs were stated and each need could be given one of the following answers: "Never", "Sometimes", "Always", "Don't Know", and "N/A". Finally, in the tenth question, the participants were asked to state at least three characteristics of a strategic customer. The questionnaire templates can be found in Appendix C. The logic of identifying patterns by using questionnaires is also supported by Saunders et al. (2009). On the other hand, Williams and Buswell (2009) mean that the customers themselves should be approached in order to avoid assumptions. Still, since this was not possible in this study, the questionnaire has worked as guidance in the argumentation. Furthermore, the questionnaire was developed as an iterative process, where both supervisors at Volvo Penta and the supervisor at Chalmers University of Technology reviewed the questionnaire and gave feedback. Additionally, five different employees at Volvo Penta tested the questionnaire and gave their input. In this way, the questionnaire was improved several times in order to be as clear as possible for the participants.

The sampling of participants for the questionnaire was further made by contacting managers at Volvo Penta and asking for personnel with high customer knowledge. In total, the questionnaire was sent out to 90 employees globally, within the areas of Sales, Customer Service (Front Office), and Process Management and Supply Chain Development. Further, out of the employees that received the invitation to the questionnaire, 61 persons opened the questionnaire out of which 35 persons finished it. According to Saunders et al. (2009), the response rate should exclude the ineligible respondents who, despite several attempts, have not been reached. For this study, one introductory email was first sent out to give notice of the coming questionnaire, which was later sent in a second email. After this, two reminders were sent to all respondents who had, at the time, not finished the questionnaire. When considering the employees that did not open the questionnaire as unreachable, that is 29 persons, the respondent rate of the questionnaire was 57,4%. The division of the respondents positions is found in Appendix D.

4.1.3 Quality Assurance of Collected Data

Saunders et al. (2009) mean that there are some difficulties while collecting primary data through interviews, since the collected data might be biased or unreliable due to a lack of standardization in the prepared questions. These kinds of quality issues have been overcome by asking different employees similar questions and thereafter verify similar answers. According to Saunders et al. (2009), this is a quality assurance where the reliability of the data is secured. Reliability refers to the extent to which the techniques and analyses performed on the data will give consistent findings if it is performed again (Saunders et al., 2009). Also, the authors mean that the main threat to reliability is the subject or participant bias and/or error. Only in rare cases, interviews were performed in groups of two or more employees and they might have biased each other, however, the risk for this was not considered as serious. Additionally, the quantitative data has worked as a reliability control for the qualitative data. In connection with this, it should also be mentioned that the persons who have been interviewed or responded to the questionnaire during the work are kept anonymous with regard to research ethics and their rights to stay anonymous (Saunders et al., 2009). Only on a few occasions are titles mentioned and this is in agreement with the person or persons concerned. The titles are mentioned to increase the credibility of the data presented and no valuation is added in the title itself.

Moreover, secondary data has also been used for this Master's Thesis as a compliment for primary data. The secondary data has been collected when it would be too resource demanding to gather all data, or to validate the collected primary data. For instance, secondary data for all customer orders that were placed and billed during 2017 and 2018 was collected and compared. By comparing the different years, it was clear that the data was stable and without any big differences. This principle is supported by Saunders et al. (2009), which further describe that data can be either raw or compiled, meaning that the data can be processed or not when it is collected for the research. In the data collection for this Master's Thesis, both raw and compiled data have been used. The raw data represents customer specific sales data, for instance volume, purchasing dates, and number of configurations. Meanwhile, data of the purchasing pattern, for instance order changes and forecasts, was data that had been processed.

4.1.4 Analysis of the Collected Data

After the data collection, the data was analyzed in order to be comprehensible. Depending on what type of data that was analyzed, that is qualitative or quantitative data, the methods for analyzing the data differed. Qualitative data is data that has not been quantified or which is non-numeric, and which consequently needs to be analyzed and compared to theory for a deeper understanding and this type of data is typically collected by interviews (Saunders et al., 2009). For this Master's Thesis, the data which was collected by interviews was analyzed by conducting workshops with supervisors and other employees at Volvo Penta as well as the supervisor from Chalmers University of Technology.

Contrary, quantitative data is numerical or categorical, which means that it often needs to be processed and analyzed with different techniques, such as charts or tables, in order to make sense (Saunders et al., 2009). These types of techniques where used for the secondary data that was collected, in order to visualize patterns and trends in the data. For the questionnaire, the data was analyzed by similar techniques.

4.1.5 Verification and Validation of Results

According to Saunders et al. (2009), verification is the act of reviewing the results, while the validity is the degree to which the findings are really about what they appear to be. The authors mean that data, or a result, with a high degree of validity has no other explanation than what it appears to be. This Master's Thesis has first and foremost verified and ensured a high validity through repeated feedback with the supervisors and experts at Volvo Penta and also by an iterative theory work. This has especially been applied for the most critical parts of the thesis, such as the internal questionnaire, extra important interviews, verification of attributes and attribute levels, and the final distribution of the customers between the segments.

Furthermore, two different methods of validation of the segmentation and the attribute levels were performed. The first validation was based on answers from the questionnaire, where the respondents had specified one current customer per segment, that is one customer with the characteristics mentioned in the question. At the time of the questionnaire, however, there were no numerical attribute levels, which meant that, for example, the level for "high business value" became arbitrary. For this reason, the first validation was not considered good enough, although there were many similarities between the respondents' specifications and the final segmentation. Therefore, a second validation was made in accordance with one of the supervisors at Volvo Penta. Samples of customers within each segment were picked and compared to the internal expertise on where the customers should be placed. The supervisor examined the different segments, as well as samples of the customers' position in each segment, and thereby verified that the segmentation structure could differentiate different customer needs from a supply chain service perspective.

Lastly for this study, results were compiled and the report was completed. A presentation was also held at Volvo Penta, where all of the interviewees and other interested employees were invited to participate.

5

Empirical Findings

This chapter presents the empirical findings gathered from interviews with employees of Volvo Penta, as well as findings from the internal questionnaire. The structures for the interviews can be found in Appendix A and the questionnaire template in Appendix C.

5.1 Supply Chain Services

Currently, there are different supply chain services offered by Volvo Penta in order to handle and deliver customer orders. Also, most customers are handled through standard processes. However, to suit more specific needs and requirements from different types of customers, Volvo Penta has developed special supply chain services for a small number of customers. These solutions have been developed as special cases and are, as a result, supported manually by processes. The manual setup means extra work when it comes to planning and coordinating and it must hence be financially supportable to operate these kinds of adaptions. This generally means that the customers who are served with these services buy high volumes, but there are no other firm requirements.

Historically at Volvo Penta, the approach of how to handle customers has been characterized by providing all customers with the required amount of service to deliver value and obtain high customer satisfaction. This means that customers with specific needs have been handled ad hoc with special supply chain services. Additionally, as no formal customer segmentation has been carried out, there is no standard for which type of services a particular type of customer should be offered.

To be able to match a supply chain service with a customer need, the researchers of this study divided the different supply chain services, compiled from interviews with employees at Volvo Penta, into four categories. The four categories are time, flexibility, dependability, and communication, and can be seen in Table 5.1. The following sub-chapters provide a further description of the different categories and supply chain services compiled from interviews.

Table 5.1: Description of the different supply chain services provided by Volvo Penta, divided into four categories described by Rushton et al. (2016)

Time	Flexibility	Dependability	Communication
Priority	Order changes	Return packaging	Single-point-of-contact
Mode of transport	Return material	Track and trace	Self-service portals
Delivery precision	Expanded assortment	Pre-assembly	Order entry
Service hours	Local assortment		
Authorized stock	Production material		
Dedicated stock	Special labeling		

Time

Different **priorities** can be given to different customers with regards to production planning or order fulfillment. This results in that different customers can be given priority in order to shorten the lead times. In order to be able to offer short lead times to customers, changes in the **mode of transport** must sometimes be made. Such changes are often performed to minimize the risk of late delivery to the customer when Volvo Penta is responsible for delayed production. But, of course, Volvo Penta wants to keep these changes in mode of transport as few as possible, as it often comes with higher costs and a greater environmental impact. Further, Volvo Penta uses **delivery precision** to be able to measure on-time delivery and, therefore, different customers can be given different levels of delivery precision. Customers are also offered different amounts of **service hours**, depending on the type of customer and market.

Additionally, a group of customers is today also offered a shorter lead time by different storage solutions. The solutions mean that fast deliveries of special products for chosen customers are secured. One type of solution is the **Authorized Stock Engines** (ASE), where the customer requests configurations, which are put into Volvo Penta's stock. The solution means that engines are manufactured as Make-To-Stock (MTS) and later stored without being dedicated to a specific customer. Another solution for some prioritized customers is the **dedicated stocks**, meaning that the stock is held by Volvo Penta for the specific customer. The number of dedicated stocks is very few, as these customers must have approval from the board since this is a resource demanding solution.

Flexibility

In order to provide the customers with flexibility, Volvo Penta offers different supply chain services. For instance, some customers make **order changes**, even after the orders are frozen. Such changes might concern the mode of transport, postponement of order, or changes in order lines. Also, after a customer has received a delivery, changes can be made, i.e. the **return material** service. The assortment customers are provided with can vary depending on the type of customers and location of the customer. Meaning, some customers are offered an

expanded assortment, e.g. products or components, and some customers are offered a **local assortment** depending on geographical location. Another adapted service is the delivery of **production material**, instead of the regular delivery of product kits. The different components are delivered separately in batches in order to suit the specific customer's production set-up. Furthermore, on request from a few customers, **special labeling** for unique identifications have been developed. The labels cause extra manual work in the processes.

Dependability

One adapted service concerns the packaging, which is generally disposable, but in some rare cases are replaced with steel racks in order to offer **return packaging**. The racks are transported in a loop between the customer and Volvo Penta. Currently, there are approximately five customers who have this set-up. There are also special packaging solutions offered for some customers. **Track and trace** of orders is another service provided, this in order to enable visibility for customers. Furthermore, **pre-assembly** is currently offered to a few customers, meaning that the production at Volvo Penta is to some extent temporarily adapted to pre-assemble the customer-specific product.

Communication

Volvo Penta provides different services to improve communication to its customers. One service is **single-point-of-contact** (SPoC), where customers have one key person to turn to what concerns the supply chain. Customers can also be offered **self-service portals**, where the customers themselves can view the order, and handling process. There are furthermore different **order entries** for customers to place orders, namely Demand Schedule, Prosales, or through EDI (Electronic Data Interchange). Regarding Demand Schedule, this is a long-term planning tool where big OEMs place forecasts, which Volvo Penta later transfer to purchasing orders. This means that the customers that are offered to utilize the software Demand Schedule, can leave forecasts and place orders directly in Volvo Penta's system. Contrary, Prosales does not utilize forecasts, but this is an in-house system at Volvo Penta, where sales personnel create and place orders. Additionally, EDI can only be used when the customer is compatible with it.

5.2 Segmentation Attributes from Interviews

At interviews held with employees at Volvo Penta, several attributes to use for a segmentation have been suggested. All of these suggested attributes can be found in Appendix B. However, those attributes that were found interesting from a supply chain service perspective are presented in this sub-chapter.

One of the attributes that have been mentioned most frequently is **volume**, that is the number of engines sold to a specific customer per year since differences in purchasing volumes tend to give the customer a certain service level from Volvo Penta. This is also related to the second most mentioned attribute, which is the **profit** made on sales to a specific customer. In relation to this, the **potential profit** for a customer has also been suggested as an attribute, as well as the **current pricing model** with ranked customers. Hereafter, the frequency of the attributes are equally distributed and the mentioned order should, therefore, not be considered.

Another mentioned attribute is the **customers' maturity** in communication, industrialization, IT, and finance, where the capabilities of the customers are viewed and ranked. The **region** where the customer is located has also been suggested as an attribute, as this describes the geographical location and also a part of the supply chain network. Similarly, the existing **business areas** have been suggested as the products give the customer specific needs related to the supply chain operations. In addition to this, the customer **requirements of performance**, such as uptime or productivity, have been suggested by interviewees. **Purchasing pattern** is a further attribute mentioned at interviews, meaning the volatility of a customer's purchasing behavior, such as volumes, order flexibility, and forecast accuracy.

Furthermore, it has also been suggested that the **production setup** at the customer should be considered, that is if the customer has a line production with a need for Just-In-Time (JIT) deliveries and **batch supplies** or a fixed layout with the need for **prepared kits**. Also, it has been suggested that the segmentation should consider if the customer **purchase towards stock** or for **production**, which could be exemplified with the difference between an OEM and a dealer.

Attributes that considered the future were also mentioned as proposals, including the customer's **willingness to be sustainable**. This could, for example, mean that the customer is willing to wait longer for an order delivery if it is done with a more environmentally friendly means of transport.

Lastly, the **risk of the business** considering the **financial stability** of the customer and also the **variation in product purchases** have been suggested during interviews. The risk of the business has been suggested in the context of ensuring that Volvo Penta gets paid for what is actually produced, while the later attribute of product variation considers the stability and predictability between different purchases from the same customer. It was further emphasized during interviews that ownership is important, meaning that someone needs to be responsible for managing the segmentation in order to sustain a useful segmentation.

5.3 Internal View on Customer Needs

At this point in time, the reader should be reminded that this study has been iterative and that the report does not follow the same logic as the study. For this reason, the findings presented in this sub-chapter are based on the analysis made in Chapter 6, where the attributes of the segmentation are analyzed. However, in order to understand this sub-chapter, the reader should be somewhat familiar to the eight different segments elaborated in this study and these are therefore presented in Table 5.2. The table shows the different segments and its respective level (high/low) in each of the three segmentation attributes. A green colored arrow means that the customer characteristic is beneficial for Volvo Penta, while a red colored arrow indicates the opposite. The first attribute is the **product variation**, which describes if the customer has a high or low variation considering the number of product configurations per purchase volume. The second attribute is the **business value**, which describes if the customer has a high or low gross profit. The third and last attribute is the **purchasing pattern**, which describes if the customer is predictable or unpredictable considering reliable forecasts and number of order changes per total number of customer orders.

Table 5.2: The eight different segments elaborated in this study and their respective level of the three segmentation attributes

Attributes / Segments	Product Variation	Business Value	Purchasing Pattern
Segment 1	↑	↑	↓
Segment 2	↑	↓	↓
Segment 3	↑	↑	↑
Segment 4	↑	↓	↑
Segment 5	↓	↑	↓
Segment 6	↓	↓	↓
Segment 7	↓	↑	↑
Segment 8	↓	↓	↑

Furthermore, this sub-chapter presents the findings from the internal questionnaire that was conducted at Volvo Penta in order to understand the internal view on customer needs for supply chain services (see Appendix C for Questionnaire Template).

Additionally, it should be mentioned that one of the respondents contacted the researchers and informed its opinion, from who's perspective all customers have the same needs, regardless of the customer characteristics. For this reason, this participant notified the researchers that its questionnaire had been given the answer

"N/A" to all questions. This means that one of 35 participants answered "N/A" on all questions.

5.3.1 Findings from the Questionnaire

In the questionnaire, eight different needs were examined together with eight different customer segments. As described earlier in chapter 4, each need for every segment could be given the answer "Never", "Sometimes", "Always", Don't know", and "N/A". As seen in Figure 5.1, the eight different customer segments that have been suggested in the study are presented on the x-axis and the findings from the questionnaire, what concerns the first need **order flexibility**, are displayed on the y-axis. In the questionnaire, order flexibility was explained to the participants as the need to make late and/or frequent order changes. Practically, this means that changes are made by the customer on an already placed purchasing order. Today, changes are done both before and after the order is frozen in the Master Production Schedule, and both of these changes create big problems for the supply chain.

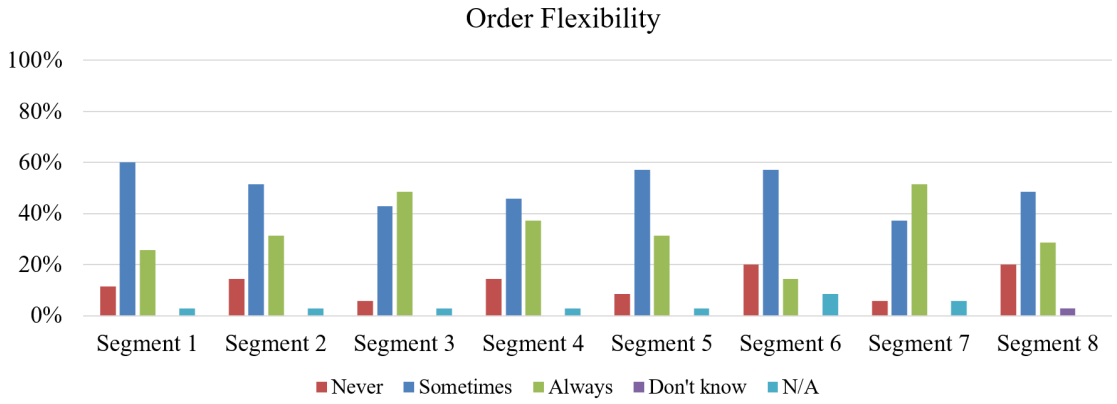

Figure 5.1: The findings of the need "Order Flexibility" displayed with regards to the eight suggested customer segments

Furthermore, findings from the questionnaire for the second need **availability** is found in Figure 5.2. In the questionnaire, the respondents were explained to the need for availability as the need for short lead times. This means that the customer has the need to receive the order within a shorter lead time than the standard. The standard lead time is not definite throughout Volvo Penta since it is Make-To-Order, but is rather depending on the product and order as a whole. The need of availability could, however, mean that services such as stock keeping are needed.

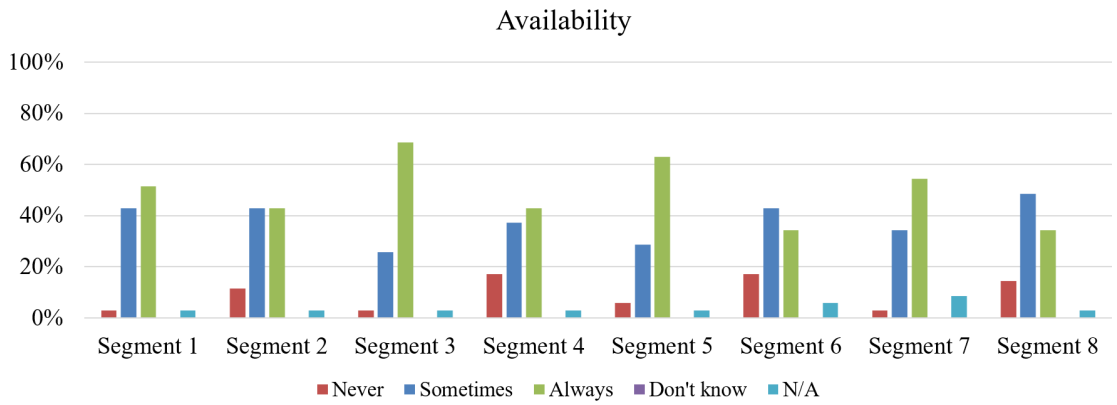

Figure 5.2: The findings of the need "Availability"

Moreover, Figure 5.3 displays the findings for the third need, **on-time delivery**. On-time delivery means that the order is delivered as promised to the customer. In practice, this means that other modes of transports can be used if the production is running late.

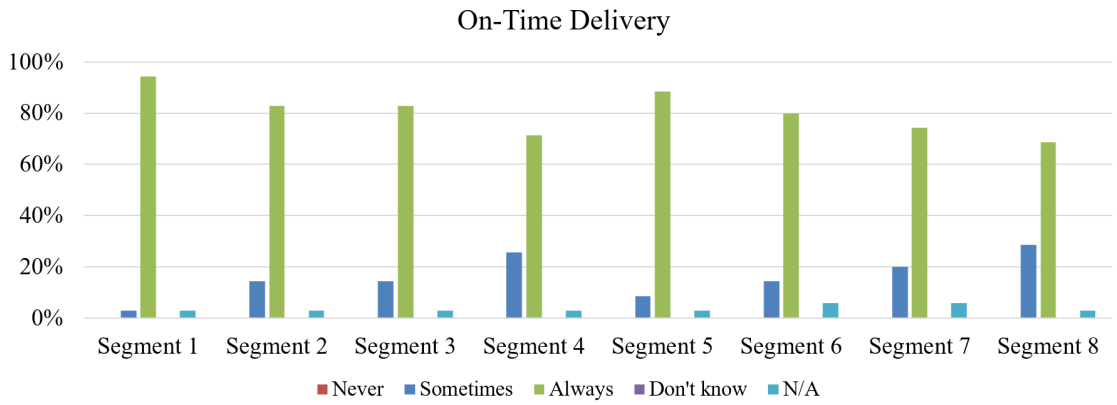

Figure 5.3: The findings of the need "On-Time Delivery"

Likewise, in Figure 5.4, the findings from the fourth need **reduced uncertainty through increased visibility** are shown. In the questionnaire, the need was explained to the respondents as the need to have transparency in Volvo Penta's production planning, inventories, and transportation.

The fifth need that was examined in the questionnaire was the need for an **extended assortment**, which means that the customer needs something that is originally not offered by Volvo Penta. Practically, this could for instance mean that product assortments from other parts of Volvo Group are used. The findings of the need are presented in Figure 5.5.

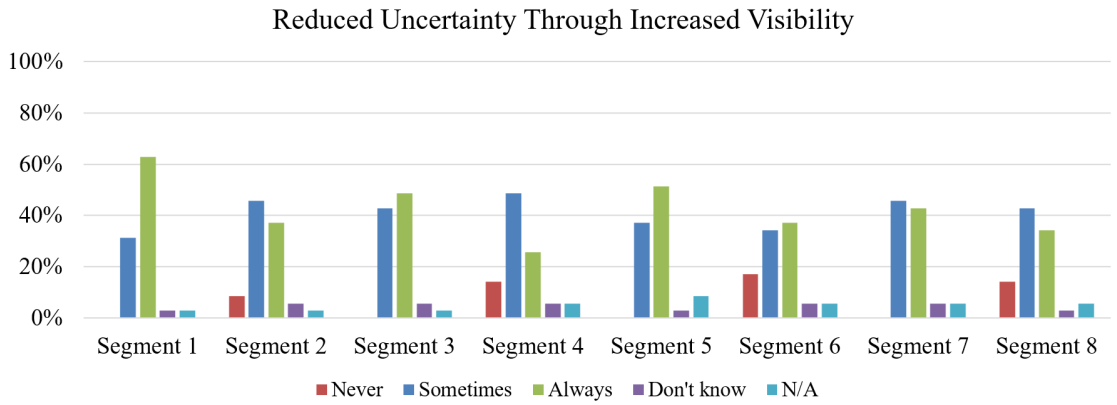

Figure 5.4: The findings of the need "Reduced Uncertainty Through Increased Visibility"

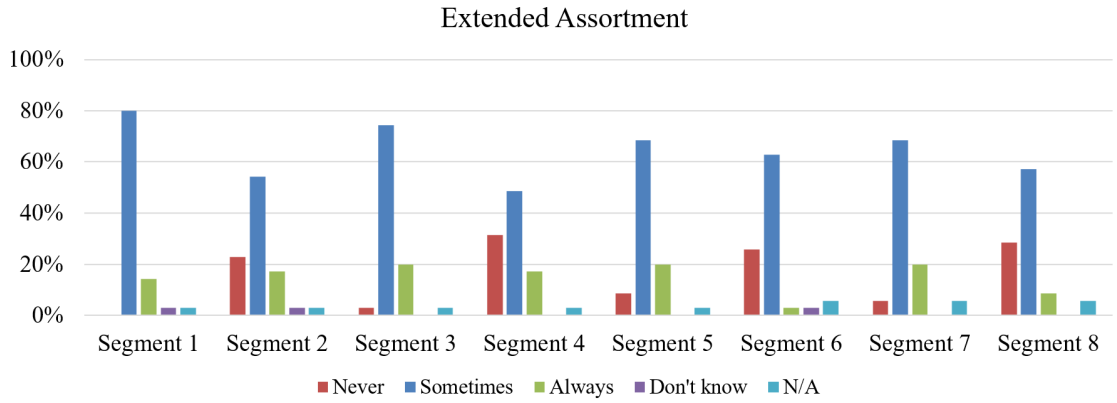

Figure 5.5: The result sorted with regards to the need "Extended Assortment".

The sixth need that was examined in the questionnaire was the need for **access to supply chain support**. This need means that the customer needs a single point of contact (SPoC) in order to get a better overview of the current status of the order, which for instance could be the case for complex supply chains or valuable goods. The findings of this need are presented in Figure 5.6.

The seventh need in the questionnaire that was examined for all eight segments was the need for **batch delivery**. Internally and in the questionnaire, this is explained as "driveline components delivered in batches", which means that deliveries are done on component level and in high volumes. The findings can be seen in Figure 5.7.

The eighth and last examined need in the questionnaire was the **kit delivery**, which is the opposite of the previously mentioned need for batch delivery. A kit delivery is internally explained as "complete driveline installation delivery", which means that components are delivered together in modules. The findings can be seen in Figure 5.8.

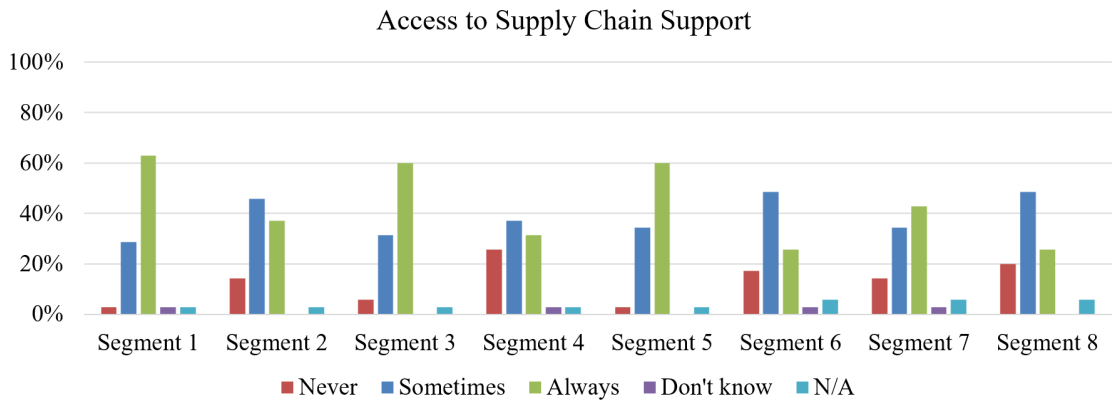

Figure 5.6: The result sorted with regards to the need "Access to Supply Chain Support"

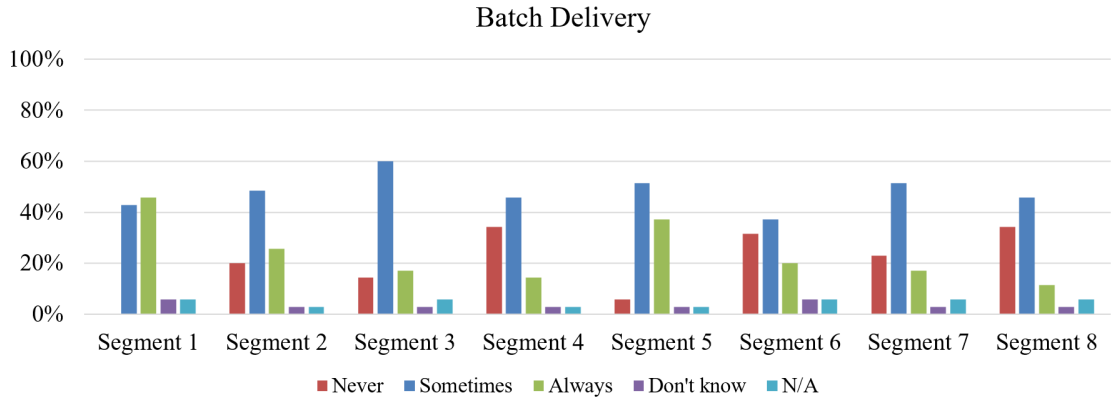

Figure 5.7: The result sorted with regards to the need "Batch Delivery"

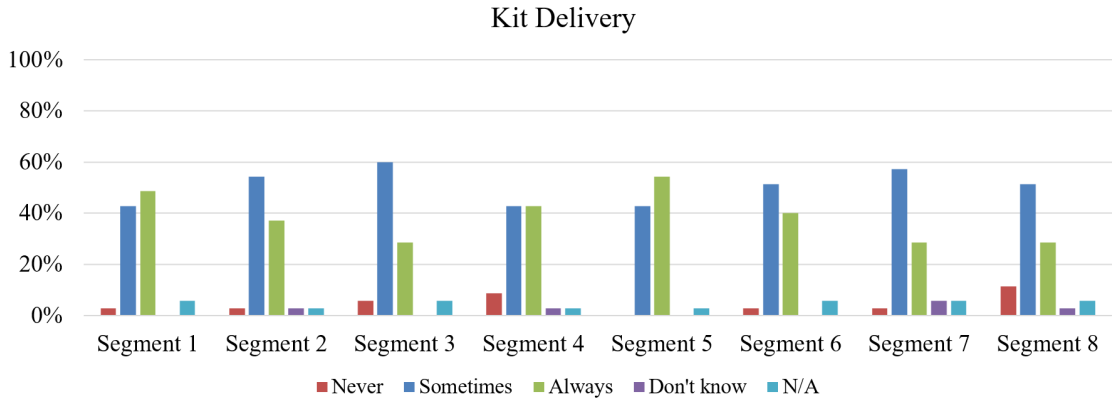

Figure 5.8: The result sorted with regards to the need "Kit Delivery"

5.3.2 Strategic Customers and Related Findings from the Questionnaire

Throughout the interviews that have been held with employees at Volvo Penta, it has been clear that some customers are considered by the employees to be strategic customers. These customers have been described as **trendsetters** with a **global presence**, **purchasing large volumes**, and with **high profits**. However, the documentation of which these customers are and why these are selected as strategic customers does not exist, meaning, there is no definition of strategic customers. Accordingly, this study brought attention to the fact that Volvo Penta does not have a common view of which customers are strategic. This was seen as an interesting finding by the employees at Volvo Penta and, therefore, a workshop was arranged to highlight these findings and to start a discussion about how to define strategic customers.

From the workshop, it was clear that there are at least four different categorizations of customers at Volvo Penta, which came as a surprise for the representatives at the workshop. The different customer categorizations are used in different internal systems, which are not completely compatible, or only used by some departments. During the workshop, data regarding the distribution among the different categorization was presented. For instance, one of the categorizations named Business Partner Potential Category ranked the customers from A to D. In this categorization, the A-customers, meaning the prioritized customers in this A-D categorization, constituted for 30% of the total number of customers. This results in that the categorization cannot work as a prioritization tool for production, since too many customers are considered A-customers, and prioritization must therefore be done among these customers. The participants at the workshop argued that the large number of A-customers could be a result of that no strict measurable qualifiers have been used, but instead sales personnel have, to some extent, been in charge of categorizing their own customers. In addition, the workshop also showed that there is additionally one categorization for pricing called Customer Category, another prioritization categorization in the CRM (Customer Relationship Management) tool, and also an old categorization called Customer Prio. It should also be mentioned that the internal view of how and to what extent that the customers should be served differed between the employees. The representatives from the operational departments had a focus on cost efficiency, while the representatives from the sales department had a higher focus on increasing the revenue.

Additionally, the internal view of strategic customers was examined in the questionnaire. In the questionnaire, the participants were asked to provide at least three attributes that in their opinion described a strategic customer. The compiled attributes were widely spread and in total 35 different suggestions of attributes were collected. The most frequent attributes that the participants of the questionnaire suggested are presented below in Figure 5.9. Attributes that were suggested fewer than five times are not included in the figure, however, all

attributes can be found in Appendix D.

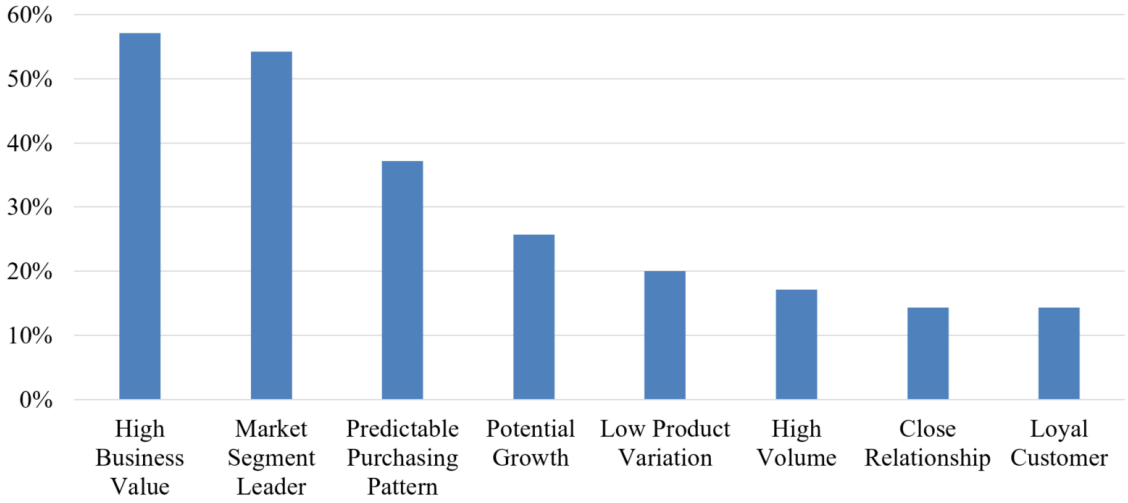

Figure 5.9: A compilation from the questionnaire of the most frequently suggested attributes for strategic customers

5.4 Data for Segmentation Attributes

This sub-chapter presents the data used to decide the numerical levels for the segmentation attributes. The chapter is divided with regard to the three attributes; product variation, business value, and purchasing pattern.

5.4.1 Numerical Levels of Product Variation

Together with the Global Inventory Manager at Volvo Penta, the researchers of this study discussed the impact of customers' product variation on supply chain services. In Figure 5.10 below, the distribution and share of customers and the respective level of product variation is illustrated. As mentioned earlier, the product variation is the first attribute and it describes the customer's number of product configurations per purchased volume. Since the data for this attribute covers all orders purchased during one year, the attribute further distinguishes customers that always purchase unique products and customers repeatedly purchasing a number of configurations. To assure that there is not a mix of different levels of configurations within the same segment a separate verification was made. For instance, customers purchasing unique products in each purchase and customers purchasing the same configured products yearly should not be in the same segment. The verification showed that 92% of the customers purchase more than once a year, which means that the attribute gives the correct division.

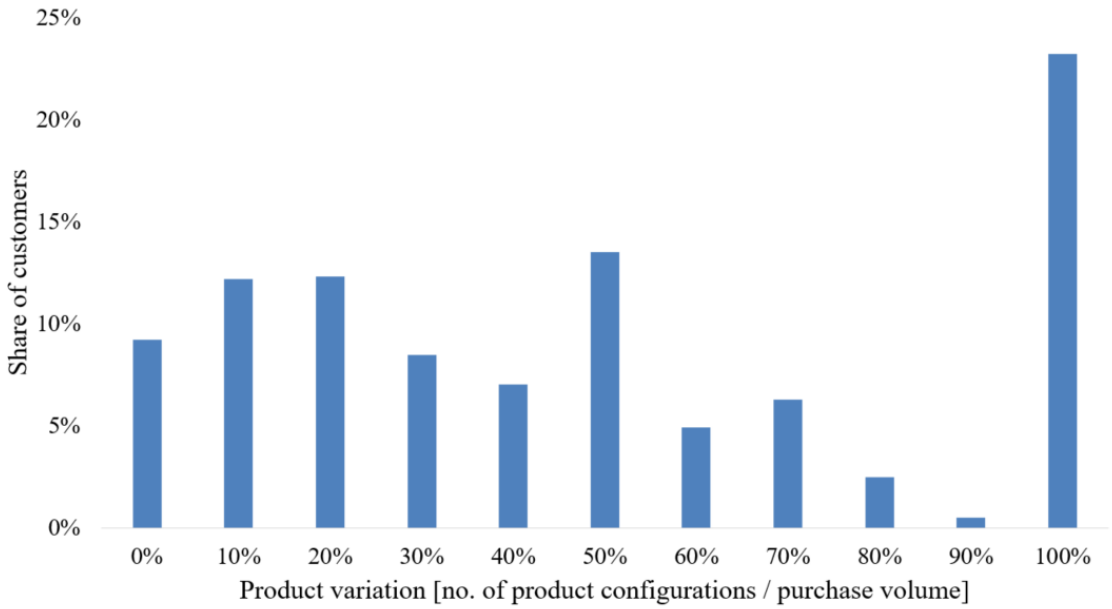

Figure 5.10: The division of how large product variation Volvo Penta's customers purchase

As seen in Figure 5.10, it is a high variety in the distribution, and no clear division could be found. Customers with a low product variation can be handled in more standardized ways than those with a high variation, since high product variation takes more effort for supply chain solutions. However, the Global Inventory Manager highlights that most customers in the business areas of the Industrial Genset, and Marine Leisure buy large volumes with low product variation, whereas customers within the Marine Commercial, as well as the Industrial Versatile business areas, often buy smaller volumes with high product variation. To consider this distinction, the number of configurations a customer purchase in one year is divided with the yearly purchasing volume.

5.4.2 Numerical Levels of Business Value

It has been highlighted during interviews that it is important to consider that customers' business value differ among different business areas, and high business value can be the result either having large margins and/or purchasing large volumes. Therefore, the gross profit was chosen as a measurement of business value, this to be able to compare customers' business values from different business areas, see Figure 5.11. One thing to keep in mind is that the y-axis in Figure 5.11 has been broken, this to be able to show the division of gross profit in a perspicuous way. It is further important to highlight that the data that was accessible for business values were based on single companies and it merged business values for entire business groups, meaning that a customer might not end up in the right segment due to this. However, validations were made for a number of large business groups without any incorrect results.

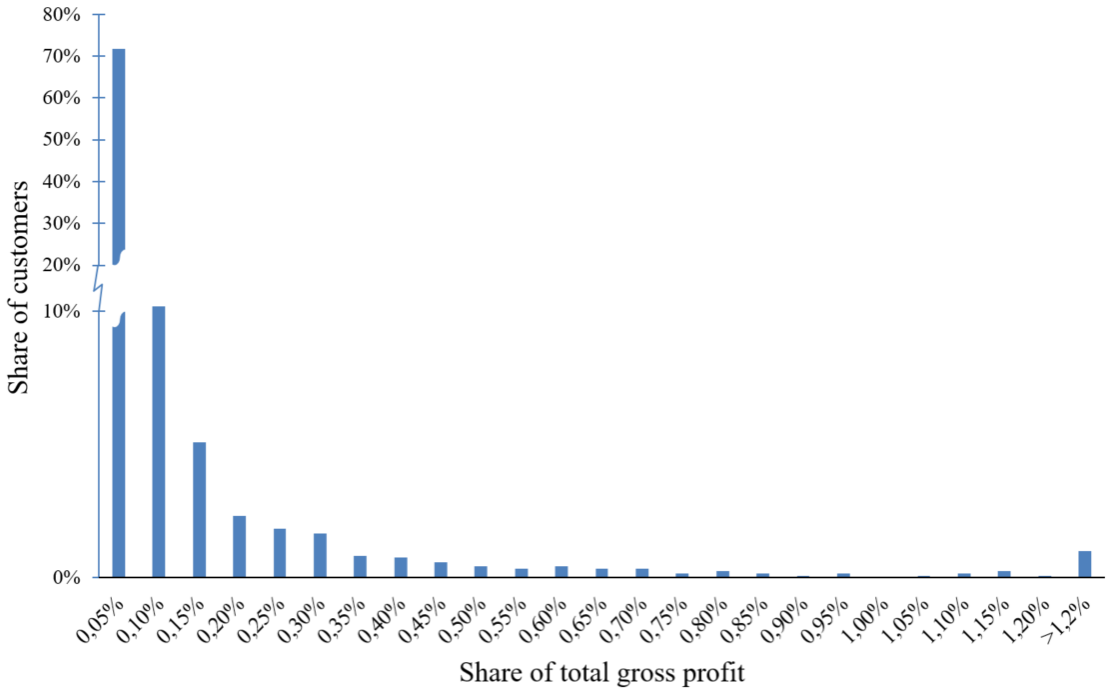

Figure 5.11: The division of gross profit for Volvo Penta's customers

5.4.3 Numerical Levels of Purchasing Pattern

From a workshop, the researches of this study, together with an employee from the Process Management and Supply Chain Development department, discussed what is included in customers' purchasing patterns. It was then concluded that order flexibility and forecast accuracy are factors that have the greatest impact on Volvo Penta's supply chain services. These factors are, therefore, considered to describe the customer needs for supply chain services most accurately. If a customer makes a lot of order changes or does not have an accurate forecast, this affects the production planning and it can block production slots for other customers. Additionally, this is also resource demanding since manual changes of orders are done. Consequently, the time from order placement to order delivery and the variation in purchasing volumes were two other factors further discussed during this workshop. However, the delivery time depends rather on the product type, and not the type of customer. Whereas volume variety can be considered embedded in the forecast accuracy, meaning, volume variation is not the problem, it is a non-accurate forecast that affects supply chain services the most.

Hereafter, a follow-up workshop was arranged together with the employee from the Process Management and Supply Chain Development department in order to discuss the order flexibility. The workshop focused on what is seen as relevant attribute levels for the order flexibility. In total, 16 different types of order changes can be made, although, only four of these changes were considered to affect supply chain services. All 16 types of changes can be found in Appendix E. The four changes that were chosen to be considered are changes regarding the request of the

delivery date, mode of transport, canceling or adding new order lines. Looking at all orders placed from March 2019 and two years back, 24% of all orders had at least one of these four changes. However, Volvo Penta has a target KPI of 10% for these order changes. Figure 5.12 shows the distribution of how many order changes the customers make. Order changes require manual work and are, therefore, resource demanding for Volvo Penta. Hence, customers that make order changes require more resources than other customers. To be able to make this attribute measurable, a customer is seen as predictable if no order changes are done, and unpredictable if changes are done.

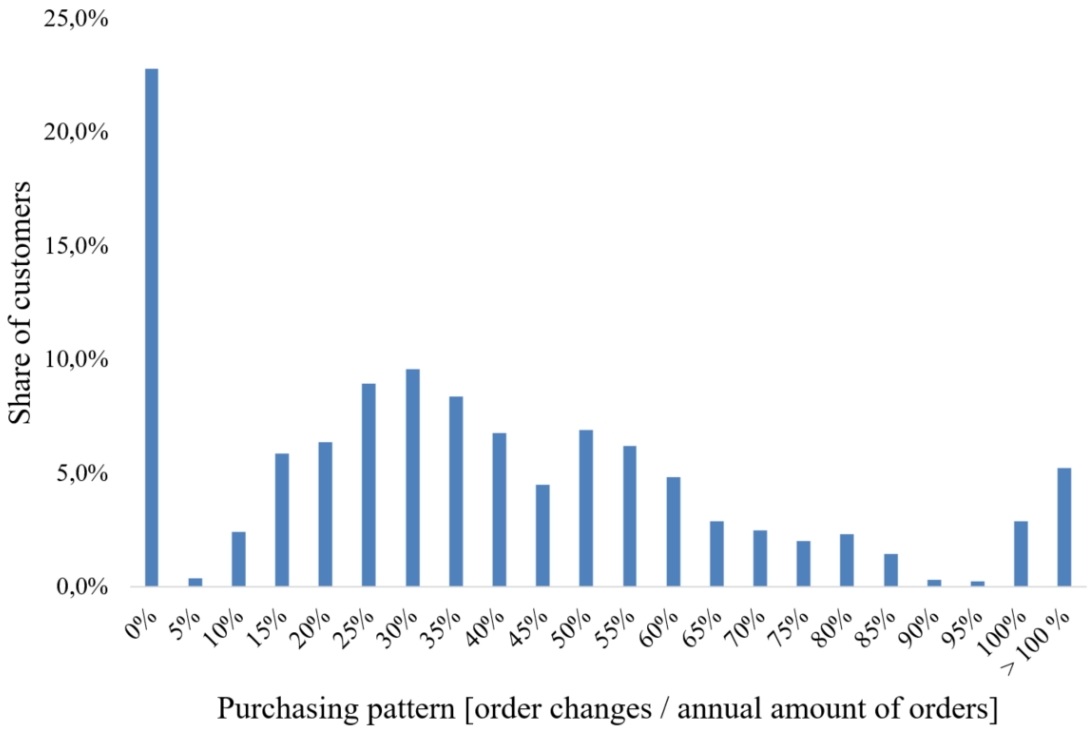

Figure 5.12: The division of how large portion of a customer's placed orders that are changed

Furthermore, forecast accuracy was discussed together with the Demand Manager at Volvo Penta. Currently, this is not a measurement Volvo Penta uses on a customer level, instead the forecast accuracy and forecast quality are accumulated for every business area and product segment. This means that there is no data of how accurate a customer's forecasts are. However, there is an ongoing project at Volvo Penta concerning this, where the expected outcome should enable forecast accuracy on a customer level.

6
Analysis and Discussion

This chapter aims at presenting the analysis of the findings from interviews and the compilation of the internal questionnaire about customer needs, combined with the reviewed literature. The chapter is divided into two major parts where an analysis about the segmentation structure is first done followed by an analysis regarding the applicability of the segmentation for Volvo Penta.

6.1 Analysis of Volvo Penta's Current Supply Chain Strategy

Currently, the supply chain strategy at Volvo Penta should be considered as a one-size-fits-all approach, with exceptions for a few customers. This since the company meets the customer needs through only one supply chain strategy and thereby treats the customer needs as homogeneous (Hjort et al., 2013). Also, the majority of the customers are met with the same level of service when it comes to supply chain management, which further strengthens the statement according to Hjort et al. (2013). This can be seen as a strategy that is remaining from the time when Volvo Penta mainly offered Marine Leisure engines, which in this context are considered to be standardized products, and when the business had a strong focus on efficiency and economies of scale. Additionally, since the Marine Leisure engines were offered for several years before the other business areas were introduced, the supply chain strategy that was established was adapted after the Marine Leisure area only. The supply chain strategy used at this point in time is what Christopher et al. (2006) call a "high volume lean pipeline". This implies that the supply chain pipeline is suitable for high volumes of standard products with a stable demand and long lead times, which is very similar to the business area of Marine Leisure engines. However, as other markets were introduced and new products were developed, new customer demands were established.

To keep the customer satisfied when entering the new markets, Volvo Penta developed a strong focus on product adaptation and configuration, which led to high customer orientation and also a stronger focus on effectiveness. Nonetheless, the strategy of tailoring the offers after the customer needs were not emulated for the supply chain and the "high volume lean pipeline" hence remained for almost all customers. But as pointed out, not all customers are today offered the standard supply chain services, but rather more customized solutions. As explained in the theoretical framework, a "customer service policy" declares and structures the

customer needs and the services that are offered in order to meet the demands (Rushton et al., 2016). At Volvo Penta, the logic and structure for which and why certain customers receive different offers than the standard one is more or less undocumented. As a result, there is no standard for which customers that should be, or currently are, met with the alternative supply chain services and these arrangements can hence be seen as ad hoc. The risk of this is hence that valuable resources are utilized in the wrong place (Lukas et al., 2013). Anderson et al. (2009) additionally argue that a lack of segmentation might lead to unnecessarily costly relationships, as some customers will get too much attention.

Furthermore, as the company now wants to move towards more tailored supply chain strategies, there is a need to first categorize the customers in order to simplify the logic of what customer that should have and also needs access to certain services. By using the Kano Model from Kano et al. (1984), one understands that not all customer needs must be fulfilled, but that a fulfilled customer need improves the customer satisfaction. In line with this, Hatton et al. (2017) argue that customers have different needs and thereby also different levels of requirements. This means that each attribute in the Kano Model (reverse, must-be, indifference, one-dimensional, and attractive) vary for each customer and offered product/service. For instance, one service component could be a "must-be" for one customer, but at the same time seen as "attractive" for another customer. With this in mind, it is not surprising that Anderson et al. (2009) mean that standard solutions, or a one-size-fits-all strategy, does generally not meet all customer requirements.

For the current case at Volvo Penta, the one-size-fits-all supply chain strategy generally meets the most necessary and generalized needs (e.g. "must-be" attributes). But, some of the service components might not be found as contributors to the satisfaction at all ("indifference" attributes) or even have a negative effect ("reverse" attributes) as they do not fit with the customer needs, which then affects the customer satisfaction negatively. It is hence possible, that a lowered customer satisfaction leads to a lower loyalty. From the logic by Anderson et al. (2009) and the theory of the loyalty ladder, it is clear that a customer with high loyalty is also of high value for the company. In this sense, it is also clear that a customer with a decreasing loyalty, that is a customer who is moving from "most valuable customer" or "partner" to "switcher" or "undesirable customer", cannot easily be moved back by just increasing the customer management effort, but this is rather a question about the customer's view of the company as a whole. This in turn, means that the relationship complexity plays a vital role in the customer perception of the company. As explained in the theoretical findings, a relationship is characterized by the degree of collaboration and also the complexity in communication. For Volvo Penta, the history of high product standardization has affected the complexity in communication, where the touch points between Volvo Penta and a customer are often multiple. However, the degree of collaboration is widely different between the different business areas. This is due to the characteristics of the offered products, where for instance the Marine Commercial

engines are often developed in projects in close collaboration with the customer. On the other hand, customers of the Genset engines tend to be less collaborative and rather transactional, which is due to the culture of the market where short lead times are necessary.

Lastly, it could from this analysis be argued that Volvo Penta should move from the one-size-fits-all approach towards a differentiated supply chain where the wide range of customer demands can be met and thereby increase the customer satisfaction even more. But, as Godsell et al. (2011) argue, the opportunity of deviating from the traditional strategy of one-size-fits-all towards a differentiated supply chain strategy must first evaluate how to group the customers. The segmentation of Volvo Penta's customers will, therefore, be further elaborated in the following sub-chapter.

6.2 Analysis of Segmentation Compilation

The first step when developing a segmentation is to define the market (Fill & Fill, 2004). As presented earlier, all of Volvo Penta's new engines sales customers should be included in the segmentation. This is a wide variety of customers, since it includes all business areas and regions. However, even if the organization of Volvo Penta is divided with regard to these factors, interviews have been held with employees at Volvo Penta to compile attributes that differentiate customer needs with regard to supply chain services, which according to Fill and Fill (2004) is the second step in the segmentation process. The third step is to target segments and to match the offered resources to each segment, which is analyzed in sub-chapter 6.3.

As stated by Fill and Fill (2004), a customer segmentation can be performed from two different view-points, breakdown or build-up. Due to the complexity of Volvo Penta's customer base, with the broad product range that stretches over different markets and thus a wide variety of customers, it is difficult to only use one of these methods. Instead, both similarities and differences must be taken into consideration when segmenting Volvo Penta's customers. To develop suitable segmentation attributes, Hutt and Speh (2010) present macro and micro segmentation. In order to catch the customer needs, it is important to have such clear segments that it is obvious which segment a customer should be placed in. In addition, a customer should only fit in one of these segments, while it at the same time is a trade-off between how many segments that is possible to have. With too many segments, it can be complex to get a good overview of the segments and to be able to work with the segments in the daily processes. Additionally, since the characteristics of a macro segmentation are to some extent already existing at Volvo Penta, e.g. regions and business areas, a micro segmentation is suitable in order to capture the customer needs, but still limit the number of segments.

6.2.1 Analysis of Segmentation Attributes

As previously mentioned, the customers of Volvo Penta are divided into business areas and geographical locations, this since it has direct affect on the processes from a sale perspective, while the supply chain processes are not put in focus. As have been presented earlier, interviews were held in order to compile the internal view on customer needs with regard to supply chain services. As stated above, it is important to not have too many attributes, while still enough to be able to distinguish customer characteristics from each other, therefore, the most commonly mentioned attributes stated in sub-chapter 5.2, from interviews were analyzed. To be able to implement the segmentation rather easily after this project, and to minimize the subjective evaluation of which segment a customer should be placed in, Fill and Fill (2004) and Anderson et al. (2009) state that it is important that the segmentation attributes are measurable, accessible, substantial, actionable, and compatible in order to develop valid and reliable segments. Therefore, attributes that require subjective evaluation have been evaluated but not prioritized.

The most often mentioned attributes from the interviews were volume, profit, and potential profit. The volume constitutes the order volume that each customer purchases both per year and per order. This has a direct affect on the supply chain services that a customer needs since high volumes can enable special solutions or adaptations since these become more profitable by economies of scale. Similarly, profit was also suggested as an attribute, since customers buying products with a high-profit margin can be worth investing in. Regarding potential profit as an attribute, this shows if it is worth spending extra resources on the customers, since it can generate increased profit in the future, however, this is a subjective evaluation done by the seller and there is no guarantee that it will lead to increased profit. Additionally, there is a current categorization of customers that considers what pricing strategy that should be used for each customer category. This categorization was also brought up as an attribute suggestion at several interviews. However, this categorization does only consider what type of pricing strategy that is suitable for a certain type of customer and does not cover the customer needs from a supply chain perspective. Furthermore, this customer categorization was developed several years ago and findings from interviews show that the segmentation might not be completely accurate.

Furthermore, customer maturity is an example of an attribute that also has been mentioned in interviews. The maturity can for example distinguish the customers that are able to have digital solutions for order planning and forecasting and it could, therefore, be an useful attribute. However, a subjective evaluation might be needed in order to decide what characterizes a mature customer and this should hence be avoided. Further, the region that a specific customer is located in affects the supply chain services with regard to different lead times, however, it does not concern what types of supply chain services a specific type of customer might need. Furthermore, regarding the business area as an attribute, it has been clear from the interviews that some business areas have unique requirements, i.e. Genset engines, since this market requires much faster deliveries than Volvo Penta usually

offers. Because of this, special supply chain solutions must be developed for these customers. Additionally, the term purchasing pattern should be considered to include the frequency of purchase, the forecast accuracy, and the order flexibility, which are all attributes that have been mentioned as suggestions on interviews. The purchasing pattern was also emphasized by Christopher et al. (2006) as an important attribute since this captures the behavior of the customer. Furthermore, if a customer has a high or low product variation, with regards to both number of engine configurations and the number of different engines, it has a direct affect on the supply chain services. This since it requires different supply chain solution if the product variation is high or whether it is low.

Attributes given during interviews concerning the customers' production set-up have also been analyzed since this can affect the customer needs regarding supply chain services. However, to be able to provide the right supply chain services, a lot of information about the specific customer's production set-up is needed. Since this is currently not documented at Volvo Penta, it is difficult to compile valid and reliable attributes for this. Likewise, the suggestion of an attribute concerning the customer's willingness to be sustainable fell on the current lack of documentation. This is, however, an attribute which, just like the previous one, would have had a significant impact on the segmentation, considering the great impact it can have from a supply chain service perspective. But, because no data or internal knowledge is currently available on the customers' willingness to be sustainable and that this is also a subjective assessment, this was not further analyzed. Lastly, the attributes concerning financial and risk features are of course important to consider. Although, these might not describe the customer need regarding supply chain services and might, therefore, not be the best attributes for this segmentation.

6.2.2 Segmentation Proposal

The attributes that were considered to fulfill the stated requirements of Fill and Fill (2004) and Anderson et al. (2009) and that best distinguish differences between customers, as well as clustering similarities, with regard to supply chain service needs were: product variation, business value, and purchasing pattern. These three attributes capture and categorize customers with regard to how complex the need for supply chain services is, how valuable the business is to Volvo Penta, and how much resources that are needed due to the customers purchasing pattern, e.g. late changes or accurate forecasts.

In order to limit the number of segments, but still consider the characteristics of the customer, two different levels for each of the three chosen attributes were analyzed, resulting in 2^3 segments (see Figure 6.1). The different levels of the three attributes are further described in sub-chapter 6.2.3. However, one can argue that it can be difficult and rather harsh to only have two levels of each attribute, and that an additional level could provide more specific customer needs from each segment. Although, to be able to have a limited number of segments, there is a trade-off between the number of levels of each attribute and the number of

attributes. The researchers of this project, therefore, argue for a higher number of attributes, since this can provide more valid and reliable segments, rather than a higher number of attribute levels. A higher number of attributes will enable a higher focus on capturing customer characteristics.

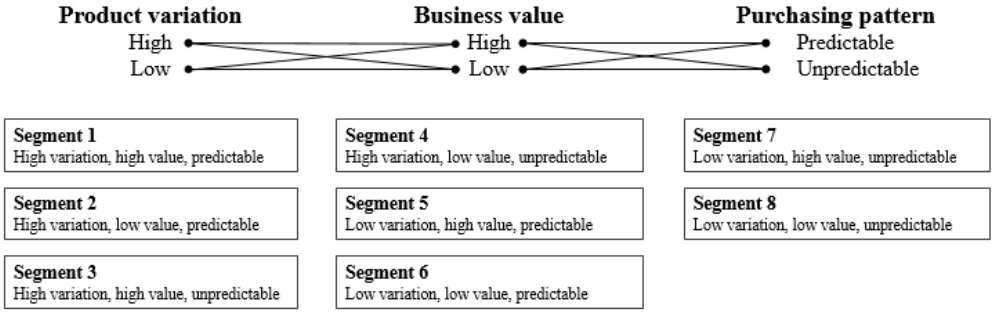

Figure 6.1: An illustration of the suggested attributes and segments

Additionally, one more segment was added, which is not shown in the figure. This segment was added on the basis of the findings from interviews regarding what is called strategic customers. Even though there is no formal definition of what is seen as a strategic customer, there are still a number of customers that, due to different reasons, are handled in a unique and customized way from a supply chain service perspective. Therefore, these customers do not fit in any of the other segments and it must also be clear that this type of customer should be given extra resources, since these customers most likely constitute a large portion of Volvo Penta's current and future businesses.

6.2.3 Measurable Values for Segmentation Attributes

As stated above, it is highlighted by Fill and Fill (2004) and Anderson et al. (2009) that valid and reliable segment attributes must be measurable, accessible, substantial, actionable, and compatible. As illustrated in Figure 6.1, a level of each attribute that distinguishes the customer needs of supply chain services is needed to be identified. As mentioned earlier, this study has emphasized to keep the segmentation free from subjective features. This has been supported by several authors where, among others, Fill and Fill (2004) argue that an objective segmentation provides a higher value to the organization. Additionally, the authors mean that if a customer segmentation considers the context of the business, the likelihood for overcoming the segmentation barriers increases.

Firstly, for the product variation attribute, it can be seen in Figure 6.2 that the product variation is widely distributed among the customers, with a high number of customers only purchasing one product of each configuration, as can be seen at the end of the x-axis. However, since product variation results in difficulties for supply chain services, and a higher product variation needs more manual

adjustments regarding supply chain service solutions, one can argue that the effort is proportional to the product variation. Thus, as low attribute limit as possible is desirable, however, one still wants to include enough customers to make the segments substantial. Therefore, 35% is a justified attribute limit, since approximately 40% of Volvo Penta's customers has a product variation lower than 35% (see Figure 6.2). The attribute limit, therefore, separates the customers that purchase engines with fairly low product variation from customers purchasing more unique products.

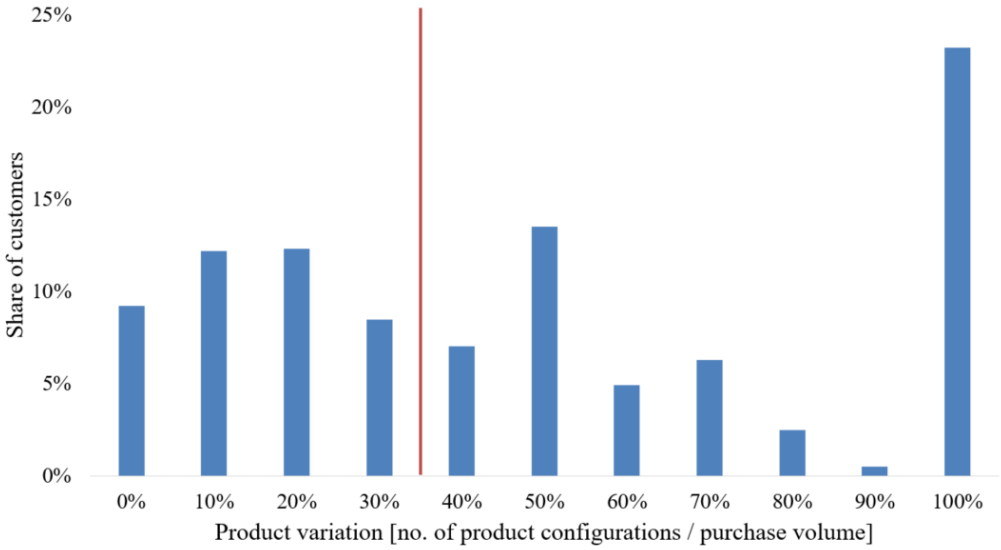

Figure 6.2: Attribution level for product variation

Secondly, the gross profit for Volvo Penta's customers is also widely spread. Nonetheless, a large portion of the customers is gathered on the left side of the x-axis (see Figure 6.3). As seen in the figure, the tale at the right part of the chart is long and the customers to the far end have a great impact on Volvo Penta's profit. Therefore, it is important to distinguish the ones that have a significantly higher gross profit than others. As marked in Figure 6.3, 80% of the customers have a yearly gross profit lower than 0,1% of Volvo Penta's total gross profit (see Figure 6.3). It is hence noteworthy that 80% of the customers have a very concentrated gross profit, whereas, the gross profit of the rest of the customers is more widely dispersed. Additionally, customers with a low business value do currently not have the same impact on Volvo Penta, as customers with high business value. Hence, 0,1% can be used as an attribution limit to distinguish between low and high business value. The spread among the customers with a business value higher than 0,1% could be argued to be high. However, high business value is currently discussed as one attribute for strategic customers at Volvo Penta and it will also be further elaborated later on. But in short, this means that the dispersion might not be this wide for the high level of business value, if the customers with the highest business values belong to the strategic customer segment.

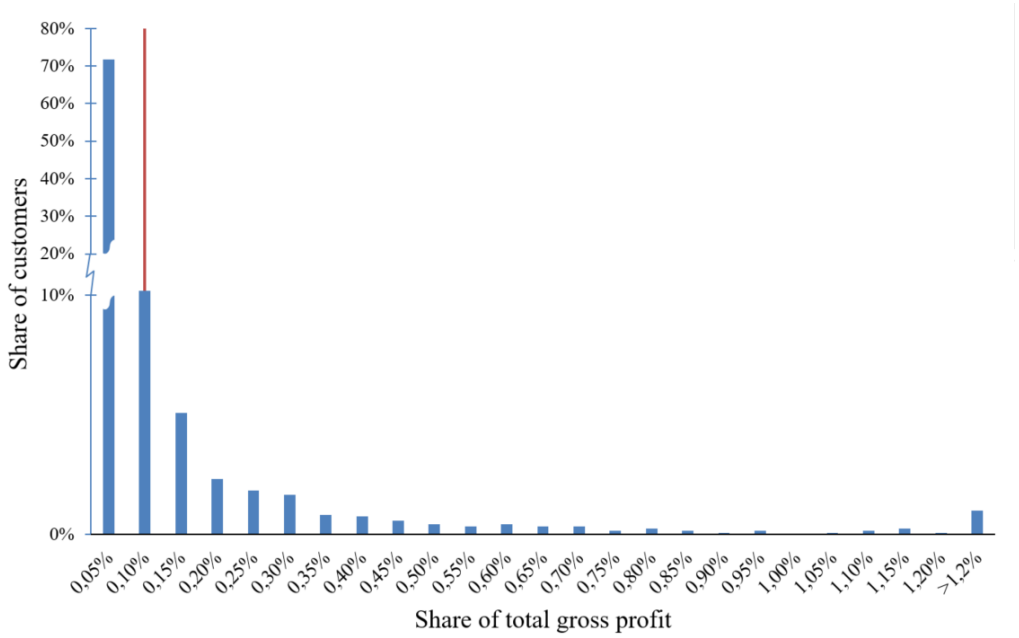

Figure 6.3: Attribution level for business value

Thirdly, for the order flexibility and the purchasing pattern, a large percentage of all placed orders that a customer change is rather dispersed (see Figure 6.4). However, since all required changes are resource demanding, the required resources increase with a higher percentage of order changes. As stated previously, Volvo Penta has a KPI for order changes at 10%, however, only 25% of Volvo Penta's customers have order changes lower than 10%. Hence, 20% in order changes were chosen as an attribute limit for the purchasing pattern. This, to be able to include more customers in predictable purchasing pattern segments, since 40% of the customers have 20% or less in order changes of their total amount of orders (see Figure 6.4). It is although important to emphasize that all attribute limit must be continuously updated to be representative of the customers' characteristics and behavior. Order changes must later be combined with forecast accuracy for each customer, or possibly how accurate forecasts Volvo Penta can make for each customer, in order to establish the conclusive purchasing pattern. However, as stated earlier, Volvo Penta does currently not measure how accurate forecasts are for specific customers and, therefore, this can currently not be used as a measurable segmentation attribute. Although, if the outcome of the ongoing project at Volvo Penta, where this is being investigated, enables forecast accuracy to be measured on customer level, this could be used as a measurable attribute combined with the frequency of order changes.

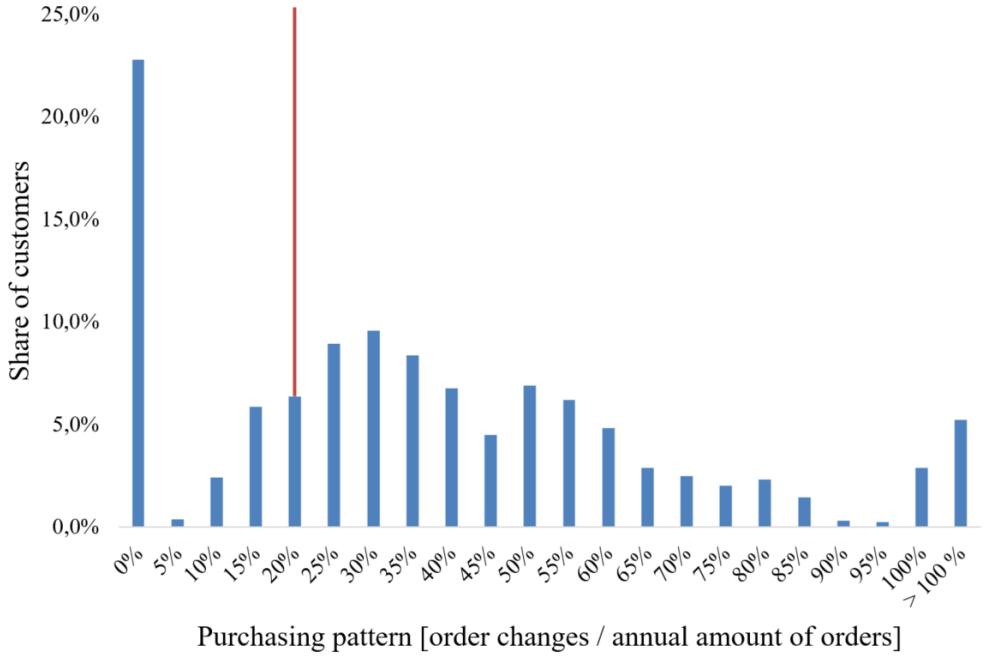

Figure 6.4: Attribution level for order changes

6.2.4 Attributes for Strategic Customers

As previously stated, the term of strategic customers was often brought up during interviews with employees at Volvo Penta, where employees highlighted that strategic customers could not be compared or handled in the same way as other customers. The employees thought that higher prioritization must be given to these customers in order to secure current and future businesses. Therefore, the segmentation proposal includes a segment called strategic customers. As stated previously, no definition of strategic customers currently exists, however, strong internal opinions and ideas about what a strategic customer is and which customers that are strategic for Volvo Penta exist among employees. The ideas about strategic customer characteristics from interviews and findings from the questionnaire overlap to some extent, although, not fully. From interviews, **trendsetters, global presence, large purchase volumes,** and **high profits** were characteristics used to describe strategic customers. Whereas, **high business value, the market segment leader, predictable purchasing pattern, potential growth, low product variation, high volume, close relationship,** and **loyal customers**, were frequent characteristics used to describe strategic customers in the questionnaire responses. From this, it is clear that the internal view on characteristics of strategic customers is based on a customer that has a great impact on Volvo Penta, both with regard to income, and the footprint on a certain market, as well as long term relationship characteristics.

However, 35 different characteristics for strategic customers were given from the respondents of the questionnaire (see Appendix D). This shows that the internal view is widely spread and that no direct definition exists among the employees, even

though more general features can be identified, as stated above. A difficulty when no definition exists is that it is hard to identify customer needs and customers' requirements. Therefore, it is also difficult to develop measurable attributes for this segment. Instead, a more subjective evaluation might be more suitable for this segment, where a shortlist of unique and important customers for Volvo Penta is compiled. For such shortlist, it is important to both consider current businesses, but nevertheless potential businesses as well, meaning not only focusing on sharp numbers but to also consider expansion and new markets. To compile such shortlist, one can presume that great customer and market knowledge is needed, combined with business and process expertise to be able to achieve a common understanding of why these customers are included in this segment.

6.2.5 Including New Customers in the Segmentation

As stated earlier, Bingham et al. (2005) emphasize the importance of including new customers in the segmentation, and not only develop a segmentation for existing customers. A difficulty with this is to know what characteristics new customers have and what needs these possess, this since it can be difficult to estimate a suitable segment for a specific new customer. Therefore, a segment where new customers temporally are placed could be a solution. Meaning that new customers can automatically be placed in such segment until an objective evaluation of the new specific customer can be done and customers can be placed in a suitable segment with regard to the specific customer needs. With such a segment, the difficulties of estimating customer characteristics can be handled and it clearly visualizes that the specific customer is new for Volvo Penta.

6.3 Analysis of Matching Segments and Services

As the segments have been suggested and the attributes have also got measurable and solid levels, each segment should be matched with a set of services that matches the customer needs. According to Anderson et al. (2009), Flexible Marketing Offerings (FMOs) can be used in order to meet the specific demands of different customer segments. But in order to do so, both the current services and the customer needs in each segment must first be understood.

6.3.1 Analysis of the Needs and Services at Volvo Penta

As described in sub-chapter 5.1, the services offered at Volvo Penta can be divided into four different categories. By also looking at the needs investigated in the questionnaire (see 5.3.1), it is possible to match the current services and customer needs. By this logic, the need for availability and on-time delivery can be met with services within the category of time, e.g. consignment stock, delivery precision, and/or mode of transport. Whereas, the need for order flexibility, extended assortment, as well as batch or kit delivery, are met with services from the category for flexibility, e.g. order changes, local assortment, and production material. Further, the need for reduced uncertainty through increased visibility is

met with services within the category of dependability, e.g. track and trace services. Lastly, the need of access to supply chain support is met with services from the category of communication, e.g. single-point-of-contact and order entry. All categories and services are found in Table 5.1 following the logic of Rushton et al. (2016). Additionally, the different needs analyzed and discussed for each segment below were deeper described in sub-chapter 5.3.1.

Additionally, from the questionnaire that was made internally at Volvo Penta, it became clear that employees at Volvo Penta do not believe that all customers have the same need for supply chain services, or at least not the same need for supply chain service fulfillment. These findings were made when analyzing the customer's product variation, business value, and purchasing pattern. This implies that the statement made by the one respondent, who claimed that all customer needs were the same regardless of the customer characteristics (see sub-chapter 5.3), only corresponds to a very small part of the internal view and it can, therefore, be disregarded. However, as Williams and Buswell (2009) argue, the customer needs are easily assumed if the customers themselves are not approached. Therefore, the following part of the analysis will not solely examine the results of the questionnaire, but also consider the theory and other findings from the study.

6.3.2 Analysis of the Needs and Services in Segment 1

Starting with the segment called **Segment 1** in Figure 6.1, which has a **high product variation, a high business value, and a predictable purchasing pattern**, it is clear from Figure 6.5 that these customers have a need for order flexibility on an occasional level (Never 11%, Sometimes 60%, Always 26%, and N/A 3%). By interpreting the result "Sometimes" as that all customers do not have this need, it appears that the need does not always have to be addressed. According to Anderson et al. (2009), this would then mean that this segment should have an optional service that meets the need for having order flexibility. Additionally, when comparing this need among the other seven segments, i.e. strategic customers are not included, two more segments with a predictable purchasing pattern (Segment 2 and 5) have slightly the same results. This implies that even though all customers have predictable purchasing patterns, late and frequent order changes are occasionally needed. It could, however, be argued that order flexibility is costly and affects the whole supply chain and should therefore be kept as low as possible. On the other hand, customers in Segment 1, who have high business values, are of great importance to Volvo Penta and by not meeting this need the customer loyalty could be negatively affected. For instance, Anderson et al. (2009) mean that pricey relationships with a high loyalty (e.g. Partners) are preferred over relationships with high effort and low loyalty (e.g. Undesirable Customers). With this in mind, the occasional need for order flexibility should be met by offering services as an option.

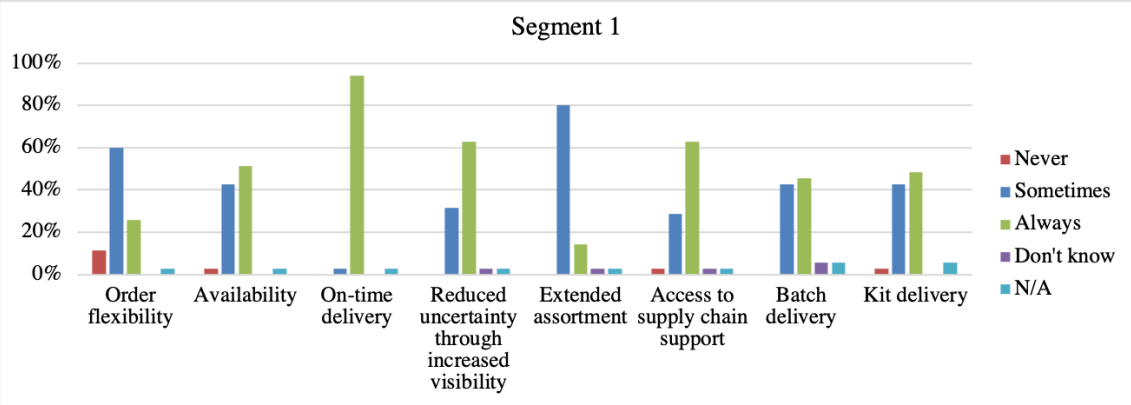

Figure 6.5: Findings from the questionnaire for Segment 1

Looking at the need for availability and Figure 6.5, the internal questionnaire shows that customers in Segment 1 have a deliberative need for availability (Never 3%, Sometimes 43%, Always 51%, and N/A 3%). In practice, this means that customers within this segment have a need for services such as stock holding. Considering that these customers have a high business value and a predictable purchasing pattern, services such as stock holding would not be as complex and expensive for Segment 1 as for customers with low business values and an unpredictable purchasing pattern (e.g. Segment 4 and 8). However, customers within Segment 1 do also have a high product variation, which would increase the number of stock holding units. Then again, these customers have a high business value and the Return of Investment might therefore be beneficial. For Segment 1, services that increase the availability should hence be offered as an option.

For on-time delivery, it is easy to see similarities between all segments (see Figure 5.3), as all segments have a majority of responses on "Always", which is also the case for Segment 1 (Sometimes 3%, Always 94%, and N/A 3%). It is, therefore, natural to say that all customers, regardless of the segment, should have on-time delivery. In the long term, the segmentation could, however, be used as a prioritization if it, for some reason, is not possible to give all customers on-time delivery. How this prioritization should work is, however, not further analyzed in this study.

Moving on to the need for reduced uncertainty through increased visibility, the findings from the questionnaire show that Segment 1 most likely has a majority of customers with a need for this (Sometimes 31%, Always 63%, Don't know 3%, and N/A 3%). This means that the customers in this segment have a need to pursue the orders in more detail. Since the services needed in order to meet this need can be both expensive and risky, that is sharing internal information, it could be argued that customers with low business value should not have access to these services. This would, however, imply that a customer with low business value has a lower degree of loyalty than a customer with high business value, which might not be an accurate assumption. Additionally, such an assumption would also presume that the risk of sharing information is only related to customer loyalty

when it might also be a question about the relationship as a whole. Anderson et al. (2009) claim that the type of relationship, that is transactional or collaborative, does not equal a high or low business value since that also depends on the value of the orders. However, predictability in purchasing could imply that the customer is loyal if there is a repeated pattern. Therefore, the customers in Segment 1 should have access to services that fulfills the need for reduced uncertainty, since these customers both have a high business value and a predictable purchasing pattern, which means that the forecasts of valuable orders are accurate. Customers within Segment 1 are hence offered services related to this need as a standard.

Moreover, the need for an extended assortment for Segment 1 (see Figure 6.5) has a clear majority of "Sometimes" (Sometimes 80%, Always 14%, Don't know 3%, and N/A 3%). This argues for a customer segment that should have access to other assortments as an optional service (Anderson et al., 2009). From a financial aspect, this could be seen as relatively viable, since the customers have a high business value and also a predictable purchasing pattern. On the other hand, these customers do also have a high product variation, meaning that the extended assortment might be complex to operate. With this in mind, the operational complexity would be lower for Segment 5, which has customers with low product variation, but still a high business value and a predictable purchasing pattern. This segment, Segment 5, does also have a majority of responses for "Sometimes" (Never 9%, Sometimes 69%, Always 20%, and N/A 3%). The same interrelation can be found for Segment 3, which has a high product variation, a high business value, and an unpredictable purchasing pattern (Never 3%, Sometimes 74%, Always 20%, and N/A 3%). But for this segment, Segment 3, the unpredictable purchasing pattern increases the complexity in the operations even more as a Bullwhip effect is easily created between the assortments. In other words, a high business value should not give direct access to an extended assortment, but the costs must be carefully analyzed. It should then be kept in mind that all needs must not be fulfilled if it is not a "must-be" (Kano et al., 1984). However, for Segment 1, an extended assortment would be relatively easy to operate, considering the predictable purchasing pattern, and it would also be financially viable. Customers within Segment 1 should, therefore, have access to an extended assortment offered as an option.

In the findings for the need for access to supply chain support (see Figure 6.5), it is also here similarities between Segment 1, 3 and 5 (Never 3%/6%/3%, Sometimes 29%/31%/34%, Always 63%/60%/60%, Don't know 3%/0%/0%, and N/A 3%/3%/3%). Mutually, these three segments do all have customers with high business values. However, customers within Segment 7, who also have high business values (plus low product variation and an unpredictable purchasing pattern), do not appear to have the same need for access to supply chain support (Never 14%, Sometimes 34%, Always 43%, Don't know 3%, and N/A 6%), according to the internal questionnaire. Noticeable is that the interrelation is still the same. According to Elliott (2003), the use of a SPoC (Single Point of Contact) eases the work of supply chain coordination since the complexity and number of

contacts are reduced. In line with this and for all these four segments (Segment 1, 3, 5, and 7), it could hence be argued that a high business value implicates either highly valuable goods or high volumes and that the importance of these businesses are high, which should implicate that a low level of complexity is valued. Therefore, Segment 1, 3, 5, and 7 should have their needs of access to supply chain support fulfilled, and services, such as SPoC, should be offered as a standard for these four segments.

The two last needs, batch and kit deliveries, have from the perspective of the researchers been seen as either or, since the customer should have a need for either batch delivery or kit delivery, not both. Starting with Segment 1 for these two needs, the results are almost identical (see Figure 6.5). For the batch delivery, the respondents found the customer need as Sometimes 43%, Always 46%, Don't know 6%, and N/A 6%. While the same respondents found the customer need for kit delivery as Never 3%, Sometimes 43%, Always 49%, and N/A 6%. From this, it can hence be argued that for Segment 1, the need for batch or kit deliveries cannot solely be decided from the three characteristics, but it is also a question about the specific customer within the segment. However, since kit deliveries are today's standard at Volvo Penta, an overview of which customers, that is which segments, that should be considered for batch deliveries is needed. With this in mind, customers within Segment 1 should have the possibility of batch deliveries, considering the high business value and the potential Return of Investment.

For Segment 1, it can therefore be argued that a new and more differentiated supply chain strategy should consider the demand as predictable and the supply as long lead-time (see Figure 3.1). According to Christopher et al. (2006), this means that the customers are lean and that the main focus for these customers should be on planning and executing. The supply chain strategy for Segment 1 should further include and offer services that fulfill the needs as seen below in Table 6.1.

Table 6.1: Compilation of need fulfillment for Segment 1

Order flexibility	Availability	On-time delivery	Reduced uncertainty	Extended assortment	Supply chain support	Batch delivery	Kit delivery
Optional	Optional	Standard	Standard	Optional	Standard	Optional	Standard

6.3.3 Analysis of the Needs and Services in Segment 2

The segment called **Segment 2** in Figure 6.1, which has **a high product variation, a low business value, and a predictable purchasing pattern**, was also examined in the questionnaire. The findings from the questionnaire show that these customers most likely have a relatively high need for order flexibility (Never 14%, Sometimes 51%, Always 31%, and N/A 3%). As mentioned above, this is the same interrelation as Segment 1 and 5 (see Figure 6.6) and these three segments all have a predictable purchasing pattern. For the customers within Segment 2, it could, however, be argued that the low business value does not justify the costly services that are needed in order to fulfill the need, even if the

purchasing pattern is predictable. The services that fulfill the need for order flexibility should hence not be offered for Segment 2.

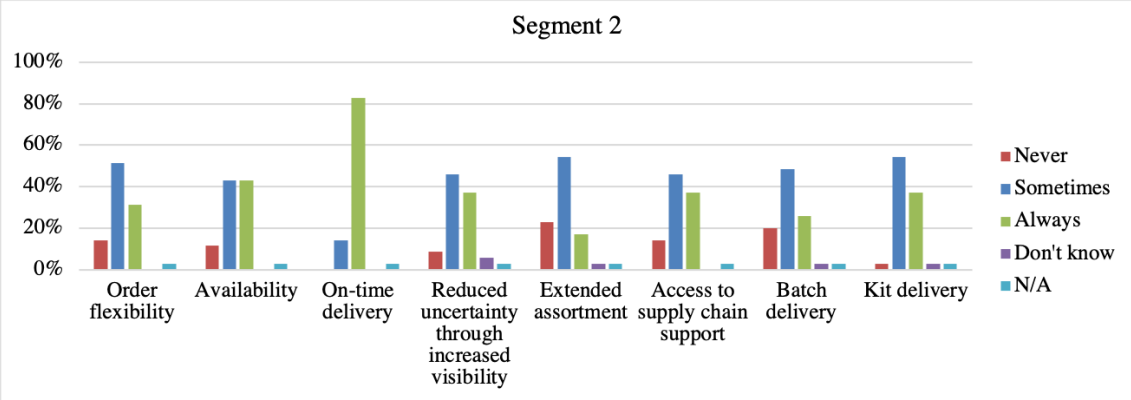

Figure 6.6: Findings from the questionnaire for Segment 2

Moreover, the findings of availability, found in Figure 6.6, show that Segment 2 has an equal distribution between "Sometimes" and "Always" (Never 11%, Sometimes 43%, Always 43%, and N/A 3%). For this reason, it could be argued that Segment 2 must have short lead times, through for instance stock holding. On the other hand, stock holding might be a costly operation depending on the product characteristics, and the low business value of these customers does once again not justify the services needed. Additionally, the customers have a high product variation and even though the purchasing pattern is predictable, the stock holding of a high variety of products strengthens the argument of costly services. The services that fulfill the need for availability should hence not be offered for Segment 2.

As mentioned above under Segment 1, the findings from the questionnaire show that the need for on-time delivery is high for all segments (see Figure 5.3). For Segment 2, the response rate of "Always" was, however, lower than for Segment 1 (Sometimes 14%, Always 83%, and N/A 3%), which presumably can be derived to the low business value. The services needed to provide on-time deliveries should nonetheless be a standard for Segment 2 as well.

Furthermore, Figure 6.6 displays that the need for a reduced uncertainty through increased visibility is not obvious for customers within Segment 2 (Never 9%, Sometimes 46%, Always 37%, Don't know 6%, and N/A 3%). As argued for Segment 1, costs and risks of sharing internal information should affect which customers that have access to these services, regardless of their needs. For Segment 2, the combination of low business value and a predictable purchasing pattern decreases the financial incentives, but still lowers the risk if the predictability shows a steady flow and thereby a loyal customer. Additionally, a satisfied and loyal customer might in the long term increase its business value by buying more, which would increase the incentives to offer the service. Still, for Segment 2, it is not considered justified to offer services that decrease the

uncertainty. Therefore, services that fulfills the need of reduced uncertainty through increased visibility should not be offered for customers within Segment 2.

For Segment 2, the need for an extended assortment was also examined in the questionnaire (see Figure 6.6). The findings display that it is likely that the customer does not have this need (Never 23%, Sometimes 54%, Always 17%, Don't know 3%, and N/A 3%). Similar results can be found for Segment 4, 6, 8 (Never 31%/26%/29%, Sometimes 49%/63%/57%, Always 17%/3%/9%, Don't know 0%/3%/0%, and N/A 3%/6%/6%). All four segments (Segment 2, 4, 6, and 8) have customers with low business values. From this, it could hence be argued that the respondents might have considered the fulfillment of the need, rather than the actual need, due to the high levels of "Never". But, it is also possible that customers with low business values never need an extended assortment, or as the findings show, the need is only applicable for some customers in the segment, i.e. "Sometimes". The cost of an extended assortment is however higher than only considering the standard assortment, and the low business values should hence play a vital part in this argumentation. Additionally, for Segment 2, the combination of high product variation and low business value contradicts that Segment 2 should have the possibility of an extended assortment since it means a high complexity with low value. Therefore, since Segment 2 does not have an obvious need for an extended assortment and since it would also mean a high effort with low value, it is not suitable to offer the services that fulfill this need as a standard to any of the four segments (Segment 2, 4, 6, and 8).

For the need for access to supply chain support (see Figure 6.6), the questionnaire findings for Segment 2 show that there is a relative need (Never 14%, Sometimes 46%, Always 37%, and N/A 3%). Similar results, or at least the same interrelations, can once again be found for Segment 4, 6, 8 (Never 26%/17%/20%, Sometimes 37%/49%/49%, Always 31%/26%/26%, Don't know 3%/3%/0%, and N/A 3%/6%/6%). Still, since these four segments constitute customers with low business values, the effort of decreasing the complexity of the business is fruitless. Therefore, customers within Segment 2, 4, 6, and 8 should not be offered services that fulfill the need for access to supply chain support.

Lastly, for Segment 2, the needs of batch and kit deliveries were examined and the findings display that the likelihood for kit deliveries (Never 3%, Sometimes 54%, Always 37%, Don't know 3%, and N/A 3%) are greater than for batch deliveries (Never 20%, Sometimes 49%, Always 26%, Don't know 3%, and N/A 3%). Also this time, the findings for Segment 4, 6, and 8 have the same interrelations. Findings for the need for batch deliveries shows that a vast majority of the respondents do not find the need obvious for all customers (Never 34%/31%/34%, Sometimes 46%/37%/46%, Always 14%/20%/11%, Don't know 3%/6%/3%, and N/A 3%/6%/6%). Meanwhile, the kit deliveries display the opposite (Never 9%/3%/11%, Sometimes 43%/51%/51%, Always 43%/40%/29%, Don't know 3%/0%/3%, and N/A 3%/6%/6%). Considering these findings and since the customers do also have a low business value, Segment 2, 4, 6, and 8 should only

have access to kit deliveries.

For Segment 2, it can be argued that a new differentiated supply chain strategy should consider the demand as unpredictable and the supply as long lead-time (see Figure 3.1). According to Christopher et al. (2006), this means that the customers are leagile and that the main focus for these customers should be on postponement. The supply chain strategy for Segment 2 should conclusively include and offer services that fulfill the needs as seen below in Table 6.2.

Table 6.2: Compilation of need fulfillment for Segment 2

Order flexibility	Availability	On-time delivery	Reduced uncertainty	Extended assortment	Supply chain support	Batch delivery	Kit delivery
Not offered	Not offered	Standard	Not offered	Not offered	Not offered	Not offered	Standard

6.3.4 Analysis of the Needs and Services in Segment 3

The segment called **Segment 3** in Figure 6.1, which has **a high product variation, a high business value, and an unpredictable purchasing pattern**, was the third segment that was examined in the questionnaire (see Figure 6.7). The findings regarding the need for order flexibility for Segment 3 clearly show that these customers most likely need services that can fulfill this need (Never 6%, Sometimes 43%, Always 49%, and N/A 3%). This can be argued to depend on all three attributes, as the combination creates a customer that is complex but still has valuable meaning to Volvo Penta. Considering this, it is however a high risk to allow these customers to make late and frequent order changes, as the purchasing pattern is unpredictable at the same time as the product variation is high. Additionally, the same interrelations are found for Segment 4, 7, and 8 (Never 14%/6%/20%, Sometimes 46%/37%/49%, Always 37%/51%/29%, Don't know 0%/0%/3%,and N/A 3%/6%/0%), which are segments that also have unpredictable purchasing patterns. For these segments, late and frequent order changes would hence mean a high risk due to the unpredictability. Regardless of the business value and also the level of product variation, customers who are unpredictable should not be allowed to do late or frequent order changes once the purchasing order has been placed. Segment 3, 4, 7, and 8 should, therefore, not be offered services that fulfill the need for order flexibility.

Furthermore, the findings for Segment 3 regarding the need for availability show that a majority of the customers most likely always have this need (Never 3%, Sometimes 29%, Always 69%, and N/A 3%). As argued for Segment 1 and 2 earlier, the fulfillment of this need is a question regarding the attributes of the customers. For Segment 3, the high business value speaks for the fulfillment of the need, however, the unpredictability and high product variation contradicts this from a stock holding perspective. On the other hand, considering the high need and also the unpredictability, increasing the availability for the customers within this segment can potentially increase the loyalty of the customer, as this customer

must not seek for another supplier in order to get fast deliveries. In line with this, Anderson et al. (2009) claim that a customer with high business value should always be kept loyal. Therefore, customers within Segment 3 should have their needs of availability fulfilled with these services offered as a standard.

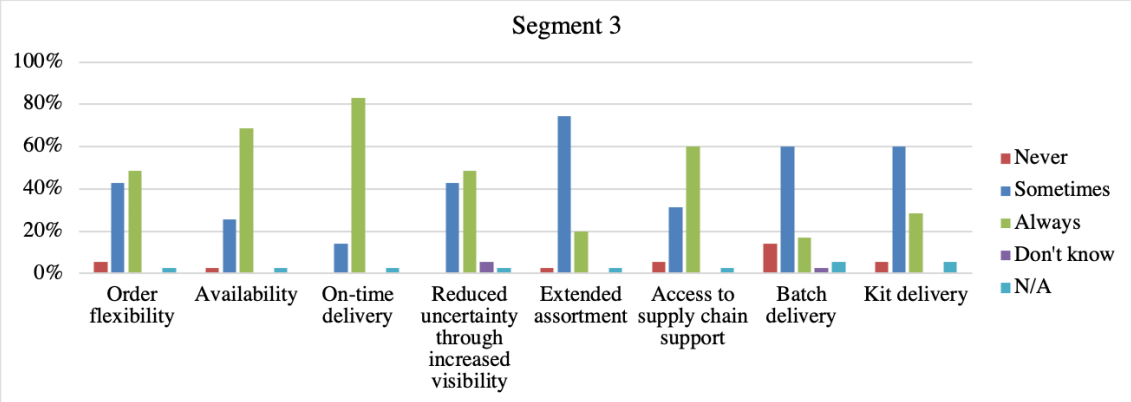

Figure 6.7: Findings from the questionnaire for Segment 3

Continuing with the need for on-time delivery and as mentioned above for Segment 1, the findings from the questionnaire show that the need for on-time delivery is high for all segments (see Figure 5.3). For Segment 3, the response rate of "Always" was, however, lower than for Segment 1 (Sometimes 14%, Always 83%, and N/A 3%), which presumably can be derived to the unpredictable purchasing pattern for Segment 3. The services needed to provide on-time deliveries should nonetheless be a standard for Segment 3 as well.

Moreover, the findings from the questionnaire regarding the need for reduced uncertainty through increased visibility in Segment 3 show that these customers most likely have a high need for this (Sometimes 43%, Always 49%, Don't know 6%, and N/A 3%). But as argued earlier, the services needed in order to fulfill this kind of need means a certain degree of risk and the attributes of the segments must, therefore, also be considered carefully. Since the customers in this segment are unpredictable in their purchasing pattern, which means inaccurate forecasts or several late order changes, it is possible that the customers are disloyal. However, it is also possible that increased visibility would improve the predictability of the purchasing as the customers can follow the orders in greater detail. Additionally, as these customers also have a high business value, it is justified that the degree of cooperation is increased by increased visibility. With this in mind, customers in Segment 3 should be offered services that reduce uncertainty as a standard.

Continuing with the need for an extended assortment, the findings from the questionnaire, seen in Figure 6.7, clearly show that the need for this most likely varies from customer to customer (Never 3%, Sometimes 74%, Always 20%, and N/A 3%). As mentioned earlier, this is the same interrelation for the findings as for Segment 1, but the big difference between Segment 1 and 3 is the predictability

in purchasing. For Segment 1, it was considered relatively self-evident that the customers' need for an extended assortment would be addressed as optional. But for Segment 3, this offer poses a certain risk for all actors involved, since the unpredictable purchasing pattern can produce unwanted Bullwhip effects. Once again, it is therefore necessary to analyze if this need fulfillment is a "must-be" for any customers in Segment 3. But as long as the actual customer needs are not known in detail, customers in Segment 3 should not be offered services that fulfill the need of access to an extended assortment.

Furthermore, the need for access to supply chain support was evaluated also for Segment 3 (see Figure 6.7). The findings from the questionnaire display that it is most likely that the customers within Segment 3 have this need (Never 6%, Sometimes 31%, Always 60%, and N/A 3%). As has been discussed under Segment 1, the findings show that all customers with high business value (Segment 1, 3, 5, and 7) should have access to services that ease the coordination of the supply chain.

Lastly, for Segment 3, the needs of batch and kit deliveries were examined (see Figure 6.7). The findings display that the likelihood for a need for kit deliveries (Never 6%, Sometimes 60%, Always 29%, and N/A 6%) are greater than for batch deliveries (Never 14%, Sometimes 60%, Always 17%, Don't know 3%, and N/A 6%) among customers in Segment 3. However, since these customers have a high business value and the delivery of batches should be seen as chances of increasing the customer satisfaction greatly, Segment 3 should be offered batch deliveries as an optional service.

For Segment 3, it can be claimed that a new differentiated supply chain strategy should consider the demand as unpredictable and the supply as short lead-times (see Figure 3.1). According to Christopher et al. (2006), this means that the customers are agile and that the main focus for these customers should be on quick response. The supply chain strategy for Segment 3 should hence include and offer services that fulfill the needs as seen below in Table 6.3.

Table 6.3: Compilation of need fulfillment for Segment 3

Order flexibility	Availability	On-time delivery	Reduced uncertainty	Extended assortment	Supply chain support	Batch delivery	Kit delivery
Not offered	Standard	Standard	Standard	Not offered	Standard	Optional	Standard

6.3.5 Analysis of the Needs and Services in Segment 4

The segment called **Segment 4** in Figure 6.1, which has **a high product variation, low business value, and an unpredictable purchasing pattern**, was the fourth segment that was examined in the questionnaire (see Figure 6.8). The findings regarding the need for order flexibility for Segment 4 were analyzed and discussed above together with Segment 3. The findings for Segment 4, however, show that these customers, most likely, need services that can meet the

need for order flexibility (Never 14%, Sometimes 46%, Always 37%, and N/A 3%). As stated above, customers who are unpredictable should not be allowed to do late or frequent order changes once the purchasing order has been placed, regardless of the business value and also the level of product variation. Therefore, Segment 4 should not be offered services that fulfill the need for order flexibility.

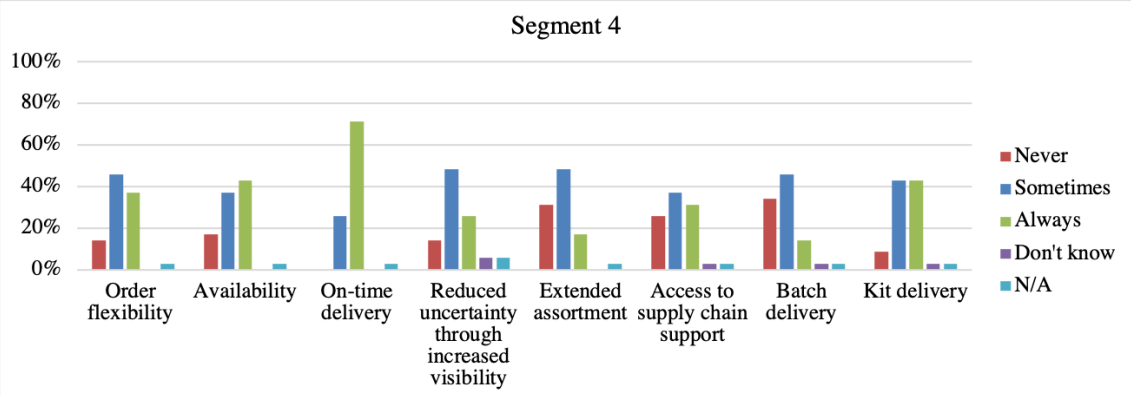

Figure 6.8: Findings from the questionnaire for Segment 4

Moreover, the need for availability was also studied in the questionnaire for Segment 4 (see Figure 6.8). The findings from this show that the need for availability for Segment 4 is rather uncertain (Never 17%, Sometimes 37%, Always 43%, and N/A 3%). Without creating too much repetition, it should be mentioned that the fulfillment of accessibility can be costly. With this in mind, plus the uncertain need, it is therefore not appropriate that Segment 4 should be offered the type of services needed in order to fulfill this need.

Continuing with the need for on-time delivery, and as mentioned earlier under Segment 1, the findings from the questionnaire show that the need for on-time delivery is high for all segments (see Figure 5.3). For Segment 4, the response rate of "Always" was however lower than for Segment 1, 2, and 3 (Sometimes 26%, Always 71%, and N/A 3%), which most likely has to do with the combination of a low business value and an unpredictable purchasing pattern in Segment 4. The services needed to provide on-time deliveries should however be a standard for Segment 4 as well.

Additionally, the need for reduced uncertainty through increased visibility was examined and the findings for Segment 4 are presented below in Figure 6.8. The findings show that customers within Segment 4 are most likely to have this need on an occasional level (Never 14%, Sometimes 49%, Always 26%, Don't know 6%, and N/A 6%). However, with regard to the low business value and unpredictable purchasing pattern and the logic that has been used for this need earlier, these customers should not have access to the services that decrease the uncertainty. The customers within Segment 4 are already inclined to make late changes to placed orders, a behavior that probably does not change with increased visibility, and the low business value also reduces the incentives for such an investment.

Segment 4 should therefore not be offered services that fulfill this need.

Furthermore, the need for an extended assortment was examined also for Segment 4 in the questionnaire (see Figure 6.8). The findings display that it is likely that the customer does not have this need (Never 31%, Sometimes 49%, Always 17%, and N/A 3%). Therefore, and as argued under Segment 2, since Segment 4 does not have an obvious need for an extended assortment and since it would also mean a high effort with low value, it is not suitable to offer Segment 4 services that fulfill this need and the service should hence not be offered.

For the need for access to supply chain support (see Figure 6.8), the questionnaire findings for Segment 4 were analyzed and discussed under Segment 2. However, the findings display that there is a relative need (Never 26%, Sometimes 49%, Always 31%, Don't know 3%, and N/A 3%), but still, since this segment has customers with low business values, the effort of decreasing the complexity of the business is not worth it. Therefore, customers within Segment 4 should not be offered services that fulfill the need for access to supply chain support.

Lastly, for Segment 4, the findings for the needs of batch and kit deliveries were analyzed and discussed under Segment 2. However, the findings display that the likelihood for kit deliveries (Never 9%, Sometimes 43%, Always 43%, Don't know 3%, and N/A 3%) are greater than for batch deliveries (Never 34%, Sometimes 46%, Always 14%, Don't know 3%, and N/A 3%). Considering these findings and that the customers do also have a low business value, Segment 4 should only have access to kit deliveries.

For Segment 4, it is therefore argued that a new differentiated supply chain strategy should consider the demand as predictable and the supply as long lead-times (see Figure 3.1). According to Christopher et al. (2006), this means that the customers are lean and that the main focus for these customers should be on planning and executing. The supply chain strategy for Segment 4 should hence include and offer services that fulfill the needs as seen below in Table 6.4.

Table 6.4: Compilation of need fulfillment for Segment 4

Order flexibility	Availability	On-time delivery	Reduced uncertainty	Extended assortment	Supply chain support	Batch delivery	Kit delivery
Not offered	Not offered	Standard	Not offered	Not offered	Not offered	Not offered	Standard

6.3.6 Analysis of the Needs and Services in Segment 5

The segment called **Segment 5** in Figure 6.1, which has **a low product variation, a high business value, and a predictable purchasing pattern**, was the fifth segment that was examined in the questionnaire (see Figure 6.9). The findings regarding the need for order flexibility for Segment 5 were partly analyzed and discussed above together with Segment 1. The findings, however, show that these customers, most likely, need services that can fulfill the need for order

flexibility (Never 9%, Sometimes 57%, Always 31%, and N/A 3%). As addressed when analyzing Segment 1, these late order changes are expensive and affect the whole supply chain, but on the other hand both these segments (Segment 1 and 5) have high business values and predictable purchasing values. Another advantage for Segment 5 is that the product variation is low for these customers and the risk of, for example, unpredictable product configurations is therefore low. Additionally, as argued for Segment 1, the customers within Segment 5 are financially important to Volvo Penta and the occasional need for order flexibility should therefore be fulfilled by optional services.

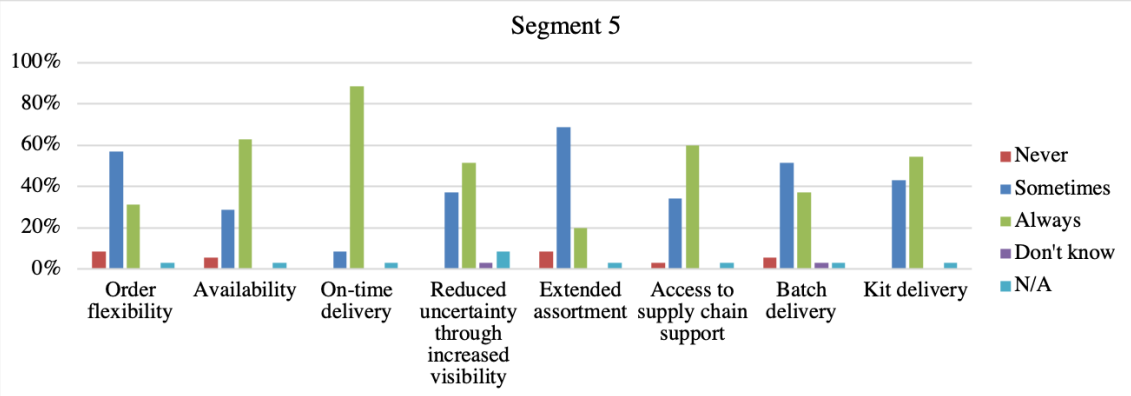

Figure 6.9: Findings from the questionnaire for Segment 5

Furthermore, it should not be a surprise to the reader that availability was also tested for Segment 5 in the internal questionnaire. The findings from this show that the customers in this segment are likely to have a convincing need for availability (Never 6%, Sometimes 29%, Always 63%, N/A 3%). If considering these findings as to the absolute truth for all customers in Segment 5, and also considering the non-complexity and high value of these customers, it is not difficult to argue that this segment should have full access to high availability. Therefore, customers within Segment 5 should be offered services that support high availability as a standard.

Continuing with the need for on-time delivery and as mentioned earlier for Segment 1, the findings from the questionnaire show that the need for on-time delivery is high for all segments (see Figure 5.3). For Segment 5, the response rate of "Always" was however lower than for Segment 1, but higher than for Segment 2, 3, and 4 (Sometimes 9%, Always 89%, and N/A 3%), which most likely has to do with the combination of all three attributes for Segment 5. The services needed to provide on-time deliveries should yet be a standard for Segment 5 also.

Moreover, the questionnaire showed that customers within Segment 5 most likely wish to have a reduced uncertainty through increased visibility (Sometimes 37%, Always 51%, Don't know 3%, and N/A 9%). With the same argumentation as earlier, these customers are highly valuable to Volvo Penta and should also be considered as non-complex. Hence, the cooperation with these customers should

be increased by fulfilling their needs of decreased uncertainty.

Following, the findings for the need for an extended assortment for Segment 5 shows that it is likely that a majority of some customers have this need (Never 9%, Sometimes 69%, Always 20%, and N/A 3%). As mentioned under Segment 1, Segment 5 has a lower operational complexity thanks to the low product variation and the predictable purchasing pattern. In addition, the customers also have a high business value. Since not all customers within Segment 5 appears to have this need for sure, services that meet the need for availability should be offered as an option.

Furthermore, the need for access to supply chain support was evaluated also for Segment 5 (see Figure 6.9). The findings from the questionnaire show that it is most likely that the customers within Segment 5 have this need (Never 3%, Sometimes 34%, Always 60%, and N/A 3%). As discussed under Segment 1, all customers with high business value (Segment 1, 3, 5, and 7) should have access to services that ease the coordination of the supply chain. Hence, Segment 5 should have services related to supply chain support offered as a standard.

Lastly, the findings from the questionnaire for the needs of batch and kit deliveries in regards to Segment 5 are more diverse than for other segments. For Segment 5, the internal perception of the segment's needs is fairly evenly distributed between "Sometimes" and "Always" for both batch and kit deliveries. However, the findings display that the likelihood for a need for kit deliveries (Sometimes 43%, Always 54%, and N/A 3%) are greater than for batch deliveries (Never 6%, Sometimes 51%, Always 37%, Don't know 3%, and N/A 3%). With this, and the fact that the segment according to the questionnaire contains customers with shared needs for this, batch deliveries should be offered as an option. This is supported by the fact that the segment has a low product variation and a predictable purchasing pattern, which simplifies the process of delivering suitable batches, and that the customers have a high business value, which increases the incentives for increased collaboration.

For Segment 5, it is therefore argued that a new differentiated supply chain strategy should consider the demand as predictable and the supply as short lead-time (see Figure 3.1). According to Christopher et al. (2006), this means that the customers are lean and that the main focus for these customers should be on continuous replenishment. The supply chain strategy for Segment 5 should hence include and offer services that fulfill the needs as seen below in Table 6.5.

Table 6.5: Compilation of need fulfillment for Segment 5

Order flexibility	Availability	On-time delivery	Reduced uncertainty	Extended assortment	Supply chain support	Batch delivery	Kit delivery
Optional	Standard	Standard	Standard	Optional	Standard	Optional	Standard

6.3.7 Analysis of the Needs and Services in Segment 6

The segment called **Segment 6** in Figure 6.1, which has **a low product variation, low business value, and a predictable purchasing pattern**, was the sixth segment that was examined in the questionnaire (see Figure 6.10). For this segment, the findings from the questionnaire show that it is likely that a majority of all customers do not need order flexibility (Never 20%, Sometimes 57%, Always 14%, N/A 9%). As earlier mentioned and argued for Segment 2 and 4, it is very costly to meet these needs and, with regard to the customers' low business values, services that fulfill this need should hence not be offered.

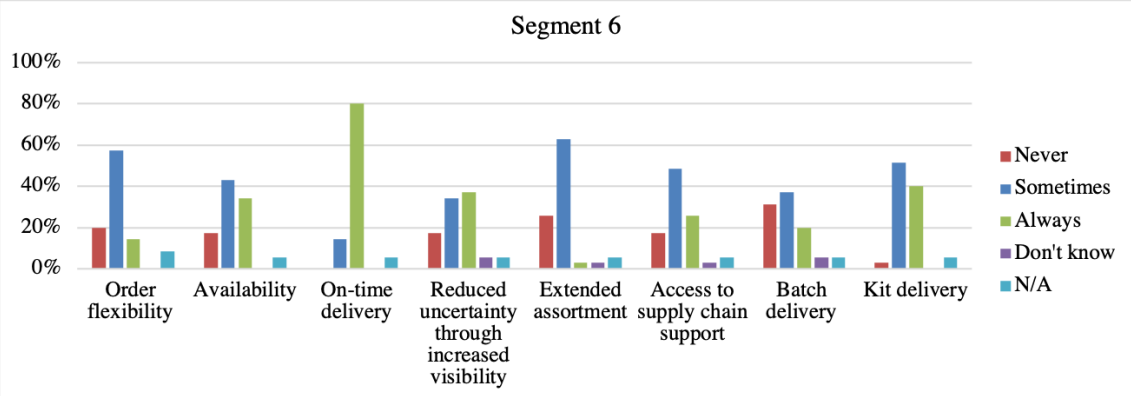

Figure 6.10: Findings from the questionnaire for Segment 6

Moreover, the findings for the need for availability shows that customers within Segment 6 are likely to ask for shorter lead times (Never 17%, Sometimes 43%, Always 34%, N/A 6%). However, the low business value and the predictable purchasing pattern make services such as stock holding unnecessary, since orders can be produced according to forecasts. The orders are also likely to contain small volumes or standardized products, which also benefits the production and further confirms that Volvo Penta should not need such services to meet this need. Concerning the findings from the questionnaire, similar numbers are found for Segment 8 (Never 14%, Sometimes 49%, Always 34%, N/A 3%), which has a low product variation, a low business value, and an unpredictable purchasing pattern. Through the above arguments, and also previously used logic of cost versus business value, none of these two segments (Segments 6 and 8) should be offered service that provides increased availability.

Furthermore, as mentioned for all previous segments the need for on-time delivery has similar findings from the questionnaire for all segments (see Figure 5.3). For Segment 6, the response rate of "Always" was however lower than for Segment 1, 2, 3, and 5, but still higher than for Segment 4 (Sometimes 14%, Always 80%, and N/A 6%). The services needed to provide on-time deliveries should however be a standard for Segment 6 as well.

Continuing with the findings of the need for reduced uncertainty through increased visibility, it is a large spread of the respondents view on the need within Segment 6 (Never 17%, Sometimes 34%, Always 37%, Don't know 6%, N/A 6%). However, this means that it is customers who do not buy great value, variation or unpredictability, but these customers do generally pass through the processes without major remarks. Considering this and also the findings from the questionnaire, but these customers within Segment 6 should not be offered the services that fulfill this need.

Additionally, the need for an extended assortment within Segment 6 was also examined in the questionnaire (see Figure 6.10). The findings display that it is likely that the customers do not have this need (Never 26%, Sometimes 63%, Always 3%, Don't know 3%, and N/A 6%). In addition, similar findings were made for Segment 2 and 4, which was why it was also analyzed under Segment 2. By using the same logic as earlier, it is hence not suitable to offer services of extended assortments for Segment 6 since it is not an obvious need for all customers and thereto also a high effort with low return. Therefore, customers within Segment 6 should not be offered services that fulfill the need for an extended assortment.

For the need for access to supply chain support (see Figure 6.10), the questionnaire findings for Segment 6 were analyzed and discussed under Segment 2. However, the findings display that there is a relative need (Never 17%, Sometimes 49%, Always 26%, Don't know 3%, and N/A 6%), but still, since this segment contains customers with low business values, the effort of decreasing the complexity of the business is unprofitable. Therefore, customers within Segment 6 should not be offered services that fulfill the need for access to supply chain support.

Lastly, for Segment 6, the findings for the needs of batch and kit deliveries were analyzed and discussed under Segment 2. However, the findings display that the likelihood for kit deliveries (Never 3%, Sometimes 51%, Always 40%, and N/A 6%) are greater than for batch deliveries (Never 31%, Sometimes 37%, Always 20%, Don't know 6%, and N/A 6%). Considering these findings and that the customers do also have a low business value, Segment 6 should only have access to kit deliveries.

For Segment 6, it is claimed that a new and more differentiated supply chain strategy should consider the demand as unpredictable and the supply as long lead-times (see Figure 3.1). According to Christopher et al. (2006), this means that the customers are leagile and that the main focus for these customers should be on postponement. The supply chain strategy for Segment 6 should hence include and offer services that fulfill the needs as seen below in Table 6.6.

Table 6.6: Compilation of need fulfillment for Segment 6

Order flexibility	Availability	On-time delivery	Reduced uncertainty	Extended assortment	Supply chain support	Batch delivery	Kit delivery
Not offered	Not offered	Standard	Not offered	Not offered	Not offered	Not offered	Standard

6.3.8 Analysis of the Needs and Services in Segment 7

Continuing with the segment called **Segment 7** in Figure 6.1, which has **a low product variation, a high business value, and an unpredictable purchasing pattern**, was the seventh segment that was examined in the questionnaire. The findings regarding the need for order flexibility for Segment 7 was analyzed and discussed earlier together with Segment 3, however, the findings show that these customers most likely need services that can meet the need for order flexibility (Never 6%, Sometimes 37%, Always 51%, and N/A 6%). But as argued earlier for Segment 3 and 4, customers who are unpredictable should not be allowed to do late or frequent order changes once the purchasing order has been placed, regardless of the business value and also the level of product variation. Segment 7 should therefore not be offered services that fulfill the need for order flexibility.

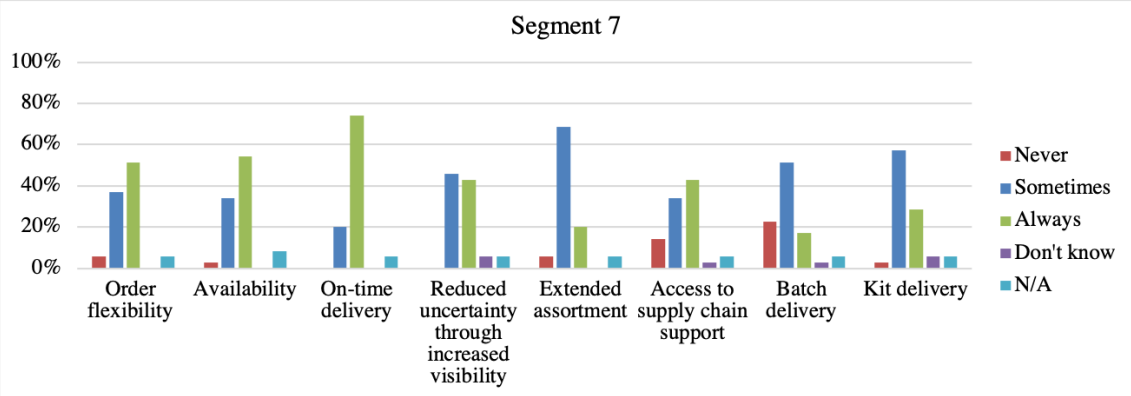

Figure 6.11: Findings from the questionnaire for Segment 7

Furthermore, Figure 6.11 also display the findings for the need for availability within Segment 7. As seen, there is a majority of respondents who argue for a high need for availability (Never 3%, Sometimes 34%, Always 54%, and N/A 9%). With regards to this, customers within Segment 7 are highly likely to ask for shorter lead times than standard, but these requests will most likely come on an unpredictable basis. However, the customers also have a high business value and a low product variation, meaning that the unpredictability could be argued to regard time, both of order placement and delivery, rather than the order content. With this in mind, it could hence be argued that services such as stock holding could be rather non-complex for these customers, seen to the stock holding units. On the other hand, the time required to keep these in stock and also the number of units. But, due to the high business value, the Return of Investment for those customers that need shorter lead times than standard might be high. Therefore, the services needed to fulfill this need should be offered as optional for customers within Segment 7.

Moreover, the findings from the questionnaire show that the need for on-time delivery is high for all segments (see Figure 5.3). For Segment 7, the response rate of "Always" was however lower than for Segment 1, 2, 3, 5 and 6, but still higher than for Segment 4 (Sometimes 20%, Always 74%, and N/A 6%). Nonetheless, the services needed to provide on-time deliveries should be a standard for Segment 7 as well.

The findings for the fourth need, the need for reduced uncertainty through increased visibility, display that customers within Segment 7 most likely are diverse in this need (Sometimes 46%, Always 43%, Don't know 6%, and N/A 6%). If the argumentation for this segment and need is kept short, it could be argued that the customers have a high business value and that the share of cooperation through shared information should therefore be done. As mentioned earlier, it is not preferred that customers with an unpredictable purchasing pattern get access, seen from the perspective that they could take advantage of this even more. However, for customers with high business value, the risk should be considered as lower since these customers most likely have a closer relationship to Volvo Penta. Therefore, customers within Segment 7 should be offered services that reduce uncertainties through increased visibility.

Following, the findings for the need for an extended assortment (see Figure 6.11), show that some of the customers within Segment 7 most likely have this need (Never 6%, Sometimes 69%, Always 20%, and N/A 6%). As earlier argued and discussed, customers with an unpredictable purchasing pattern might cause a Bullwhip effect when other assortments are involved. However, customers within Segment 7 do also have a high business value, which supports that these customers should have access to other assortments. This since an increased customer satisfaction might improve the businesses for Volvo Penta perceptually more, than what a customer with low business value would. Considering this and also that the customer need is diverse, customers within Segment 7 should have service related to an extended assortment as an option.

Furthermore, the need for access to supply chain support was evaluated also for Segment 7 (see Figure 6.11). The findings from the questionnaire show that it is most likely that the customers within Segment 7 have this need (Never 14%, Sometimes 34%, Always 43%, Don't know 3%, and N/A 6%). As has been discussed under Segment 1, all customers with high business value (Segment 1, 3, 5, and 7) should have access to services that ease the coordination of the supply chain. Therefore, the customers within Segment 7 should be offered service related to supply chain support as a standard.

Lastly, for Segment 7, the findings from the questionnaire for the needs of batch and kit deliveries are shown in Figure 6.11. The findings display that the likelihood for kit deliveries (Never 3%, Sometimes 57%, Always 29%, Don't know 6%, and N/A 6%) are greater than for batch deliveries (Never 23%, Sometimes 51%, Always 17%, Don't know 3%, and N/A 6%). Considering these findings and

that the customers have a high business value and a low product variation, Segment 7 should have access to both kit and batch deliveries.

For Segment 7, it is therefore claimed that a new and more differentiated supply chain strategy should consider the demand as unpredictable and the supply as short lead-times (see Figure 3.1). According to Christopher et al. (2006), this means that the customers are agile and that the main focus for these customers should be on quick response. The supply chain strategy for Segment 7 should hence include and offer services that fulfill the needs as seen below in Table 6.7.

Table 6.7: Compilation of need fulfillment for Segment 7

Order flexibility	Availability	On-time delivery	Reduced uncertainty	Extended assortment	Supply chain support	Batch delivery	Kit delivery
Not offered	Optional	Standard	Standard	Optional	Standard	Optional	Standard

6.3.9 Analysis of the Needs and Services in Segment 8

Lastly, among the segments examined in the questionnaire, the segment called **Segment 8** in Figure 6.1, which has **a low product variation, a low business value, and an unpredictable purchasing pattern**, was the eighth segment. The findings regarding the need for order flexibility for Segment 8 was analyzed and discussed earlier together with Segment 3. The findings, however, show that these customers most likely need services that can meet the need for order flexibility (Never 20%, Sometimes 49%, Always 29%, Don't know 3%). As was found earlier, customers who are unpredictable should not be allowed to do late or frequent order changes once the purchasing order has been placed, regardless of the business value and also the level of product variation. Segment 8 should therefore not be offered services that fulfill need for order flexibility.

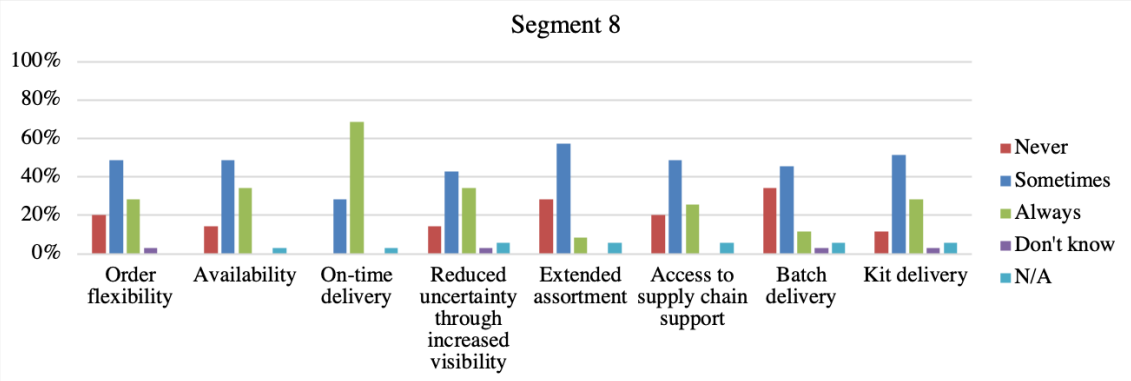

Figure 6.12: Findings from the questionnaire for Segment 8

Furthermore, the need for availability was examined in the questionnaire and the findings are seen below in Figure 6.12. The findings show that a majority of the customers within Segment 8 will most likely ask for a shorter delivery time, at

least on an occasional level (Never 14%, Sometimes 49%, Always 34%, N/A 3%). Nonetheless, the service fulfillment of customers with low business value was discussed earlier under Segment 6, where it was argued that the incentives from the cost versus the business value were too low. Additionally, Segment 8 does also contain customers with an unpredictable purchasing pattern, which means an even higher cost for the services needed. Therefore, customers within Segment 8 should not be offered services that provide increased availability.

Moreover, the findings of the need for on-time delivery still show that this is high for all segments (see Figure 5.3). For Segment 8, the response rate of "Always" was however lower than for all other segments (Sometimes 29%, Always 69%, and N/A 3%). Still, the services needed to provide on-time deliveries should be a standard for Segment 8.

Following, the findings for the need for reduced uncertainty through increased visibility are seen below in Figure 6.12. As seen, the questionnaire shows that customers within Segment 8 are likely to have this need (Never 14%, Sometimes 43%, Always 34%, Don't know 3%, and N/A 6%). Nonetheless, these customers have both a low business value and an unpredictable purchasing pattern, which is also the case for Segment 4. The same argument, meaning that the incentives at Volvo Penta for increased cooperation are likely to below. As for Segment 4, the customers within Segment 8 should not be offered any services in order to reduce the uncertainty.

Furthermore, the need for an extended assortment was also examined in the questionnaire (see Figure 6.12), which in addition has also been analyzed under Segment 2. The findings for Segment 8 do however display that it is likely that the customers do not have this need (Never 29%, Sometimes 57%, Always 9%, and N/A 6%). Since Segment 8 does not have an obvious need for an extended assortment and since it would also mean a high effort with low value, it is not suitable to offer services that meet this need. Therefore, customers within Segment 8 should not be offered services that fulfill the need of an extended assortment.

Continuing with the need for access to supply chain support (see Figure 6.12), the questionnaire findings for Segment 8 were also analyzed and discussed under Segment 2. However, the findings display that there is most likely a relative need (Never 20%, Sometimes 49%, Always 26%, and N/A 6%). Still, since this segment has customers with low business values, the effort of decreasing the complexity of the business is fruitless. Therefore, customers within Segment 8 should not be offered services that fulfill the need for access to supply chain support.

Lastly, for Segment 8, the findings for the needs of batch and kit deliveries were analyzed and discussed under Segment 2. However, the findings display that the likelihood for kit deliveries (Never 11%, Sometimes 51%, Always 29%, Don't know 3%, and N/A 6%) are greater than for batch deliveries (Never 34%, Sometimes 46%, Always 11%, Don't know 3%, and N/A 6%). Considering these findings and

that the customers do also have a low business value, Segment 8 should only have access to kit deliveries.

For Segment 8, it is argued that a new differentiated supply chain strategy should consider the demand as predictable and the supply as long lead-times (see Figure 3.1). According to Christopher et al. (2006), this means that the customers are lean and that the main focus for these customers should be on planning and executing. The supply chain strategy for Segment 8 should hence include and offer services that fulfill the needs as seen below in Table 6.8.

Table 6.8: Compilation of need fulfillment for Segment 8

Order flexibility	Availability	On-time delivery	Reduced uncertainty	Extended assortment	Supply chain support	Batch delivery	Kit delivery
Not offered	Not offered	Standard	Not offered	Not offered	Not offered	Not offered	Standard

6.3.10 Analysis of the Possibility to Merge Segments

As all eight segments have now been analyzed in terms of the fulfillment of needs, an analysis of the possibility to merge different segments should be done. The segmentation has its basis in the statement from Anderson et al. (2009), who argue that the number of segments should be kept as low as possible but without disregarding the customer needs. With this in mind, a compilation of the different segments and the fulfillment per need has been done below (see Table 6.9).

Table 6.9: Compilation of need fulfillment for each segment

Needs / Segments	Order flexibility	Availability	On-time delivery	Reduced uncertainty
Segment 1	Optional	Optional	Standard	Standard
Segment 2	Not offered	Not offered	Standard	Not offered
Segment 3	Not offered	Standard	Standard	Standard
Segment 4	Not offered	Not offered	Standard	Not offered
Segment 5	Optional	Standard	Standard	Standard
Segment 6	Not offered	Not offered	Standard	Not offered
Segment 7	Not offered	Optional	Standard	Standard
Segment 8	Not offered	Not offered	Standard	Not offered

Segments \ Needs	Extended assortment	Supply chain support	Batch delivery	Kit delivery
Segment 1	Optional	Standard	Optional	Standard
Segment 2	Not offered	Not offered	Not offered	Standard
Segment 3	Not offered	Standard	Optional	Standard
Segment 4	Not offered	Not offered	Not offered	Standard
Segment 5	Optional	Standard	Optional	Standard
Segment 6	Not offered	Not offered	Not offered	Standard
Segment 7	Optional	Standard	Optional	Standard
Segment 8	Not offered	Not offered	Not offered	Standard

As seen in the table, Segment 2, 4, 6, and 8 all have the same set of need fulfillment. This can be derived to the degree of business value, which for all four segments is low. To merge all four segments into one would however mean that 75% of Volvo Penta' customers are put into one segment, which would not benefit the future work of a new supply chain strategy. Nonetheless, the segments should be merged in order to not have too many segments with the same service offerings. Since all four segments have a low business value, only the other two segmentation attributes differ. By comparing the impact on the supply chain, it could be argued that the purchasing pattern has a higher operational impact than the product variation. Therefore, Segment 2 and 6, which both have customers with low business values and predictable purchasing patterns, should be merged. Similarly, Segment 4 and 8 should be merged into one segment on the basis that both segments contain customers with low business values and unpredictable purchasing patterns.

6.3.11 Analysis of the Services for Strategic Customers

As mentioned earlier in the analysis, the needs of the strategic customers are unknown. To speculate in what kind of specific services that these customers need is therefore not in the scope of this study. The customers that today receive special services are likely to be strategic and as mentioned these services are created with adaptions for the special case. This must also be the case, since the importance of these businesses is highly valuable both currently and for the future. When Volvo Penta has decided which customers that are strategic, the primary thing to do is hence to understand the customer needs and thereafter offer tailored services.

6.3.12 Analysis of the Services for New Customers

As previously mentioned, new customers are naturally important and should be included in the segmentation. The three attributes for the segmentation (product variation, business value, and purchasing pattern) are however not possible to apply for new customers, since these depend on historical data. The services offered for the customers within this segment must hence be of more observational

and caring characteristics. This could for instance mean that on-time delivery for a new customer is highly prioritized, or that services for high availability are offered. This since the characteristics of the customers are still unknown. When enough data is available, the customer should be moved to the right segment. If the new segment offer a higher service level, which would mean that the customer has had too much attention, the service level should be gradually lowered. The reduction of service level must however consider the specific customer in order to not create unnecessary negotiations. The service level within each segment is considerable firm, and it is therefore important that customers which are moved from the segment of new customers to "Segment X" are met with the same standard as other customers within "Segment X".

6.4 Analysis of Segmentation Applicability

In order to ensure that the customer segmentation is viable for Volvo Penta, this sub-chapter will analyze and discuss the usefulness and easiness of the implementation and the level of maintenance that is needed in order to keep the segmentation up to date. However, the sub-chapter will firstly discuss the branding of the segments that will increase the application handiness.

6.4.1 Analysis of Segment Branding

According to Pirola et al. (2014), the understanding of the customer need can be done by utilizing the tool of personas. For the branding of the segments, that is the designation of the segments, this study has utilized the tool backward. The analysis started from the six segments (four segments were merged into two segments, as stated above) plus the different attributes and needs. Out of these, examples of customers (personas) were used to brand the segments. It should also be mentioned that the customer is unaware of which segment it is placed in, meaning that the segments and also the branding are only for internal use. All segments are found below in Figure 6.13.

For Segment 1, which contains customers with high product variation, a high business value, and a predictable purchasing pattern, customers used as personas for this segment were Versatile engine customers. As mentioned in the findings, these customers tend to order engines on a project basis, meaning that the product variation is high, but there also is a high business value and a predictable purchasing pattern. Due to the project based orders, where collaboration is needed, this segment was branded as **Collaborative Customers**.

Furthermore, for the merged segment of customers from Segment 2 and 6, the branding resulted in the designation **Steady Customers**. These customers have either a high or low product variation, a low business value, and a predictable purchasing pattern, meaning that the customers are probably smaller customers but with a steady and predictable flow of orders. The customers used as personas

were hence small yards.

Hereafter, customers in Segment 3 were branded. These customers have a high product variation, a high business value, and an unpredictable purchasing pattern, which was why the customers were given the segmentation name **Impulsive Customers**. For these customers, the unpredictability means that not only is the time of order placement unknown, but also the order size and the order configuration. This type of customer was, therefore, seen as impulsive and the persona used to elaborate the brand of the segment was a Marine Commercial customer.

For the second merge, that is of Segment 4 and 8, the name **Unsteady Customers** was elaborated. This since the customers have either a high or low product variation, a low business value, and an unpredictable purchasing pattern. Unlike the Steady Customers, these customers are both small and unpredictable, which makes them unsteady and the persona used was hence a dealer.

For Segment 5, which contains customers with low product variation, a high business value, and a predictable purchasing pattern, the customers were considered to be highly beneficial customers for Volvo Penta. Therefore, this segment was branded as **Most Beneficial Customers**. In this branding, the cost of the customer effort, in relation to the business profit, was considered higher than for the other segments.

Moreover, Segment 7 was also elaborated. This segment contains customers with low product variation, a high business value, and an unpredictable purchasing pattern, which was why Genset engine customers were primarily kept in mind. Since these customers are generally not predictable when it comes to time, but still somewhat predictable in the purchase of engine configurations, the segment was branded as **Powerful Customers** since the customers are demanding in terms of flexibility.

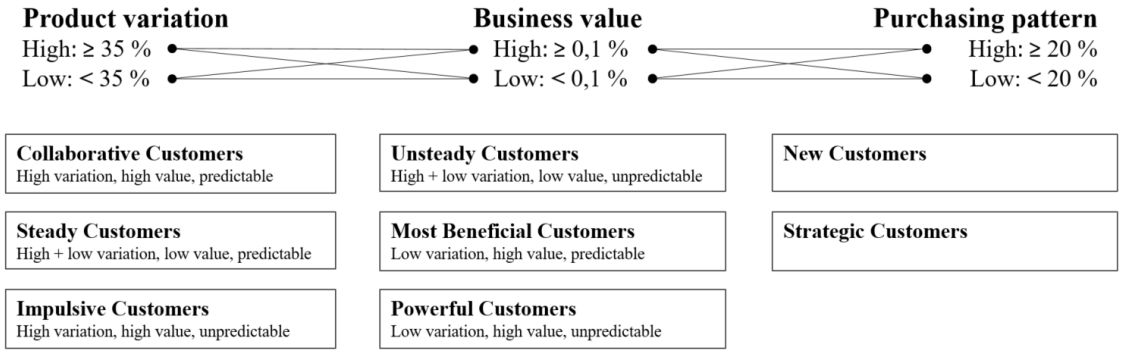

Figure 6.13: A compilation of the elaborated names for the different segments

Customer Distribution Among Segments

To be able to evaluate the segmentation proposal and segmentation attributes, all customer orders placed and billed during 2018 were analyzed, and the customers were positioned, based on the attribute levels, in the proposed segmentation structure (see Figure 6.14). To further guarantee that the segments were substantial, an analysis of the customer distribution among the segments was made. According to Fill and Fill (2004), substantial segments implies that the segments are big enough to distinguish differences. Therefore, the following sub-chapter aims to ensure that the segmentation proposed in this study is substantial.

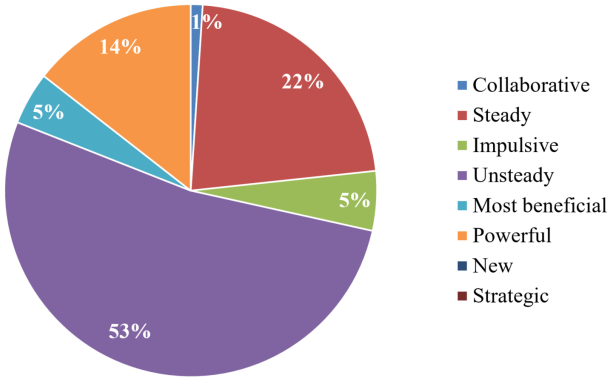

Figure 6.14: Distribution of customers among the different segments

As can be seen in Figure 6.14, a majority of the customers are positioned in the Unsteady segment. It is seen as logic that this segment is the largest since a lot of customers make sporadic purchases without contributing to large business values. In addition, these customers have also been recognized to have similar needs for supply chain services. The second largest segment is the Steady segment. Since the largest portion of the customers stands for a relatively small share of the total business value, it is legitimate that the Unsteady and Steady segment are the two largest segments. This, especially since the product variation is not considered for these two segments. It could of course be beneficial to divide these segments with regard to product variation in order to achieve a more equal distribution of the customers, however, it is seen more beneficial to group all customers that have the same needs and also to keep the number of segments limited.

Furthermore, the Most Beneficial segment and the Impulsive segment are relatively similar in size. These customers contribute to a large part of Volvo Penta's revenue and are further distinguished on product variation and purchasing pattern. Similarly, the segments of Collaborative and Powerful customers do also contribute largely to the revenue, but the distribution is not equally even. That the sizes between these four segments are not equal should, however, not be seen as a problem since substantial segments have been found anyway. This since similarities are seen within each segment and differences are seen between the different segments. It should nonetheless be noted that Volvo Penta has a large customer

base of Powerful customers and a much smaller customer base of Collaborative customers and it could be argued that the latter segment is easier to serve.

Lastly, there are no customers placed in the segments for New customers or Strategic customers since the distribution is based on existing customers and existing documentation. Therefore, it should be emphasized that since there is no current definition of strategic customers there will be no proposal of which customers that should be placed in this segment. Additionally, it is for the future also seen as necessary to manually evaluate if a customer should be moved from the New customer segment to another segment as well as if a customer belongs to the Strategic customer segment.

Supply Chain Service Distribution Among Segments

A compilation of the needs that should be fulfilled with services as either standard, optional or not offered, are presented below in Figure 6.10 for each branded segment. As stated above, four segments were merged into two segments since these otherwise would have the same service offerings. Additionally, the segments of New customers are suggested to be served with only standard or optional services, while the Strategic customers are served with tailored offerings. For each segment different supply chain services should be assigned either optional, not offered, or as a standard (see Table 6.10).

Table 6.10: Compilation of need fulfillment for each branded segment

Needs / Segments	Order flexibility	Availability	On-time delivery	Reduced uncertainty
Collaborative	Optional	Optional	Standard	Standard
Steady	Not offered	Not offered	Standard	Not offered
Impulsive	Not offered	Standard	Standard	Standard
Unsteady	Not offered	Not offered	Standard	Not offered
Most beneficial	Optional	Standard	Standard	Standard
Powerful	Not offered	Optional	Standard	Standard
Strategic	Tailored	Tailored	Tailored	Tailored
New	Optional	Optional	Standard	Optional

Needs / Segments	Extended assortment	Supply chain support	Batch delivery	Kit delivery
Collaborative	Optional	Standard	Optional	Standard
Steady	Not offered	Not offered	Not offered	Standard
Impulsive	Not offered	Standard	Optional	Standard
Unsteady	Not offered	Not offered	Not offered	Standard
Most beneficial	Optional	Standard	Optional	Standard
Powerful	Optional	Standard	Optional	Standard
Strategic	Tailored	Tailored	Tailored	Tailored
New	Optional	Optional	Optional	Standard

6.4.2 Analysis of Segmentation Management

As stated earlier, one finding from the interviews with employees at Volvo Penta was that in order to secure sustainable management of the segmentation, it is important to delegate the ownership of the segmentation. This means that someone, or someones, must be responsible for updating the segmentation and to keep it compatible with the internal processes at Volvo Penta. In order to accomplish this, the owner of the segmentation should possess great knowledge of both the internal processes and customer knowledge, this to secure that the segmentation is usable and that customers are positioned in the most suitable segment. If this knowledge is not possessed by the owner, then there is a risk of not optimizing the usefulness of the segmentation.

The management of the segmentation should further include to continuously update the attributes of the segmentation and also the customer positions. This since it is important to have suitable attribute levels, that distinguish different customer needs of supply chain services, which is supported by Russell (2015), stating that processes must be continually updated. Additionally, Kano et al. (1984) argue that customer needs are dynamic, meaning that they change over time. Therefore, the positions of the customers in the different segments must also be kept up to date. However, since the attributes and the information needed is available, such update can be done automatically for all segments except for new customers and for strategic customers. But in order to secure that the segmentation is updated, a yearly updating process could be implemented. The management must therefore include delegating authorization for deciding which customers that should be included in the strategic segment and also for transferring new customers to a suitable segment once there is enough information to understand their needs of supply chain services. It is important to ensure that not too many customers are included in the strategic segment, since these customers must be treated with the tailored services.

To assure that the segmentation is useful, it is important to integrate it in the core processes of Volvo Penta. The core processes that are seen most relevant to the segmentation are the second and third processes, i.e. the Market and Sell Total

Offer process, and the Produce and Distribute Product process (see Figure 2.7). This since these two processes concern customer needs and how to fulfill these, meaning delivering the right products in the right way and with the right services. Hence, the proposed customer segmentation can be useful in these processes and provide a motivation to which services that should be available for each customer type. By this, the complexity of adapting supply chain services would be reduced. It is further in the obligation of the segmentation owner that both the segmentation and the internal processes at Volvo Penta are developed to benefit from the compatibleness.

6.4.3 Analysis of a New Supply Chain Strategy

According to Fill and Fill (2004), a segmentation must be compatible with the business strategy. At Volvo Penta, a new supply chain strategy is about to be developed and it is hence desirable to make this backward. This sub-chapter will, therefore, describe how the segmentation has the possibility to shape the future supply chain strategy. For the future strategy it should, however, also be remembered that a Customer Service Policy should be elaborated. This will, according to Rushton et al. (2016), give a clear overview of which services that are offered and also what customer needs these fulfills.

According to Beck et al. (2012), a supply chain strategy should be differentiated with regards to the customer demand. By viewing the different segments elaborated in this study, the demand and supply for each segment become clear. Thanks to this, it is possible to plot the different segments according to theory by Christopher et al. (2006). As seen below in Figure 6.15, the segments have been positioned in four different areas of supply chain strategies, which each has different focuses. Additionally, the positions within the areas should also be considered as this reflects the degree of demand (predictability) and supply (lead time) for the segment.

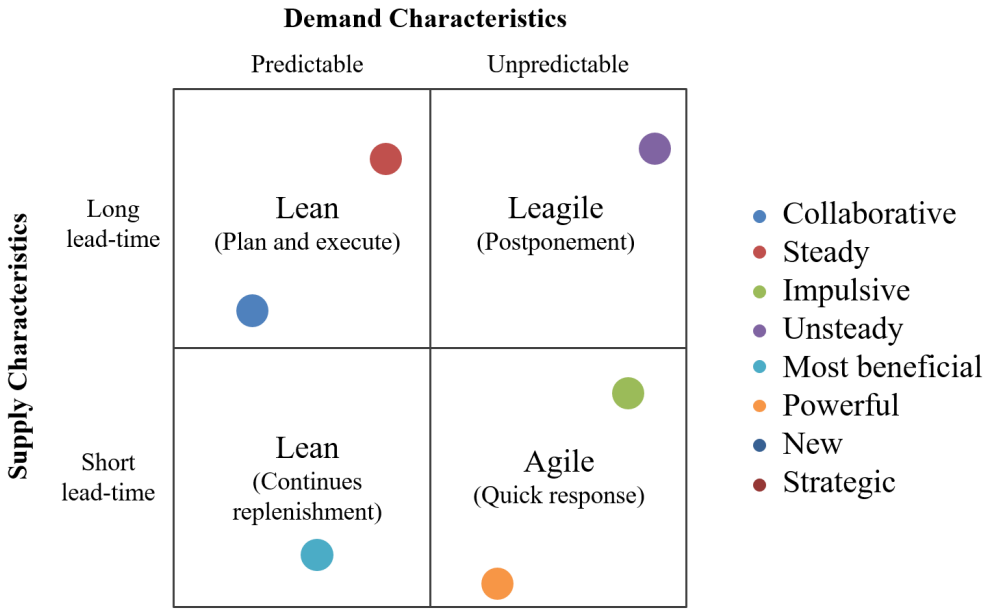

Figure 6.15: Distribution of the different segments between different supply chain strategies from Christopher et al. (2006)

Starting in the first and upper area of a lean supply chain strategy, the **Collaborative** customers are positioned here. The position of these customers, where the lead-time is long and the demand is predictable, can be derived to the closeness of the relationship since the customers work closely together with Volvo Penta. Also, the lead-time for these customers is relatively close to the middle line between short and long, meaning that the customers are not impulsive when it comes to order placements, but should still be prioritized. Similarly, the **Steady** customers are also considered as lean, but with a lower degree of predictability and a lower prior in lead-time. For both these customer segments, the plan and execution should be in focus.

Furthermore, the **Unsteady** customers are positioned in leagile area, meaning that these customers should be served with postponement. The customers are further considered to be very unpredictable and should be served with a long lead-time.

In the third strategy area, meaning the agile area, the **Impulsive** customers are positioned in the upper right corner. This means that the customers have a high level of unpredictability but must still be supplied with a short lead-time. The focus for these customer is hence on quick responses. Similarly, the **Powerful** customers are also positioned in this type of supply chain strategy. Since these customers generally possess the power in negotiations, the short lead-times are even more important.

Moreover, the **Most beneficial** customers have been positioned in the fourth area which is the lower lean area. These customers require a focus on continuous replenishment since the predictability is high but the lead-time is short.

Lastly, **New** and **Strategic** customers have not been positioned within any specific supply chain area. For the New customers, these should be served by a strategy that is not specific but rather adjusted to the specific customer. As mentioned earlier in this context, this must be the case until the customer needs and behaviors are known. However, the macro segmentation based on the customer's business area and customer type (e.g. dealer, OEM, etc.) can be applied and, to some extent, be used as a reference when choosing a supply chain strategy. For instance, this means that OEMs that are Genset engine customers are generally Powerful or Impulsive customers, implying that the customers should be served with an agile supply chain strategy. Similar generalizations can, therefore, be made for other new customers where the initial supply chain strategy is based on the macro segmentation (e.g. the business area and/or customer type). The branding made earlier can, hence, provide an idea of the respective strategies. In addition, the Strategic customers are neither placed within any specific supply chain strategy area. For these customers, the supply chain strategy must be tailored since the customer characteristics are unique. Therefore, specific supply chain strategies will not be proposed for any of these two segments since a generalization on a segment level cannot be made.

7
Conclusion

In this chapter, the conclusion of this Master's Thesis is presented. The chapter is structured with regards to the research questions and it is later concluded with recommendations for Volvo Penta.

7.1 Answers to the Research Questions

How are customers currently approached with regard to supply chain services?

At Volvo Penta, most customers are today approached with the same standard set of supply chain services. For instance, most customers have the same level of service flexibility when it comes to order changes or an extended assortment and also the same access to service hours. The customer needs are, therefore, seen as homogeneous, as there is currently no regard to the customer needs for supply chain services. Furthermore, this means that the current supply chain strategy at Volvo Penta is a one-size-fits-all approach, where only the most basic customer needs are met. However, a handful of customers are approached with tailored services, such as authorized stocks, special order entries, and pre-assembly, although, these services are only offered in rare cases. Nonetheless, there is no policy for when and how these services will be offered to other customers. Additionally, the current supply chain strategy focuses on efficiency, rather than effectiveness, which is remaining from the time when Volvo Penta only served one market. In order to better meet the customer needs, the supply chain strategy focus should now shift towards effectiveness but in order to do so, a customer segmentation from a supply chain service perspective is first needed.

What segmentation attributes should the customer segmentation be based on, in order to differentiate customer needs of supply chain services?

Volvo Penta is present at several different markets and industries and, therefore, the customer base characteristics of Volvo Penta is widely spread. By performing interviews with employees at Volvo Penta, similarities and differences among Volvo Penta's customers could be identified in order to understand how to segment the different customers. Three attributes were conclusively chosen as a base for the segmentation, product variation, business value, and purchasing pattern. These

attributes are both seen valid and most relevant when segmenting from a supply chain service perspective, whereas other attribute suggestions did not differentiate customer needs with regard to supply chain services. For each of the chosen attributes, a limit was decided in order to achieve two levels of each attribute.

Product variation was chosen as one of the segmentation attributes since it distinguishes if a customer can have a standardized flow with the same product variations over time, or if the product flow must be more adjusted to different product variants. Business value as an attribute describes how profitable a customer is for Volvo Penta, and it can, therefore, be used to distinguish how much resources to put on supply chain service on a certain customer segment. Purchasing pattern is supposed to include order flexibility and forecast accuracy, however, since no data currently is collected at Volvo Penta regarding forecast accuracy on a customer level, only order flexibility is considered for this segmentation attribute. Volvo Penta is, therefore, recommended to start such data collection for the customers' forecast accuracy since it provides a more accurate picture of customer needs with regard to supply chain services. Order flexibility, meaning how many changes that are made after an order is placed, shows how resource demanding a customer is since changes need to be made manually and it can further cause effects on production and inventory planning. Two separate segments were further included in the segmentation proposal, one for new customers and one for strategic customers. These segments are not based on the three attributes, but instead strategic customers are unique and seen as highly important for Volvo Penta's businesses, while there are no existing data to base the positioning of new customers.

What supply chain services should be accessible to the different customer segments, in order to match the customer needs within the segments?

In order to better meet the customer needs, it has in this Master's Thesis been argued that different customer segments should have access to different supply chain services. By this, the elaborated segmentation structure enables Volvo Penta to deviate from the current supply chain strategy, where customer needs are seen as homogeneous, and instead tailor the supply chain services after the needs within each segment. By offering different segments different services, the customer satisfaction is likely to increase since the supply chain strategy then focuses on effectiveness rather than efficiency.

Furthermore, the analysis of the customer needs together with the possible benefits that are likely to emerge if the needs are fulfilled, showed that all customers within a segment do not have the same needs and also that it is not always beneficial to fulfill these with offered services. The evaluated needs were; order flexibility, availability, on-time delivery, reduced uncertainty through increased visibility, extended assortment, access to supply chain support, batch delivery, and kit delivery. Additionally, the analysis showed that all segments do not have the same needs and, therefore, the logic by Anderson et al. (2009) was applied and the

different customer segments were permitted different levels of access to the services that fulfilled the needs. Meaning, each segment has services offered to fulfill the needs, which are offered as either standard, optional, or not offered (see Table 6.10). In short, this means that each customer segment has access to a number of services, which together creates a differentiated supply chain approach adapted for each customer segment.

What is needed in order to make the customer segmentation applicable?

Within the scope of this thesis, the proposal of the customer segmentation has been made more applicable to Volvo Penta by branding each segment. The different segments were branded with descriptive names to ease the use of the segmentation for all employees at Volvo Penta and to make it easy to understand what customer needs the different segments represent. However, it is further important to also secure the future use of the segmentation. Therefore, the researchers concluded that it is important to delegate the ownership of the segmentation to assure the applicability. The ownership should hence be assigned to someone, or someones, that possess great understanding of both customers and the core processes of Volvo Penta. The ownership of the segmentation must also include keeping the segmentation compatible with internal processes and assuring that customers are positioned in the most suitable segment. The ownership should further comprise to decide which customers that should be included in the strategic segments, as well as move new customers when a suitable segment can be chosen.

To assure that the segmentation is compatible with Volvo Penta's processes, and continuously updated, maintenance of the segmentation needs to be done on a yearly basis. The ownership of the segmentation must also comprise developing and adjusting the supply chain services offered to the different segments. This to ensure fulfillment of the different needs and to keep the segmentation applicable.

7.2 Recommendations

First and foremost, it is recommended to Volvo Penta to carefully and truly understand the proposed customer segmentation. By doing this, the barriers to implementing the segmentation are more easily overcome. Hereafter, in order to further develop the customer segmentation and to also develop the new supply chain strategy at Volvo Penta, it is recommended that an owner of the segmentation is appointed. This has been highlighted earlier as important since an ownership will decrease the risk of having the segmentation forgotten, in which case the success of the new supply chain strategy would also diminish. Furthermore, it is also recommended that the owner of the segmentation promotes the development of forecast accuracy on a customer level. Hence, to include the forecast accuracy per customer in the proposed customer segmentation structure will further strengthen the applicability and usefulness of the customer

segmentation. As the last recommendation for the owner of the segmentation, it is suggested that the task specification of this role includes attendance in the development of a strategic customer definition.

Secondly, Volvo Penta should investigate the real customer needs, which naturally should be done together with the customers. It is also recommended that the team, which is appointed to examine this, consists of both sellers and employees with more specific knowledge in supply chain management. A cross-functional team increases the likeliness of finding both the expressed and latent needs as well as understanding which needs that must be fulfilled. Subsequently, it is recommended that the new supply chain services are elaborated in order to match the different customer needs, as well as the future needs. Additionally, these needs should be documented in a Customer Service Policy.

By implementing the customer segmentation proposed in this Master's Thesis, and also by following the recommendations above, Volvo Penta will most likely succeed in developing a new supply chain strategy that both understands and manages different customer needs.

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A

Interview Questions

This Appendix presents the structures for the interviews that have been held with employees at Volvo Penta during the spring of 2019. The total number of interviews that were held amounted to 28. The questions in the Appendix are structured by the different departments and the number of interviewees per department are specified below each sub-heading. Please note that some employees were interviewed twice, meaning that the number of employees does not match the number of interviews.

Questions Asked to All Interviewees

- Could you tell us about your role?
- Could you tell us about the business area in which you are working?
- Could you tell us about the customer portfolio?
- Would you say that there are similarities/differences between the customers needs and behaviours? If so, in what way?
- What would you say characterizes a customer in your business area compared to other areas or geographical regions?
- What attributes would you consider appropriate for a customer segmentation from a supply chain perspective?
- How would a customer segmentation ease/affect your work?

Questions asked to Interviewees from Business Control

Number of interviewees: 2

- How do you measure customer value and costs? Do you have any KPIs?
- Do you differentiate customers by their values and costs?
- You have an ABC analysis for the customers, how is this used?
- What are the similarities and differences between A, B, and C customers?
- What trends do you see within supply chain management?
- Which are the greatest costs in the supply chain?
- Do you give priority to certain customers when it comes to supply chain management?
- How do you define "big customers"?

Questions asked to Interviewees from Processes and IT

Number of interviewees: 3

- How does the business process look like and what IT tools are supporting this?
- What capabilities do you have in the processes?
- How did you develop the capabilities and why?

Questions asked to Interviewees from Product Management

Number of interviewees: 3

- What initiates the development of a new product?
- How do you determine when a new product should be developed?
- How does the development process look like?
- With product development in mind, would you describe Volvo Penta as customer oriented?
- Do you work towards expressed or latent customer needs?
- How much information about the customer do you have access to?
- What adjustments and impositions do you do?
- How well would you say that you know the customer needs?
- How does the life cycle of the product and customer look like? Is there any point in time at which the customer is extra sensitive to changes?
- Considering the loyalty ladder, would you say that all customers are treated similarly?

Questions asked to Interviewee from Corporate Strategy

Number of interviewees: 1

- How do you identify trends? Do you do this proactive or reactive?
- Do you work in close collaboration with the customer?
- What trends do you see for the different business areas?
- What strategies within supply chain management are used to meet trends?
- Would you say that there is a trend, or an ongoing change, in the way that customers behave?
- Would you say that there is a trend, or an ongoing change, in customer demands?
- Would you say that there is a trend, or an ongoing change, in customer satisfaction?

Questions asked to Interviewee from Business Development

Number of interviewees: 1

- How does the business development affect the customer process?
- How do you prepare for new trends?
- Are you currently preparing for any trends?

Questions asked to Interviewees from Sales and Marketing

Number of interviewees: 9

- Could you describe the different type of customers?
- Could you describe the sales structure? Are the sellers appointed to certain customers?
- Could you tell us about the structure for sell incentives at Volvo Penta?
- Would you say that there is a high variation in purchasing pattern and the purchased volume?
- What similarities and differences would you say that there is between customers?
- How well would you say that the sellers know the customer needs?
- Does a seller mostly work with expressed or latent customer needs?
- Would you say that Volvo Penta are customer oriented? If so, is it the same degree for all customers?
- Would you say that the end customer affects the work of Volvo Penta?
- How does the distribution between transactional and collaborative customers look like?
- What is a strategic customer? What characterize a strategic customer?
- Are there any criteria of becoming a strategic customer?
- What is a strategic customer offered? Are all strategic customers offered the same services?
- Can all type of business partners become strategic customers?
- Which, why and when are special services are offered to a customer?
- What determines how much a seller can offer in terms of lead time, volume, and product adjustments?
- What customer needs, from a supply chain perspective, are common?
- What supply chain services are the customers offered? Is there a standard package?
- Does a seller document customer needs?
- Would you say that customer needs differ depending on the business area?
- Would you say that customer needs differ depending on the geographical region?
- Would you say that customer needs differ depending on customer size or purchasing volume?

Questions asked to Interviewees from Global Supply Chain Management and Industrial Development

Number of interviewees: 4

- Could you explain the different types of distribution centers (global, regional, and local)?
- Are all distribution centers controlled centrally?
- For whom might products be kept in stock?
- How is the stock controlled?
- To which degree does Volvo Penta follow the logic of make-to-order?
- Could you explain the special supply chain solutions offered by Volvo Penta?
- Which customers can get special supply chain solutions?
- Are there any firm requirements for which customers that should be offered special supply chain solutions?
- How many customers are currently offered special supply chain solutions?
- What parts of the supply chain can be customized?
- Is it generally the same type of customers that demands special supply chain solutions?
- How do you prioritize different customers in internal processes, such as production planning?
- Who has the authorization of prioritizing between different customers in internal processes?

B

Segmentation Attributes from Interviews

This Appendix presents all the segmentation attributes that were acknowledged during the interviews with employees at Volvo Penta. The attributes have not been ranked, but should be consider to be mentioned in a random order. Further, the attributes marked with an asterisk (*) are those mentioned in the Findings, sub-chapter 5.2.

- Maturity (communication, industrialization, IT, financially) *
- History of relationship
- Potential to increase sales for the specific customer *
- Potential on the market through a customer
- Components in the ordered product
- Region *
- Delivery (distance and infrastructure)
- Purchasing pattern
- Volume (number of engines) *
- Volume at the aftermarket
- Global footprint of the customer
- Location of the customer's head quarter
- The customer's type of production strategy (e.g. serial) *
- If the customer makes purchases towards stock or production *
- Profit of sales to customer *
- The customer's interest in electromobility (potential and innovation)
- Customer's willingness to be sustainable *
- Type of customer (e.g. yard, nisch OEM)
- Customer requirement (e.g. uptime, productivity) *
- Category in the current business (A-D customer) *
- Business area (type of product) *
- Variation in product purchase *
- Innovativeness
- The customer's industry
- Risk of the business *
- Easiness of custom clearance

C

Questionnaire Template

This Appendix presents the questions given in the questionnaire which was sent out to 90 employees at Volvo Penta during the Master's Thesis. For question 2 to 9, the respondents were asked to choose either "Never", "Sometimes", "Always", "Don't know", or "N/A" for each listed need and also specify an example of the customer with the mentioned characteristics.

For each question, the following three customer characteristics are used:

Product variation: describes if the customer has a high/low variation when it comes to the number of product configurations and product identities they purchase

Business value: describes if the customer has a high/low value when it comes to current purchasing volume, profit margin or potential sales

Purchasing pattern: describes if the customer is predictable/unpredictable when it comes to purchasing volumes, late order changes, time from order entry to delivery, or provides a reliable forecast

1. Please specify your position.
   - Sales Europe
   - Sales International
   - Sales Americas
   - Front Office (all regions)
   - Process Management and Supply Chain Development

2. In your opinion, a customer with high product variation, high business value, and a predictable purchasing pattern has the following needs that should be fulfilled:
   - Order flexibility (late and frequent changes)
   - Availability (short lead times, stock holding, etc.)
   - On-time delivery
   - Reduced uncertainty through increased visibility (in production planning, inventories, transportation, etc.)
   - Extended assortment (the customer needs something that is not offered as a standard)
   - Access to supply chain support (single point of contact, etc.)

- Batch delivery (driveline components delivered in batches)
- Kit delivery (complete driveline installation delivery)

3. In your opinion, a customer with high product variation, low business value, and a predictable purchasing pattern has the following needs that should be fulfilled:
   - Order flexibility (late and frequent changes)
   - Availability (short lead times, stock holding, etc.)
   - On-time delivery
   - Reduced uncertainty through increased visibility (in production planning, inventories, transportation, etc.)
   - Extended assortment (the customer needs something that is not offered as a standard)
   - Access to supply chain support (single point of contact, etc.)
   - Batch delivery (driveline components delivered in batches)
   - Kit delivery (complete driveline installation delivery)

4. In your opinion, a customer with high product variation, high business value, and an unpredictable purchasing pattern has the following needs that should be fulfilled:
   - Order flexibility (late and frequent changes)
   - Availability (short lead times, stock holding, etc.)
   - On-time delivery
   - Reduced uncertainty through increased visibility (in production planning, inventories, transportation, etc.)
   - Extended assortment (the customer needs something that is not offered as a standard)
   - Access to supply chain support (single point of contact, etc.)
   - Batch delivery (driveline components delivered in batches)
   - Kit delivery (complete driveline installation delivery)

5. In your opinion, a customer with high product variation, low business value, and an unpredictable purchasing pattern has the following needs that should be fulfilled:
   - Order flexibility (late and frequent changes)
   - Availability (short lead times, stock holding, etc.)
   - On-time delivery
   - Reduced uncertainty through increased visibility (in production planning, inventories, transportation, etc.)
   - Extended assortment (the customer needs something that is not offered as a standard)
   - Access to supply chain support (single point of contact, etc.)
   - Batch delivery (driveline components delivered in batches)
   - Kit delivery (complete driveline installation delivery)

6. In your opinion, a customer with low product variation, high business value, and a predictable purchasing pattern has the following needs that should be fulfilled:
   - Order flexibility (late and frequent changes)
   - Availability (short lead times, stock holding, etc.)
   - On-time delivery
   - Reduced uncertainty through increased visibility (in production planning, inventories, transportation, etc.)
   - Extended assortment (the customer needs something that is not offered as a standard)
   - Access to supply chain support (single point of contact, etc.)
   - Batch delivery (driveline components delivered in batches)
   - Kit delivery (complete driveline installation delivery)

7. In your opinion, a customer with low product variation, low business value, and a predictable purchasing pattern has the following needs that should be fulfilled:
   - Order flexibility (late and frequent changes)
   - Availability (short lead times, stock holding, etc.)
   - On-time delivery
   - Reduced uncertainty through increased visibility (in production planning, inventories, transportation, etc.)
   - Extended assortment (the customer needs something that is not offered as a standard)
   - Access to supply chain support (single point of contact, etc.)
   - Batch delivery (driveline components delivered in batches)
   - Kit delivery (complete driveline installation delivery)

8. In your opinion, a customer with low product variation, high business value, and an unpredictable purchasing pattern has the following needs that should be fulfilled:
   - Order flexibility (late and frequent changes)
   - Availability (short lead times, stock holding, etc.)
   - On-time delivery
   - Reduced uncertainty through increased visibility (in production planning, inventories, transportation, etc.)
   - Extended assortment (the customer needs something that is not offered as a standard)
   - Access to supply chain support (single point of contact, etc.)
   - Batch delivery (driveline components delivered in batches)
   - Kit delivery (complete driveline installation delivery)

9. In your opinion, a customer with low product variation, low business value, and an unpredictable purchasing pattern has the following needs that should be fulfilled:
   - Order flexibility (late and frequent changes)
   - Availability (short lead times, stock holding, etc.)
   - On-time delivery
   - Reduced uncertainty through increased visibility (in production planning, inventories, transportation, etc.)
   - Extended assortment (the customer needs something that is not offered as a standard)
   - Access to supply chain support (single point of contact, etc.)
   - Batch delivery (driveline components delivered in batches)
   - Kit delivery (complete driveline installation delivery)

10. In your opinion, what characterizes a strategic customer? Please specify at least three characteristics below. For instance, characteristics might concern business value, product variation, and purchasing pattern, but please do not feel limited to these examples.

D

Questionnaire Results

This Appendix presents the results from the internal questionnaire, performed in April 2019, what concerns question 1 and 10.

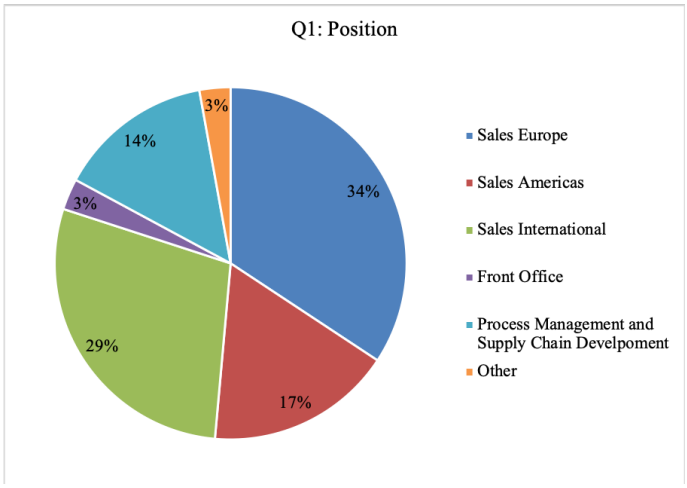

Figure D.1: The result of question 1

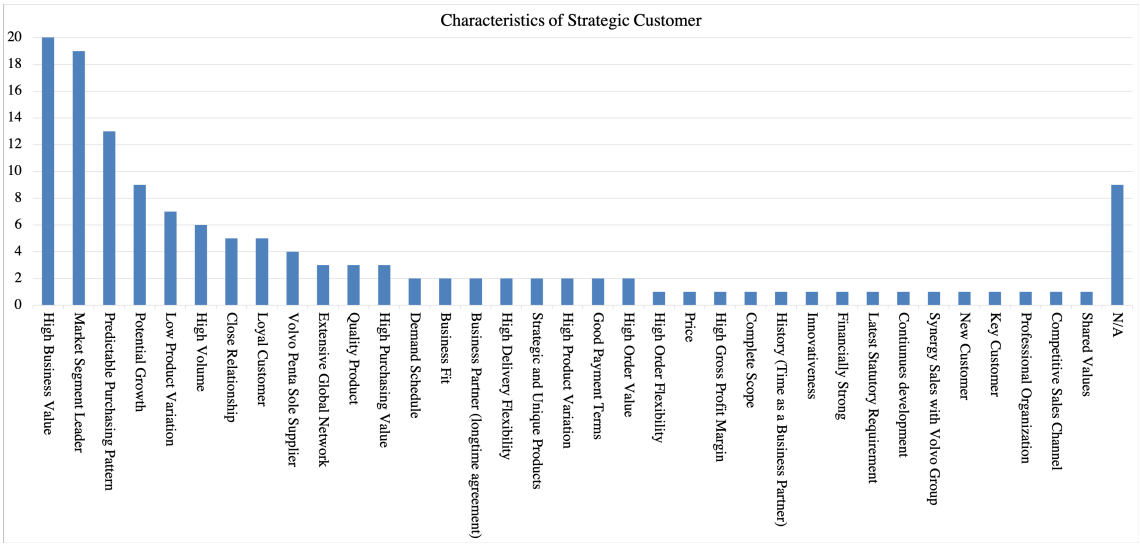

Figure D.2: The result of question 10

E

Order Changes

This Appendix presents all 16 order changes that can be done at Volvo Penta. The changes have not been ranked, but should be consider to be mentioned in a random order. Further, the order changes marked with an asterisk (*) are those included in the Findings, sub-chapter 5.4.3.

- Ship to change
- Request date change *
- Mode of transport change *
- Payment-term changed
- Configuration changed
- Serial number changed
- Stop code changed
- New line *
- Cancelled line *
- New line DCN (design change notice)
- Cancelled line DNC (design change notice)
- Cancelled order
- Postponement
- Pick delayed
- Incoterms changed
- Price change