



CHALMERS

Digitalization in the Automotive Aftermarket

An investigation of what impact digitalization has on automotive service dealers

Master of Science Thesis in the Management and Economics of Innovation Programme

SIMON JOHANSSON

MASTER'S THESIS E 2017:008

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SIMON JOHANSSON

Tutor, Chalmers: YASHAR MANSOORI
Examiner, Chalmers: HENRIK BERGLUND

Department of Technology Management and Economics
Division of Entrepreneurship and Strategy
CHALMERS UNIVERSITY OF TECHNOLOGY
Göteborg, Sweden 2017

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SIMON JOHANSSON

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Department of Technology Management and Economics
Division of Entrepreneurship and Strategy
Chalmers University of Technology
SE-412 96 Göteborg, Sweden
Telephone: + 46 (0)31-772 1000

Chalmers Reproservice
Göteborg, Sweden 2017

Acknowledgements

This study has been conducted during the fall of 2016 within the area of Technology Management and Economics. Several people have been involved in the process of this master thesis, for which I would like to express my gratitude. Firstly, I would like to thank my tutor Yashar Mansoori, who has been of great help during the whole master thesis process with helpful advice and guidance. I would also like to thank my examiner Henrik Berglund who gave valuable input during the initial stages of the thesis.

I would also like to thank my tutor at Triathlon Group, Jonna Svensson, for invaluable feedback and insights during the whole process. I would further like to thank Tobias Filander Hassler and Anders Sundbye, who have supported this master thesis during several stages of the process.

Finally, I would like to thank all the respondents from the companies that took part of the study for their time, interest, and knowledge they shared during the interviews.

Gothenburg, January 2017

Simon Johansson

Abstract

The automotive aftermarket is an integral part for many automotive companies, however it faces several challenges in the coming years. The digital development and shifting customer behavior are disrupting the industry and threaten the long-term profitability of service dealers within the automotive industry. The purpose of the study is to understand what impact digitalization has on automotive service dealers. This will be performed by investigating what challenges service dealers are facing in light of digitalization and how this affects the business model of the service dealer.

In order to answer the purpose, a theoretical framework has been constructed with business model innovation, actor-network theory and data and information handling serving as base for the framework. To understand the impact of digitalization in the automotive industry, a qualitative study has been conducted using semi-structured interviews as the main data collection method. 11 deep interviews were held in total and both manufacturers and service dealers were interviewed in order to get a comprehensive view of the automotive aftermarket.

This research identifies a clear difference between independent and authorized service dealers, not only in terms of business model composition but also in the nature of relationship and information sharing with Original Equipment Manufacturers. The research further find ways for service dealers to increase their digital presence with comparatively low effort, for example by enabling traditional offerings digitally. In order for service dealers to use digitalization as a differentiation factor relative competitors, effort should be focused on new offerings enabled digitally and developing a strategy for handling information and connectivity. The need for service dealers to secure the right competence in the coming years should be seen as a collective problem in which mutual efforts, rather than individual, would benefit the whole industry and the actors therein.

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1. Introduction

This section aims to provide the reader with the research of the study. It is initiated with a background and research context, followed by purpose, research questions and disposition of the study.

1.1 Background

The automotive aftermarket is the secondary market of the industry and can be described as all activities related to maintaining a car after its initial sales (Gebauer, et. al 2010). For a long time, the aftermarket has been an integral part for most companies acting in the automotive industry and sales volumes within in this area have been growing gradually during the past years. It has become increasingly important to automotive companies, in relation to new car sales, due to higher margins and a desire to keep the customer loyal to their brand and service dealer.

Increasing competition in form of eCommerce and direct sales channels is threatening established actors and the role of the service dealer might not be what it used to be. At the same time, vehicles are being manufactured with more and more electronic and digital components and the amount of data related to vehicles and drivers is expected to grow concurrently. Valuable knowledge could be acquired and taken advantage of from this data, for example driving habits and predictive maintenance for vehicles. The rising share of electronics and digital components in the car require new strategies because the predictability of the demands and characteristics of the parts with respect to storage, availability or reproduction are significantly different from mechanical components (Hermann, 2011). This development not only affects sales of spare parts and accessories, but also what kind of competence that will be required to meet future demand within the automotive aftermarket.

Rapid digital advancements from the automotive manufacturers forces service dealers to learn new things faster in order to stay relevant in their business environment. At the same time, customers are interacting in a more digital way, which means there will be fewer and fewer physical visits to the service dealer (Mohr et. al., 2014). Customers further often have good knowledge of components and prices when coming to the negotiation phase, whether it is a vehicle purchase or purchase of spare parts and repairs. This digital development together with a change in customer behavior in the automotive area are pressuring service dealers to increase their digital presence and knowledge to keep customer satisfaction at a high level and securing long-term profitability. Hence, it is of high interest for service dealers and manufacturers to get more knowledgeable in the area of digitalization in the automotive aftermarket.

1.2 Research Context

City populations are booming and for the first time in history, more than half of the world's population are currently living in urban areas (World Economic Forum, 2016). This development is expected to grow steadily for many years to come, with 90 % of the growth set to take place in the developing world. Urban consumers are more sophisticated, demanding and digitally engaged in their living, buying and communication habits. Urban mobility, along with connectivity and the demand for a range of digital channels of services and information, will dominate the future of the automotive industry (Gissler et. al., 2015).

With over 7 billion gadgets and a higher number of mobile phones and smartphones than people (Boren, 2014), the world is more connected than ever. One of the largest challenges for the automotive industry will be to adapt, prosper and stay relevant in this rapidly changing environment where new competitors and industries are constantly aiming to take part of the future automotive ecosystem.

The average age of the European car fleet is getting higher for every year and the quality of many car parts is increasing (Gissler et. al., 2008; Mekonomen, 2016). This means a reduced need for repairs and change of spare parts, but with a comparatively old car fleet on the roads in the near future. From a service dealer perspective, this means extended intervals between car service and repair times, which in turn affects the current business model with a lower number of customers per year. There are further structural changes in the automotive area such as an increasing cost of car ownership in the developed markets together with a decreasing interest of possessing a car of their own (Viereckl et al., 2016), which means person vehicle buyers will delay buying a new car or find other ways to solve the mobility issue. Recent trends in the Nordic markets are an increasing use of private lease, car pools and ride-sharing (Mekonomen 2016; Motormannen 2016). These concepts are not only affecting the direct sales of new cars, but the whole value chain including service dealers and the aftermarket that is linked to it.

There are three main stakeholders in the automotive aftermarket process: manufacturers, service dealers and customers. Manufacturers are the companies that traditionally produce the vehicles and spare parts, which are connected to the vehicles that have been produced. A service dealer is a business that mainly offer service- and repair of vehicles and sales of spare parts. It is often, but not always, associated to a car dealership where vehicles are sold. There are two main groups of service dealers in Sweden; authorized and non-authorized. An authorized service dealer is directly associated with at least one manufacturer, often several, and must be certified by that or those manufacturers. By being authorized, the dealer is guaranteed to follow certain guidelines, procedures and are only selling Original Equipment Manufactured (OEM) parts.

The independent (non-authorized) service dealers are not directly associated with a specified manufacturer, and are therefore free to perform service on any brand they want to offer to the customer. They do not have any OEM-certification and usually sell spare parts which are not being produced by an OEM. The non-authorized service dealers are often part of a larger brand chain, with the focal service dealer acting either as part of the chain itself or as a franchise solution. If not part of a chain, the service dealer is described as an independent garage.

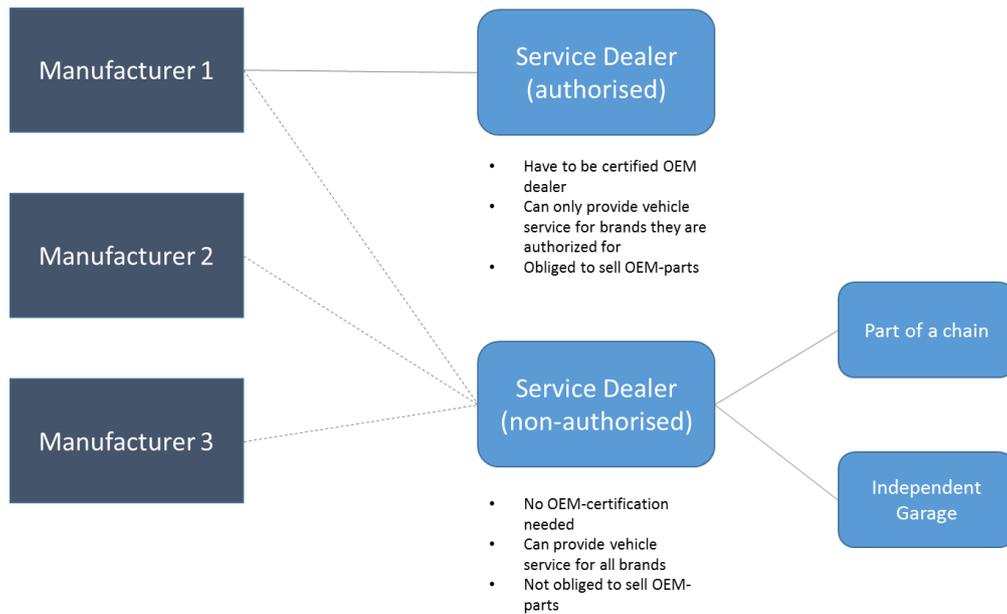


Figure 1. Conceptual picture of relationship between actors

1.3 Purpose and research questions

The purpose of this study is to understand what impact digitalization has on automotive service dealers. This will be performed by investigating what challenges service dealers are facing and how digitalization affects their business models.

Research Question 1: What challenges are automobile service dealers facing in light of digitalization?

Research Question 2: What impact does digitalization have on automotive service dealers and their business models?

1.4 Disposition

The introduction is followed by the theoretical framework applied in this research, which consists of four main parts: business model innovation, actor-network theory, data, and information handling and lastly the automotive aftermarket. Chapter three consists of an explanation of the methodology used in this study, with research strategy, data collection, data analysis forming the base of the section. The methodology chapter ends with a discussion regarding delimitations and research quality. Following the methodology, results from the empirical findings and discussion of the results in light of the theoretical framework are presented. The thesis is finalized with a conclusion and suggestions of further areas of study.

2. Theoretical Framework

This section aims to provide the reader with an understanding of the subject and will serve as base for the discussion. This section starts with introducing digitalization and business model innovation and is followed by network theory and data and information handling. The section is concluded with theory regarding the automotive aftermarket.

2.1 Introduction to digitalization and definition

Digitalization can be defined as the use of digital technologies to change a business model and provide new revenue and value-producing opportunities (Gartner, 2016). In other words, digitalization can be described as leveraging digital technologies to improve business practices.

Transformation is fundamentally about change, and organizational change is the foundation of digital business transformation (Wade, 2015). Expanding on this, business transformation is digital when it is built on a foundation of digital technology. As of today, some kinds of technologies are most significantly associated with digital business transformation, for example: analytic tools and applications, mobile tools and applications, social media tools and applications respectively the Internet of Things (IoE), including connected devices. Combining organizational change and digital transformation provides a good base for improving performance in terms of revenue, efficiency, enhanced customer engagement and better knowledge collection.

In this research, a conceptual framework for digitalization with four overlying areas has been chosen and these areas have their base in the study ‘Digital Business Transformation’ by Wade (2015). This conceptual framework was used since it is both a known framework developed together with Global Center for Digital Business Transformation and was considered highly for application on the automotive industry. The four areas which will be explored in this chapter are: business model innovation, actor-network theory, data, and information handling and lastly the automotive aftermarket.

2.2 Business model innovation

The greater frequency of disruption and dislocation in many industries is shortening business model lifecycles and new global competitors are at the same time emerging (Lindgart et. al, 2009). Thus, a need among firms is created to reconfigure existing, or create new, business models in order to survive.

Business models have been an integral part of economic behavior since pre-classical times (Teece, 2010), however it is only recently that the scale and speed at which innovative business models are transforming industries and, indirectly society, has attracted the full attention of both scholars and business professionals (Massa Tucci, 2013). The concept of business model is somewhat elusive, allowing for considerable interpretative flexibility (Pinch & Bijker, 1987). There are, however, some emerging common themes that act as a common ground among the various conceptualizations of the business model. One shared view is rooted in the technology management and entrepreneurship literature, recognizing that technology by itself has no single objective value and the economic value of a technology remains latent until it is commercialized in some way via a business model (Chesbrough, 2010). A mediocre technology pursued within a great business model may be more valuable

than a great technology exploited via a mediocre business model. Another view is that the business model represents a new dimension of innovation itself, which spans the traditional modes of process, product, and organizational innovation (Zott and Amit, 2007). This new dimension of innovation could then be a source of superior business performance, even in mature industries with seemingly low or stagnating growth. This can be applied for service dealers operating within the automotive industry, the growth of which has been relatively modest during the last years (Mekonomen, 2016). Thus, it becomes even more important for service dealers to differentiate among competitors in new ways.

A business model canvas is a strategic management tool used to describe, design, challenge, and pivot a business model. It was presented and developed by Osterwalder in 2004 to form a common ground when debating business models and business model innovation. The canvas consists of nine building blocks for its activities, which in turn cover the four segments offer, customer, infrastructure, and financial viability. The building blocks and parts of the canvas can be found in figure 2. When two or more blocks in the business model canvas are reconfigured or innovated, business model innovation takes place (Lindgart et. al., 2009). How a firm innovates or reconfigures its business model depends both on the circumstances and the industry where they operate.

To renew and innovate a business model the firm must understand the existing business model and how it provides the firm a competitive advantage, but it is equally important to map the shortcomings of the model (Osterwalder and Pigneur 2011). Hence, these shortcomings should be examined in order to see how they are aligning with the industry, global trends and customer behavior and preferences. However, business model innovation cannot be fully planned *ex-ante*, they are rather shaped through a discovery-driven process (McGrath, 2010). This concept is backed up by Hayashi (2009) who stated that many companies had an original business model that did not work, which was not necessarily a failure if they quickly could switch to an alternative plan. In order to shift to an alternative plan, managers and entrepreneurs should engage in experimentation and challenge their initial assumptions. Thus, to further confer a reliable competitive advantage, business model innovation must be systematically cultivated, sufficiently supported, and explicitly managed. This is very applicable to the automotive industry and the aftermarket within it. In times of increasing electric and digital components in vehicles together with changing customer behavior, it becomes hard to predict and plan the outlook in a rapidly changing industry and at the same time composing a viable long term business model.

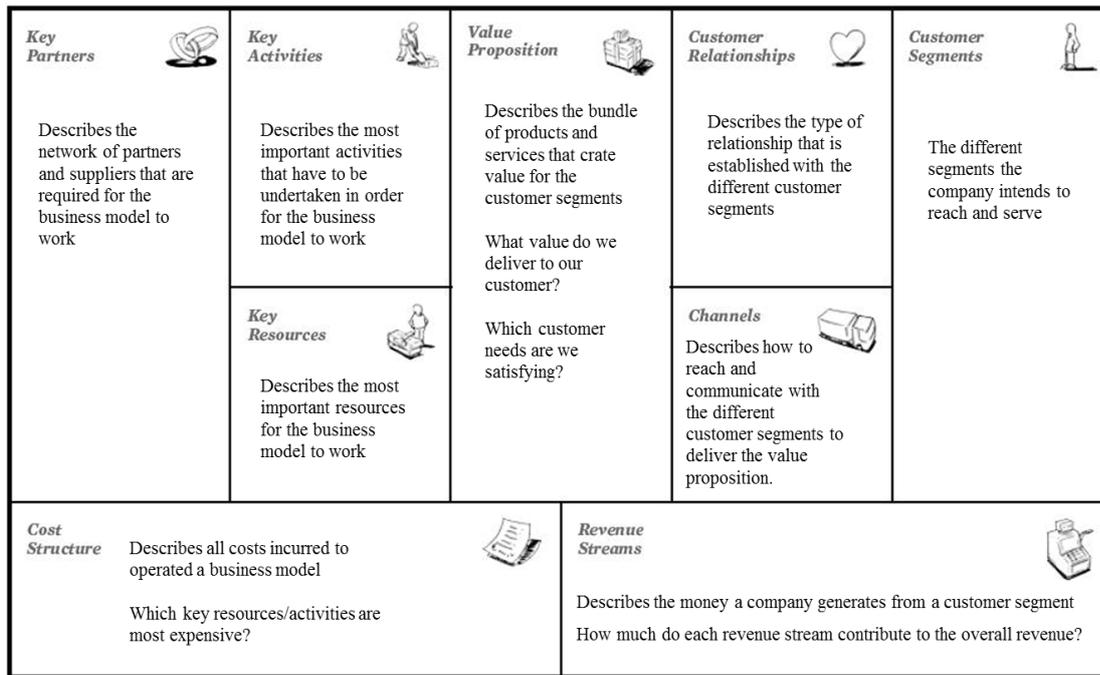


Figure 2. Osterwalder's business model canvas (Osterwalder & Pigneur, 2011)

One of the major choices when implementing a new business model is whether to embed a new business model in the core business or establish it separately (Lindgart et al. 2009). There are several benefits of embedding the new model into the core business such as common assets, access to customers and capabilities (Girotra et al., 2014). However, when the new disrupted business model differs significantly from the existing one, it could be better to opt for a separation due to more autonomy for the new business unit and at the same time avoiding fierce competition of resources inside the firm. Thus, deciding upon whether or not to embed the new business model into the core business is a vital decision for service dealers and manufacturers to make when innovating parts of their business models.

There are several risks and pitfalls to look out for when reconfiguring or innovating the business model. One of the main pitfalls is *portfolio bloat*, which occurs when a company becomes drowned in too many uncoordinated, bottom-up innovations (Lindgart et al., 2009). The result then is an unbalanced and overlapping portfolio of experiments, where no innovation has the resources or support from management to become core of the business model. Another apparent pitfall when innovating the business model is when the company *fails to scale up* (Teece, 2010; Lindgart et al., 2009), which happens when a project has been piloted and the initial enthusiasm passes away. A lack of attention, resources, and failure to establish criteria can keep the project from being scaled up successfully, especially if the organization acts on a global market. The risk of portfolio bloat might be easier to avoid for service dealers that are smaller and only act on a national market, whereas service dealers who have many branches in several countries must invest more time and effort in ensuring coordination of activities and portfolio consistency. On the other hand, larger service dealers usually have the financial muscles and geographical spread to scale new projects up whereas smaller service dealers might lack sufficient resources to expand in a desired way.

2.3 Actor-Network theory

Much research has been made on network-forms of organizations, with Coase (1937) introducing the insight that firms and markets were alternative means for organizing similar kinds of transactions. Williamson (1975; 1985) argued that between markets and hierarchies (i.e. vertically integrated firm), there must exist some sort of hybrid version and that the previous views were too static. Powell (2003) presents the notion of network forms, which occur through individuals engaged in reciprocal and mutually supportive actions. Thus, bringing forward the concept that it is possible that parties in networks agree to forego their own interests at the expense of others, and that benefits and burdens could come to be shared, depending on the type of network structure.

The basis of an industrial network approach is that firms operate in the context of interconnected business relationships, forming networks. From a strategic viewpoint, these relationships affect the nature and the outcome of the firms' actions and are their potential sources of efficiency and effectiveness (Hakansson & Snehota, 1995; Wilkinson & Young, 2002). There are clearly many advantages of forming relationships, such as shared knowledge and resource collaboration. For service dealers that are part of a larger chain, there are advantages such as ability to share knowledge and brand recognition. Having a close relationship with a manufacturer could also be advantageous in resource collaboration, shared risk, and knowledge spillover between parties. However, there are several issues that arise when assessing strategy and relationships in industrial networks.

One issue when developing industrial networks is to identify and establish an appropriate level of involvement with individual partners and at the same controlling the network to the extent that they can achieve their own objectives (Gadde et. al., 2009). Involving the firm with another firm is often costly and time-consuming and require effort and dedication from both companies Furthermore, too strong a connection might make the actors interdependent, which gives rise to lock-in effects (Gadde et. al., 2007). Nevertheless, there are many ways where collaboration and involvement between actors is desired, depending on size of the companies involved, type of industry and preferred level of engagement. Firms are seeking to combine their strengths and overcome weaknesses in collaborations that are much broader and deeper than the typical marketing joint venture and technology licensing that were used previously (Powell, 2003), collectively aiming to create long-term alliances and high barriers to entry for direct competitors within the industry (Grant, 1998).

Collaborative arrangements could involve a wide variety of organizations and thereby look very different in their composition. While the joining together of small firms that possess entrepreneurial commitment and expertise in technology innovation with large scale corporate organizations that have marketing and distribution power represents the prototypical examples, these arrangements are not the only option (Powell, 2003). In some cases, large firms are joining together creating global strategic partnerships and in other cases new ventures take form of novel cooperative relationships with suppliers or cross-industry collaborations (Doeringer et. al., 1995). Service dealers in the automotive industry are composed and structured in many ways; some are part of a large national chain very controlled by the owners while others are more independent and free to cooperate with different actors.

In a network, activities and resources are not coordinated and combined spontaneously, but rather purposefully directed by many individual actors who systematically try to influence each other (Gadde et. al., 2007). The more the actors try to influence each other, the more ambition there is in the network and the greater potential for development. However, one needs to balance the interplay between influencing others and being influenced. When one actor gets too much control, the network becomes less innovative and the network moves toward a hierarchical structure instead of a network, which could lead to a sub-optimal state for the network altogether. In the relationship between automotive manufacturers and service dealers, company size often matters when determining who has most power, and manufacturers are frequently accused of being very tough with service dealers in negotiations (Fites, 1996).

2.4 Data and information handling

Vehicles today are manufactured with an increasing number of sensors and data collection systems (Reininger, 2015). These systems can collect real-time data about both vehicle behavior and driver behavior which then can be used for various purposes. Examples of real-time data that are and will continue to be collected could be about driving routes, speed, fuel consumption and, more importantly from an aftermarket perspective, the wear and tear on components and when a car should be taken in for service. Information from a vehicle could be gathered from several sources, not only by pre-installed sensors in new vehicles. If properly harnessed together, the onboard sensors in cars and embedded sensors in smartphones can objectively record information gathered from a car, meaning that the smartphone as it is today would play a central role in the future vehicle information ecosystem (Reingner, 2015). However, collecting data from users require consent in form of a signature from the user in question (Datainspektionen, 2016).

Transmitting data always poses a risk (Cushing, 2015). If the collected data is not anonymized, it could be linked to individual users, which would pose serious surveillance threats if the sensors or smartphones collecting the data were connected to a server accessible by third parties (Reininger, 2015). This actualizes the debate of privacy, and whether all manufacturers of vehicles that install sensors in vehicles are fully prepared with tools to ensure that user privacy is kept. An American study by Markey, (2015) showed that while many vehicle manufacturers were involved in collecting data, very few seemed concerned with the attended risks and most manufacturers had not made enough effort to fully inform customers as to how much that was being collected or how it was distributed. It is considered an issue with high priority (Diallo, 2013), and tougher legislative measures from different countries and institutions might not be in a distant future.

2.5 The automotive aftermarket

Aftermarket is the secondary market of the automotive industry and can be described as all activities related to maintaining a car after its initial sales (Gebauer, et. al 2010). It encompasses all parts and services including replacement parts, accessories, lubricants, and service repairs. The parts may or may not be produced by the Original Equipment Manufacturer (OEM). Globally, the aftermarket volume is still large and has become increasingly important to automotive companies in comparison with new car sales due to higher margins and the desire to keep the customer loyal to your brand and service dealer

(Gebauer et. al., 2010). A famous example from another industry that is leveraging the aftermarket in their business models is the razor and blade industry, in which companies hardly make any money on the razors but a lot on the blades that the customers must buy every month.

A legal regulation from an EU-directive in 2003 (EU, 2003) changed several things in the European vehicle aftermarket and it had implications on the Swedish aftermarket. One large change was that car dealerships no longer had to offer service- and repair services when selling cars and thereby could outsource that service to another service dealer. A second change was that the vehicle manufacturers had to allow the service dealers to be more independent, (i.e. not be associated with a OEM brand) and still get access to all necessary information, equipment, education, and the fact that all warranties still would apply after a vehicle had been repaired or served by an independent dealer (Liljenberg, 2013). The main outcomes of these legislative changes were: more authorized dealers that were not connected to a car dealership, more independent dealers, and a larger supply of spare parts due to the customer's right to have the freedom of choice regarding which spare parts should be used when repairing the vehicle (EU, 2003).

3. Methodology

This section aims to provide the reader with the research methodology used in this study. It is initiated with the research approach and definition of scope and preparatory work, followed by data collection, and ends with research quality.

3.1 Research Strategy

The research has been conducted as a qualitative study with minor quantitative elements. The focus has mainly been on understanding how service dealers approach digitalization and how it will impact them and their business models. Semi-structured deep interviews were chosen as the main data collection method in order to get commensurable results between interviews, but still with some flexibility. Quantitative elements in form of an evaluation model, in which the respondents had to grade different parameters in relation to each other, has been used. However, the evaluation model has acted as complement to the qualitative study rather than an integral component of the research. A deductive approach was used when conducting this study. A deductive approach is, as opposed to an inductive, top-down and starts with thinking up a theory, which then is narrowed down into hypotheses that in turn can be confirmed or disconfirmed (Easterby-Smith, 2015). This approach was deemed most appropriate in this setting.

3.2 Data Collection

This section describes how data was collected during the research study.

3.2.1 Definition of scope and preparatory work

The purpose of this study was formulated in collaboration with the initiator Triathlon Group and Chalmers University of Technology. The opening stages of the study aimed to setting the scope of the thesis, which consisted of several meetings with the initiator Triathlon Group and Chalmers University in order to decide upon a topic, assess the relevancy and setting the frame of the study to be undertaken. The literature study was performed with several purposes. It helped to define the view of digitalization from a theoretical perspective and at the same time providing a base for the framework to be used when setting the interview structure to be used in the data collection phase. The literature review was performed continuously throughout the study, however most of it was done in the initial phases. The literature was gathered from university courses and recommendations from Chalmers and Triathlon, but also from publications and articles through independent library and database searches.

To get a deeper understanding in the field and with the aim of both validating the literature findings and building an interview template, a small qualitative pre-study was performed a few weeks before the first interviews. The participants of the pre-study consisted of two Triathlon consultants, one industry expert from ISEA¹ and one service- and aftermarket manager from one of the dealers. Firstly, the early literature findings were tested together with the two consultants and an interview template was constructed. The interview template was then first tested on the two consultants together with the industry expert from ISEA, before performing an interview with the service-and aftermarket manager. The outcome of the pre-

¹ Industry Senior Advisors, an organization representing a number of senior executives with a confirmed record of international industrial accomplishments.

study resulted in a slight modification of the research questions and additionally helped the author to both narrow down and strengthen the relevancy of the interview questions that was kept.

3.2.2 Selection of research areas and participants

The literature review together with the pre-study with Triathlon consultants, ISEA and one service dealer resulted in four core areas that were chosen as base for the data collection phase. These four areas were: traditional offerings enabled digitally, new offerings enabled digitally, information and connectivity and organization and competence.

The interviewed stakeholders can be classified into two groups:

- Automotive service dealers – either independent or authorized dealer for a certain manufacturer
- Head office or national office of vehicle manufacturers

In addition to these groups, one interview was conducted with one of the largest research institutions in Sweden in order to get a legislative and governmental view on the digital development in the automotive and transportation area. Eleven (11) deep-interviews were conducted in total.

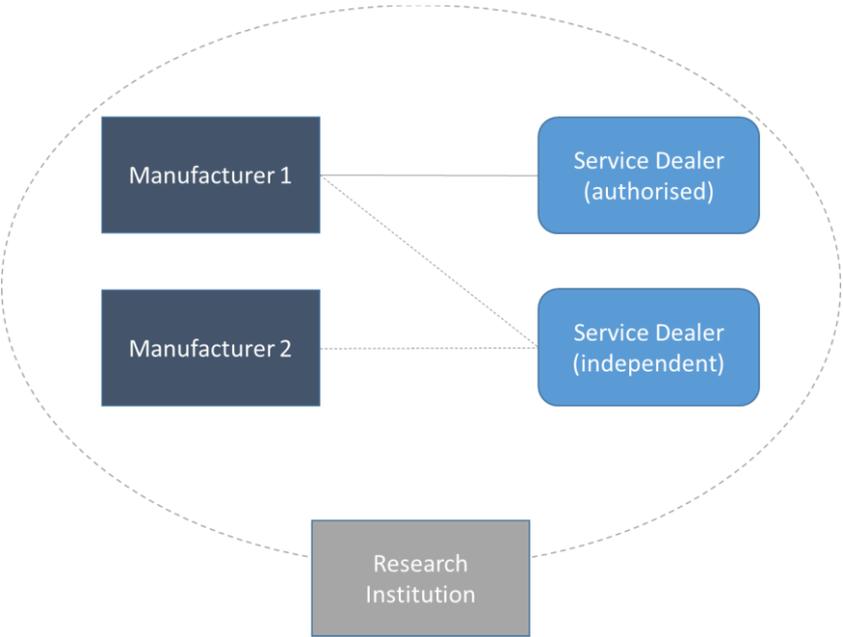


Figure 3. Conceptual figure of relationship between interviewed stakeholders

The lion share of companies that were approached were bound to have the following criteria: To perform aftermarket services for the person vehicle segment, to be of a medium- to large size, location in the middle- or southern part of Sweden and the person to be interviewed had to have a strategic role in the aftermarket process at the company. The companies that already were not in the network of the author were contacted in person or via telephone.

Since most companies chose to be anonymous, it was decided to keep all anonymous for privacy reasons and the delicate nature of many questions discussed during the interviews. To

enable comparison and still get a good understanding of the companies participating, some similarities and differences needed to be accounted for and is presented in figure 4.

Company	Type of company	Associated / Independent
Company A	Service Dealer	Associated
Company B	Service Dealer	Associated
Company C	Service Dealer	Associated
Company D	Service Dealer	Associated
Company E	Service Dealer	Associated
Company F	Service Dealer	Independent
Company G	Service Dealer	Independent
Company H	Service Dealer	Independent
Company I	Institution	-
Company J	Manufacturer	-
Company K	Manufacturer	-

Figure 4. Participators and company facts

3.2.3 Semi-structured interviews

In semi-structured interviews, the researcher will have a list of themes and questions to be covered, although these may vary slightly from interview to interview (Easterby-Smith, 2015). It allows the interviewer more freedom, compared to structured interviews and it also allows new issues to emerge for exploration. In this study, semi-structured interviews have been used in for all primary data collection. However, the degree of structure has been varied between interviews due to the various profiles and backgrounds of the interviewees. The aim was to conduct all interviews face to face in order to ensure mutual understanding and minimize the risk of misinterpretation, but due to accessibility reasons one interview, out of eleven in total, had to be conducted via telephone.

The interview template consisted of 4 major areas with 15 use-cases in total. The semi-structured interviews aimed to cover these areas in an in-depth discussion of around 60-70 minutes. Then, after the in-depth discussion, the evaluation model with grading of the use-cases was presented and worked through. This structure was used to ensure a good flow in the interview and not limiting the interviewee to be bound by the grading systems during the discussion phase. The interview structure can visually be seen in figure 5.



Activities

- | | | | |
|---|---|--|--|
| <ul style="list-style-type: none"> ■ Introduction and get familiar ■ Generate understanding of the business model ■ About 15 min | <ul style="list-style-type: none"> ■ Successively discuss the 4 areas and corresponding 15 parameters ■ Deep-dive into interesting subjects when found ■ About 40-60 min | <ul style="list-style-type: none"> ■ Evaluate and grade the 15 parameters ■ Follow-up and clarify answers ■ About 15-20 min | <ul style="list-style-type: none"> ■ Further questions ■ Providing information of next steps ■ About 10 min |
|---|---|--|--|

Figure 5. Interview structure used during data collection phase

The evaluation model consisted of the same 15 use-cases introduced loosely introduced during the second stage of the interview. In the evaluation phase, the person had to grade each use-case seen to how important he or she considered each one to be and was encouraged to speak during the grading phase with the purpose of providing the author with a better understanding of the results of the grading.

3.3 Data Analysis

The data collected during the interviews was recorded with help of recording equipment, then transcribed and compiled in Excel spreadsheets with standardized templates for the author to fill in. In two of the interviews, notes were taken instead of the interview being recorded on request by the interviewees. When in the evaluation phase of the interview, the interviewee ranked the different questions and areas on a scale between 1-5 in order to assess the importance of each question. If a question was ranked 4 or higher, it was considered to be of great importance. The questions in each area were then added together and an average importance score could be calculated.

After the interviews, the empirical findings chapter was constructed in line with the four areas chosen as base for the data collection. Thereafter, the theoretical framework and findings were tested and verified with the outcome of the empirical findings in order to build the discussion section. Follow-up interviews were conducted via telephone or email when clarification of answers was needed. After the results and analysis were completed, general research conclusions were drawn together with further areas of study in the field.

3.4 Delimitations

The scope of the study was limited to investigate the automobile service shop mainly from a revenue viewpoint. Therefore, the internal processes inside the company and the potential of cost reduction has not been investigated to any large extent. There could be several different

ways for an automobile service shop to increase revenue and it does not necessarily have to include digital transformation. However, due to the mentioned trends and to get a sufficient scope, focus has been on key characteristics that can be improved with help of digitalization measures.

The automotive vehicle market can roughly be divided into person vehicles, smaller commercial vehicles, and larger trucks. All three are interesting from a digitalization and aftermarket perspective. However, the use cases are widely different between person vehicles and large trucks with the main difference that large trucks mainly are used in commercial and business purposes and therefore have a different set-up in terms of aftermarket and service dealers. To get a sufficient scope and depth of this study, focus has therefore been on person vehicles and smaller commercial vehicles. Furthermore, when scope and boundaries of the research were set, it was decided that the customer-centric viewpoint would not be taken into large considerations due to the size of data that would be needed to collect.

Even though the vehicle market is global to some extent, service dealers operate on a relatively local basis. Therefore, the geographical scope of the study has been limited to Sweden and the aftermarket there. Literary sources from all over the world have been examined but focus have been put on the European and especially Swedish aftermarket. All companies interviewed have in Sweden and even though some companies taking part of the study have operations in other Nordic countries and in Europe, it was clarified that Sweden was the focal point of the study.

One apparent delimitation is also the size of the participating companies. It was decided together with the initiator Triathlon and supervisor at Chalmers that the service dealer should be of an appropriate size. This since smaller service dealers were considered to lack sufficient knowledge and funds to fully engage in the digital transformation in the aftermarket, and additionally the fact that medium- to large sized companies already were discussing these questions to some extent.

3.5 Research Quality

There could be a number of quality issues related to semi-structured interviews and therefore the concepts of reliability, validity, generalizability, and different sorts of biases have been examined in this study (Saunders et. al., 2016).

When using semi-structured interviews and non-standardized research methods, the findings are not necessarily intended to be repeatable since they reflect reality at the time they were collected (Marshall and Rossman 1999) and thus affect the reliability of the study. Due to the changing landscape of the automotive industry and the associated aftermarket in form of electric mobility, digitalization and the increasing amount of information, reliability is something that needs to be taken into consideration. In this setting, the replicability of this study could therefore be argued to be difficult to maintain without undermining the strength of it. If the aim of the study was to have the ability to fully replicate the study, it would most likely have damaged the used methodology, and the exploratory nature of the research would not have been feasible.

Validity refers to the research method's ability to measure what is intended to be measured and is often divided into external and internal validity (Lekvall & Wahlbin, 2001). The main

criteria in external validity is generalizability of the research, which examines to what degree the findings of the research are applicable to another setting or time (Saunders et. Al 2016). In this study, it has been from the perspective of the Swedish aftermarket. While some companies have offices and operations in Europe, most of them have their main market in Sweden. Most interviews conducted have been in a large city or a large city. The results might therefore not represent all service dealers in Sweden. To mitigate this, one interview was conducted in a smaller city in the middle of Sweden. Nonetheless, the geographical validity inside Sweden should be taken into consideration.

The interview bias is where the process of conducting an interview might influence the responses given (Easterby-Smith, 2015). Thus, creating a need for the questions to be asked during the interview to be of an objective nature and not being framed in a certain way. To mitigate this, one session with industry experts and one pre-study with a service dealer were held and the questions were thereafter somewhat revised. Moreover, there is a very real concern about interviewers imposing their own reference frame on the interviewees, both when the questions are asked and when the answers are interpreted (Easterby-Smith, 2015). Since the author became more knowledgeable in the aftermarket area the more interviews that were undertaken, it could be assumed that the first interviews conducted in the study were under a larger researcher bias than the last ones to be held.

In the context of research, ethics refers to the appropriateness of your behavior in relation to the rights of those who become the subject of your work, or are affected by it (Saunders et al., 2016). Since several participants of this study are direct competitors targeting the same customers, ethics have been an integral part when conducting the interviews. Raw data in form of interview answers have therefore been handled with high confidentiality and carefulness.

One of the most common ethical issues concerns the control and use of data obtained by the researcher (Easterby-Smith, 2015), who has ownership of the data and thereby greatly influences both the interpretation of it as well as information that potentially could harm individual informants and interests of these. The names of participating companies of the study has not been kept secret unless asked, but the answers from each participant would be handled with confidentiality and nothing said by the participants would be attributed to them without first seeking and obtaining permission. This, due to the somewhat delicate nature of the questions asked in the study and also in order to prevent direct company espionage between participants.

4. Empirical Findings

In this section, the empirical findings will be presented and it aims to provide the reader with the outcome of the data collection. The companies are briefly described to simplify the context for the reader.

During the interviews, it has been clear that many of the interviewees interpret the word digitalization with different meanings. Some of them see it as only doing business online instead of in the real world, while others do not have a clear definition of it. However, most interviewees agree that digitalization can be described as innovation of the business model using digital elements. All interviews further agreed that digitalization is of the largest challenges service dealers stand for and all considered having a person responsible for digitalization was of great importance.

Four key areas were investigated in total: Current offerings enabled digitally, New offerings enabled digitally, Information and connectivity and lastly Organization and competence. Current offerings are seen offerings the service dealers have as of 2016. New offerings can be seen as offerings most service dealers do not have as of 2016, but might offer in the near future. Information and connectivity can be described as how companies work with information and the connected vehicle in order to create valuable offerings. Organization and competence can be described as how companies work with organizational development and ensuring they have the right competence to meet future demand of the industry and its development. The aim of choosing these areas was to give a full picture of the revenue side of the business model, and what impact the changes in these areas would affect the current business model.

The four areas shown in figure 6 acted as a base for the data collection. Information & connectivity was ranked as the most important parameter of these four with 80 % of respondents considering it of great importance to manage in the near future. After rating all parameters, most respondents also stated explicitly that information & connectivity, and connected vehicles in particular, was the most pressing issue for service dealers. Secondly came organization & competence and more specifically how to handle the employee competence at service dealers, which 79 % of respondents considered to be of great importance.

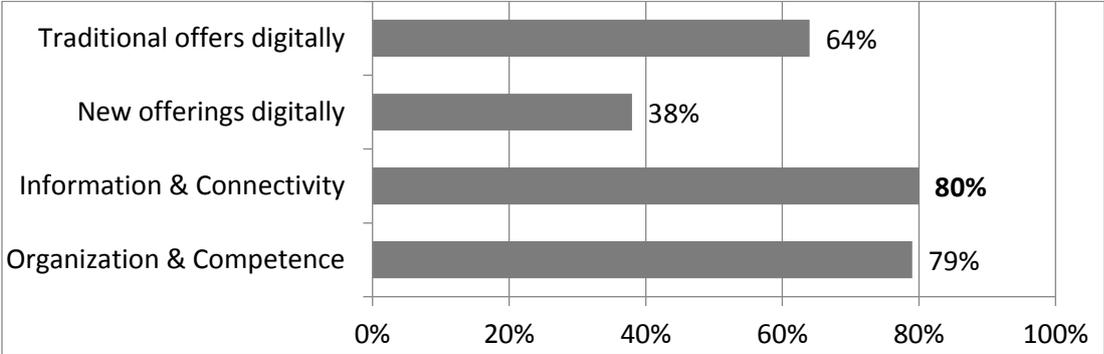


Figure 6. Strategic importance of the different areas

4.1 Traditional Offerings enabled digitally

Traditional offerings can be viewed as offerings that are currently in use physically or via telephone. The reasoning in this area was to assess the attractiveness to offer these products or services through a digital channel in order to replace or complement the physical one.

Having an eCommerce solution, where spare parts and accessories could be sold were of interest among the respondents of the study. Regarding spare parts versus accessories, both had some similar comments among the respondents, but also a few differences. Several participants brought up the fact that they sold most spare parts in connection when performing service of a vehicle and it was only a small part that was sold over the counter as free spare parts. This, since the Do-it-yourself(DIY)-segment was not particularly large and if people wanted to buy an independent spare part to install themselves, they usually went to a dedicated store for this instead of a service dealer. Furthermore, many brought up the risk of commodization of spare parts and that it was of little importance for the customers if the spare part online would come from a warehouse in Sweden or Germany.

” We see a large risk of spare parts being commoditized and wear and tear of parts will successively decrease” – Service Dealer B

With accessories, the offering is not targeted to the DIY-segment and no or little knowledge to install accessories is needed. Therefore, this offering could be offered to a larger customer group and the respondents were more positive to accessories than spare parts online. The majority of the respondents further noted that if they were to offer spare parts or accessories online through an eCommerce solution, they were also needed to offer delivery service with the good to be transported home or nearby home, as opposed for the customer to pick the good up at the dealer, for the offer to be attractive enough.

Long telephone waiting times and having lengthy conversations up to ten minutes when booking service at a service dealer have caused a high customer frustration. All respondents agreed that being able to book service online was a necessity for a service dealer to have in the near future. As of 2016, most of the service bookings came via telephone, some face-to-face and a small portion online. Many of the respondents had some form of service booking online solution. However, almost all did not have this solution automated to the extent that was preferable. It usually required a lot of manual work for the service dealer after the customer had booked the service online, which was not optimal but with the main difference of minimizing customer waiting time.

“This [Service booking online] would save us time, money in form of salaries and decrease customer dissatisfaction significantly” – Service Dealer B

“It’s hard to offer a price for all models and there’s still a lot of manual work after the booking has been made online” – Service Dealer D

The main difficulty several respondents brought up was the ability to offer an accurate price when booking a service online. The more information a customer provides about its vehicle online, the more accurate the price would be. At the same time, the more information a customer must provide the more time it takes and less likely it also is of booking a service online. The independent dealers had more difficulties of estimating prices than associated

dealers, since they usually serve and maintain all vehicle brands whereas the associated dealers only serve one or a few brands and usually have a lot of knowledge of those.

Some respondents have implemented Customer service online in form of a chat function, but far from all.

“This does not create any direct profitability, but is very important for customer satisfaction”
– Service Dealer F

4.2 New Offerings enabled digitally

New offerings enabled digitally can be viewed as offerings that many service dealers do not have as an offering today, but might be of interest for the future. Most service dealers did not have offerings within this area, but several had thought about these concepts to include in the future. The offers in this section would contribute to customer value and provide a service dealer with a differentiated offering, however large uncertainty of how to charge for these offerings due to the newness of them. The offerings in this section was generally considered to have a high level of uncertainty, according to the respondents. The major concern was how to make a solid business case of the offerings, i.e. making sure the profits would exceed the costs in a satisfactory way.

The ability to rent products or services for a specific time, for example a rooftop box or special tires, were considered attractive among the respondents. What came up during several interviews was the fact that not only products would be attractive to rent for a specific time but also non-tangible products or services such as insurances and software upgrades.

“Physical products have a limitation, with a digital service there is a whole new level of scalability” – Service Dealer D

Non-tangible products and services were considered even more attractive from a service dealer point of view, since they then can circumvent large storage areas and scale the service in a much better way.

According to the respondents of the study, most service dealers today have a damage inspection center where customers come in when a damaged vehicle needs to be assessed and analyzed before it can be repaired or fixed. This damage inspection center is almost always in a separate building and could even be in a different part of the town, which means that the customer both has to visit the damage inspection center before it can come the service dealer building and sometimes additionally drive a long way between the two buildings. Being able for the customer to take pictures of the damaged vehicle online would potentially solve the first trip to the damage inspection center, however several issues with this solution arose during the interviews. The main problems being for larger damages when the internal parts inside the dent also are affected, which can't be seen from a picture of the outside of the car body. Further, some customers may not have the knowledge of how to take an accurate picture of the damaged parts and what is important for a service technician to know. However, many service dealers agreed that for smaller damages such as scratches and stone chips it would save the customer a lot of time and be of high value.

“The customer should only be here when it wants to be here. A service like this [damage inspection online] would help us increase our customer satisfaction in certain segments” – Service Dealer C

From a customer viewpoint, the respondents were positive to the idea of having a mobile service offering. However, they all considered it very hard to implement in practice due to the high incurred costs, environmental issues, and legal matters. Only 3 out of 11 respondents considered mobile service of vehicles as something they would

” It would be great if you [the service dealer] can manage the business case. More suitable target to those who already pay premium price for service.” – Service Dealer A

“From our perspective, we need to think globally and ensure standardization and deliverability.” – Manufacturer B

Both manufacturers interviewed brought up that they act on a global market, stating that standardization and deliverability must be ensured when a new product or service offering is launched. When working with standardization globally, they both agreed on the importance of cooperating close with the dealers in general and especially when launching new products or services.

4.3 Information and Connectivity

Information and Connectivity can be described as information and management of data from, and in connection with, the vehicle. This area was considered the most important one by the respondents. There is an increasing amount of data that is being generated by vehicles, and most of the respondents stated that the handling of that data would be of utmost importance for service dealers and manufacturers in the coming years.

The majority of the respondents considered an integrated CRM system as very important. However, one of the major issues was the high number of different systems in use at the different service dealers. Since every vehicle manufacturer have an own CRM system the service dealers must work with, the associated dealers usually had far fewer systems connected to CRM than independent dealers. The independent service dealers could have up to 5 times more systems than associated service dealers, which made the daily business for the independent dealers more complex and time consuming.

Having a shared software platform within the chain, where certain information and data could be shared, was also considered to be of high importance for all respondents including independent and associated service dealers. The main difference of software platform sharing between associated service dealers and independent service dealers was that the associated dealers often shared platform with and exchanged data with other dealers within the same associated chain and the manufacturers they were associated to, whereas the independent dealers only shared data with dealers within the independent service chain and not with manufacturers to any great extent. This information sharing structure was also the same with connected vehicles, where the independent service dealers did not cooperate with the manufacturers to any great extent. Connected vehicles was by most independent service dealers considered as one of the most crucial challenges for them to tackle in the coming years.

”For us as an independent actor serving all brands, there is many difficulties in managing all systems” – Service Dealer F

” Everything except for prices and notes of specific customers is shared between dealers within the chain. Being part of a large chain comes with lots of complexity, but also great opportunities in sharing data and customer insights between dealers” – Service Dealer G

Two independent service dealers stated that connected vehicles will be a large threat to the independent dealer market since the manufacturers are the ones installing the connected systems that collects data from the vehicles would be the first actor who get access to that data. These two independent dealers saw cooperation between industries to get customer data as something of great importance in the coming years.

When talking to the research institution, there are several ways to store vehicle data with different legal implications depending on the choice. One way that has been used frequently is to store data inside the vehicle and then extract it when the car is being served or repaired. Another way, which is increasingly being used is to store vehicle data in the cloud. Manufacturers are forced to provide service dealers in Sweden with certain vehicle data², however when storing vehicle data in the cloud, manufacturers do not have to provide as much data as they would have when storing it inside the vehicle seen to the current legislation.

” This [Connected vehicles] is a large threat against the independent dealer market, but also a great opportunity. We will have to cooperate with other industries in order to stay relevant”
– Service Dealer F

”By storing data in the cloud instead of in the vehicle, manufacturers can avoid sharing otherwise mandatory data and information” – Institution A

4.4 Organization and competence

Most service dealers are worried about having the right competence in the coming years. There is a strong need today for mechanics for the current car fleet in use and with the emergence of the electric car segment, new competence will be required at service dealers.

All respondents spoke about the shortage of competent personnel and mainly repair technicians. According to Manufacturer A, the industry must hire 5500 mechanics in the coming three years to satisfy demand. With the emergence of electric vehicles, many respondents were tense about the change of competence, but also the fact that electric vehicles are estimated to have very low wear of components and will thereby not be served and repaired as often as a vehicle is today. Although several respondents of the study stated that this transition will take time, others stated that increasingly people are willing to buy a hybrid- or fully electric car and that the service dealers must be fully prepared with competence and able to charge for that competence in a satisfactory way.

² Interview with Research Institution

“It [change of competence] is an industry problem. With the electric vehicle development, there will be more cars that won’t need the same service level – we will have rethink our offering.” – Service Dealer A

“With the existing technology development, the electric vehicle market evolution will take time. The current urge for classical mechanics will continue to exist during a long time and throughout the transition period.” – Institution A

Since vehicles are manufactured with more and more digital components, most respondents saw a clear need of being able to repair digital information and entertainment systems in vehicles. Most of them do repair these systems today, but there are several issues in this area. It requires a lot of time and effort to solve problems within this area, especially if the dealers have many different brands to have knowledge about. Associated dealers can easier solve problems related to digital systems since they have much fewer vehicle brands and models to serve and have knowledge about. Due to a good relationship with the manufacturer they often have access to a technical hotline where they can get support and knowledge regarding the cars they are selling and serving.

“It [Repairing digital systems] takes a lot of time and it is not sure you’ll find the problem. Low income per time spent ratio, but the customer expects us to do it” – Service Dealer G

” One of the perks of being an authorized dealer is that we are getting access to a large knowledge pool from the manufacturers ” – Service Dealer A

All respondents consider having someone responsible for digitalization within the company as a necessity in the coming years. The respondents all work with digitalization to some extent, however they also define it differently and work with it in different ways. Most service dealers want to use digitalization to improve current offerings and to enable better communication with their customers and all agree that there are many ways to use digitalization to increase customer value. At the same time, several service dealers and one manufacturer express concerns that using digitalization just for the sake of being digital is a waste of time and money, and that they must be able to charge for the digital product or service.

” We won’t radically change the way we’re doing business – but include digitalization as means to connect with our customers” – Service Dealer A

”Digitalization enable many opportunities, but we cannot forget to see what impact each opportunity have on the bottom line financially” – Service Dealer E

5. Discussion

This section aims to discuss the outcomes of the result section and will be analyzed in light of the theoretical concepts from the theoretical framework section.

5.1 Insights regarding the ecosystem of the service dealer

This part aim to present and discuss the environment of which the service dealer operates within.

5.1.1 Differences and similarities between the independent and associated service dealer

Both manufacturers interviewed stated that they must think and act in a global way and to ensure standardization and deliverability, but at the same time maintain good relationships with all the dealers since they are ones with direct customer contact. While this is in line with Wilkinson & Young (2002), that relationships positively affect the nature and outcome of the firms' actions and potential sources of efficiency and effectiveness, there is at the same time an asymmetry between the global view of the manufacturer and the local view of the service dealer. Where manufacturers need to standardize offers deliverable to all markets, service dealers clearly only care about their local, most often national or regional, market. Associated service dealers do have benefits of being in close relationship with the manufacturer such as shared knowledge and resources collaboration (Hakansson & Snehota 1995), however when launching a new service or even modifying their business model they must follow certain guidelines and procedures towards the manufacturer and are thereby more tied in what they can offer. In this case, the independent dealers have much more freedom and flexibility to offer new products and find new collaborations on the local market. Gadde et. al. (2009) argued that involving the firm with another firm often is costly and time-consuming and require a lot of effort and dedication from both companies and he further argues that a too strong connection might make the actors interdependent, which in turn gives rise to lock-in effects. When about to launch new services, independent dealers have a better starting point when coming up with ideas and innovative offerings for the local market they operate within. On the other hand, only coming up with a new idea does not provide the firm with any revenue but it must also be successfully implemented. Lindgart. et. al (2009) states that one of the most common pitfalls when innovating the business model is a failure to scale up and major reasons for this are lack of resources and failure to establish criteria. In this case, the associated dealers could benefit from a large shared resource pool and deliverability focus when cooperating with the manufacturer if they jointly are scaling up a service together. Digitalization in form of shared platforms and data could be a way to reduce the barriers between the global manufacturer and the local associated service dealer, enabling easier information sharing and communication when in the stage of scaling up the service.

Both manufacturers considered close cooperation with service dealers to be of great importance. This is in line with Hakansson & Snehota (1995); Wilkinson & Young (2002), who argue that industrial firms operate in the context of interconnected business relationships, forming networks, which affect the nature and outcome of the firms' actions and potential sources of efficiency. Network collaborations are much broader and deeper than the typical marketing joint venture that were used previously (Powell, 2003), thus it can be concluded that in long-term relationships it is better to be part of a network than not being part of one. Although being rather tied to the strategy of the manufacturer, associated dealers do benefit

from shared resources and information collaboration, something several independent dealers stated that they missed out on.

5.1.2 The battle for information

Historically, data has been stored inside the vehicles and extracted when a vehicle has been in for service or repair, but with smart sensors and systems new opportunities arise. According to Reiniger (2015), vehicles are manufactured with more and more sensors and data collection systems, often named ‘connected vehicles’. These systems can collect real-time data about both vehicle and driver behavior such as fuel consumptions, wear, and tear of components and when a vehicle should come in for service, although consent from the user is required for all forms of data collection (Datainspektionen, 2016). Controlling this data will almost certainly be of great importance for the service dealer in the near future, when modifying or innovating new offers to customers. Due to fewer and fewer physical visits to the service dealer (Service dealer A; Service dealer C), there will be fewer times to extract data from vehicles and collecting real-time data via sensors would thus be of even greater importance.

According to Liljenberg (2013), all dealers have the right to access necessary information equipment and education from the manufacturer. However, if manufacturers store the data outside of the vehicle, e.g. in the cloud, they can avoid providing otherwise necessary information to the service dealer with the current data privacy legislation (Interview with Institution A, 2016; Datainspektionen, 2016). Firstly, this development would give the manufacturers a lot of valuable information and power of the customer, which other parts of the industry ecosystem will not have. Secondly, the implications would most likely negatively affect the service dealers that do not have a strong relationship with the manufacturers, in this case the independent dealers. Since associated dealers often have a strong relationship with the manufacturer, it could be assumed that they would get access to this information in order to get insights of their customers and vehicles, which would be of great benefit for the aftermarket business for both the service dealer and Original Equipment Manufacturer. On the other hand, information from vehicles can be gathered from several sources and not only preinstalled sensors (Reiniger et. al., 2015). Since independent service dealers most likely will have limited access to information from the preinstalled sensors, they have to find other ways of accessing information.

According to Service Dealer D, connected vehicles is a large threat against the independent dealer market and they must cooperate with other companies and industries in order to stay relevant. Cooperation between independent dealers is already undertaken to some extent and further cooperation with information technology companies such as Telia or Ericsson could be of future interest, with the purpose of collecting customer information. However, both manufacturers interviewed agreed that although this is one of the most important areas to handle, there are a few risks that need to be taken into consideration with the largest one being within the legislative domain. Laws regarding data privacy are rather vague today, and with a new data protection reform by the European Union effectively in place in 2018 (Datainspektionen, 2016), there is still a lot of uncertainty how this will affect companies. Developing a strategy of how to approach the increased information flow together with handling data privacy issues will be of great importance for both independent and authorized service dealers in the near future.

5.2 Insights regarding business model innovation

This part aim to present and analyze how business model innovation affects the service dealer.

5.2.1 Change in customer behavior and preferences

When innovating a business model, firms must first understand the existing model and how it is currently aligning with the industry, global trends and customer behavior and preferences (Osterwalder and Pigneur, 2011). Furthermore, customers are interacting in a more digital way and there are fewer and fewer physical visits to the service dealers (Mohr et. al., 2014). This is in line with what several respondents brought up during the interviews and they were looking for new ways to connect with the customer on their terms. All respondents agreed that offering traditional services in a more digital way would be of great importance for the coming years. Booking service online, offering accessories through an eCommerce solution and having a customer service solution online were considered three straightforward ways of increasing digital presence and customer satisfaction, according to the respondents. Since digital service solutions in form of service booking online and customer service online do not provide any direct profitability, it could be difficult for service dealers to justify investment in such services. In those cases, it is of high important to look to the business model and see how these activities could provide value for the service dealer. In the case of booking service online, all respondents agreed that being able to book service online was a necessity for a service dealer to offer in the near future. Rather than looking to innovate the offering where the direct profitability is, in this case the service of the vehicle, firms must see to the customer preferences and focus on activities leading to direct profitability (i.e. the ability to book service online) and evaluate how the customer relationship and satisfaction affect the overall business model. Nonetheless, one must not forget how to measure and follow up the impact offerings have on the financials of the service dealer subsequently. Having a digital offer just for the sake of it might not be viable in the long term, even if it looks good.

5.2.2 New offerings require new capabilities and resources

Building on section 5.2.1, several respondents brought up the fact that due to increased competition and fewer visits from the customer, the service dealer must perform more activities in-house of what they earlier used to outsource to other companies, for example windshield repairs, damage to the paintwork and, with an increased number of digital elements in the car, also digital repairs, and upgrades.

When changing offers towards customers, companies should have in mind how this affects the overall business model. An increasing number of new activities will not only incur higher costs for the firm in terms of personnel and resources, but also an increased risk of portfolio bloat (Lindgart. et. al., 2009), which occurs when a company becomes drowned in too many uncoordinated, bottom-up innovations. On the other hand, an increased number of activities is a source of growth and future profitability if properly managed. Having more activities and customer touch points could further strengthen the relationship with the customer in its lifecycle with the service dealer. A full-service offering for the whole customer lifecycle would also make it easier to keep in touch with customers between service intervals. Digital offerings such as customer service online, damage inspection online and booking service

online are three examples of activities that at a first glance do not act as direct profitability, but could strengthen the relationship with the customer during the lifecycle, and at the same time act as routes into revenue-generating activities.

When the business model and offerings within it are being innovated, the need for the right competence is an important aspect that needs to be taken seriously. According to Manufacturer A, the industry will have to hire 5500 mechanics in the coming years. With vehicles being manufactured with more and more electronic and digital components, a different kind of competence will be required. Nine out of eleven respondents considered the need to have sufficient competence to repair information- and entertainment systems to be of great importance, in order to be a competitive service dealer. These findings should not be seen as a struggle only for the focal service dealer, but rather as an industry problem that collectively needs to be solve through structural efforts to meet the coming demand.

6. Conclusion

Digitalization is a debated topic in many industries, including the automotive industry, however there is not much literature and insights regarding digitalization in the automotive aftermarket and the service dealer view. Therefore, this thesis fills an important gap by investigating how digitalization affects service dealers and their business models. Moreover, it is important from a service dealer and manufacturer perspective to have knowledge about digitalization within the aftermarket, since it enables them to stay competitive to national and international competitors, and at the same time meeting the needs of the customer in a better way.

There are large differences between associated and independent service dealers in several aspects, with the most evident one being the level of involvement and cooperation with the manufacturer. Manufacturers and associated dealers are acting in a network-like relationship when it comes to sharing of information, whereas independent actors must find other ways and collaborations to get access to vehicle and driver information. Service dealers stand in front of two main challenges here: being able to get information and subsequently extract value from it.

Enabling traditional offerings in a digital setting is a comparatively straightforward way of increasing digital presence and customer satisfaction, whereas new offerings digitally enabled are more complex due to high uncertainty. However, new offerings digitally enabled could at the same time be a source of competitive advantage if properly managed. Digitalization in itself does not have any real value, it is when it is connected with the current offerings and business models of service dealers that it can come to its full right and provide value. Instead of viewing digitalization as a product or service, it should be seen as means to enhance the customer relationship and at the same time help service dealers to refine and sharpen their current value proposition and thereby generating and securing profitability. A trend towards a full-scale offering to cover the full span of the customer lifecycle has been distinguished, however firms must look out for the risks that comes associated, for example portfolio bloat and incurred higher costs.

Cooperation for information, especially for independent service dealers, will be of great importance for the future. If vertical cooperation with manufacturers is not possible, horizontal cooperation with other industries or even competitors should be approached and encouraged. With emergence of electric and digital components in vehicles together with a lack of personnel within the industry, securing the right competence will be crucial in order to both stay in business and use it as a differentiation factor relative to competitors within the industry.

7. Further areas of study

This thesis has discussed areas of interest with the service dealer as a focal point. However, there are other areas that would be of high relevance to investigate further. One of the first things that would be of interest is to research the role of the consumer and verify that the view of the service dealer aligns with the consumer view. In this study, an emphasis has been put on the supply side of the ecosystem and the role of the customer and demand side has been discussed during the interviews, but no in-depth interviews have been conducted with different types of consumers. Hence, it would act as a good complement to the study conducted and thereby provide the industry with a more comprehensive picture of digitalization within the automotive area.

Another interesting topic for further study would be to investigate how digitalization affect the aftermarket of the commercial vehicles and trucks. This study focus mainly on the person vehicle market and how digitalization affect service dealers within this area. However, since commercial actors in general work business to business and the vehicles within the commercial area are more capital intense, it would be a slightly different but highly relevant topic to research.

Finally, it would be of interest to conduct a study with similar format to validate the results and findings from this study. As a suggestion, a study could be performed with a greater geographical spread and possibly include several of the Nordic countries. A larger sample of service dealers and manufacturers could further validate and strengthen the findings of what impact digitalization has on the automotive aftermarket.

8. References

- Boren, Z., (2014) There are officially more mobile devices than people in the world. [online] Available at: <http://www.independent.co.uk/life-style/gadgets-and-tech/news/there-are-officially-more-mobile-devices-than-people-in-the-world-9780518.html> [Accessed 2016-11-24]
- Chesbrough, H. (2010). Business model innovation: opportunities and barriers. *Long range planning*, 43(2), 354-363.
- Coase, R. H. (1937). The nature of the firm. *economica*, 4(16), 386-405.
- Crane, A. (2003). In the company of spies: The ethics of industrial espionage
- Cusing, T. (2015) Cars Are Delivering Tons Of Driving Data To Manufacturers With Minimal Security And Even Less Transparency. [online] Available at: <https://www.techdirt.com/articles/20150211/10134429988/cars-are-delivering-tons-driving-data-to-manufacturers-with-minimal-security-even-less-transparency.shtml> [Accessed 2016-11-07]
- Datainspektionen (2016) Personuppgiftslagen och inbyggd integritet Available at: <http://www.datainspektionen.se/lagar-och-regler/personuppgiftslagen/inbyggd-integritet-privacy-by-design/> [Accessed 2016-11-07]
- Day, Lance; McNeil, Ian (1966). "Davidson, Robert". Biographical dictionary of the history of technology. London: Routledge. ISBN 978-0-415-06042-4
- Diallo, A. (2013) Is Your Car A Privacy Threat. [online] Available at: <http://www.forbes.com/sites/amadouiallo/2013/12/16/connected-car-data-privacy/#4c071a5d22f0> [Accessed 2016-11-07]
- Doeringer, P. B., & Terkla, D. G. (1995). Business strategy and cross-industry clusters. *Economic development quarterly*, 9(3), 225-237
- Fagnant, D. J., & Kockelman, K. (2014). Preparing a nation for autonomous vehicles: Opportunities, barriers and policy recommendations. In *Transportation Research Board 93rd Annual Meeting* (No. 14-1281).
- Fites, D. V. (1996). Make your dealers your partners. *Harvard Business Review*, 74(2), 84.
- Easterby-Smith, M., Thorpe, R., & Jackson, P. R. (2012). *Management research*. Sage.
- EU. (2003) Nya regler för försäljning och service av bilar. Brussels. Available at: http://europa.eu.int/comm/competition/car_sector/
- Gadde, L. E., Huemer, L., & Håkansson, H. (2003). Strategizing in industrial networks. *Industrial marketing management*, 32(5), 357-364.
- Girotra, K., & Netessine, S. (2014). Four paths to business model innovation. *Harvard business review*, 92(7), 96-103.
- Gartner (2016) Digital Business KPIs Defining and measuring success [Online] Available at: <https://www.gartner.com/doc/3237920?srcId=1-3931087981> [Accessed 2016-10-20]

- Gebauer, H., Tennstedt, F., Elsässer, S., & Betke, R. (2010). The Aftermarket in the Automotive Industry—How to Optimize Aftermarket Performance in Established and Emerging Markets. http://www.capgemini.com/resource-file-access/resource/pdf/tl_The_Aftermarket_in_the_Automotive_Industry.pdf, accessed, 26(9), 2016.
- Girotra, K., & Netessine, S. (2014). Four paths to business model innovation. *Harvard business review*, 92(7), 96-103.
- Gissler, A. (2008). OEM After Sales Strategy. *Arthur D. Little*
- Gissler, A. (2015). Automotive After Sales 2015. *Arthur D. Little*
- Grant, R. M. (2016). Contemporary strategy analysis: Text and cases edition. *John Wiley & Sons*.
- Hakansson, H (Eds.) & Snehota, I. (1995). Developing relationships in business networks. *London: Routledge*.
- Hayashi, A. M. (2009). Do You Have a " Plan B"? *MIT Sloan Management Review*, 51(1), 10.
- Herrmann, C. (2011). Functional Thinking for Value Creation. Springer Berlin Heidelberg,.
- Lekvall P. & Wahlbin C. (2001). Information för marknadsföringsbeslut. *IMH Publishing, Göteborg*.
- Lindgardt Z., Reeves M., Stalk G., Deimler M. S., (2009). Business model innovation. *The Boston Consulting group*. December
- Massa, L., & Tucci, C. L. (2013). Business model innovation. *The Oxford Handbook of Innovation Management*, 420-441.
- McGrath, R. (2010) 'Business models: a discovery driven approach', Long Range Planning, Vol. 43
- Mohr. et. al. (2014) Innovating Automotive Retail - Journey towards a customer-centric, multiformat sales and service network. *McKinsey & Company*
- Mekonomen (2016). Market Overview. [online] Available at: <http://www.mekonomen.com/en/about-us/market-overview/> [Accessed 2016-10-02]
- Morris, M., Schindehutte, M., & Allen, J. (2005). The entrepreneur's business model: toward a unified perspective. *Journal of business research*, 58(6), 726-735.
- Motormannen. (2016) Välj rätt sätt att ha bil [online] Available at: <https://www.motormannen.se/radgivning/kopa-och-salja/valj-ratt-satt-att-ha-bil/> [Accessed 2016-11-05]
- Mjömark, P. (2016) Vi sammanfattar internetstatistikåret 2015. <http://www.internetstatistik.se/artiklar/vi-sammanfattar-internetstatistikaret-2015/>. Accessed 2016-11-11
- Osterwalder A., Pigneur Y. (2011). Business model generation. New Jersey: *John Wiley & Sons, Inc*.

- Pinch, T. J., & Bijker, W. E. (1987). The social construction of facts and artifacts: Or how the sociology of. *The Social Constructions of Technological Systems: New Directions in the Sociology and History of Technology*, 17.
- Powell, W. (2003). Neither market nor hierarchy. *The sociology of organizations: classic, contemporary, and critical readings*, 315, 104-117.
- Reininger, M., Miller, S., Zhuang, Y., & Cappos, J. (2015). A first look at vehicle data collection via smartphone sensors. In *Sensors Applications Symposium (SAS), 2015 IEEE* (pp. 1-6). IEEE.
- Saunders M., Lewis P., Thornhill A. (2016). *Research Methods for Business Students*. 7th edition. London: *Pearson Education Limited*
- Teece, D. J. (2010). Business models, business strategy and innovation. *Long range planning*, 43(2), 172-194.
- Viereckl. et. al. (2016) Connected car report 2016: Opportunities, risk, and turmoil on the road to autonomous vehicles. *Strategy&*
- Wade (2015) Digital Business Transformation – A conceptual framework. *IMD*
- Wilkinson, I., & Young, L. (2002). On cooperating: firms, relations and networks. *Journal of Business Research*, 55(2), 123-132.
- Williamson, O. E. (1975). Markets and hierarchies. *New York*, 26-30.
- Williamson, O. E. (1985). The economic institutions of capitalism. *Simon and Schuster*.
- World Economic Forum. (2016) Automotive Industry. World economic forum white paper. Digital Transformation of Industries: In collaboration with Accenture
- Worstell. T. (2014). When Should Your Driverless Car From Google Be Allowed To Kill You?. [Online] Available at: <http://www.forbes.com/sites/timworstell/2014/06/18/when-should-your-driverless-car-from-google-be-allowed-to-kill-you/#aaa35ab1d672> [Accessed 2014-06-18].
- Zott, C., & Amit, R. (2007). Business model design and the performance of entrepreneurial firms. *Organization science*, 18(2), 181-199.

Appendix A: Outcome of the evaluation study

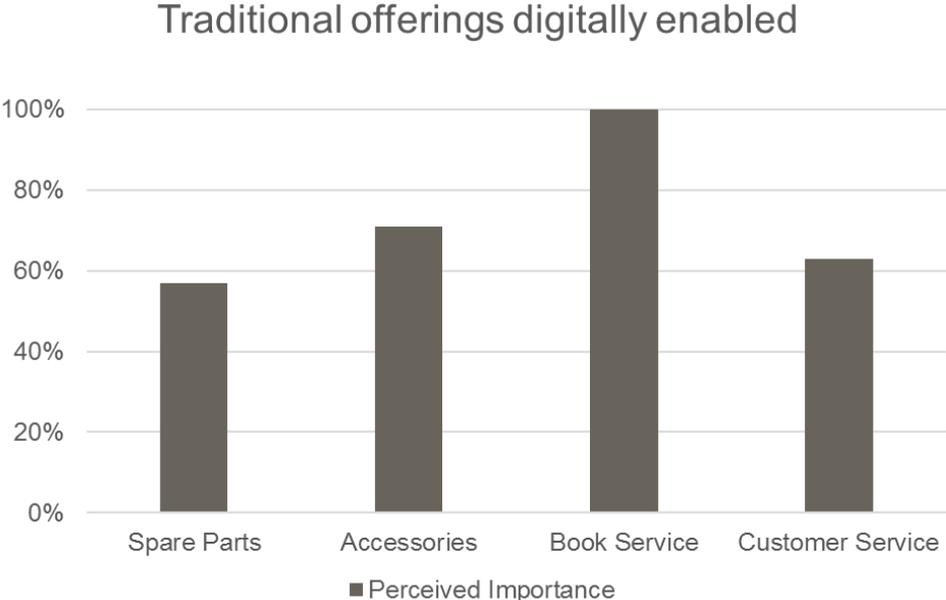


Figure A. Perceived importance of the questions within the area of traditional offerings digitally enabled

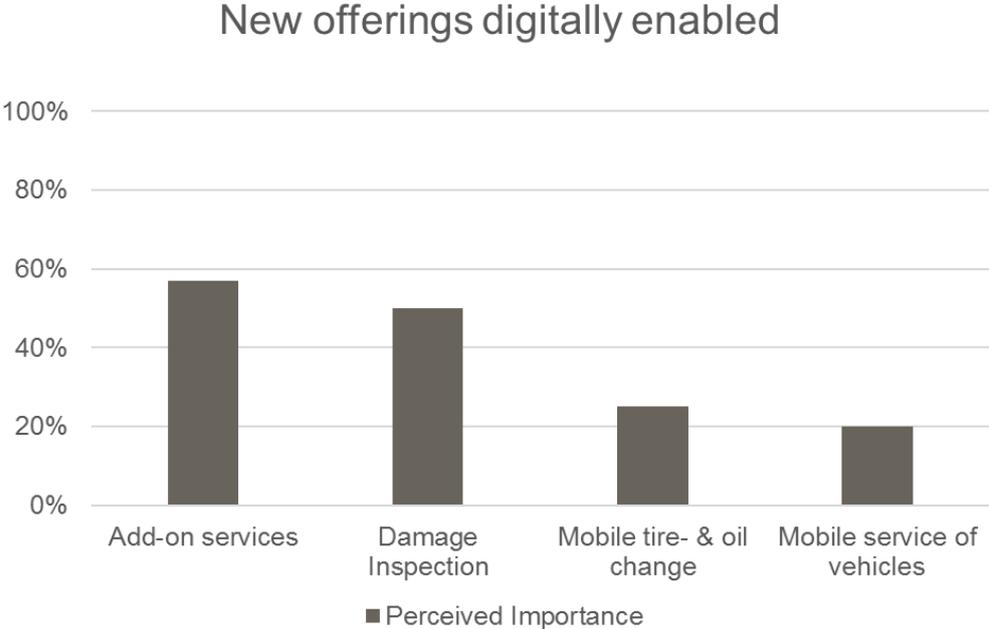


Figure B. Perceived importance of the questions within the area of new offerings digitally enabled

Information and Connectivity

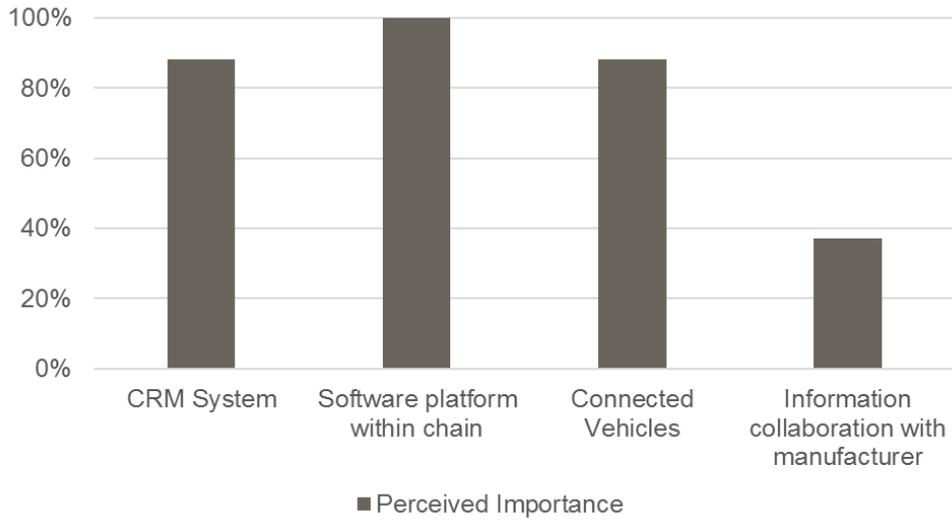


Figure C. Perceived importance of the questions within the area of information and connectivity

Organization and Competence

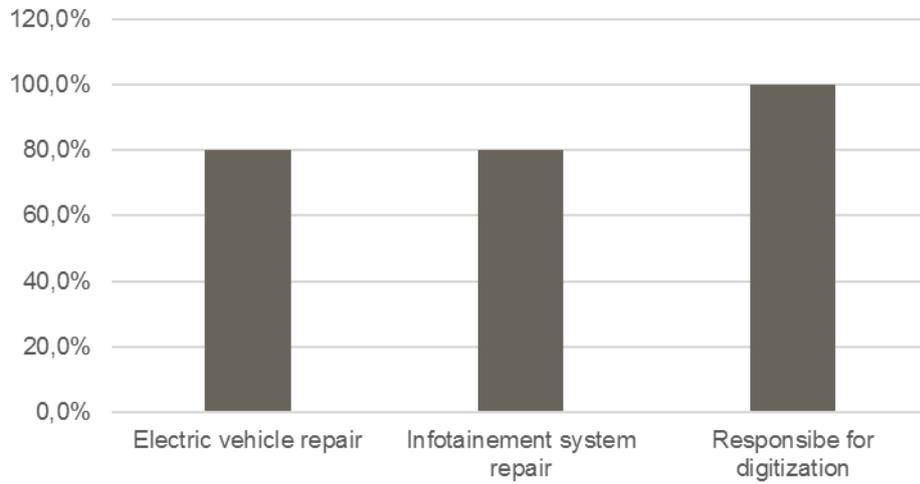


Figure D. Perceived importance of the questions within the area of information and connectivity

Appendix B: Interview Guide

Introduktionsfrågor innan huvuddelen av intervjun började:

- 1) Introfrågor (Titel, år inom bolaget, bakgrund i branschen)
- 2) Affärsmodell (Kunder, aktiviteter som ni utför, hur ni tar betalt, oberoende verkstad eller OEM-styrd)
- 3) Resurser (Vilka är nyckelresurserna i dagsläget?)
- 4) Kundkontakt och CRM (Hur interagerar ni med kunder idag?)
- 5) Produkter (Vilka produkter säljer ni samt vilka eftermarknadsprodukter?)

Erbjudande	Beskrivning	Vänligen ange hur viktigt du anser respektive erbjudande vara med ett kryss på skalan nedan. 5 =bäst	Vänligen kryssa för den/de du anser vara av stor vikt
Reservdelar Online	En webbshop för e-handel som är integrerad i hemsidan där kunder kan beställa reservdelar och få dem hemskickade eller hämtas upp i närliggande butik	1 2 3 4 5 —————>	<input type="checkbox"/> Få dem hemskickade <input type="checkbox"/> Hämtas upp i närliggande butik <input type="checkbox"/> Annat: _____
Accessoarer online	En webbshop för e-handel som är integrerad i hemsidan där kunder kan beställa enklare tillbehör	1 2 3 4 5 —————>	<input type="checkbox"/> Bilbarnstolar <input type="checkbox"/> GPS: <input type="checkbox"/> Annat: _____
Boka service online	Att ha möjligheten att boka service för sitt fordon online och därmed inte behöva ringa kundtjänst för att göra så	1 2 3 4 5 —————>	<input type="checkbox"/> Via dator <input type="checkbox"/> Via smartphone/app <input type="checkbox"/> Annat: _____
Tilläggstjänster online	Att kunna hyra en produkt eller tjänst för en specificerad tid, exempelvis GPS med Europakarta, takbox under sportlovsveckan	1 2 3 4 5 —————>	<input type="checkbox"/> Takbox <input type="checkbox"/> GPS <input type="checkbox"/> Däck <input type="checkbox"/> Annat: _____

HUR VIKTIGT ANSER DU DET VARA?

1	2	3	4	5
Oviktigt, ingen påverkan på lönsamhet	Kan möjligen vara viktigt att ha inför framtiden	Kommer bli viktigt att erbjuda inom de närmsta åren	Viktigt att ha som erbjudande idag	Krävs att ha för att stanna kvar i branschen

—————>

Erbjudande	Beskrivning	Vänligen ange hur viktigt du anser respektive erbjudande vara med ett kryss på skalan nedan	Vänligen kryssa för den/de du anser vara av stor vikt
Skadebesiktning Online	Att kunna ta ett kort eller video på en skada på fordonet där något behöver repareras eller uppgraderas, sedan skicka det till dealern som ger ett prisestimat samt tid att komma in och fixa felet	1 2 3 4 5 —————>	<input type="checkbox"/> Bekymmer att tyda bilder <input type="checkbox"/> Svårt att ta betalt för tjänsten <input type="checkbox"/> Annat: _____
Kundtjänst Online	Ett chatttjänst där man kan skriva med kundtjänst eller servicetekniker i realtid	1 2 3 4 5 —————>	<input type="checkbox"/> Med servicetekniker <input type="checkbox"/> Med kundtjänstmedarbetare <input type="checkbox"/> Annat: _____
Mobil tjänst för däck- & oljebyte	Istället för att kunden kommer till servicecentret för att serva bilen så kommer dealern till kunden och byter detta på en förutbestämd plats	1 2 3 4 5 —————>	<input type="checkbox"/> För hög kostnad för företaget <input type="checkbox"/> Svårt att ta en premiumpris för det <input type="checkbox"/> Annat: _____
Mobil tjänst för servning av fordon	Istället för att kunden kommer till servicecentret för att serva bilen kommer dealern till kunden och servar bilen på en förutbestämd plats	1 2 3 4 5 —————>	<input type="checkbox"/> För hög kostnad för företaget <input type="checkbox"/> Svårt att ta ett premiumpris för det <input type="checkbox"/> Däck Annat: _____

HUR VIKTIGT ANSER DU DET VARA?

1	2	3	4	5
Oviktigt, ingen påverkan på lönsamhet	Kan möjligen vara viktigt att ha inför framtiden	Kommer bli viktigt att erbjuda inom de närmsta åren	Viktigt att ha som erbjudande idag	Krävs att ha för att stanna kvar i branschen

—————>

Erbjudande	Beskrivning	Vänligen ange hur viktigt du anser respektive erbjudande vara med ett kryss på skalan nedan	Vänligen kryssa för den/de du anser ha stor relevans
CRM-system	System där du kan se kundlojalitet, tracka kundens bil- och servicehistorik samt få god kunskap om befintliga och potentiella kunder	1 2 3 4 5 —————>	<input type="checkbox"/> Finns inte tillräckligt med data <input type="checkbox"/> Svårt att få ut värde från data Annat: _____
Softvaruplattform inom kedjan (om del av en större koncern)	En gemensam softvaruplattform mellan olika filialer inom samma koncern där man kan dela data och dra nytta av den totala information som finns	1 2 3 4 5 —————>	<input type="checkbox"/> Finns ingen delad plattform <input type="checkbox"/> Finns för många olika system Annat: _____
Uppkopplade fordon	Fordon blir alltmer uppkopplade och ger upphov till stora datamängder, både från fordonen själva, men också från kunden. Finns system för att mäta detta idag?	1 2 3 4 5 —————>	<input type="checkbox"/> Svårt att få tillgång till data <input type="checkbox"/> Kommer bli svårt att få ut värde från data Annat: _____
Samarbete med tillverkaren ur informationssynpunkt	Får dealern den data den behöver samt finns det information som skulle vara intressant att få?	1 2 3 4 5 —————>	<input type="checkbox"/> Information är svårt att få tillgång till <input type="checkbox"/> Informationen ger för lite värde Annat: _____

HUR VIKTIGT ANSER DU DET VARA?

1	2	3	4	5
Oviktigt, ingen påverkan på lönsamhet	Kan möjligen vara viktigt att ha inför framtiden	Kommer bli viktigt att erbjuda inom de närmsta åren	Viktigt att ha som erbjudande idag	Krävs att ha för att stanna kvar i branschen

—————>

Erbjudande	Beskrivning	Vänligen ange hur viktigt du anser respektive erbjudande vara med ett kryss på skalan nedan	Vänligen kryssa för den/de du anser ha stor relevans
Reparera elektroniska bilar	Flera fordon är helt eller delvis elektriska, vilka också behöver lagning och underhållsarbete och kräver därmed speciell kompetens	1 2 3 4 5 →	<input type="checkbox"/> För liten marknad idag <input type="checkbox"/> Svårt att hitta rätt kompetens Annat: _____
Reparering av information- och underhållningssystem	Alltfler fordon innehar digitala informations- och mediasystem som behöver repareras och/eller uppdateras	1 2 3 4 5 →	<input type="checkbox"/> För liten marknad idag <input type="checkbox"/> Svårt att hitta rätt kompetens Annat: _____
Ansvaring för digitalisering	En person med ansvar för digitaliseringsfrågor inom företaget eller koncernen	1 2 3 4 5 →	<input type="checkbox"/> Ser inte behovet för det <input type="checkbox"/> Svårt att hitta rätt kompetens Annat: _____

HUR VIKTIGT ANSER DU DET VARA?

1	2	3	4	5
Oviktigt, ingen påverkan på lönsamhet	Kan möjligen vara viktigt att ha inför framtiden	Kommer bli viktigt att erbjuda inom de närmsta åren	Viktigt att ha som erbjudande idag	Krävs att ha för att stanna kvar i branschen

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