

# **Servitization and Customer Perceived Value**

**A qualitative study on how customer perceived value is shifting due to the servitization in the automotive industry**

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## **Abstract**

Servitization is one of the major transformations that impact the future development of the automotive industry. The servitized trend has revolutionized the automotive offerings from providing merely products to providing a comprehensive solution package consisting of products, services, knowledge, and other intangible elements to address customers' needs from a holistic perspective. A lot of previous research has studied the impact of servitization on suppliers, while little attention is given to the customer perspective. Moreover, much existing research studying customer perceived value unfolds in the context of B2C industries. Therefore, this study, on the basis of Lapierre's (2000) framework with three dimensions and 13 value drivers, investigates how customer perceived value is shifted in the context of the B2B industry, automotive industry, due to servitization. This study explores how customers of a very successful automotive supplier respond to the value-related questions regarding products, services, and relationships in qualitative and semi-structured interviews. By analyzing the empirical data, this study shows how major dimensions in the framework change, how value drivers under each dimension shift, and the relative importance of value drivers under each dimension. By the end of this study, a new customer perceived value integrating all of these shifts is produced, thus building an up-to-date framework to understand customer perceived value in the automotive industry.

**Keywords:** Servitization, The Automotive Industry, Customer Perceived Value, B2B

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Thank you!

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## Definition of Terms

<b>Terms</b>	<b>Definition</b>
<b>Servitization</b>	Increasing value to main product offerings by providing enhanced offering of more comprehensive market packages. (Vandermerwe & Rada, 1988)
<b>Digital servitization</b>	By using digital tools, companies experience a transformational process from a product-centric to a service-centric business model. (Kowalkowski et al., 2017)
<b>Product-service system</b>	It refers to the business model providing the package of products and services. It is to promote the use of both products and services. (Piscicelli et al., 2015)
<b>Customer Perceived Value</b>	Customer's subjective assessment of a product's utility on the basis of what was gained and how much was paid that are perceived by the consumer. (Parasuraman et al., 1988)
<b>B2C</b>	Business-to-consumer (B2C) is the business model of selling products to customers directly and thereby there are no third-party players involved. (Zhang et al., 2011)
<b>B2B</b>	Business-to-business (B2B) is a marketing strategy that includes the turnover of goods and services between companies. This can be compared to the relationship between companies and other groups, such as consumers, retailers, and public administration. (Vargo & Lusch, 2011)

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# 1. Introduction

## 1.1 Background

The automotive industry has undergone a major transformation in recent decades: Servitization (Opazo-Basáez et al., 2018). Servitization refers to the process where services are integrated into traditional product-based offerings in business operations (Sjödin & Parida, 2016), meaning that complete product-service systems are offered to customers by automotive companies (Visnjic & Van Looy, 2013). Particularly, with the facilitation of digital technologies, there is a wide variety of advanced services. Parida et al. (2015) discuss the development of technologies enabling companies to process fast data which is fundamental to making effective and efficient decisions. Likewise, Ardolino et al. (2018) indicate that adopting technologies like artificial intelligence could transform delivered services' features. Hence, it is clear to see the importance of digital technologies in innovating services, and there is a close link between digital services and servitization. The term, digital servitization, is used to describe the convergence of the two circumstances.

Servitization is viewed as the guidance to benefit from the integration of services throughout the product life cycle in the automotive industry (Gaiardelli et al., 2014). Servitization has provided tools for automakers to support business operations by integrating digital services (Vendrell-Herrero et al., 2017). Services of this kind are supporting digital procedures, and at the same time offer BI (business intelligence) and analysis tools to enable information sharing and transparent processes of decision making. (Lightfoot et al., 2011; Kindström & Kowalkowski, 2014). These trends have significantly shifted product & service offerings and the supplier-buyer relationship, exerting transformative impacts on the automotive industry.

Specifically, servitization has facilitated new business models and new service offerings. The new mobility solutions and technologies have significantly challenged the ownership in the traditional car-selling business model (Adrodegari et al., 2015). The rental and leasing business models are rising and developing (Piscicelli, et al., 2014). Besides, the car-sharing business is often cited as an example of the implementation of the product-service system (Tran et al., 2015). Furthermore, an increasing number of services have been presented to the customer because of technological changes propelled by digitalization and the spread of the internet. Although service is already a vital element of the automotive industry with financing, maintenance, and repair services, new offerings unfold for B2C and B2B offers improving automotive companies', especially for car manufacturers, service activities (Mahut et al., 2017).

Moreover, service-oriented transformations have revolutionized the relationship between automobile companies and their customers. Nowadays, many companies are providing new services not only to cater to customer requirements but also to sustain a positive and consistent relationship with them (Ditter et al., 2019). A lot of companies have engaged customers via relationship marketing, responding promptly to customer feedback, and endeavoring to enhance relational values (López-Arquillos et al., 2015). Customer relationship and engagement have been gradually interpreted as a key strategic lever for automobile companies. To conclude, servitization has promoted numerous shifts in the automotive industry with the diversification of services model & offerings and the elevating significance

of customer relationships and interactions as major transformations, exerting impacts on many perspectives of this industry.

## **1.2 Problem Discussion**

In the existing research, several studies assess the impact of servitization from an organizational perspective. For instance, some previous literature has indicated that applying servitization enables firms to have sales improvements (Kohtamäki et al., 2013), higher profit margin (Crozet & Milet, 2017), and increased Key Performance Indicators (KPI) (Bustinza et al., 2017). As late as 2018, Opazo-Basáez et al. found that the productivity of automotive companies is positively linked to the implementation of green and digital servitization, namely the dual-servitization strategy. Moreover, a company's appropriate positioning in regard to its product and service quality dimensions affects its competitiveness. According to one article (Guajardo et al., 2016), it seems clear that firms could develop a more competitive strategy if their service and product strategies can be considered jointly instead of independently. Nevertheless, there is just a few current research focused on the changes made by servitization from a customer perspective. While firms diversify service offerings and increase customer interaction and engagement, the way that customers perceive value is altered accordingly. Parasuraman et al. (1988) define customer perceived value as the customer's subjective assessment of a product according to what was gained and how much was paid that is perceived by the consumer. Even though Cassia et al. (2015) study that customer perceived value can be enhanced by service-based products compared with good-based products, the research is taken in a B2C context and does not specify what specific value drivers may affect customer perceived value. Hence, there is no adequate research and deeper understanding formed on how customer perceived value is impacted in B2B under the trend of servitization.

## **1.3 Purpose and Research Questions**

In order to address this research gap, the purpose of this thesis is to study how customer perceived value in the automotive industry is transformed by servitization. Therefore, this research paper will address these questions:

Main research question:

*How is servitization influencing customer perceived value in the automotive industry?*

Sub-research questions:

- 1. How does servitization influence the dimensions of customer perceived value?*
- 2. How does servitization shift value drivers under each dimension?*
- 3. How do customers perceive the importance of different value drivers?*

## **1.4 Delimitations**

This research focuses on the impact of servitization on customer perceived value in the automotive industry. Furthermore, the B2C industry is excluded in this study and only B2B customer perceived value is investigated. Therefore, there are fifteen customers of one automotive supplier interviewed. Even though all customers use several brands' offerings, they



are found from one particular automotive supplier. Therefore, some subjective preferences and experiences of customers are considered.

### **1.5 Expected Contribution**

There are several contributions this research can make. From the academic perspective, an understanding of how servitization impacts customer perceived value in the B2B industry will be formed. Moreover, based on Lapierre's (2000) framework of customer perceived value, an updated version of value drivers will be presented. Last but not the least, the relative importance of value drivers can be ranked in the perception of customers. From the perspective of practice, this research helps companies to better understand what are influential factors of customer perceived value when they are experiencing the servitization trend. Companies can also recognize how to diversify their offerings and maintain solid relationships with customers under the transformation.

## **2. Literature Review**

### **2.1 Servitization**

‘Servitization’ was initially put forward by Vandermerwe and Rada (1988) to define the trend of the enhanced offering of a more comprehensive mix of products, related services, and expertise to improve the core offering. This idea is translated into different versions in the later research stage such as ‘the shift from being product-centric to being service-centric’ (Oliva & Kallenberg, 2003) and ‘service infusions’ (Brax, 2005). These definitions, even though with different names, have all highlighted the increasing attention of services in the product offering. In one study, the researchers synthesize these definitions and add more contextual considerations (Raddats et al., 2019). They define servitization as the transformative process of a firm from a product-dominant to a service-dominant method and mindset. It describes a dominant change in a firm’s business model, whereby the service business plays a more important role in driving the growth of the firm. Moreover, with regard to service infusion, it is a transformation where a firm’s service offerings’ relative importance advances in comparison with that of product offerings. They have also given a specific definition of servitization in the manufacturing industry: it is a transitional process from add-on services and regulated products to edging services and tailored solutions. Kohtamaki et al. (2019) investigate that customized solutions are extensions of the offerings of manufacturers toward selling services on the basis of performance and operation. They typically include new pricing models, tailored services, and products. Customized solutions are also defined as offerings that require tailoring and adjustment based on customer needs and features (Baines & Lightfoot, 2013). In summary, servitization in the manufacturing industry can be defined as a key trend where the importance of service offerings outperforms the importance of product counterparts in the overall industrial offerings, and services-oriented elements such as add-on services and customized solutions are becoming the primary source of competitiveness for firms.

However, some scholars are not completely positive about the prospect of servitization and have proposed uncertainties and challenges for the future. In one research, a conflict between service logic and product logic is noticed (Oliva & Kallenberg, 2003). They argue that an increase in the quality of service can prolong the life cycle of old products, thus impeding the sales of new products. Likewise, the revenue of related services like maintenance and repair can be declined due to the improvement in product quality. Visnjic et al. (2013) point out that there are tensions between those responsible for service and product revenues.

Kohtamaki et al. (2020) identify servitization has four paradoxes. They are effectiveness in product manufacturing and efficiency in the customization; exploitative innovation in product manufacturing and exploratory innovation in solutions; separated services and product organizations and organization service and product integration; developing a customer orientation and maintaining an engineering mindset. They suggest that in the first paradox, it is becoming more difficult to improve efficiency by improving standardization or repetition of the complete solutions due to the fact that the key differentiator in the competition is the customization of solutions. It is clear to see that there is a paradoxical challenge that is persistent and cannot be solved easily. To conclude, tensions between products and services &

quality improvement, and sales improvement is the primary challenge for the automotive industry.

### **2.1.1 Digital Servitization**

Many researchers identify a significant interdependence between servitization and digital technologies (Lerch & Gotsch, 2015). In general, digitalization can be phrased as the trend of the frequent use of digital technologies and their integration into the firm's products and activities (Björkdahl & Holmén, 2019). Digital technologies include cloud technologies, IoT (Internet of Things), AI (artificial intelligence), big data (Sjodin, 2020), and other advanced technologies. Digitalization will lead to fundamental transformations, especially in how organizations build and acquire value (Björkdahl, 2009). Simply speaking, digitalization refers to the enhanced creation, interpretation, and utilization of data to improve the company's operational efficiency and drive the growth of the company by increasing customer value via the shift from physical configurations to digital ones.

Existing literature mentions the fact that digitalization can empower and drive servitization (Kohtamäki et al., 2019). Adrodegari and Sacconi (2017) argue that digitalization has driven companies from traditional product-dominated patterns to digitalized service-oriented models. Most studies connect servitization with digitalization from a broader perspective, which focuses on how digital technologies such as big data (Opresnik & Taisch, 2015), cloud computing (Wen & Zhou, 2016), advanced analytics (Ardolino et al., 2018), and the Internet of Things (Zancul et al., 2016) can facilitate value generation for servitization. Digital Servitization is used to describe this convergence. Some studies investigate the commercial dimensions impacted by servitization. These dimensions include the manufacturing process (Coreynen et al., 2017), aftersales procedures (Belvedere & Grando, 2017), and transport and logistics (Vendrell-Herrero et al., 2017). Frank et al. (2019) suggest that servitization is a crucial part of the trend of Industry 4.0.

Digitalization generates hurdles and opportunities for automotive companies. With regards to challenges, digitalization is making the nature of competition hard to predict since digital technologies synchronized with firms' internal resources and capabilities will impose fundamental shifts on how they create and capture values (Björkdahl, 2009). Furthermore, investment in digitalization carries some uncertainties since customer behaviors are erratic and are followed by an insufficiency of competitive knowledge and elevating competitions for brand-new solutions (Day & Schoemaker, 2000). To summarize, digitalization will improve the efficiency of production, value chain, and coordination of different resources and functions as well as promote product innovation; however, this trend will also complicate the competitive landscape and elevate investment uncertainties.

Opportunities wise, digital technologies can ensure higher efficiency of product development by reducing the usage of physical products, integrating digital visualization and design in the product design process (Björkdahl, 2020). Björkdahl (2020) also points out that most manufacturing firms are involving digitalization to increase the competitiveness of their production: it can help improve product quality, cut down defects, and decrease breakdowns

by enabling a more intelligent process with the use of disruptive technologies. Digitalization-enabled technologies enable companies and their customers to gather product and other application-related data, allowing products to be scrutinized, enhanced, and supervised (Porter & Heppelmann, 2014). Moreover, digitalization makes more integrated value chains: on the one hand, it increases efficiency, shortens waiting times, and ensures a better operational administration; on the other hand, the flow of information interconnecting different procedures and functions, for example resources and manufacturing planning, improves cooperation of some crucial steps (Björkdahl, 2020). Besides, Martín-Peña et al. (2018) contend that the opportunities to enlarge services domain and portfolio boost when firms utilize edging technologies. These emerging technologies will promote a growth agenda for new combinations and innovations within firms (Björkdahl, 2009).

## **2.2 Customer Perceived Value**

There are heterogeneous terminologies regarding the definition of customer perceived value. For example, some scholars use “customer value” (Khalifa, 2004) or “perceived value” (Sanchez-Fernandez & Iniesta-Bonillo, 2007), while “customer perceived value” (Yang & Peterson, 2004) or “consumption value” (Sheth et al., 1991) are used in consumer behavior and marketing research, especially when discussing the notions of value from demand-side. Moreover, Zauner et al. (2015) state that major features of customer perceived value are that customers would maximize their choices’ utility (considering the sacrifices and benefits aspects of their choices). This definition is discussed from the perspective of unidimensionality. According to Sanchez-Fernandez and Iniesta-Bonillo (2007), it is fair that customer perceived value is focused more on cognitive and economic aspects. On the other hand, instead of emphasizing the economic aspect of customer perceived value, Sánchez-Fernández et al. (2009) raise the attention to feelings and emotions created by customers. This understanding advocates the multidimensional perspective of customer perceived value. In other words, this view suggests that both affective and cognitive components are dimensions to consider when studying consumer behavior. In the study from 2009 Phelps also states the critical role of emotions when individuals form their attitudinal perceptions.

Nevertheless, as there are transformations in market trends and dynamics, customer behavior would be impacted as well. In one study, Woodall (2003) illustrates that customer perceived value is situation-dependent. This is aligned with another finding that individuals’ judgments can be influenced by the given situation and circumstances, suggesting that customer perceived value would contain dynamic facets (Sánchez-Fernández & Iniesta-Bonillo, 2006). Hence, in certain situations, the shifting consumer trends and industry dynamics would influence the particular dimension of the value to construct (Zauner et al., 2015).

Pine and Gilmore (1999) define that customer perceived value has three major determinants: service quality, product quality, and contextual experience. Mbango (2019) also discusses that even though the underlying requirement for attaining customer perceived value is product quality, customer perceived value is a multidimensional notion ranging from the quality of product to the service utility that customer receives from the supplier. Some scholars

demonstrate further that customer perceived value is also associated strongly with customer satisfaction (Wang et al., 2004) and switching costs (Padgett, 2020). In particular, in some B2B services industries, customer perceived value has a positive impact on the switching cost and the trust of service providers (Garver et al., 2016). In addition, Correa et al. (2021) point out that customers' future relationship with suppliers is impacted indirectly by customer perceived value of the service. Lapierre (2000) demonstrates that customer perceived value should be considered from three dimensions: product-related, service-related, and relationship-related in industrial contexts (as shown in Figure 1). In total, there are 13 value drivers from these three dimensions, and each of the value drivers can be recognized as either a benefit or a sacrifice. Since this research paper is conducted in the manufacturing industry, more specifically in the automotive industry, Lapierre's theory of customer perceived value seems more appropriate for the later analysis.

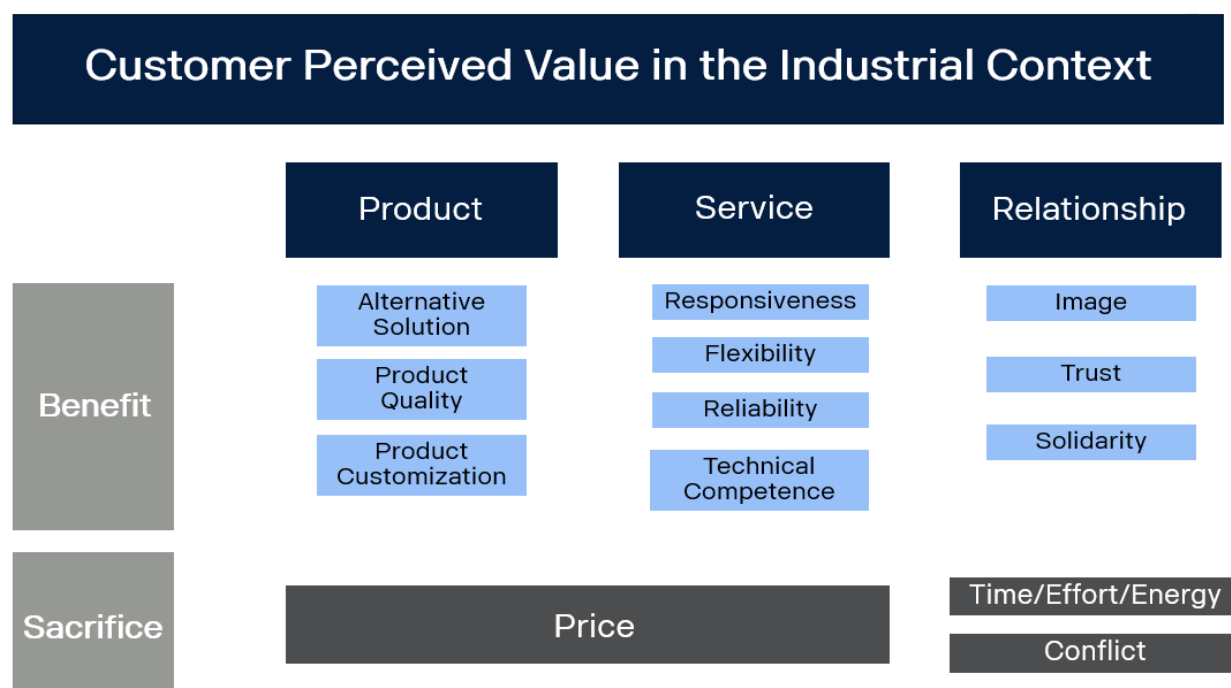


Figure 1 Customer perceived value in the industrial context adapted from Lapierre (2000)

### 2.2.1 Product Dimension

Lapierre (2000) specifies four value drivers in the product dimension, among which include 3 benefits drivers and one sacrifice driver; the three benefit drivers are *Alternative Solution*, *Product Quality*, and *Product Customization* while the sacrifice driver is *Price*. Lapierre (2000) defines *Alternative solutions* as the number of options provided by the company, the company's ability to tailor offerings to match customer needs, and the firm's helpfulness to assist customers in solving their problems. *Product Quality*, according to Garvin (1987), consists of eight key criteria: product performance, durability, perceived quality, conformance, aesthetics, features, serviceability, and reliability. Lapierre (2000) highlights the importance of the product's durability, reliability, performance, and incremental increase in product quality. Ulaga and Eggert (2006) and Homburg et al. (2005) view product quality as the extent to which delivered products can satisfy customers' requirements in terms of performance and consistency over the years. *Product Customization* refers to producing tailored products based

on customers requirements and needs and the company's capability of satisfying special product requirements (Lapierre, 2000). Hallgren and Olhager (2009) argue that *Product Customization* can also be defined as the suppliers' capability to handle different requirements from a broad range of products and to provide a wide range of choices. There has been a confirmed correlation between the extent of customization and the degree of customer value creation (Tu et al., 2001). On the other hand, the only sacrifice factor, *Price*, including the price of products and services and the fairness of the price compared with other competitors, is regarded as a key determinant of customer perceived value (Homburg et al., 2005). Cannon and Homburg (2001) indicate that reducing costs in commercial relationships is an effective and direct way to create customer perceived value. The content of the price factor has been further expanded into three costs: (1) direct costs, (2) costs of acquisitions, and (3) the operational costs (Ulaga & Eggert, 2006).

### **2.2.2 Service Dimension**

Lapierre (2000) states four value drivers from the service dimension. *Responsiveness*, *Reliability*, *Flexibility*, and *Technical Competence* are considered benefits drivers, while the *Price* is defined as a sacrifice driver. In regard to *Responsiveness*, it can be understood as the supplier's competence to decrease the time needed to solve customers' complaints (Droge, 2004). Likewise, Lapierre (2000) illustrates *Responsiveness* as the ability to listen to customers' problems, offer immediate solutions and answers, and visit customers and locations to acquire a deeper understanding of the business and customers. *Reliability* stands for suppliers' capability to retain promises, the clarity, and the accuracy of the billing and transactions (Lapierre, 2000). This explanation is consistent with another research conducted by Jiang et al. (2016). In their research, they find that *Reliability* is one of the major dimensions of e-service quality, which is extremely substantial for customer perceived value. In more detail, this *Reliability* dimension includes promised accomplishments, accurate records and e-transactions, and precise initial performance. In terms of *Flexibility*, Lapierre (2000) defines it as the approach to which suppliers handle uncertainty and unforeseen demands. It also concerns the ability to be agile and adjust services and product offerings to satisfy customers' needs. Moreover, being flexible to adjust to delivery variations can add value (Ulaga & Eggert, 2006). The last benefit driver is *Technical Competence*, which can be demonstrated as the suppliers' competence to be creative and apply the latest technology to provide solutions (Lapierre, 2000). In contrast, the only sacrifice driver that is related to the service dimension is *Price*. Lapierre (2000) suggests that this value driver can be understood as the fairness of the prices customers pay, and competition's impact on the prices customers pay. In addition, Ulaga and Eggert (2006) illustrate that companies' commitments to decrease prices and fair market prices reveal the lowest potential for companies to differentiate their offerings.

### **2.2.3 Relationship Dimension**

The relationship dimension consists of five value drivers, among which there are three benefits drivers: *Suppliers' Image*, *Trust*, and *Suppliers' Solidarity with Customers* and two sacrifice drivers: *Time/Effort/Energy* and *Conflict*. *Suppliers' Image* can be easily defined as the suppliers' reputation and credibility associated with their products, services, and brands

(Lapierre, 2000). Furthermore, social-related constructs such as perceived brand image, social acknowledgment, and received word-of-mouth reputation affect customer perceived value towards the product such as comparative economic value and influence the purchase intent, including the intent to switch to disruptive technology products (Kamolsook et al., 2019). *Trust* stands in a central position and is viewed as a critical feature in forming a long-term business relationship (Homburg et al., 2005). Lapierre (2000) conceptualizes *Trust* as suppliers' ability to convince customers, the accuracy of information provided by suppliers, the suppliers' fulfillment of promises made, and the sincerity of suppliers. *Trust* is a concept for which there is no universally accepted scholarly definition (Chen & Dhillon, 2003). Chen and Dillon (2003) believe that the overall consumer trust is formed and influenced by three factors: competence, integrity and benevolence of a firm. With regards to *Suppliers' Solidarity* with customers, it is seen as the help provided by suppliers when customers are in trouble, suppliers share problems in the process of relationships with customers, the suppliers' commitment to improving benefits coming from the commercial relationship, and suppliers' willingness to satisfy customers' needs beyond the contract terms (Lapierre, 2000). Sacrifice wise, *Time/Effort/Energy* can be exemplified by the frequency of meetings between suppliers and customers, the bargaining efforts taken by customers to negotiate with suppliers to reach an agreement, and the time and efforts taken by customers for training employees and developing business relationships with suppliers (Lapierre, 2000). Lapierre (2000) defines *Conflict* as the frequent arguments involving customers and suppliers about business issues and disagreements from customers with their suppliers.

### 2.3 Research Gap

In connection with 1.2, this part examines two research gaps that the research will bridge. The first gap is that the existing research primarily investigates the implications and impacts of servitization for the automotive suppliers, thus leaving spaces for our study to investigate the counterparts for the automotive suppliers. The second gap is that the existing research mostly examines the customer perceived value in the B2C context, seldom touching upon the B2B context. Even though there are several scholars studying the customer perceived value in the industrial context, their research scope is not within the automotive industry and they do not consider the impacts of servitization, a trend that has shaped the landscape. Therefore, another significance of this study is that it will investigate the customer perceived value shifted by servitization in the automotive industry.

### 2.4 Relationship between Servitization and Customer Perceived Value

There is an observed relationship that the external environments and circumstances influence the individual assessment, implying that dynamic facets of customer perceived value are existent (Fernández & Bonillo, 2006). Servitization calls for closer collaboration between automotive suppliers and their customers. Raddats et al. (2019) state that customer centricity is an indispensable characteristic of servitization-oriented strategies. Customer centricity is segmented into 2 parts. The first part is the transition from product-related services to services aiming to improve customer experiences and processes. Secondly, it refers to the shift of the nature of the supplier-customer interaction from being transaction-oriented to being relationship-oriented. Liinamaa et al. (2016) use data from the case study to elaborate that

servitization is accompanied by a change that companies are shifting their strategies from product-dominated to service-based, implying that services-synchronized customer processes and needs can facilitate the creation of competitive advantages. Bettencourt and Brown (2013) argue that effective service disruptions in automotive companies should start with a holistic interpretation of customer value. It shows that automotive suppliers closely engaging with their customers are easier to obtain successful service disruptions (Santamaría et al., 2012). In brief, servitization has created an increasing importance of customer engagement and understanding in strategy, product development, and service innovation for manufacturing firms.

In the domain of digitalization, digital transformation is transforming the customer perceived value; it transforms the way how an organization constructs and acquires value when digitalization is closely involved in the creation of services (Iansiti & Lakhani, 2014). Lerch and Gotsch (2015) explain that digitalization will significantly change supplier–customer interactions; and the primary hurdle for focal organizations implementing the strategy of digital servitization is to modify the current product-oriented relationships and mindsets since digitalization-enabled services encourage suppliers to shoulder more responsibilities to transform the customer process to be more relational, instead of being transactional (Reim et al., 2018). Hence, digitalization will build more intimate supplier–customer interactions featured by co-development, constant loyalty, and more designated investment and attention to the relationships. On the other hand, Allmendinger and Lombreglia (2005) have examined how digitalization services take over physical counterparts, decrease associated costs, enhance agility, and increase efficiency. Some researchers figure out how technological advancements can enhance the differentiation, flexibility, and customisation. To summarize, digitalization will promote more frequent and deep relationships between suppliers and customers and will help strengthen some value drivers such as flexibility and customization.

## 2.5 Theoretical Framework

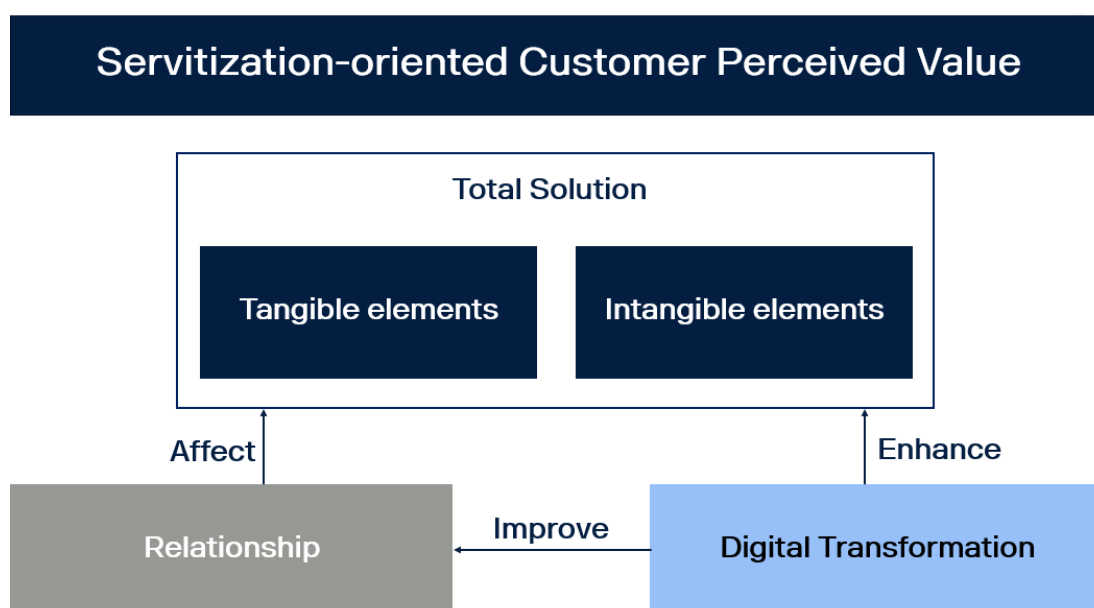


Figure 2 The framework of the servitization-oriented customer perceived value



Based on insights and arguments presented in 2.4, a draft framework (Figure 2) can be crafted to tailor Lapierre's (2000) framework to major transformations in Servitization. The first shift is the mixture of automotive services and products into the solution dimension, illustrating the blurring boundary between these two elements that can be referred to in the definition. Secondly, the relationship element is inclined to play an enabling role to enhance customer experience with the whole solution, which aligns with Oliva and Kallenberg's (2003) finding that the customer interaction is undergoing the transformation from transaction-based to relationship-based. Furthermore, this new framework demonstrates the elevating influence of digital transformation by adding more digital services (Allmendinger & Lombreglia, 2005) and improving relationships (Reim et al., 2018). This framework will serve as guidance to the analysis and more value drivers will be produced upon the completion of the analyses.

### **3. Methodology**

This chapter describes how the research is designed, the approach applied to collect and analyze empirical data. Moreover, some methods to ensure the quality of data are also presented, and a section about ethical considerations is followed.

#### **3.1 Research Philosophy**

The interpretivism philosophy is applied to achieve the expected outcome of this paper. As explained by Saunders et al. (2009) interpretivism puts more emphasis on the standpoint that humans create meanings, so it is critical to develop interpretations and understandings of social contexts and human actions. Following interpretivism; philosophy enables us to dig deeper into our research topic while holding our values when conducting research. Moreover, interpretivism believes that as people having various cultural backgrounds, speaking different languages, and under different situations may come up with variant meanings, there are multiple social realities (Collis & Hussey, 2014). The aim of this thesis is to discover the shifts in customer perceived value due to the trend of servitization in the automotive industry and we suppose customers may perceive value differently depending on which sectors and segments they are in. In addition, using the philosophy of interpretivism provides us with chances to acquire an in-depth analysis of each customer from various segments.

#### **3.2 Research Approach**

This study has utilized an abductive approach (Josephson & Josephson, 1994), an integration of deductive and inductive approaches, since deduction and induction are unfolding at different research stages. The deductive element is demonstrated in the usage of previous literature and theoretical frameworks to design interview guides and structure empirical data. However, this research does not entirely conform to theories but just uses the high-level theoretical structure to define the boundary of the research. In the following procedures, a more inductive approach is taken to observe how interviewees are thinking and acting within this boundary. These observed facts are subsequently interpreted and analyzed to produce new perspectives not covered by old theories and new theories not existing in previous research. The weaknesses of both inductive and deductive approaches can be fixed by the abductive approach. To elaborate more on this point, Saunders and Thornhill (2012) suggest that there is a lack of clarity in deductive reasoning as the way to select a theory is unclear, while with regard to inductive reasoning, theory-building will not be necessarily enabled by a certain amount of empirical data. Therefore, the study has remedied the absence of theoretical support and at the same time, allows new factors to emerge from the empirical review to further develop theories regarding customer perceived value.

#### **3.3 Research Strategy**

In this study, a qualitative approach has been used, which, as Bryman and Bell (2011) indicate, is suitable when the number of studied objects is few and the emphasis lies on words instead of numbers. Qualitative research is an interpretation-oriented approach that focuses on words via data collection and analysis to interpret social phenomena and facts (Bryman & Bell, 2017). Therefore, understanding the meaning of human words, in other words, interpretivism,

is consistent with the qualitative research strategy. Besides, this study is to investigate how servitization influences and shifts customer perceived value and whether there are some new value drivers emerging from the customer perspective, which according to Kvale and Brinkman (2014), is more appropriate to be addressed by the qualitative approach. Eisenhardt and Graebner (2007) suggest using qualitative data for theory-based research questions intending to develop existing theories because it offers insights into complicated social constructs that quantitative data may not easily reveal. Moreover, Bryman and Bell (2017) suggest that qualitative research can both be used to verify old theories and create new theories, and usually includes interviews with unstructured elements and large flexibility.

To summarize, the structure of this research is to develop the existing theory based on the old theoretical framework by interviewing customers to understand how servitization has shifted their perceived value under the dimension of product, service, and relationship. Interviewee words are significant sources of information for further analysis. New findings including new value drivers and new relationships among old drivers are considered to be an important contribution to existing literature and theories.

### **3.4 Data Collection**

#### **3.4.1 Interview Sample**

To achieve the objective of this study and answer the research questions, the method of purposive sampling is utilized. According to Bryman and Bell (2017), purposive sampling means that researchers use a strategic manner to find interviewees and the selection is based on each interviewee's relevance to the whole study. As mentioned previously, servitization is seen as the automotive industry's major transformation (Opazo-Basáez et al., 2018) and the scope of this study is limited to the automotive industry. Therefore, the empirical context for this research is the automotive industry. Moreover, there are six criteria when selecting appropriate customers to interview.

First of all, all customers are found from one particular automotive company. The chosen automotive company is one of the outstanding transport solution providers around the world. In particular, they are experiencing the servitization transformation and have a strong willingness to develop a complete transport solution strategy for their customers. In addition, since the context of this research is the servitization transformation and a shift of customer perceived value needs to be discovered, customers of the chosen automotive company have to undergo this transformation. Then the second condition is the chosen customers are using and having digital servitization offerings. The third criterion is that these chosen customers are also customers of other automotive companies, thus representing the perspective and trends of the whole automotive industry. Fourth, in order to ensure a wide variety of perspectives and insights can be acquired, the customers have to be from multiple European countries and markets. Fifth, these customers are from three primary segments: long distance, construction, and urban in the automotive industry, comprehensively considering differences across different segments. The last requirement is that the customers can speak English, otherwise, a translator is needed to translate the local language into English. In total, there are fifteen customers (Table 1) selected for this research, which come from the following countries:

Sweden, Netherlands, Poland, and Germany.

Customer #	Role	Industry/Company	Country	Duration
1	Fleet Manager	Logistics and Transport	Sweden	48min
2	Logistics Manager	Construction	Poland	53min
3	Fleet Director	Urban Distribution	Germany	61min
4	Fleet Manager	Waste Collection	Sweden	63min
5	CEO	Energy	Sweden	54min
6	Fleet Manager	Logistics and Transport	Poland	47min
7	Fleet Coordinator	Food Logistics	Poland	53min
8	Fleet Manager	Urban Distribution	Sweden	51min
9	CEO	Construction	Sweden	53min
10	Fleet Manager	Logistics and Transport	Sweden	64min
11	Fleet Manager	Logistics and Transport	Netherlands	67min
12	Head of Purchasing	Military	Netherlands	52min
13	Fleet Manager	Waste Collection	Netherlands	45min
14	Transport Planner	Food Logistics	Sweden	57min
15	Fleet Manager	Logistics and Transport	Germany	59min

*Table 1 Interview sample*

### 3.4.2 Interview Design

In this research, all primary data is gained from semi-structured interviews. Semi-structured interviews are normally used in qualitative research because it allows respondents to have the flexibility to elaborate on their perceptions and perspectives (Bryman & Bell, 2017). Interview questions are designed as open-ended since more detailed answers could be collected.

Furthermore, some additional and follow-up questions are added to the interview depending on the interview situation and each particular interviewee's responses.

Interview questions are divided into three parts. Starting from some background questions which could gain information about each customer's main business and business relationships with automotive suppliers. Then the interviewers lead the conversation into the second part which is also the main part of the whole interview. In this section, the structure is designed based on the three dimensions of customer perceived value drivers designed by Lapierre (2000). In the end, the interview ends with some ending questions to capture customers' overall perceptions. The complete interview guide is shown in Appendix 1.

Prior to conducting interviews with the customers, some pre-study interviews with local sales managers of the automotive companies are also managed. The reason for that is to acquire a more comprehensive view and understanding of each local market's situation and digitalization-enabled servitized offerings.

### **3.4.3 Interview Process**

Before starting the interview, each customer received an email containing information about the purpose of this research. Since the customers are located in multiple countries and have busy schedules, it takes around three weeks to finish all interviews. Moreover, taking into account the long distance, all interviews are made online. Bryman and Bell (2017) indicate that the location of interviews may impact how interviewees respond and react. In order to provide convenience and enable customers to have a sense of safety, interviews were conducted via Microsoft Teams and thus all customers could choose to do the interview either at home or at their offices, a more relaxed and comfortable context for them. However, some challenges of doing digital interviews are the difficulty of observing interviewees' body language and unstable internet connection (Bryman & Bell, 2017). Researchers try to resolve these challenges by letting both parties turn on the video camera and adjust the camera to an angle where the upper body can be seen. Furthermore, interviewers paid attention to the tone of voice as well because expressing a sense of friendliness and enthusiasm could send positive signals to interviewees (Bryman & Bell, 2017) and leave a good impression on them, thus they would trust the authors and provide deeper insights. If an unstable internet connection occurred during the interview, the interviewers would ask the questions again.

At the beginning of each interview, all customers were informed that they will be treated as anonymous in the research. After gaining consent, interviews were recorded. During the interview, one researcher was responsible for guiding the whole interview, such as introducing the project scope and asking the main questions. Another researcher was responsible for taking notes and observing customers' body language and facial expressions and asking follow-up questions. In total, 14 hours were spent conducting the interviews, and the average length of interviews is about 55 minutes.

### **3.5 Data Analysis**

This part describes what types of analysis tactics have been employed in the study. The

thematic analysis is primarily utilized to analyze data from interviews, texts, and documents. In addition, an inductive analysis is made to gain all new insights and factors emerging during the semi-structured interviews. Thematic analysis is used to pinpoint and develop insights to form patterns of themes and meanings across a wide range of data, through which researchers are able to understand the shared or collective meanings (Clarke & Braun, 2017). Generally speaking, the analysis starts with the first phase, familiarizing all textual qualitative data, like the notes taken during the interview, and listening to audio recordings while marking key points and insights. Then all data is transformed into transcripts which are all well-formed. In total, 78 pages of transcripts are created. To maintain the validity of the collected data, all transcripts are sent back to customers to check whether collected information is accurate and to ensure there is no misunderstanding. Then in the next stage, a series of initial codes are generated as the building blocks of analysis to find a 'label' for a characteristic of the data that is related to the focal research topic. Subsequently, Braun and Clarke (2006) suggest that all identified codes are grouped into various themes or topics, which seize some important aspects of the data associated with research questions, and demonstrate some extent of patterns of meanings and responses from the data.

In this study, themes are primarily constructed from the theoretical framework that contains 13 value drivers from the dimensions of product, service, and relationship. Moreover, new themes are produced to discover new insights, since there is the possibility that not all information and data collected will match the original codes and that some unexpected new findings might occur. New elements that are not specified in the analytical model are therefore concretized. Specifically, if some other factors are considered important to explain or understand customer perceived value under the backdrop of servitization, they will be added to revise and develop the original model. Then the next step is to display the findings of this study, for example, some quotations from the customers are presented. Lastly, the collected empirical data is compared and contrasted with the literature review, and a thorough analysis is presented to answer the research question and draw a final conclusion.

### **3.6 Data Quality**

Trustworthiness is the primary evaluating dimension for the data quality in this study. To fulfill trustworthiness, Lincoln and Guba (1985) have proposed four criteria that the authors used in this paper. They are *Credibility*, *Transferability*, *Dependability*, and *Confirmability*.

#### **3.6.1 Credibility**

With the aim of increasing the credibility of this research, it is demanding for researchers to keep objective instead of subjective while collecting and analyzing data (Yin, 2009). Therefore, before starting to conduct the actual interviews with the customers, the interview questions are firstly sent to the academic supervisor and experienced market analyst from the company side to check. Then the interview questions are adjusted and a new version is applied to the interviews. In this case, the credibility of the interview questions could be secured both from an academic and practical perspective. Moreover, Yin (2009) mentions that asking important informants to challenge the main findings of the research is considered a tactic to advance credibility as well. After collecting empirical data, the findings are reviewed by experts in the

marketing field who have rich experience in studying customer behavior. Meanwhile, both researchers review respective coding works and discuss themes together during the analysis procedure to decrease the subjectivity.

Bryman and Bell (2017) indicate that a great level of consistency between observations and theoretical concepts reveals a higher level of credibility. By reviewing existing studies, we acquire a further understanding of the relevant field, customer perceived value concept and the impact of servitization, and furthermore enabling us to conduct data analysis from various perspectives and enriching contents.

### **3.6.2 Transferability**

In regard to the transferability of this study, the sample is chosen from a wide variety of industries. There are fifteen interviewees selected in total. Interviewees are all business customers of automotive companies, but they are from various countries all around Europe and have business in different sectors. Even though transferability is a concern for qualitative researchers since the smaller sample size compared with quantitative research (LeCompte & Goetz, 1982), the selected interviewees of this study have comprehensive characteristics, thus the findings of this research is conceivable to generalize to a wider context.

### **3.6.3 Dependability**

Guba and Lincoln (1985) propose the concept of dependability to encourage researchers to follow an auditing approach, involving records of the complete research process. Simultaneously, peers would act as auditors to ensure that the whole process is being followed and is unfolding properly. In this study, all research procedures including problem formulation, selection of customers, interview transcripts, data analysis decisions, and so on are all recorded and noted in an accessible manner. At the same time, researchers will constantly review whether there are faults or misconducts in overall procedures and promptly correct all errors to maintain a proper and scientific process.

### **3.6.4 Confirmability**

Confirmability is to ensure that, while it is impossible to achieve complete objectivity in business research, the researchers should act in good faith to prevent personal values and opinions from undermining the objectivity of the research and findings deriving from it. In the study, the authors have, firstly, based all of their arguments and ideas on established theories. In order to maintain the objectivity of empirical data, the researchers have encouraged all customers to respond with an objective perspective, not limited to their personal values and experiences. Moreover, when doing analysis, the researchers keep the completeness of the original data and strictly follow the coding process to unfold the analysis.

## **3.7 Ethical Ground**

Ethics in business research is generally concerned with how people being researched are treated and principles on what activities the study should or should not engage with these individuals (Bryman & Bell, 2017). Ethical issues can be segmented into four primary aspects: 1) are there any harms to customers: substantial harms on their bodies or mental damage on

their dignity or confidentiality; 2) customers should be properly informed to make a rational and reasonable decision on whether they are willing to join the study; 3) are there any conducts related to the breach of privacy: customers should be able to refuse questions related to their privacy; 4) are there any deceptions during the interview, which occur when researchers describe their research as something different from what it originally is (Diener & Crandall, 1978).

In this study, customers' privacy and anonymity are protected upon signing the GDPR document issued by the Stockholm School of Economics and the confidential contract agreed with the company. All interviews are conducted under the supervision of managers and follow company rules. Besides, a brief presentation is made beforehand to give customers enough information about the project so that they can decide on their participation, thus ensuring informed consent and voluntary attendance. Furthermore, all information provided is consistent with the research content, objectives, and deliverables. The transcription of interviews will be sent to each customer for further verification and correction to avoid information misunderstanding



## 4. Empirical Findings

This chapter outlines the empirical findings by first providing an overview of customers' various understanding of servitization in the automotive industry and general shifts of their perceived value (4.1). Then it describes customer perceived value and highlights attributes of automotive products, services, and relationships with suppliers (4.2-4.4). To ensure parsimony and clarity, the empirical findings are presented in aggregate, integrating responses from all customers. The names of customers have been replaced by 'Customer #' to preserve the customers' anonymity.

### 4.1 Background and Context

The empirical findings confirm the fact that servitization is a common trend in the automotive industry by providing customer first-hand experiences with diverse servitized offerings, which can be classified into three categories. The first category featured by the full services contract highlights the productization of services. In other words, services are becoming a part of suppliers' product portfolios to help customers solve their problems:

*"We are signing a full-service contract with our vehicle suppliers. This contract will cover all incurred expenses from repair, maintenance, and potential training sessions. Buying services now is more like buying vehicles."*

(Customer 1)

*"Our company has started using the full-service package from all suppliers. This service package will help us tackle almost all breakdowns without incurring extra expenses and will ensure a smooth operation of the fleet."*

(Customer 4)

The second category can be summarized as the Mobility-as-Service offering, which describes the phenomenon that the whole vehicle is regarded as a service offering to satisfy customers.

*"Vehicle leasing and renting is also very popular in our industry. This is economical and can save a lot of energy for us. Moreover, we are using some financing services from our vehicle suppliers to gain extra returns."*

(Customer 3)

The last category is related to digital servitization, empowering digital tools such as IoT and artificial intelligence to improve users' experience and enhance their profitability. Almost every customer mentions this transformation; two of them are very representative of this new offering:

*"We are using a lot of vehicle connected services, where you can track your vehicles and keep an eye on the vehicle status. This service is more important to us especially when we want to introduce more electric vehicles in our fleet."*

(Customer 2)

*“One of the best examples of the digital solution is the fleet management system. We can easily navigate our fleet via this digital platform and improve fuel efficiency and fleet cost by better managing the movement of all vehicles.”*

(Customer 1)

The empirical findings have revealed some significant changes in the relationship between industrial suppliers and customers. These changes include the omnichannel to interact with suppliers and the increasing frequency of interactions.

*“In the past, we only talked to salespeople to get information. But now we can get what we want from Youtube, Instagram, Facebook, and other social media. Besides, company websites and call centers are important ways to reach out to our suppliers. With wider availability, we can be more inclined to interact with suppliers.”*

(Customer 3)

Last but not the least, most customers have realized the shifts of their perceived value towards products, services, and relationships; in other words, the attributes of products, services, and relationships important to customers are undergoing some changes.

*“Definitely we are changing our criteria and standards to evaluate our suppliers. For example, in the past, price was a very important indicator for the purchasing people. Nowadays, it is still going in this way, but our focus will be more on the total cost of ownership.”*

(Customer 2)

Therefore, in the following sections, customers' responses to their perceived value in products, services, and relationships will be presented in a comparative way: perceived value before servitization versus perceived value in servitization to demonstrate the shifts of customer perceived value under the trend of servitization.

## **4.2 Product Dimension of Customer Perceived Value**

### **4.2.1 Customer General Perception of Product**

In the discussion about products (trucks, in this study), the majority of customers have placed the performance of trucks in a core position that will affect the operations and profitability of their business. Most of them argued that the quality of trucks is the key indicator to show whether the truck can ensure a longer uptime and a more efficient deployment and fewer costs incurred from maintenance and repair.

*“Trucks are the important assets of our company and the performance of trucks will determine whether we can satisfy our own customers and then make a profit. So, we will prioritize the quality of trucks when selecting trucks of different brands; we want to make sure that these trucks can have a longer uptime and a short downtime (for repair and maintenance). Thus we can maximize our profits.”*

(Customer 10)

However, most customers highlighted the quality and accessibility of services as a complement to the product quality, demonstrating the integration of services and products in the automotive context.

*“Service quality and level can be also used to evaluate the performance of trucks. A good service can ensure a quicker comeback and a better performance of trucks when they break down.”*

(Customer 6)

Moreover, another general perception is that most customers are now attaching greater importance to the cost of trucks when they make the purchasing decision. The major change is that more focus is placed on the *total cost of ownership*, compared with the focal attention on the price of trucks in the past.

*“Price is a very important factor that we must consider. But now, we are more into the total cost of ownership including the fuel consumption, the expenses of repair and maintenance, and training for drivers. We are now considering more aspects for the cost. Price is not the only factor we should highlight.”*

(Customer 7)

In the following part, related empirical findings under each product value driver will be thoroughly presented to demonstrate shifts of customer perceived value from the product dimension.

#### **4.2.2 Product Quality**

With regards to the *Product Quality*, all of the customers have mentioned that the quality and durability of trucks is a significant factor to consider when they decide to buy a truck from a specific supplier. They argue that good quality can guarantee a sustainable operational model consisting of longer uptime, fewer breakdowns, and better driver experiences.

*“The quality of trucks is the first thing we will consider since the quality of trucks will decide how much time we will spend on maintenance and repair. It will affect whether we can do the business efficiently and profitably as well.”*

(Customer 1)

*“A high quality truck will ensure a better driving experience for our drivers. Usually, our drivers prefer trucks from brands with a high quality reputation.”*

(Customer 14)

However, *Product Quality* is not the only factor that customers utilize to evaluate the quality. Besides, the quality of services provided can be an indispensable variant that will influence customers' perception of product quality. It is widely agreed among these customers that high

quality services can, to some extent, complement the quality of trucks.

*“We will also look at the service quality to check whether this truck is a reliable product. Good services will improve the quality of trucks and will complement some minor errors existing in this truck.”*

(Customer 4)

Moreover, the product is likely to be reconciled by the relationship between customers and suppliers. Some of the customers agreed that a closer relationship with the truck supplier will increase their tolerance of quality issues and breakdowns since a good relationship can guarantee a faster fixing process and a better after-sales experience.

*“Sometimes it is okay for us to have some quality problems on our trucks, especially with the supplier with whom we have a very good relationship. We totally understand that no trucks are perfect, but if our suppliers can quickly help us fix these problems, we won't complain about it.”*

(Customer 6)

#### **4.2.3 Product Customization**

*Product Customization* is an important factor for customers to evaluate industrial products (Lapierre, 2000). However, in this study, no customers have actively mentioned this factor as a to-consider element when they make the purchase decision. Some customers shared that even though many salespersons and marketing people have highlighted their ability to produce trucks tailoring to customer needs, they will not take it as an attractive benefit since what they usually do is to choose the fittest truck model matching their working requirements and conditions. Given that most suppliers have many models to choose from, *Product Customization* is not necessarily needed.

*“We have heard about the product customization several times from our salespersons, but we didn't see any necessary benefits from this feature. It is because we really need to find the best truck with the ideal cabin and engine to fit into our working requirements and solve our problems. We usually can find the ideal truck model from our suppliers and that's why we need customization under most circumstances.”*

(Customer 4)

#### **4.2.4 Alternative Solutions**

Similar to *Product Customization*, the concept of *Alternative Solutions* has been rarely referred to by our customers as their criteria to evaluate the performance of products. Some customers argued that they will usually stick to the truck model based on their company's specifications and that they will not consider other solutions under most circumstances. However, it is undeniable that a wide range of solutions on the supplier's shelf will enhance the chance for them to find the best product satisfying their needs.

*“We will usually purchase the truck model we like the best in the beginning and will not turn to*

*other solutions for most occasions. The reason is that we have to stick to the specifications given by our company. But we have to admit that it will be easier for us to make the decision when the supplier has a wide range of options.”*

(Customer 8)

Furthermore, many customers have expressed their interest in new products with some innovative features and shared that they are very happy to place an order on innovations, which will potentially boost efficiency and profitability.

*“Product innovations sound very attractive to us. Usually, we are happy to order some of the newest truck models from our suppliers. We believe that firstly trying product innovations will help us build some advantages over our competitors.”*

(Customer 5)

#### **4.2.5 Price**

The *Price* driver has been frequently referred to by the customers in the interviews. However, customers focused on different layers of the *Price* driver and highlighted respective implications on their business. First of all, the price of products is viewed by many customers as a critical factor that will impact their perceived value. Even some customers argued that the price of products had been a dominating criterion for a long period of time.

*“Price of trucks is definitely the first thing we will consider when buying trucks. The relatively higher price will impede our motivation in some ways but we will also look into the product quality to evaluate whether it is value for money. In the past, we were relying on this factor to make a decision.”*

(Customer 12)

Moreover, many customers demonstrated a shifting focus from the price of products to the total cost of ownership, which includes costs of services, costs of operations, and other associated costs. These costs can refer to different items in different industries, while in this study it consists primarily of fuel consumption and costs of repair & maintenance.

*“Price is important, but it is not the only factor we consider. Usually, we consider the total economy of owning a truck, which means we will also check how much it will cost for us to buy their services contracts. We must calculate the price of repair and maintenance when we buy vehicles.”*

(Customer 6)

*“Fuel consumption is what we talk about quite often, especially when the fuel price has been soaring recently. Even though some trucks are very expensive, the relatively lower fuel consumption will save some money in the long term.”*

(Customer 10)

Another interesting finding regarding the *Price* driver is that many customers take the price of

trucks in the second-hand market into their consideration. Several customers argued that as the second-hand market is booming in the industry, they have to consider whether their older products can be sold at a favorable price to justify the investment.

*“It is very common that we will sell our older trucks after several years of usage. So we need to evaluate whether these older ones can be sold at a reasonable price later on. We will look into the original price, the brand reputation, second-hand market preferences, and depreciation.”*

(Customer 7)

#### **4.2.6 Customer Perceived Importance of Value Drivers**

This part is in connection with the interview question *“Do you think certain drivers are more important than others? If so, what are the reasons for that?”* to investigate which value drivers are prioritized in customer perceptions. The findings suggest that even though most customers are struggling to present a list of priorities, they are inclined to place *Product Quality* and *Price* ahead of other drivers.

*“I will put the truck quality in the first place since it is closely related to our business performance and our profitability. It is terrible if we spend time in workshops for maintenance and repair.”*

(Customer 1)

*“The total of ownership, I will say. The label price of trucks, the costs of services contracts, and fuel consumption are what we have discussed a lot within our company. We will prefer trucks with a track record of low fuel consumption, especially.”*

(Customer 4)

### **4.3 Service Dimension of Customer Perceived Value**

#### **4.3.1 Customer General Perception of Service**

When talking about service offerings, most of the customers have mentioned the accessibility of service (workshops being responsible for repairing and maintenance) and the quality of service are key factors for them to value the service. Especially for those customers within the logistics and long distance industry, they would be willing to get access to the service whenever they need it and get their truck back to the road as soon as possible. One customer has mentioned this during the interview:

*“Our supplier has a strong and international network of their services, I mean the workshops, all over Europe. Even though we may face some breakdowns on our way to deliver fresh foods, we can always find the location to do repairs and ensure we can deliver on time. The accessibility of those workshops is very important for us.”*

(Customer 7)

In addition, the quality of the product, which is the truck in this case, has been brought up several times during the conversation. This demonstrates the integration of product and service

offerings under the transformation in the automotive industry once again.

*“The reliability of the truck and the quality of the truck is a critical factor as well. If the trucks won’t break down, then we won’t even need repair service.”*

(Customer 5)

When it comes to some new service offerings which apply digital platforms, some customers highlighted the strong interest in getting the complete solutions from one truck supplier. Using a bundle of services and products from one supplier could provide convenience and better support to customers.

*“We would prefer to have all the solutions in one package because those truck suppliers know their trucks the best. Therefore, when they provide service to us, they know how to provide the appropriate service and fix the trucks.”*

(Customer 11)

#### **4.3.2 Responsiveness**

From the interview data we have collected, it is obvious to see that all of the customers have mentioned that they truly value suppliers’ fast responsiveness. Some customers also noted when asking for help from the suppliers, they would value whether they will be prioritized to be answered and helped.

*“I really prefer an immediate response from the call centers when my trucks break down. I don’t have a fast response every time. I can’t predict the breakdown, so when I face the problem, I want to get help and send my truck to the workshop for the first time.”*

(Customer 13)

Another interesting finding is that some customers are willing to have more interaction with the supplier when having digital services. In order to better solve customers’ demands, suppliers have to listen and know customers’ problems first. In other words, some customers hope suppliers could be open to customers’ feedback and make constant improvements to provide better solutions.

*“A close connection with us is very important for us. We hope they (suppliers) could be more customer-oriented and better know our demands. Sometimes we give some feedback to (the suppliers), but they don’t have any response. I can’t see them changing or making adjustments to satisfy our needs.”*

(Customer 15)

#### **4.3.3 Reliability**

*Reliability* is another critical factor most customers have mentioned that they would value when having service offerings. Some customers expressed their satisfaction when having

transparency on the service package they would receive and clarity on their spending and billing. Likewise, some of them argued that the ability of suppliers to solve the problem as promised can be considered one of the performances of *Reliability*. The reason for that is the supplier could truly accomplish their promises to the customers.

*“I can always trust (suppliers) to fix my trucks. As they have promised to us, they have a 24 hours warranty, guaranteeing our trucks will be back on the road as soon as possible. Otherwise, we will get some money back from them.”*

(Customer 4)

*“... our supplier gives the transparency of what the service contract includes. And we can always calculate ahead how much we need to pay. It provides a lot of convenience for us to calculate the total cost.”*

(Customer 5)

In addition, when talking about the *Reliability* of the service provided by suppliers, some of the customers noted that they would also care about the reliability of the trucks. As there is a close connection between the quality of the trucks and the frequency they will receive the service from suppliers.

*“I must say the reliability of trucks is also critical for me because if my trucks don’t break down, then I don’t have to go to the workshops.”*

(Customer 3)

#### **4.3.4 Flexibility**

From the interview data we have collected, it seems that compared with other service value drivers, the *Flexibility* of service offerings is not to be considered as the main benefit driver the customers would value. Even though one of the customers argued that it is impossible for them to predict when they need repair services, they would value it more if suppliers can provide agile solutions to better handle their unforeseen requirements. Once again, the quality of the truck has been noticed since the customer believes if the truck won’t have breakdown issues, there won’t be uncertainties as well.

*“Sometimes I must say the spare parts can be seen as a problem. My supplier, they have their head storage place somewhere in Europe. They rely on overnight transportation. I wish my truck can be back on the road again quickly, so I hope they can be a little more flexible and agile to solve my problems quickly ... but if the truck won’t break down, then there is no need for spare parts storage ...”*

(Customer 9)

#### **4.3.5 Technical competence**

The ability of suppliers to apply technology to offer solutions has been noted several times by



the customers. In particular, for those offerings that apply digital tools, the majority of customers consider *Technical Competence* as a critical benefit value driver. Some customers complained about the incompatibility of the systems, leading them to have to manage the fleets from different brands on multiple platforms. Moreover, some other expectations customers have are easier navigation and more visualization of the systems, and advanced functions could be offered.

*“The platform we have today to manage our fleet is much easier to use. All brands can be compatible on this single platform. While in the past, I had to open different brands’ fleet systems to check the trucks, and since they are completely different platforms, I can't even make a comparison for different trucks.”*

(Customer 7)

*“One of our truck suppliers offers a remote diagnostics function on the road. They are the best because they only have this kind of function and it is very favorable for us.”*

(Customer 15)

One more interesting finding under this section is that the competence of technicians to apply the latest technology has also been noted several times. The efficiency, speed of solving the problem, and professional level of technicians have been argued by several customers.

*“When our trucks are sent to the workshop, those service staff are very professional. They are all equipped and have sufficient resources. They know what they should do and how to apply those resources to fix our problems as fast as possible.”*

(Customer 13)

#### **4.3.6 Price**

As the only sacrifice value driver in the service dimension, the price of service has been perceived as an essential driver when evaluating the performance of service by the majority of the customers. However, many argued that they would value the total cost of ownership of the trucks, meaning that they would put the price of the product, the price of service, and the quality and life cycle of the product into consideration when making purchases.

*“Based on my experience, I think X brand is cheaper than Y brand, I mean the service costs. Since X brand’s trucks are more reliable, there is less maintenance and repair we need.”*

(Customer 8)

Another finding which is worth mentioning is that some customers suppose that different suppliers’ offerings are differentiated by the quality of the truck instead of the price of the service.

*“Price always comes first, but now different suppliers offer the same level of price. They all look at each other and know how much the other is charging the customers. Therefore, in the*

*end, we come back to the quality of their trucks.”*  
(Customer 14)

#### **4.3.7 Customer Perceived Importance of Value Drivers**

Some customers expressed the difficulty of ranking the importance of value drivers since they believe a combination of value drivers is applied to assess the service offerings. Nevertheless, more than half of the customers prioritized *Reliability* over other value drivers. In more detail, the reliability of the truck and the service are both valued by the customers.

*“I will put reliability first. Our suppliers are reliable so we can always trust their trucks. The trucks don’t break down that often and if we need to send the trucks to the workshop. The service people are reliable as well. They are competent and professional and can fix problems quickly.”*  
(Customer 7)

#### **4.4 Relationship Dimension of Customer Perceived Value**

##### **4.4.1 General Customer Perception of Relationship**

When it comes to the relationship dimension in the automotive context, the majority of customers highlight the importance of maintaining a positive relationship with suppliers in achieving better business performance. Many of them place *Trust* as the core driver to sustain the business relationship and argue that anything can be negotiated on the basis of trust.

*“We had a very happy experience with our supplier. They really help us solve many problems. We think the key to keeping a great business relationship is to trust each other. With trust in mind, we can solve all conflicts and problems occurring in the relationship.”*  
(Customer 6)

Besides, many customers stress the role of effective communication in the relationship and agree whether the supplier can effectively communicate with them will largely optimize their business process and impact how they evaluate their suppliers. Furthermore, several customers argued that their suppliers could not offer detailed information and introduction for some new offerings such as services contracts and digital services, thus impeding their adoption speed of these advanced offerings.

*“We expect the salespersons from the supplier to be very effective and can respond to our requests accurately and quickly. Usually, they do very well, but in terms of some new offers, for example, the fleet management system, we do not have enough sources of information from their side. We have no idea of this system and how it will help us.”*  
(Customer 9)

Last but not least, many of the customers’ responses reveal a connection between the product & service quality and the relationship. They think that a high-quality offering including products and services will promote a positive relationship with suppliers.

*“The most basic thing in the relationship is that they (suppliers) can provide very good products and services. We have nothing to complain about if they can do this. And we are sure that our relationship will become closer.”*

(Customer 8)

#### **4.4.2 Suppliers' Image**

*Suppliers' Image* is found not to be a critical driver in determining whether a great relationship can be maintained and even escalated; instead, it is a prerequisite for most customers to decide whether they will commence the relationship with their suppliers. In other words, *Suppliers' Image* is regarded as the dealbreaker filtering some unqualified suppliers in the selection stage. However, given that most automotive companies have stable brand reputations, many customers do not include the image as a relationship driver.

*“It applies when we choose whom we want to cooperate with. We are more into the brand with a solid reputation. And in our industry, the brand image and reputation is very steady, so we usually do not consider this to see whether we can have a greater relationship.”*

(Customer 11)

Many customers argue that the suppliers' image is closely connected with the quality of products and services provided by suppliers. *Suppliers' Image* can be, to some extent, translated into the product and service quality.

*“Quality is what we really care about, I mean, products and services. We often associate quality with reputation and image and are very happy to work with these suppliers.”*

(Customer 15)

#### **4.4.3 Trust**

*Trust* is generally agreed by almost all customers to be the most fundamental driver to build a good relationship. Even though it is hard to give an absolute definition for trust, many customers mention transparency and honesty are what can make deeper trust between two sides. Many customers define transparency as the suppliers' ability to deliver a clearcut information flow demonstrating updates and changes and interpret honesty as their ability to frankly communicate upsides & downsides and the severity of what is happening without any concealment.

*“Trust is, of course, the most important attribute we value to build a relationship. We wish our supplier to be transparent with everything we are undergoing and to be honest enough to inform us of the benefits and shortcomings of everything. We are not afraid of bad things, but we are afraid of being fooled.”*

(Customer 3)

#### **4.4.4 Suppliers' Solidarity with Customers**

Even though no customers have mentioned the word “solidarity” during the interview process,

most of them express a high motivation to build closer relationships with suppliers who can treat them as friends, always sympathizing with their difficulties and proactively seeking solutions. Some customers shared that they are more attached to one supplier who advocates the concept of building a family with customers.

*“It would be perfect if our supplier can relate to us when we meet some troubles and try their best to help us out. We really enjoy being treated like a friend or a family member by our suppliers since they will give us a strong sense of reliability and security.”*

(Customer 8)

Moreover, many customers will evaluate *Suppliers’ Solidarity* based on whether suppliers have the intent of giving some extra benefits beyond the contracted terms and whether suppliers have the commitment to awarding loyal customers with some goodwill.

*“As a big and important customer of the supplier, we really value whether the supplier can give us some extra perks beyond the terms or do goodwills to reward our loyalty. Our relationship, I believe, will become closer if they can do it this way.”*

(Customer 15)

#### **4.4.5 Time/Effort/Energy**

The majority of customers suggest that they do not want to spend much unnecessary time communicating with suppliers and that they prefer efficient communication with quicker responsiveness and fewer intermediaries. In other words, they argue that an efficient communication mechanism, for example, direct contact with salespersons, will significantly promote a greater business relationship.

*“I don't want to waste much time with our suppliers. We hope that our supplier can effectively and efficiently deal with our requests and thus, we prefer building a closer individual relationship with salespersons so that our requests can always be prioritized.”*

(Customer 4)

With regards to efficient communication, many customers speak highly of the remote diagnostic system enabled by advanced digital technologies in communication with after-sales services. They agree that these leading technologies have eliminated some unnecessary steps and significantly improved efficiency and that this system has a positive impact on their relationship with suppliers.

*“The remote diagnostic system has really helped us save time and accelerate the whole process. We are really satisfied with the communication process with higher efficiency and are happy to see more breakthroughs enabled by technologies.”*

(Customer 14)

Another interesting finding is that most customers fail to receive enough information regarding new offerings such as services-related solutions and digital services from

salespersons and suppliers. They say that most contact persons can only give them feedback and information regarding their requests but cannot give them a thorough explanation of new offerings, thus leading to their insufficient knowledge and acceptance of these innovative offerings. Most of them express a strong interest in receiving more thorough information about new offerings from their suppliers.

*“Well, I know our suppliers have launched many interesting offerings or solutions, but the problem is that we have no clue what is really included and what will be the real benefits for us. We can just get very limited information from salespersons and could not find more details via their websites or social media. It was very frustrating.”*

(Customer 9)

#### **4.4.6 Conflict**

*Conflict* is originally defined as a big sacrifice value driver in the relationship dimension (Lapierre, 2000). However, in this study it is found that most customers do not view *Conflict* as a critical sacrifice that will undermine the relationship with suppliers because they believe that *Conflict* can be mediated by transparency, honesty, and effective communication that suppliers have demonstrated in interactions.

*“Conflicts with our suppliers are very common, actually. We totally understand that sometimes we have different opinions and suppliers are not perfect, but we hope our suppliers to be transparent and honest with us and act proactively to solve conflicts. In this way, conflict is not gonna be a big issue in our relationship.”*

(Customer 7)

Besides, it is observed that conflicts are usually associated with the quality of products and services from suppliers. Many customers suggest that most conflicts arise from the fact that suppliers' products are severely flawed and that their subsequent services are not in a perfect place.

*“We can always get along with each other if there is no problem with products and services. It is true that most conflicts happen because we are not very happy with their products and services and order delivery processes.”*

(Customer 6)

#### **4.4.7 Customer Perceived Importance of Value Drivers**

When asked about the priority ranking of these mentioned value drivers, many customers struggle to figure out the importance of these drivers in their business contexts since a lot of factors are evaluated simultaneously to get a holistic assessment of the relationships.

*“This is a super difficult question to answer because usually, we would take all factors into consideration when we interact with our suppliers. We want to check whether we trust each other, their ability to help us as quickly as possible, and their ability to sympathize with our situations. But unfortunately, it is hard to say which factor should be prioritized.”*

(Customer 11)

However, from a holistic perspective, it can be found that most customers have intuitively prioritized *Trust* when talking about the relationship with suppliers.

*“The first thing we want to highlight is the mutual trust between 2 sides. Trust is the foundation of future dialogues and cooperation.”*

(Customer 2)

## 5. Analysis and Discussion

In this section, the empirical findings are analyzed in connection with the theoretical framework developed based on the customer perceived value model by Lapierre (2000). As shown in Figure 2, the theoretical framework consists of three main dimensions: *Total Solution*, *Relationship*, and *Digital Transformation*. The analyses include three phases, which include confirming shifts of this framework compared to Lapierre's original one (5.1), investigating value drivers under each dimension (5.2), and ranking these drivers based on their importance (5.3). In the last part (5.4), a completely new framework will be presented.

### 5.1 Shifts of Customer Perceived Value

This part connects the empirical findings with four major transformations on the original customer perceived value model: 1) the assimilation of services and products into *Total Solution*; 2) the closer interrelation between *Product & Service* and *Relationship*; 3) the enabling impact of *Digital Transformation* on *Relationship*; 4) the enhancement of *Total Solution* by *Digital Transformation*.

#### 5.1.1 Total Solution

Lapierre (2000) originally put *Product* and *Service* in two separate dimensions and placed two sets of different value drivers under each dimension. However, Sjödin and Parida (2016) argue that servitization refers to the process where services are integrated into traditional product-based offerings in business operations, indicating that many manufacturing companies are offering complete product-service systems that place products and services in one package (Visnjic & Van Looy, 2013). The empirical findings align with this previous research and suggest a blurring boundary between products and services in companies' offerings from three perspectives. First of all, the findings suggest that most customers make the purchasing decisions of services and products simultaneously and consider the specifications of products and services at the same time. This synchronizes with one study that the product-service systems make the purchase of products parallel to that of services (Visnjic & Van Looy, 2013). Secondly, it is observed that customers' evaluation of service quality is interdependent on that of product quality. To be specific, the assessment of product quality will be enhanced by the high-quality service provided by manufacturers; likewise, the assessment of service quality will be reconciled with the quality of products. This finding confirms the argument by Oliva and Kallenberg (2003) that the increase in product quality will hurt service revenue and the increase of service quality will impede sales of products, from an opposite perspective. Lastly, customer responses have demonstrated a tendency for customers to calculate the total cost of ownership comprising the price of products and cost of services when they buy products. This has significantly reinforced Sjödin and Parida's (2016) argument that services have been integrated into the product offerings. On the basis of the previous research and empirical findings from this study, *Product* and *Service* are integrated in one dimension with the name of *Total Solution*.

#### 5.1.2 Relationship and Total Solution

Connections between *Relationship* and *Product & Service* have not been covered by Lapierre (2000). However, Oliva and Kallenberg (2003) refer to a transition of the nature of the

supplier-customer interaction from being transaction-oriented to being relationship-dominated and suggest that the relationship between suppliers and customers is unfolding in the whole solution process. The empirical findings indicate a mutual influential model between *Relationship* and *Total Solution*. The first layer of the model is that the supplier-customer relationship will impact customers' evaluation of *Total Solution*. For example, when in a great and close relationship with suppliers, customers tend to speak highly of their solution offerings and have a higher tolerance for some drawbacks. The second layer is that the overall quality of *Total Solution* will influence customers' evaluation of *Relationship*. Customers express an intention of building a closer relationship with suppliers when suppliers could provide a high-quality solution package consisting of solid product offerings and consistent services. Therefore, it can be concluded that customers' perception of *Relationship* is interdependent on the counterpart of *Total Solution*.

### **5.1.3 Digital Transformation and Relationship**

*Digital Transformation* is a newly-developed element in this study on the basis of Lapierre's (2000) framework. This shift is in connection with a recently identified strong interdependence between servitization and digital technologies (Lerch & Gotsch, 2015). The empirical findings demonstrating a wide presence of digital services and products and a high acceptance of these new offerings have significantly aligned with the previous research. Meanwhile, there are some observed connections between *Digital Transformation* and the other two dimensions.

The first connection is between *Digital transformation* and *Relationship*. The empirical findings show two different impacts of *Digital Transformation* on the *Relationship* dimension. The first impact is the enabling role of digital technologies to facilitate a better relationship. It is found that customers who are experiencing the benefits of digital transformation (for example, the increased efficiency created by the remote diagnostic system) tend to have a positive tone towards the relationship with suppliers. This finding is echoing with Belvedere and Grando's (2017) idea that the integration of digitalization-enabled technologies into after-sales leads to higher efficiency and higher customer satisfaction. The second impact is regarding some potential challenges imposed by digital transformation on business relationships. The first challenge, according to the findings, is that the supplier has to convey information or explanation for a wider range of offerings including digital services and some other related services. Most customers have encountered the difficulty in finding sufficient information about companies' new offerings. The second challenge is accompanied by the increased complexities of new offerings enabled by digital transformation: the suppliers are supposed to spend more time convincing customers of the benefits of buying these offerings. These findings align with Björkdahl's (2009) argument that digital transformation will change how suppliers capture value and communication with customers.

### **5.1.4 Digital Transformation and Total Solution**

The second connection lies between *Digital Transformation* and *Total Solution*. The empirical findings illustrate three primary effects of *Digital Transformation* on the *Total Solution*. The first impact is that *Digital Transformation* enhances the quality of the *Total Solution* by improving the responding and fixing speed of services and increasing the accuracy and



durability of products, which can be summarized from customer responses from interviews. This will accordingly alter customer perception of the quality of the *Total Solution*. This point aligns with the trend that digital transformation makes more comprehensive value chains: it ensures greater control over the operation, diminishes lead times, and improves efficiency (Björkdahl, 2020). The second shift is that *Digital Transformation* diversifies the content of the solution. Many customers agree that they have an enriching content of solution offering since the application of advanced digital technologies; these emerging offerings include digital service platforms, product management tools, and the remote diagnostic system. This shift has confirmed the argument that digital technologies have been closely integrated into several servitized business aspects, for instance, logistics (Vendrell-Herrero et al., 2017), manufacturing (Coreynen et al., 2017), and after-sales (Belvedere & Grando, 2017). Furthermore, the empirical findings suggest a new impact of *Digital Transformation*, which has been rarely covered by previous research. It is found that *Digital Transformation* will enforce the assimilation of services and products in one supplier since the complexity of solutions created by *Digital Transformation* induces customers to choose products, services, digital solutions, and training sessions from a single supplier, thus making automotive suppliers build a more servitized business model.

## 5.2 Value drivers

In this section, a new list of value drivers would be presented. Based on the 13 customer perceived value drivers developed by Lapierre (2000) and the empirical findings we have collected, there are 13 new value drivers that have been developed. In the dimension of *Total Solution*, six value drivers are defined and two of them are pointing to intangible elements exclusively. They are *Quality*, *Reliability*, *Total Cost of Ownership*, *Completeness*, *Accessibility (Intangible elements)*, and *Responsiveness (Intangible elements)*. There are three value drivers in the *Relationship* dimension, which are *Trust*, *Close Interaction*, and *Solidarity*. The last dimension, *Digital Transformation*, includes four value drivers: *Availability of Information*, *Usability*, *Technical Competence*, and *Innovation*. Each of the value drivers is thoroughly explained in the following sections.

### 5.2.1 Total Solution

#### *Quality*

Being consistent with the Product Quality value driver developed by Lapierre (2000), customers would also use some key criteria of quality when they assess the quality of the product, like performance, durability and reliability. However, it is undeniable that the quality of service should be considered with the product quality as a whole to evaluate the *Quality of Total Solution* they have experienced. As customers highlighted that the good quality of service would complement the quality of the product they perceived, the boundary between the quality of the product offerings and service offerings became blurred. This transformation confirmed the finding of Oliva and Kallenberg (2003) that under the trend of servitization, the service offerings from the product-related have shifted to the user's process or experience-related.

### *Reliability*

In Lapierre's (2000) original model, *Reliability* is only considered a value driver in the service dimension. Jiang et al. (2016) also illustrate that *Reliability* is a significant driver for customers to perceive value when applying e-service, and this dimension covers accurate records of billing and promise accomplishments. The empirical data is aligned with their findings to some extent since customers found the importance of being transparent about the cost they paid for the service package. On the other hand, similar to the *Quality* value driver mentioned above, customers would value the *Reliability* of the product and the service as a whole to evaluate the total solution they have. Customers would take a combination of factors, such as the supplier's ability to accomplish the promises on the product and service, and also the reliability of the suppliers into consideration when making purchases. Therefore, *Reliability* should be considered as a value driver for the total solution instead of for the service dimension exclusively.

### *Total Cost of Ownership*

The price of products and services has been highlighted several times by all customers. This is aligned with the findings of Homburg et al., (2005) because price as a sacrifice factor is considered a key determinant of customer perceived value. Nevertheless, from the empirical findings, it is obvious to see that there are more factors customers would examine. For instance, the lifecycle of the product, the operating expense of the product (such as the fuel consumption in this study), and other associated costs. This can be demonstrated that customers start to take a long-run view and highlight both the expenses and savings side of the total solution they get, in other words, the *Total Cost of Ownership*.

### *Completeness*

*Completeness* is identified as a new driver that customers would value when experiencing the total solution from the supplier. According to the empirical data that has been collected, the *Completeness* of the total solution provided by a single supplier is highly appreciated and valued by the customers. Therefore, the ability of suppliers to enrich the total solution including both tangible elements and intangible elements is crucial to enabling customers to enjoy a complete solution experience.

### *Accessibility (Intangible elements)*

*Accessibility* is established as the new value driver for intangible elements. It was discovered that customers have a strong willingness to get access to the service points (such as workshops in this case) and receive help as fast as possible. Therefore, *Accessibility* of intangible elements includes the location of service points and the availability of service people.

### *Responsiveness (Intangible elements)*

In accordance with the model developed by Lapierre (2000), *Responsiveness* is still seen as a value driver for customers when evaluating intangible elements. From the empirical data, it is clear to see that a fast response and suppliers' ability to offer immediate help and provide feasible solutions may impact the value perceived by the customers.

### 5.2.2 Relationship

#### *Trust*

Lapierre (2000) points out that *Trust* means the accuracy of information provided by suppliers, and accordingly, it is also shown in the empirical data that customers wish suppliers could prove their honesty and integrity by providing a comprehensive picture of the severe situation and no hiding from each other. Moreover, the performance of conveying constant information flow regarding updates and changes is another key factor to value *Trust*, thus accelerating a strong relationship between two parties.

#### *Close Interaction*

In the dimension of *Relationship*, *Close Interaction* is a newly identified value driver. Some customers discussed that efficient and frequent communication with salespeople is a condition to maintain a good relationship with the supplier. This can be understood as a solid business relationship that is developed based on a good personal relationship with salespeople because the salespeople are the representative of the supplier company to approach the customers. Furthermore, a *Close interaction* also indicates the willingness of suppliers to receive feedback from customers and make relevant adjustments and constant improvements to better satisfy customer demands. This confirms the findings of Santamaría et al. (2012, 2017) that *Close Interaction* with customers would facilitate manufacturing businesses to innovate new offerings.

#### *Solidarity*

*Solidarity* is still considered a critical driver for customers to value the relationship with suppliers. Lapierre (2000) states that *Solidarity* can be understood as whether the suppliers are willing to offer more beyond the agreed contracts. Our findings confirm this view that customers expect to gain extra benefits and goodwill from suppliers' offerings. In particular, some loyal customers express the willingness to be rewarded or treated differently like a friend or family member. Hence, if the supplier has *Solidarity* with customers, the relationship between both sides would be enhanced accordingly.

### 5.2.3 Digital Transformation

#### *Availability of Information*

With regards to *Digital Transformation*, the total solution's content is enriched since more advanced functions and innovative solution offerings are provided by applying the latest digital technologies. However, the *Availability of Information* about new offerings should be wide. From the empirical data that has been collected, it is displayed that most customers do not have sufficient resources or channels to learn about the innovative offerings and relevant advantages they could have even though they have strong interests in advanced digital technologies. Therefore, suppliers could hold coaching sessions to elaborate on the digital technologies they have applied in the total solution. Moreover, diversifying channels to introduce innovative offerings would also increase the availability of customers to receive information.

### *Usability*

The *Usability* of the solutions applying digital technologies is also considered a key driver for customers when perceiving value. This includes the ease of use and the compatibility of the solutions. In more detail, digital transformation should bring more convenience instead of complexity to customers when handling new offerings. This can be exemplified when customers apply digital service platforms and the remote diagnostic system, they expect to save time and energy to control and monitor. Moreover, customers also value the compatibility of the platform with other brands' products. This is aligned with the view of Björkdahl (2020) that digitalization enables increased efficiency and fewer lead times.

### *Technical Competence*

In Lapierre's (2000) old value driver model, *Technical Competence* is listed under the dimension of service and is defined as the ability of suppliers to utilize the latest technology to offer solutions. However, based on the empirical data we have collected, it is more appropriate to put *Technical Competence* under the dimension of *Digital Transformation* and it has another layer of meaning. Many customers expect to get access to live and instant data about the systems they utilized. Furthermore, the competence and professional level of technicians and service people to utilize the latest technology is also critical for customers to value. This can be demonstrated that with the help of technicians and service people, customers would acquire a smoother total solution experience when using digital technologies.

### *Innovation*

*Innovation* is identified as the last value driver under the dimension of *Digital Transformation*. The findings of this study illustrate that advanced and innovative functions are appreciated by some customers. As explained by Björkdahl (2009), emerging technologies enable companies to develop new combinations of offerings and innovations. Hence, if suppliers would consider *Innovation* under the trend of digital transformation, customers would perceive value to a larger extent.

## **5.3 The Relative Importance of Value Drivers**

This section analyzes the relative importance of value drivers in the customers' perception. In the analysis of empirical findings, two criteria are applied to produce a ranking of value drivers regarding their importance and priority in the perspective of customers. The first criterion is the number of related keywords mentioned under each value driver. The second criterion is built on *The Perceived Importance of Value Drivers* in the empirical findings, analyzing customers' given weight on each driver.

### **5.3.1 Total Solution**

This dimension has six value drivers: *Quality*, *Reliability*, *Total Cost of Ownership*, *Completeness*, *Accessibility (Intangible elements)*, and *Responsiveness (Intangible elements)*. With the first criterion applied, a group of keywords in the interviews have been sorted and the frequency has been calculated (Table 2).

Value Driver	Keywords	Frequency	Ranking
<b><i>Total Cost of Ownership</i></b>	price of products, cost of services, fuel consumption, second-hand price, economy	15/15	<b>1</b>
<b><i>Responsiveness (Intangible elements)</i></b>	quick answer, responding speed, time with salespersons	12/15	<b>2</b>
<b><i>Quality</i></b>	Product quality, durability, breakdown, service profession, speed of fixing, uptime	11/15	<b>3</b>
<b><i>Accessibility (Intangible elements)</i></b>	location of workshops, service network, distance, easy to find	10/15	<b>4</b>
<b><i>Completeness</i></b>	complete solution, all from one supplier	4/15	<b>5</b>
<b><i>Reliability</i></b>	product reputation, on time delivery, responsibility, credibility	6/15	<b>6</b>

Table 2 The Frequency of Value Drivers - Total Solution

Customers' responses regarding the importance of value drivers align with the prioritized position of *Total Cost of Ownership* in Table 2 since most customers put this driver ahead of other drivers. However, in terms of the second important driver, responses are evenly distributed among *Quality*, *Accessibility (Intangible elements)*, and *Responsiveness (Intangible elements)*, which confirms a negligible difference shown in the figure above. Therefore, instead of ranking all these drivers, this study formulates three tiers of drivers to describe customers' preferences in a more accurate way (See Table 3).

<b>Tier 1</b>	<b><i>Total Cost of Ownership</i></b>
<b>Tier 2</b>	<b><i>Quality, Responsiveness (Intangible elements), Accessibility (Intangible elements)</i></b>
<b>Tier 3</b>	<b><i>Reliability, Completeness</i></b>

Table 3 The Tiering of Value Drivers - Total Solution

### 5.3.2 Relationship

This dimension consists of three value drivers: *Trust*, *Close Interaction*, and *Solidarity*. With the first criterion applied, a group of keywords in the interviews have been sorted and the frequency has been calculated (Table 4).

Value Driver	Keywords	Frequency	Ranking
<i>Trust</i>	Trust, transparency, honesty, open discussion, understanding	14/15	1
<i>Close Interaction</i>	quick response, personal relationship, effective communication	7/15	2
<i>Solidarity</i>	Together, sympathize, give solutions, goodwill, loyalty	7/15	2

Table 4 The Frequency of Value Drivers - Relationship

Moreover, the empirical findings suggest that customers tend to prioritize *Trust* when they talk about the relationship. This is consistent with the result shown in the frequency figure. Besides, likewise customers have divided opinions regarding which factor is secondary: *Close Interaction* and *Solidarity* have both been mentioned, thus suggesting that these two factors are almost standing in the same position in the mind of customers. The tiering of these value drivers is seen in Table 5.

Tier 1	<i>Trust</i>
Tier 2	<i>Close Interaction, Solidarity</i>

Table 5 The Tiering of Value Drivers - Relationship

### 5.3.3 Digital Transformation

This dimension has four value drivers: *Availability of information*, *Usability*, *Technical Competence*, and *innovation*. With the first criterion applied, a group of keywords in the interviews have been sorted and the frequency has been calculated (Table 6).

Value Driver	Keywords	Frequency	Ranking
<i>Technical Competence</i>	technology, data, functions, update, smooth, connectivity	13/15	1
<i>Usability</i>	easy to use, compatibility, navigation, fit with other systems	10/15	2
<i>Availability of Information</i>	information of offering, services specification, content, instruction, sources of information	9/15	3

<b><i>Innovation</i></b>	platform innovation, new solutions, innovative functions	5/15	<b>4</b>
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Table 6 The Frequency of Value Drivers - Digital Transformation

Responses from customers indicate the trend that customers will prioritize technical factors in evaluating digital solutions, confirming the dominating position of *Technical Competence* as the core factor for *Digital Transformation*. With regards to the rest of the drivers, customers do not express distinct preferences regarding which value drivers would be prioritized. Therefore, this study, primarily based on frequency, classifies three tiers (Table 7).

<b>Tier 1</b>	<b><i>Technical Competence</i></b>
<b>Tier 2</b>	<b><i>Usability, Availability of information</i></b>
<b>Tier 3</b>	<b><i>Innovation</i></b>

Table 7 The Tiering of Value Drivers - Digital Transformation

#### 5.4 Discussion

The above analyses firstly confirm four major shifts of the customer perceived value model based on the Lapierre (2000) theoretical framework. This first shift is the tendency that customers tend to perceive the value of products and services in one dimension, justifying the assimilation of services and products in the complete solution. The second shift is that customer perceived value on the *Relationship* dimension is interdependent on the perceived value of the *Total Solution*. The third transformation presents the emergency of digital transformation in customer perceived value and its enhancing impacts on the perceived value under *Relationship*. The last shift demonstrates how the rise of digital transformation alters customer perceived value for the solution part: the changing perception of the quality and content of *Total Solution* and a tendency to expect the supplier to offer a complete solution package, thus eliminating some unnecessary business relationships.

Besides, the analyses produce a set of value drivers under the three new dimensions. *Total Solution* is now evaluated by customers from six aspects: *Quality, Reliability, Total Cost of Ownership, Completeness, Accessibility (Intangible elements), and Responsiveness (Intangible elements)*. *Relationship* consists of three drivers: *Trust, Close interaction, and Solidarity*. *Digital Transformation* is composed of four drivers: *Availability of information, Usability, Technical Competence, and Innovation*. Furthermore, based on the frequency of keywords related to each value driver and customers' priority for different drivers, a ranking of importance for these drivers is formulated in each dimension. The synthesized result for the tiering of value drivers is presented in Table 8.

Dimension	Tier 1	Tier 2	Tier 3
<i>Total Solution</i>	<i>Total Cost of Ownership</i>	<i>Quality, Responsiveness, Accessibility</i>	<i>Reliability, Completeness</i>
<i>Relationship</i>	<i>Trust</i>	<i>Close Interaction, Solidarity</i>	<i>NA</i>
<i>Digital Transformation</i>	<i>Technical Competence</i>	<i>Usability, Availability of information</i>	<i>Innovation</i>

Table 8 The Synthesized Result for the Tiering

On top of these analyses, a brand-new theoretical framework is presented in Figure 3 to illustrate the servitization-oriented customer perceived value in the automotive context.

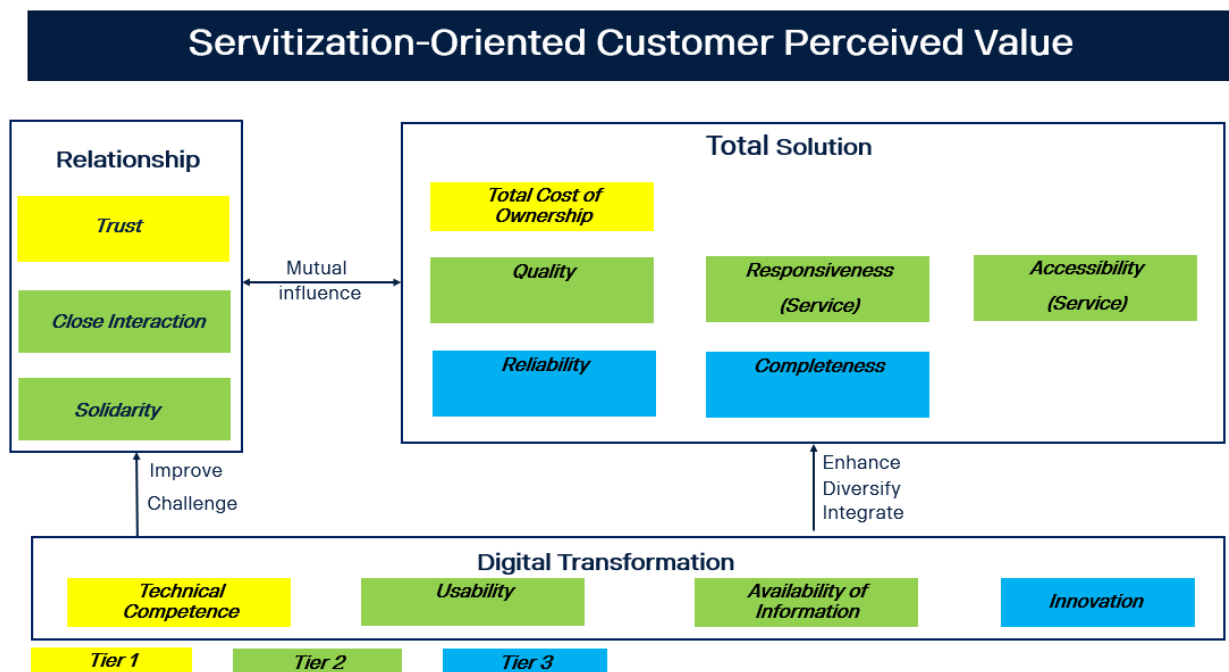


Figure 3 New Servitization-oriented Customer Perceived Value Model



## 6. Conclusion

The last section of this paper includes the theoretical contributions (6.1) and practical implications (6.2). Furthermore, the limitations (6.3) of this research are presented, followed by future research directions (6.4).

### 6.1 Theoretical Contributions

This study examines how servitization in the automotive industry is shifting customer perceived value. Based on Lapierre's (2000) framework, this study has answered three sub-questions mentioned in the introduction part. The answers to these questions form the primary part of the theoretical contributions, which add new dimensions and connections to the previous framework of customer perceived value.

First, this study has shifted the value dimensions from *Product*, *Service*, and *Relationship* (Lapierre, 2000) to *Total Solution*, *Relationship*, and *Digital Transformation*, a set of dimensions more fitting into the servitization context. It merges *Product* and *Service* into the dimension of *Total Solution*, confirming the assimilation of services and products in the complete solution package (Oliva & Kallenberg, 2003). This study has also identified a new dimension - *Digital Transformation*, which refers to the utilization of digital tools to deliver services (Lerch & Gotsch, 2015). Furthermore, this study explores connections among these 3 dimensions: the mutual influence between *Total Solution* and *Relationship* and the enhancing impact of *Digital Transformation* on *Total Solution* and *Relationship*. Second, this study identifies a set of new value drivers under new value dimensions. The dimension of *Total Solution* is composed of *Quality*, *Reliability*, *Total Cost of Ownership*, *Completeness*, *Accessibility (Intangible elements)*, and *Responsiveness (Intangible elements)*. There are three value drivers in the *Relationship* dimension, which are *Trust*, *Close Interaction*, and *Solidarity*. *Digital Transformation* includes four value drivers: *Availability of Information*, *Usability*, *Technical Competence*, and *Innovation*. Third, this study ranks the relative importance of these value drivers in the perception of customers in which *Total Cost of Ownership*, *Trust*, and *Technical Competence* are prioritized over other value drivers. Based on these contributions, an updated framework is presented for a holistic interpretation of servitization-oriented customer perceived value in the automotive industry.

### 6.2 Practical Implications

This study has presented some implications for practitioners. First, it is necessary for automotive suppliers to integrate products and services in the total solution to better satisfy customers since the perceptions of products and services are mutually dependent. Second, building a solid and positive relationship with customers will significantly enhance customers' value perception of products and services. Therefore, automotive suppliers should always hold a positive attitude with trust, honesty, and transparency to build a long-lasting relationship that benefits both sides. Lastly, it is essential for automotive suppliers to establish consolidated strategies for the further development of digital transformation, which has deep impacts on the solution and relationships with customers. These three dimensions ought to be placed on a highly-strategic level to capture customer perceived value in the new context.

The result of this study could assist management teams of automotive suppliers to better understand what attributes of their new offerings customers give more attention to. The first highlighted value driver is *Total Cost of Ownership*. Different from the past practice where the sole focus is given to the price of automotive products, the current trend calls for a holistic evaluation of the prices of products, the cost of services, fuel consumption, and other additional costs. Therefore, the supplier who can help customers achieve a lower *Total Cost of Ownership* will stand out in the competition. In the dimension of *Digital Transformation*, *Technical Competence* and *Usability* are two important points of differentiation at the beginning of the digital journey. Specifically, automotive suppliers who can enhance the technical competence of digital platforms by expanding functions and increasing accuracy & speed and who can expand the compatibility of the platform to multiple brands will quickly capture customers.

### **6.3 Limitations**

Even though there are several contributions this paper can make, as mentioned above, some limitations of this study still have to be considered. First of all, the research scope is limited to the automotive industry. However, servitization is a widespread trend in other manufacturing industries, for example, industrial equipment and electronics, and so on and so forth. The second limitation of this thesis is that customer perceived value is only discussed in the context of the B2B industry, meaning that the customer perceived value in the B2C industry is ignored. Another limitation is that the study is based on fifteen conducted interviews and all participating customers come from European countries. A higher number of interviews can be conducted in order to validate the research result. Last but not the least, servitization is an evolving trend. As there will be more emerging and high technology developed in the near future, some uncertain factors may result in a greater extent of digital transformation which in turn impacts the customer perceived value. Thus, the result of this research cannot ensure that it will be effective in the long term.

### **6.4 Future Research**

Servitization is a major transformation in the manufacturing industry, so one potential future research area could be investigating the impact of servitization on customer perceived value in other manufacturing industries other than the automotive industry. Moreover, it will be interesting to involve more customers from other continents, for instance, Asia and the Americas. In doing so, insights from multiple cultures and markets can be gathered to further enhance the understanding of the shift of customer perceived value under the trend of servitization. Finally, this study finds that there are three dimensions which are *Total Solution*, *Digital Transformation*, and *Relationship* under the new-developed servitization-oriented customer perceived value model. Therefore, to what extent each dimension could impact the servitization-oriented customer perceived value could be one future research direction.

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## **8. Appendix**

### **8.1 Appendix 1 - Interview Guide**

#### **Presentation of researchers**

- Personal Background
- Research Purpose and Project Information

#### **Interviewee introduction**

1. Could you please briefly introduce your company and main business?
2. Which industry and application are you in?
3. How long have you had business dealings with the supplier?
4. What is your overall impression of the supplier, for example, brand, various offerings etc.
5. Is there any particular truck model you prefer compared with other brands? Why do you prefer this model (for its engine, configuration, cab or something else)?

#### **Product Dimension**

6. How many trucks of the supplier are you currently operating? What models are you having? (type of trucks, which segment, type of application). Are there any other brands you are using?
7. What criteria or attributes do you use to evaluate the performance of truck products right now?
8. Which brand performs the best in terms of different attributes you just mentioned? And why is that?
9. Do you think certain attributes are more important than others? If so, what are the reasons for that?

#### **Service Dimension**

10. What kind of service offerings of the supplier are you using? Are you using services from other brands?
11. What criteria or attributes do you use to evaluate the performance of truck services right now?
12. Which brand performs the best in terms of different attributes you just mentioned? And why is that?
13. Do you think certain attributes are more important than others? If so, what are the reasons for that?

#### **Relationship Dimension**

14. How do you interact with the supplier (channel, frequency, and ...)? How do you feel about the relationship with the supplier?
15. What kind of factors do you consider? / What drives you to maintain a good relationship with the supplier for a long time?
16. Do you think certain factors are more important than others? If so, what are the reasons for that?

#### **After experiencing the servitization trend**

*Servitization: It describes the shift from selling products to offering "bundles" of customer-focused combinations of goods, services, support, and knowledge.*

For example, services contracts, digital services platform, leasing, renting, coaching etc.

17. Do you have any new offerings from the supplier? If so, what do you have?
18. When using new servitized offerings, how have some performance attributes you valued before changed?
19. What are some new attributes you consider now? Or what attributes do you value more now?
20. How do you view the importance of the relationship aspect under the trend of servitization? What are some critical factors that will make you maintain and elevate the relationship with the supplier?

**Other questions**

21. Is there anything you want to add that has not been addressed?