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Master Degree Project in Knowledge-based Entrepreneurship

**Collaboration as a mechanism for
servitization in the automotive industry:
The case of China and Sweden**

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Abstract: An increasing amount of companies have starting to embrace a transition from focus purely on products to provide service offerings to customers, also termed as servitization. The automotive industry is one example which has identified the potential of creating value through services. It is suggested by literature that services should be developed by several actors, so-called co-creation. The process of developing new initiatives has although been considered as expensive, resource-intensive and connected with risks. To open up boundaries between companies is perceived as a way to improve the process for new initiatives. There is although a lack of research regarding how companies can collaborate in order to develop services in a traditionally product-focused industry. This study thus aims to examine how collaborations are used as a mechanism for developing services in the automotive industry. This was investigated through a qualitative strategy, and more specifically with the means of multiple-case study together with a comparative perspective between China and Sweden. Findings show that there is an absence of a clear structure regarding service development, such as formal processes and decision paths. Moreover, collaborations concerning service development are increasing across boundaries and are perceived as essential for future success. The collaborative perspective between China and Sweden reveals company-specific rather than country-specific differences.

Keywords: *Servitization, Servitisation, Collaborative Development, New Service Development, Value Creation, Automotive Industry*

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Table of contents

1. Introduction	7
1.1 Background	7
1.1.1 Development of new initiatives through collaborations	7
1.1.2 Collaborations as an enabler for service offerings in the automotive industry	8
1.2 Problem formulation	9
1.3 Research questions	12
2 Methodology	13
2.1 Research strategy	13
2.2 Research design	14
2.3 Research methods	14
2.3.1 Secondary Data Collection	14
2.3.2 Primary Data Collection	15
2.3.2.1 Selection of Companies and Respondents	16
2.4 Practicalities	17
2.5 Data analysis	18
2.6 Quality of the study	19
2.6.1 Validity	19
2.6.2 Reliability	19
2.7 Methodological reflections	19
3 Empirical background	21
3.1 Zhejiang Geely Holding Group and Volvo Cars	21
3.2 The development of Lynk & Co	22
3.3 Volvo Group	22
3.4 Autoliv	22
3.5 Summary	23
4 Conceptual Background	24
4.1 Servitization	24
4.1.1 Background	24
4.1.2 Nature of services	24
4.1.3 Rationales for servitization	25
4.1.4 Value creation	26
4.1.4.1 Value-in-use	26
4.1.4.2 Additional value creation through provision of service	26
4.1.5 Forms of servitization	27
4.1.6 Organising for services	28
4.1.6.1 Service design	28
4.1.6.2 Process of developing services	28
4.1.6.3 Innovation of services	29
4.1.7 Challenges of servitization	30
4.1.7.1 Service Paradox	31

4.1.8 The role of digitisation	31
4.1.9 Deservitization.....	32
4.1.10 Summary	33
4.2 Collaborative development	34
4.2.1 The shift towards a more collaborative environment.....	34
4.2.2 Opportunities of collaborative development.....	34
4.2.3 Challenges of collaborative development	35
4.2.4 A new era of collaboration	36
4.2.4.1 Involving customers	36
4.2.4.2 Involving suppliers.....	37
4.2.4.3 Collaborative development within the automotive industry	38
4.2.5 Summary	38
4.3 Maturity matrix of servitization	39
5 Results.....	41
5.1 Servitization.....	41
5.1.1 Definition and nature of services	41
5.1.2 Rationales of services and value created through services.....	42
5.1.3 Forms of servitization	44
5.1.4 Organising for services	46
5.1.5 Challenges with service development.....	47
5.1.6 Relevance for research questions	48
5.2 Collaborative development	49
5.2.1 The shift towards increased collaboration	49
5.2.2 Opportunities with collaborations	50
5.2.3 Challenges with collaborations	52
5.2.4 Customers new role in collaborative development	53
5.2.5 Suppliers role in collaborative development.....	55
5.2.6 Relevance for research questions	56
6 Analysis	58
6.1 Servitization.....	58
6.1.1 Nature of services.....	58
6.1.1.1 Relevance for research questions	59
6.1.2 Rationales for servitization.....	59
6.1.2.1 Relevance for research questions	61
6.1.3 Value creation	61
6.1.3.1 Relevance for research questions	62
6.1.4 Forms of servitization	62
6.1.4.1 Relevance for research questions	64
6.1.5 Organising for services	64
6.1.5.1 Relevance for research questions	66
6.1.6 Challenges of servitization.....	67
6.1.6.1 Relevance for research questions	68

6.1.7 Servitization based on a Chinese and Swedish perspective	68
6.1.7.1 Relevance for research questions	69
6.2 Collaborative development	69
6.2.1 The shift towards increased collaboration	69
6.2.1.1 Relevance for research questions	70
6.2.2 Opportunities by collaborations.....	70
6.2.2.1 Relevance for research questions	72
6.2.3 Challenges of collaborations	72
6.2.3.1 Relevance for research questions	73
6.2.4 Involving customer in collaborative development	74
6.2.4.1 Relevance for research questions	75
6.2.5 Supplier involvement in service development	75
6.2.5.1 Relevance for research questions	76
6.2.6 Collaboration based on a Chinese and Swedish perspective	76
6.2.6.1 Relevance for research questions	77
6.3 Maturity matrix: Companies outlined	78
7 Conclusion	80
8 References.....	83
9. Appendix	90
9.1 Interview guide.....	90

List of Figures

Figure 1 Types of suppliers and customers involvement and their relative positions.....	37
Figure 2 Maturity Matrix of Servitization.....	40
Figure 3 Maturity Matrix of Servitization with companies outlined.....	78

List of Tables

Table 1 Overview of interviews.....	17
Table 2 Overview of present service offerings, based of respondents' sayings.....	45

1. Introduction

1.1 Background

1.1.1 Development of new initiatives through collaborations

It is widely recognised that innovation is a vital factor for corporate competitiveness (Porter, 1980) and for economic growth (Schumpeter, 1934). Consequently, innovation is perceived as a potential mean to create competitive differentiation, empowering companies to enter new markets and achieve better margins. At the same time, innovation also demands precision, speed and aptitude by the performer (Schilling, 2013). During the last decades, the management of innovation has achieved increased importance in literature and in business context (Barros Bagno et al., 2017). A globalised business world has forced the companies to continuously innovate in order to create differentiated services, products and offerings. Different dimensions of innovation are used in academia to distinguish types of innovation, whereas some examples are: radical versus incremental innovation, and product versus process innovation. The sources of innovation arise from different origins such as individuals, research efforts, companies and various forms of linkages between these sources (Schilling, 2013). One context where innovations are essential is thus in R&D.

Historically, companies have tried to consider how internal R&D could be used in order to develop new products and services for the market (Enkel et al., 2009). R&D was perceived as a core activity of the business, not to be spread outside the company. During the end of the 20th century, significant industrial and technological changes, comprising short innovation cycle and a more dynamic environment, forced companies to rethink their existing R&D activities (Hagedoorn, 2002). For several decades, researchers have now been exploring the benefits of eliminating organisational boundaries between participants in the development of new initiatives. Within this ambition, companies and practitioners have renewed processes and structures in order to develop new initiatives (Jassawalla & Sashittal, 1998).

The process of developing new initiatives has been considered as expensive, resource-intensive and connected with risks, which has triggered needs of finding ways to overcome it. To open up and collaborate through inter-firm relationships has been viewed as a mean to improve the process for new initiatives (Parker, 2000). Other actors can contribute with knowledge, capabilities and technological insights. These collaborations take form in different arrangements such as customer involvement and supplier involvement, which also can evolve over time (Ylimäki, 2014). The collaborations may manage some risks with product and service development, but might aggravate other risks, such as intellectual property protection etcetera. Lack of transparency, levels of commitment and distribution of benefits are examples of aspects,

which can harm the relationship between the actors (Parker, 2000). As with the broad range of advantages and disadvantages, there are also a many examples of these collaborations.

An initiative within this direction of openness between and in companies, was when firms started to open up internal boundaries by using cross-functional teams. Another step was to integrate customers and suppliers into their collaboration to move beyond simple integration (Jassawalla & Sashittal, 1998). *Open Innovation* is a renowned concept within this direction, whereas companies recognise the benefits with internally or externally developing ideas and commercialise them (Michel et al., 2008). Externally developed ideas and products also changed the perception of relationships with customers when the value creation was realised outside the company's boundaries (Chesbrough, 2003). *Open Collaboration* is another concept in the direction of openness, where peer-production such as Wikipedia engages millions of people online in the development of different artefacts (Forte & Lampe, 2013). Companies, like GE, embrace open collaboration in order to reach out beyond their conventional network of global R&D (Idelchik & Kogan, 2012). As examples and previous research points to, openness for companies has become a requirement for the development of new initiatives.

1.1.2 Collaborations as an enabler for service offerings in the automotive industry

Automotive industry is one out of many industries, which has been influenced by this need for openness. The competitive context has become gradually more complex in the global marketplace and globalisation of the automotive industry has included immense changes. These changes have included: the ways products are developed, where innovations are thought-out and the environmental market conditions that influence the nature of the innovations (Townsend & Calantone, 2014). Moreover, globalisation pushes companies to develop innovations through their global supply chains, and the members of these chains are playing an increasingly central role in the success of all partners involved (Jean et al., 2014). What is unique with the automotive industry is that it covers every aspect of the value chain: from natural resources, design and development, manufacturing and assembly to sales and after-market services. This means that it is a complex network of actors: from suppliers, original equipment manufacturers (OEM) to dealer and distributor actors, and service providers (Townsend & Calantone, 2014).

As in all industries, collaborations and relationships entails some disadvantages and problems. Moreover, the global companies in the automotive industry face greater risks when they are working with partners in emerging markets, such as China. In these markets, legal institutions, for instance intellectual property rights (IPR) and contracts, provide limited protection for companies' initiatives (Jean et al, 2014). Not only in China are companies influenced by government oversight such as energy policy and consumption, standards, safety regulations, taxation and ownership structures. In many markets, the companies have to manage how to

develop features and products in order to both satisfy the governmental involvement and simultaneously discover means to satisfy customer needs (Townsend & Calantone, 2014).

In addition to a complex environment, structures of partnerships, ownerships and collaborations are also rather distinctive in the automotive industry. One example is the Chinese market where foreign multinational enterprises (MNE) are required by law to operate in the form of an international joint venture. This forces MNE automakers to enter joint ventures when operating in China (Jean et al., 2014). The industry is also characterised by global-equity partnerships, as Renault-Nissan and Fiat-Chrysler and the purchase of established brands from developed markets by emerging market firms. Volvo Cars and Jaguar Land Rover are examples of this structure, which has changed the character of innovation and product and service development (Townsend & Calantone, 2014).

The automotive industry has been characterised by mature markets, mergers and acquisitions, and trends towards lower costs in the production processes (Styhre & Kohn, 2007). Traditionally the companies within this industry have been driven by engineering or financial-based decisions, and not by customer demands. Issues that might be considered in the future for automotive companies would be to identify and satisfy consumers' expectations. Examples of these could be merging different technologies and integrate other products with the vehicle, but also improve safety features and increase levels of quality for products and services (Townsend & Calantone, 2014).

The automotive industry is one example, that has starting to embrace a transition from focus purely on products to provide service offerings (Baines et al., 2009), the so-called servitization. Even though the topic of servitization has been studied since late 1980's, it is in its nature hard to define for professionals in business and in academia. Services have characteristics such as intangible, inseparable from its unit of provision, temporal and heterogeneous (Tether, 2014), which differ services from physical products, and hamper efforts to design them. Moreover, it is encouraged that services should and are developed by several actors, stakeholders and departments, also named as co-creation or co-production (e.g. Stickdorn & Schneider, 2012; Tether, 2014; Green et al., 2017), which in turn can generate further challenges in the development of them. This points to the evidence that openness has become an essential part for actors, which develops new initiatives in the area of servitization.

1.2 Problem formulation

The economic development and growth of Chinese economy have been impressive during the last decade (OECD, 2008) and it has become common for Chinese multinational corporations (MNC) to expand overseas. It is an opposite direction compared to historical patterns where western countries have made heavy foreign investment in China (Cui et al., 2009). This direction towards

going global is inter-linked with stated policies and strategies from the Chinese government (Schüler-Zhou & Schüller, 2013). The government has identified a need for companies in China to shift their mind-set from an imitation state-of-mind, to an innovation approach in order to maintain a competitive position in the technological and scientific development (Minin et al., 2010).

In 2010, Chinese auto manufacturing company Zhejiang Geely Holding Group (Geely Group) acquired Volvo Car Corporation (Volvo Cars), as a step forward in a global strategy of the latter (Geely, 2015). Geely Group also initiated the R&D centre China Euro Vehicle Technology (CEVT), located in Gothenburg, Sweden, in 2013, which would be a joint of the subsidiaries Geely Auto and Volvo Cars (Geely Global, 2014). CEVT presented a new auto brand in 2016, Lynk & Co, (Pröckl, 2017) and the heart of the brand is technology. Furthermore, it is stated that connectivity to Lynk & Co will be what safety is to Volvo Cars and the hybrid car will be mediated without middlemen dealership through a website (Savov, 2016).

Companies in the automotive industry, which are related to the Chinese market provides an excellent setting for this thesis, mainly for two reasons. Firstly, the Chinese market is the largest and world's fastest growing automotive market. Many European and American brands have created joint ventures with domestic OEMs during several years in order to operate on the Chinese market (Townsend et al., 2010). Secondly, for MNEs the emerging market context includes new companies and actors within complex and dynamic settings. This in turn involves extensive collaborations at different levels, with various actors (Jean et al., 2014). New service development is critical and a challenging task for MNEs because of the inbound characteristics of services (Tether, 2014). Accordingly, the empirical setting of this thesis offers a good opportunity to explore service development through collaborations under volatile environment.

New Product Development (NPD) is an established field in literature and numerous of authors have argued for benefits with involving external actors in the development of new initiatives. However, the results from empirical evidence have been somewhat contradictory (Hoegl & Wagner, 2005). The related area of New Service Development (NSD) is as well an established area, but not perhaps as obvious linked to the concept of open innovation and similar, as Hsieh and Tidd (2012) suggest. The literature covers different aspects of service innovations in service industries such as nature and forms of service innovations (Tether, 2014), the management of service innovations (den Hertog et al., 2010; Tether, 2014), effects of dynamic capability building on service innovation (Agarwal & Selen), and network orchestration (Nätti et al, 2014). However, the literature is surprisingly sparse of covering service innovations in traditional product-dominated industries. Moreover, the literature presents arguments for servitization (e.g. Vargo & Lusch, 2004; Normann, 2001; Baines et al., 2009) and disadvantages with service offerings (Gebauer, 2005; Kowalkowski et al., 2017) but as Kowalkowski et al. (2015) suggest, is a bit limited regarding the execution of the implementation of a service-led strategy.

The importance of openness in the development of new products has been illuminated by companies and literature during several decades. The level of openness has been evolving through reduction of organisational boundaries, increase of inter-firm relationships and peer-production of artefacts (e.g. Forte & Lampe, 2013; Jassawalla & Sashittal, 1998; Chesbrough, 2003). However, openness in collaborations for new service development is not as recited as in the NPD literature, although there are examples such as Schleimer and Schulman (2011), Santos et al. (2016) and Hsieh and Tidd (2012).

It is thus the sparse amount of literature regarding service innovations in traditional product-dominated industries, the execution of implementations of service-led strategies and openness in collaborations for new service development, which this thesis aims to cover. Accordingly, our thesis will contribute to further understandings into how service offerings are developed through collaborations within a traditional product-oriented industry. The examination of it will consequently also contribute to deepened insights into how companies servitize, and the overall concept of servitization. The term servitization corresponds to the process of developing services as a value contributor in the customer offering.

In order to establish the proposed understandings, a frame of reference is built up, based on existing literature and in short, consists of two parts: the section on servitization and the section on collaborative development. Moreover, this theoretical framework act as a foundation for an interview guide that is used on respondents from selected case companies. Furthermore, a number of aims are formulated to contribute to the overall research question. These aims are organised in groups in the following paragraphs, beneficial to correspond to the order of the research questions.

It is of importance to examine the level of maturity of the development of services of the selected companies in the automotive industry, since there are reasons to believe that this maturity likely differs in various contexts. Connected to that subject matter, is likewise to study how the different companies perceive services and services' value contribution to the business. It is also of significance to analyse the potential differences in perspectives between China and Sweden. One example of this is the organisation Lynk & Co, which is a collaboration between Chinese and Swedish efforts. In addition, it is also of interest to study the perceived challenges that are associated with the development of service offerings.

Moreover, the thesis is aiming to examine the process of collaborations in the companies' ambition to develop services. Besides the process, it is also of interest to study what the companies perceive as important opportunities in successful collaborations with other actors and stakeholder and which challenges that exists. The thesis will aim to identify which actors who are involved and in what roles in the development of service offerings. In the comparative perspective between China and Sweden, it is also of prominence to notice potential differences

with regards to collaborations, and especially to consider to what extent collaborations with various actors are used.

Furthermore, the thesis is aiming to create a maturity matrix of servitization, leveraged from the literature in the theoretical framework. The maturity matrix is intending to contribute to further understandings and respond to the overall research question. Besides developing the matrix, the aim is also to situate the different case companies within the matrix through primary and secondary data. This will be done in order to demonstrate an overview of the different companies' relation to each other and to support the illustration of how far they have come in their transition of the servitization.

1.3 Research questions

To solve the stated problem formulation, the research questions will be addressed in the context of four chosen case companies and it is thus the understandings of the statements by the respondents which will constitute the content for the thesis. Moreover, the research questions are separated into one main question and three sub-questions, where the sub-questions support understandings for the main question.

How do companies servitize through collaborations within the automotive industry?

- How are services perceived?
- How do companies develop service offerings?
- What is the role of collaborations in service development?

The research questions will be examined through a comparative perspective between China and Sweden.

2 Methodology

The chapter begins with an argumentation of the chosen research strategy and the inductive approach. Thereafter the research design is explained, followed by the research methods. In the research methods both primary and secondary data is covered, with an overview of the interview respondents. Later on, the practicalities of the thesis are described, followed by a paragraph clarifying the data analysis. Then the quality of the thesis is discussed, and the final section of the chapter covers methodological reflections. The methodology provides understanding of how the thesis has been conducted in order to contribute to the research topic.

2.1 Research strategy

In order to create understandings of the development of services through collaborations, an exhaustive analysis covering the different elements of servitization (Baines et al., 2009) was desired. An analysis of a number of external companies was appropriate, since we aimed to examine how companies within the automotive industry develop service offerings through collaborations, including processes and involved actors. Based on the thesis' purpose and aims, a qualitative strategy was chosen so as to get access to rich data and information about perceived importance of services, challenges and benefits with collaborations to be able to create an overview of the topic. According to Bryman (2011), the qualitative research method allows the researcher to perceive situations and contexts through the respondents, which can support to create a more vivid illustration. This is not the case with quantitative research, which does not have ambitions to create understandings of the social world that the research object live in. Moreover, the author states that qualitative research offer rich descriptions of the environment for the study which enables further understandings for the thesis through a contextual framing.

Furthermore, our chosen case organisations and selection of respondents cannot automatically be generalised to a larger population. This is in line with a qualitative approach, which discourages large-scale descriptions, but instead aims to describe the more limited aspects of the social reality (Bryman, 2011; Bryman & Bell, 2011). However, our aim was not to generalise to a larger context, but we were interested of to create understandings of a few cases in the automotive industry. Bryman and Bell (2011) underline further risks connected with qualitative research, whereas the chosen strategy is highly susceptible to bias, since the research is depending on the individual researcher's subjective understandings and interpretations.

Since theory and findings were outcomes from the study, the approach of the thesis could be titled as inductive. By the usage the inductive approach, patterns from observations were analysed in order to generate theories, which could be perceived as a more liberate approach compared to the deductive approach (Bryman & Bell, 2011). Moreover, since the inductive

approach allowed us as researchers to have more freedom in the way to work, it was an appropriate approach to the chosen research area. Bryman (2011) argues that qualitative research in general is more flexible than quantitative, which sometimes is reflected in the chosen data collection.

2.2 Research design

As we sought to draw comparisons and to obtain data from less than a handful of external case organisations through qualitative interviews, the research design could be explained as multiple-case study. The design was chosen due to the on-going transition of servitization within the automotive industry, which meant that the research topic was rather novel. To specify it even further, the comparative case studies was chosen in line with Yin (2011), who states that it is a desirable method when managing “how” questions. According to Bryman and Bell (2011), the case-study design allows for descriptions of unique features and further explains that the cases should be chosen in order to obtain the most knowledge as possible. Consequently, this was the intention we had when we chose the case subject. The organisations are essentially different in their nature: one supplier, one newly started company, one directed towards heavy-truck industry while the other one is operating in the car manufacturing industry. In relation to single-case study, Bryman & Bell (2011) argues that the multiple-case study can compare and contrast several cases, which can stimulate theoretical reflections on the findings and thus improve theory building. In the context for our thesis another level, besides the different organisations, was taken into consideration, namely between China and Sweden. The cross-cultural aspect of the cases enabled an additional level of reflection, which could contribute to further understandings of the different cases.

However, the chosen research design was not without its flaws, and Bryman and Bell (2011) claim that one disadvantage with the multiple-case study in comparison with the single-case study is that the researcher risks to pay less attention to specific features and contextual factors. Moreover, the authors argue that the single-case study demands less explicit focus than the multiple-case study design. Nevertheless, this was not an imminent problem for our case, since there was a clear focus on the different aspects of servitization in the automotive industry. In addition, since the concept is slightly new to the industry, a multiple-case study was considered to provide a richer illustration than a single-case study could.

2.3 Research methods

2.3.1 Secondary Data Collection

In order to achieve our objectives with the thesis, we had to discover and examine the concept of servitization and the field of collaborative development. The secondary data for the thesis was

primarily based on academic literature, such as articles and books and thus are existing literature within the two fields. The journals, articles and books which were used as secondary data in the thesis were mainly identified through Google Scholar and through Gothenburg University Library's search function "supersök". Thus, the electronic databases, which were used, were Business Source Premier, Emerald, ScienceDirect, SpringerLink, LIBRIS, GUNDA and GUPEA. In addition to relevant content, the frequency on citation and peer-reviews were essential criteria which were used in order to perform a literature review of high quality. Furthermore, we also leveraged from identified literature through scanning the references of additional literature with the purpose of extending the literature review.

Moreover, an additional type of secondary data was also used in order to get further understandings of the case companies. The background information about the companies was collected through websites, newspapers and other materials such as accessible PowerPoint presentations and press releases, mostly from Google. These latter forms of secondary sources supported us in front of interviews and as sources of knowledge at specific points.

We also conducted two informal interviews with people from two out of the chosen case companies in order to obtain background information. The three individuals could be referred to as what Bryman (2011) formulates as key informants, since they provided us with important understandings and supported us to specify our research topic. However, these conversations were rather unstructured with the aim of creating initial understanding and thus were not included in the result of the thesis.

2.3.2 Primary Data Collection

Based the explorative nature of the thesis, the choice of collecting primary data fell on qualitative interviews through a semi-structured technique. It was mainly the flexible attributes of semi-structured interviews which formed the basis for the decision. The less structured approach which Bryman and Bell (2011) describes, suited the objective with the thesis well because possibilities were given to rephrase questions, change order of the questions and to ask follow-up questions to the respondents. This was especially important when video chat interviews were performed from China, where the Internet connection was not always satisfying. The flexibility with semi-structured interview that Bryman and Bell (2011) describes, supported us to obtain richer information from the respondents which in turn created a more holistic result. Moreover, in order to be able to make comparison between the different cases and the different countries, an unstructured interview technique was excluded as a choice. Nevertheless, as Bryman (2011) argues, the disadvantages with semi-structured interviews could be to achieve a satisfying level of reliability and validity as the structured technique aims to do, and there could also be difficulties to replicate the study and obtain equivalent results.

2.3.2.1 Selection of Companies and Respondents

Our selection of case companies could be recognised as what Bryman and Bell (2011) title as snowball sampling, which is a form of convenience sampling. The snowball sampling was due to some restrictions regarding time and contacts. An obvious disadvantage with snowball sampling is the lack of representation to a larger population. To manage that sort of issue, alternative samplings could have been probability or theoretical samplings (Bryman & Bell, 2011). Initially, we aimed to cover a range of companies which are related to one of the case companies, Lynk & Co, since the company was fairly newly founded and had a clear external image of prioritise service offerings. Yin (2011) states that the chosen cases in a case-study research should be selected for their unique way of responding to the research questions, which we aimed to take into consideration. The respondents from the case companies were chosen because of their distinctive way of answering to the proposed aims and research questions, described in the 1.1 *Introduction*. Moreover, these cases were chosen since they had the possibility to contribute with insights in order to cover the identified theoretical shortages. The respondents were representatives of companies that comprised the whole processing chain of the vehicle, from a component manufacturer to original equipment manufacturers that sells cars and heavy vehicles to the end customers. Additionally, the respondents also represented two different countries' perspectives, China and Sweden, and thus covered one of the comparative aims with the thesis.

The other companies were enabled through network contacts, that either participated in the study or connected us with colleagues or contacts that had insights into the topic. Especially in the case of Autoliv and Lynk & Co, we benefited from something what Bryman (2011) mentions as gatekeepers. In each of these companies we had an already established contact who gave us access to his or her organisation as the role of a gatekeeper. Furthermore, the snowball sampling meant that once we got in contact with one respondent, we used this established contact and got further recommendations to others with contact information such as email address or phone number. Since the respondents for the interviews were chosen on purpose, the sample can be described as a non-random sample (Bryman & Bell, 2011). We were although aware of the lack of representativeness that this convenience sample brings.

We aimed to interview people with insights into development of service offerings, which meant that the positions were very wide-ranging, from senior executive manager to member of a business development team. The respondents were chosen based on preferences for department, position or organisation. In other words, they were either working in an organisation that prioritise service offerings, or work operationally with service development or have a position which enables essential insights into the topic. Since the questions in the interview guide mainly covered the perception of services, the process of development, the engagement of actors and the perceptions of collaboration, a broad range of respondents could fit in into our intended sample. But since service development was not very prevalent in the automotive industry, the sample was nevertheless a bit limited.

In sum, of the respondents were five women and four of them were men, and as mentioned, in very varied positions. This meant that we got information from both operational level but also strategic level. Four of the nine respondents were placed in Hangzhou or Shanghai in China, and the rest of them were placed in Gothenburg, Sweden.

Abbreviation	Company	Country	Level of Position	Date of interview	Lenght (min)	Channel
LC1	Lynk & Co	Sweden	Executive manager	2017-03-10	50	Phone call
LC2	Lynk & Co	Sweden	Executive manager	2017-03-31	60	F2F
LC3	Lynk & Co	China	Manager	2017-03-17	55	F2F
AL1	Autoliv	China	Executive manager	2017-03-14	45	F2F
AL2	Autoliv	China	Senior manager	2017-03-20	30	Phone call
AL3	Autoliv	China	Senior manager	2017-03-20	45	Phone call
VCC1	Volvo Cars	China	Manager	2017-03-16	65	Phone call
VCC2	Volvo Cars	Sweden	Staff / Consultant	2017-03-28	70	F2F
VG	Volvo Group	Sweden	Senior manager	2017-03-09	50	Phone call

Table 1. Overview of interviews

2.4 Practicalities

When the previous literature in the chapter of conceptual background was completed, an interview guide was created based on the thesis' purpose and problem formulation. The guide was also created in order to connect with the different topics in the conceptual background and sorted through mainly four sections. Each section had a number of questions, which were asked in different order and sometimes adjusted, depending on the respondent's statements and the interview situation. Intentionally, we aimed to avoid leading questions and the questions were rather formulated in an open approach. To ensure the quality of the interview guide (Appendix 8.1), a "test interview" was held before the first interview, as to confirm the length and choice of questions, and from that a couple of questions were re-formulated or deleted from the guide. The interview also got feedback from the supervisor, and thereafter was further adjusted.

In order to keep track of the data, all of the interviews were recorded through a smartphone device and notes were taken simultaneously during the interviews. These notes and the records facilitated smooth transcriptions of the nine interviews, which constituted the basis for the empirical data. Since we were two interviewers, the workload was distributed in the sense that one was responsible for keeping the interview and post questions to the respondent while the other was to write notes and ask any possible questions. These roles were changed in every other interview. This division of responsibilities allowed us to keep focus on the respondent's answers and to create important understandings.

Four of the interviews were done in face-to-face, of which three of them were conducted at the respondent's office or company sites. These interviews were performed in either meeting rooms or at offices, which meant that the environment was known for the respondents but also quiet and undisturbed. One interview was conducted in a conference room at the University of Gothenburg and the environment was similar to those at the case companies. The face-to-face meetings also provided us with some contextual understandings; due the visit of the company sites where we got an informal understanding of e.g. company culture. The other five interviews were conducted on conference call basis, through communication tools such as “Lync” or “Skype”. The quality of these interviews was in general satisfying, but at some moments the Internet-connection in Hangzhou created some technical trouble.

The interviews always started off with an introduction of us and the thesis' purpose and topic. Thereafter we continued the interviews by informing the respondents about ethical guidelines that we aimed to follow, namely from Science Council (Vetenskapsrådet). This meant that we explained to the respondents about the research, asked for their agreement, ensured their confidentiality and told how the information were to be used (Vetenskapsrådet, 2002). Then we asked the respondents for their agreement regarding recording the conversation. The interview then started off with background questions to get necessary information about position, responsibilities etc. and thereafter followed by a main question together with connected questions in each section of the interview guide. The interviews were finished with a question if the respondent wished to add anything or develop any argumentation, according to Kvale and Brinkmanns (2009) recommendation.

2.5 Data analysis

All of the conducted interviews were held within a period of four weeks, which enabled us to immediately go through the raw material after the interviews and then transcribe them through the recordings. This later on showed to be an efficient way of working since we were able to remember much of the interviews and could easier make comparisons between the respondents. When listening to the recordings and transcribing the material, we noticed how important it was to us to get a complete picture of each interview. Moreover, the recordings were also used to validate and extend the initial notes, as described by Bryman & Bell (2011).

After all the interviews were completed and transcribed, we started to process the material. Each interview with its related transcription was read through several times, in order to get an initial overview of the material. Thereafter we created categories based on the interview guide, in which each interview was reviewed and compared with the same section of the other interviews. Through this systematic review, important similarities and differences emerged, which enabled us to identify several themes. The transcriptions also enabled us to identify nuances and details from

the interviews, and in addition, illustrative citations could also be found. This process was in line with what Bryman (2011) describes as enabling for identifying themes and under-themes by reading through transcripts and summaries from the interviews.

2.6 Quality of the study

2.6.1 Validity

High level of validity in qualitative research in general is rare, since validity refers to what extent one is measuring what is supposed to be measured (Bryman & Bell, 2011). As stated in previous paragraphs, this study was not aiming to draw any general conclusions about servitization to all companies, not even in automotive industry, but rather to examine how far the chosen case companies have reached in their transition of servitization. According to Bryman and Bell (2011), one could refer to external validity when the results in a study can be applicable in another setting or context. This was a bit difficult in our study, as it was not an explicit goal with the study and neither possible since it was based on a few cases. Other means for us to increase the validity has been to formulate as precise research aims as possible in order to have a stable direction of the thesis. Moreover, another way had been to identify proper respondents for the interviews as to get accurate data, according to defined criteria.

2.6.2 Reliability

Reliability refers to if a study can be replicated and this is also in general problematic in qualitative studies, because of the difficulties of duplicating the same environmental settings under the study (Bryman & Bell, 2011). We have aimed to strive against a high level of transparency through comprehensive explanations about decisions regarding procedures and choices, in order to maximise the reliability. Kvale and Brinkmann (2009) have some concerns regarding unstructured interview questions' impact on reliability. When using an unstructured interview form, the questions are posted in different way, which in turn decrease the possibility to replicate the research at a later moment. A semi-structured interview form was thus not the most appropriate form with respect to reliability. A structured interview form had facilitated this problem, but at the same time had the answers probably not been as exhaustive as there had been a risk that the respondents felt ruled by the questions.

2.7 Methodological reflections

Bryman (2011) highlights potential problems with the use of gatekeepers because of their motives when allowing access to the organisation. The gatekeepers can have their own agendas that the researcher should keep in mind. Moreover, the gatekeeper can attempt to impact the research through the choice of respondents or the results of the study in their pursuit of emphasise

the organisation in positive terms. Our perception of the organisations was certainly impacted through our contact with the gatekeepers and the key informants. On the other hand, the access and the background information were important for us to create understandings of different kind of aspects of the organisations. Thus, the secondary information, consisting of information from websites, newspapers and other materials such as accessible PowerPoint presentations and press releases, was ways to create our own opinion of the organisations.

The role as a researcher was once again tested through the act of interviewing. Despite previous experiences of conducted interviews in theses, reports and similar, the art of performing satisfying interviews was not without challenges. Kvale and Brinkmann (2009) highlight that interviewing is not a mechanical activity but rather something that demands practice and skills from the person who is interviewing. Moreover, the authors argue that knowledge is something that is created in the interaction between respondent and the interviewer. The researcher's competence and judgement is thus an essential aspect in the choice of questions and follow up questions.

Another reflection was connected to the composition of the respondents of the thesis. It would be of interest to study whether or how the results would have been different if the respondents had been from other positions or departments. Furthermore, it would also have been interesting to capture perceptions and opinions from more respondents, and especially with a more equal representation from China and Sweden in all companies, in order to get a broader overview of the organisation's situation. As have been mentioned in earlier paragraphs, the multiple-case study design has some disadvantages compared to the single-case study, e.g. the researcher may not get a thoroughly picture of several case companies compared to a single one. A single-case study would thus been a relevant alternative design, in order to answer the research questions.

A consequence of a qualitative research design was that the results could not generate any quantitative measures or be applicable to other contexts (Bryman, 2011). An alternative or supplementing research approach could therefore have been to use survey to improve the thesis. A survey with statistical tested questions could have complemented the somewhat subjective views from the qualitative interviews and provided a broader view of the. On the other hand, was not the objective to get a total overview of the automotive industry, but rather give a few examples which are in either forefront or a bit behind in their transition of servitization.

3 Empirical background

The purpose of the following empirical introduction is to give an overview of the chosen case companies. Our empirical setting is outlined within several actors in the automotive industry, acting in both Sweden and China. Two of the case companies are actors within the Zhejiang Geely Holding Group, with respondents from Volvo Cars and Lynk & Co from both Sweden and China. Moreover, Volvo Cars former partner Volvo Group and the supplier Autoliv are also included actors within this thesis.

3.1 Zhejiang Geely Holding Group and Volvo Cars

Zhejiang Geely Holding Group (Geely Group) was founded in 1997 and is headquartered in Hangzhou, China. The company market and manufactures automobiles and its product portfolio consists of over 30 vehicle models (Bloomberg, 2017). In addition to the Chinese subsidiary Geely Auto, the company has also paved its way on the global market through overseas export and two major international acquisitions. In 2006, the parent company reached an agreement with British MBH on the production of taxi and in 2013, the London Taxi Company became a part of the Geely Group (Geely, 2015; London Taxi, 2015). In 2010, Volvo Cars was acquired and Geely Group thereby upgraded its global strategy a further step (Geely, 2015).

Volvo Cars have produced cars since the end of 1920s. The brand is global with manufacturing in Sweden, China and Belgium. Volvo Cars' activities in China has increased during the latest years, with several opened plants and R&D centres in the country. Moreover, China is declared as Volvo Cars biggest single market regarding sales (Volvo Cars, 2017). During the last years, Volvo Cars has created several services towards their customers. One of the new service offer is In-car Delivery, which is a service for delivering goods directly to your Volvo. Another new developed service provided by Volvo Cars is Volvo On Call, a smartphone-app created with several functions, in order to give the customer remote control over the car (Volvo Cars, 2017a).

Autumn 2013, Geely Group announced that the company would start an R&D centre, China Euro Vehicle Technology (CEVT), in Gothenburg. The initiative would be a joint of Geely Auto and Volvo Cars. CEVT would focus on the development of a modular architecture and components for the upcoming generation of C-segment cars for both Geely Auto and Volvo Cars (Geely Global, 2014). The same architecture would enable the two brands of Geely Group to retain different roles in the market. Volvo Cars can continue its path of being a premium brand which combines innovation and leadership in safety, and Geely Auto can position themselves as volume manufacturer, targeting multiple segments in both international markets but foremost in China (Geely Auto, 2015).

3.2 The development of Lynk & Co

Since the start in 2013, there has been a rapid growth of CEVT and the subsidiary is now one of the 20 largest R&D centres in Sweden with approximately 2000 employees, positioned in Gothenburg, Trollhättan and Hangzhou (My News Desk, 2016). During the four years of existence, CEVT has been developing a new car brand, Lynk & Co. The brand and its first model was first announced during autumn 2016 and will be launched initially in China during spring 2017, and if successful, later in Europe and US (Pröckl, 2017). The model has been named to 01, and is expected to be followed by several cars. Lynk & CO 01 is characterised by its personalised services and with a new perspective on ownership, which gives the car owner the opportunity to share the car with others. The aspiration of the brand was to challenge the previous auto industry conventions (Lynk & Co, 2016). The heart of Lynk & Co is technology and it is stated that connectivity to Lynk & Co will be what safety is to Volvo Cars. Moreover, the hybrid car will be sold without middlemen dealership, which is a cost cutting strategy from the company (Savov, 2016). The development of a global R&D centre in Europe, like CEVT, has previously been an unprecedented strategy for a Chinese manufacturer. Historically, Chinese manufactures have formed joint ventures in China to deal with the production of products which has been developed in Europe with domestic workforce. Another alternative has been to develop and produce a product portfolio, specially targeted towards the Chinese market (Strategy Engineers, 2016).

3.3 Volvo Group

Until 1999, Volvo Cars was part of the organisation Volvo Group (Volvo Group, 2017). Since then, Volvo Group has specialised on commercial transportation solutions. The company is producing trucks, buses, construction equipment, and drive systems for marine and industrial applications. Today, they are one of the world's largest producers of commercial vehicle with about 100.000 employees globally. Asia is listed as one of the largest and most important market for Volvo Group (Volvo Group, 2017). Volvo Group is also offering service solutions towards their customer. Financial services and guarantee package are some examples in their offerings. Moreover, Volvo Group was the first company the world testing autonomous trucks for underground mines (Volvo Group, 2016).

3.4 Autoliv

One significant supplier within the automotive industry is Autoliv. Autoliv was founded in Vårgårda, Sweden in 1953. The company is developing offerings such as seatbelts and other safety systems. Today Autoliv is the world's largest automotive safety supplier with over 70 000 employees working in 27 countries (autoliv.se). During the past few years, the company's activities in China increased remarkably, with over 7000 employees and with 12 different factories within the country (Ståhl, 2012).

With the vision of “Saving More Lives”, Autoliv offers a number of different safety solutions to car manufactures. They have separated their products into two categories, active safety products and passive safety products. In their active safety section, products such as radar systems and cameras are offered. Within their passive safety section seatbelts, airbags and steering wheels are sold (Forbes, 2016). Their customers consist of the world's most desired car companies (Autoliv.se). With products within more than 1300 auto models, their products are used world wide (Autonews, 2016). Since 1979, Autoliv has been supplier to Volvo Cars. Together, the two companies have created a jointly owned company to developing autonomous driving control software (Forbes, 2016). According to Forbes, Volvo Cars CEO Håkan Samuelsson commented the new project as “This joint-venture goes beyond the traditional supplier-OEM relationship. It gives both Autoliv and Volvo full transparency into this technology” (Forbes, 2016).

3.5 Summary

The reason of study both manufactures and a supplier in the automotive field, is to get a relevant perspective of the whole industry. From the manufacture side, both a traditional car company as Volvo Cars is presented as well as a new car venture Lynk & Co. Also the perspective of other fields of the automotive industry is provided by Volvo Group. Furthermore, the supplier perspective is given by the safety company Autoliv. As mentioned above, all the chosen case companies have established relationship towards each other. Moreover, all the actors are in some way linked to the Swedish and Chinese perspective, since they all have activities and connections to both markets.

4 Conceptual Background

The following chapter presents the construction of a conceptual framework on servitization and collaborative development, which are necessary to answer our research questions. The first section addresses the topic of servitization, with a presentation of different aspects of the topic. Thereafter, the topic of collaborative development will be demonstrated, including opportunities and challenges within the automotive industry. The two fields of servitization and collaborative development connects through the immense need for companies to involve a range of actors, such as customers and partners, in order to develop services. A collaborative approach is thus a necessary enabler to a successful servitization.

4.1 Servitization

4.1.1 Background

Servitization as a topic describes a transition from products to services in customer offerings, and interlinked with the term are also several other concepts such as Product-Service Systems (PSS), Service Logic, Solution Offerings, etc. (e.g. Kowalkowski et al., 2017; Nordin & Kowalkowski, 2010). Moreover, Lightfoot et al. (2013) argue that service marketing, service management, operations management and service science management and engineering also are communities which contributes to the knowledge production in servitization. The term servitization was initially mentioned back in 1980s by Vandermerwe and Rada (1988). The authors described servitization as a trend that would cover all different kinds of industries and was customer demand-driven. Moreover, the main action by the servitization of business was to include services in the companies' corporate offerings, also named as bundles, and thereby adding value to the customers. The creation of services was mentioned as a mean to get a more holistic view of the customer problems, which would include to approach and get a closer relationship with the customers. This in turn, was seen as strategic issue to sustain competitive advantages (Vandermerwe & Rada, 1988). The characteristics of servitization; the transition or a view of a continuum, the closeness and demand of the customers and strategic argument are consistent with themes, that are recurring in the literature.

4.1.2 Nature of services

There is a common view in literature that services are hard to define and one way to look at services is to view services as both the outcome and the activity, inseparable, in other words, the service product or offering is a process, act or performance. It is also described that these knowledge-intensive services have specific characteristics which distinguish them from physical products (Tether, 2014):

- Intangible: the service is immaterial and thus cannot be touched upon, seen, tasted, smelled or heard as physical products are. Indeed, the service can be connected with physical elements or artefacts, e.g. a phone for the phone call, and often these physical elements are considered as vital since they represent or exemplify values of the service.
- Inseparable: A true service cannot be separable from the unit of its establishment and services are therefore relational rather than transactional, in opposition to physical products. In addition, the characteristic connects to the fact that their performance does not include a transfer of ownership. Since the service is inseparable and do not have an independent existence, they are frequently consumed as they are created, sometimes referred to as simultaneity or co-production.
- Perishable: Services are temporal and do only exist in time, which connects to the characteristic of inseparability. Since it is produced in real-time, it cannot be stored in the same manner as physical products can. One vivid example is an unoccupied airline seat, which will be a lost revenue opportunity from the time when the aircraft close the boarding.
- Heterogeneous: Since the services are performed or created, they often vary, especial if it's people who provides the service. A service is thus hard to generate with the same kind of level of conformity or standardisation, as e.g. the manufacturing of physical product. One company that has tried to overcome this characteristic is McDonald's, which has standardised processes on to a far-reaching level of details (ibid).

4.1.3 Rationales for servitization

Connected to the general argument of creating additional value for the business through the provision of services, are the main rationales for offering services by companies. As summarised by Baines et al. (2009) and Gebauer et al. (2005), three drivers of servitization are often covered in literature; financial, strategic and marketing. Increased revenue stream and profit margins are two examples of financial drivers, whereas the above described competitive advantage and opportunities are two examples of strategic reasons. The marketing driver could be understood as a mean to use marketing in order to sell more products (ibid), influence the purchasing decision, satisfy a growing demand from business-to-business customers but also create customer loyalty (Vandermerwe and Rada, 1988). The provision of services also enables companies to get insights about customers' needs in order to generate customised offerings (Baines et al., 2009).

In addition to above described rationales for servitization, other authors, e.g. in the product-service system literature, have argued for the environmental rationale (Mont; 2002; Neely, 2009). The main argument behind the environmental rationale is that it is possible to reduce the negative environmental impact of products, if companies develop their business models and customers change their view of ownership, and in a longer term their consumption patterns. Moreover, in

addition to the main actors' companies and their customer, the society is also mentioned as an actor who can benefit from the servitization by influenced stakeholder relationships and creation of new jobs (Mont, 2002).

The literature covers a diverse variety of examples from servitization such as aerospace, transportation, automation, machine tools and capital equipment. These examples highlights the opportunities to keep revenue streams and improve profitability, especially in sectors where there is a high-installed base of products (Baines et al., 2009). Several of the examples are well-cited in literature, such as Rolls Royce move from providing aircraft engines to pioneering service in the industry by offering power-by-hour contracts. Another example is Xerox, which introduced pay-per-use service to support its new product line, and developed the service to annuity-based business model to ensure recurring revenue streams (Kowalkowski et al., 2017).

4.1.4 Value creation

4.1.4.1 Value-in-use

Another important contribution to the literature stream of servitization is the Vargo and Lusch (2004) paper, which describes a convergence in marketing from a goods-logic to a service logic. This convergence can be understood through a change in the perception of value and economic exchange. The goods-dominant view is defined through a tangible output and transactional exchanges, whereas in a service-dominant view the relationship with customers is central and the exchange processes are rather intangible (Vargo & Lusch, 2004). One of the biggest contributions of Vargo and Lusch is the fundamental changed perception of value creation and locus of value creation. As with Normann (2001), the authors argue for that in the goods-dominant logic, value is embedded in the products, which are outputs of the firm. The value is thereby defined and determined by the producer, namely exchange-value. An opposite view appears in the service-dominant view where the consumer is the co-producer, which determines and perceives the value, value-in-use. The companies can, in this view, only make value propositions (Vargo & Lusch, 2004; Michel et al., 2008) and thereby have a more secondary role compared to the goods-dominant logic. Vargo and Lusch summarise the differences between the goods-dominant and the service-dominant logics through six areas: primary units of exchange; role of goods; role of customer; determination and meaning of value; interaction between firm and customer and finally, source of economic growth.

4.1.4.2 Additional value creation through provision of service

There is a belief within literature that the provision of services by manufacturing firms, are expected to generate additional value through adding capabilities and thus improve their competitive advantage (Baines et al., 2009; Turunen & Neely, 2012). The provision of services are driven by ever-increasing customer needs which are of complex nature. The justifications are

based on the understanding that integrated product-service offerings have more long-lasting life cycle, enable greater differentiation and offers better competition against low cost competitors. It is thus a concept which has the potential to generate great value by offer companies new directions to change the value chain and utilise from greater value business activities (Baines et al., 2009).

4.1.5 Forms of servitization

When Vandermerwe and Rada (1988) presented their theory about servitization, they described an evolution of how services have become an important part of the customer offerings. The first stage is described as a pure good or service offering with no interference or confusion by one or the other part, simply a goods offering or a service offering. In the second stage both goods and services are described as needed by the customers, and thus demonstrated as inseparable. The final step in their argumentation includes “Goods + Services + Support + Knowledge + Self Service”, which describes a bundle of customer-focused combinations (ibid). The range of the servitization can further be described as a product-service continuum (Oliva & Kallenberg, 2003; Gebauer et al., 2005; Baines et al., 2009) where pure product manufacturers, which produce core products, are at one extreme with services purely as add-ons to the core product. The service is a main differentiator in the product marketing strategy. The revenues, profit and customer satisfaction from these offerings are distributed with the physical product as the majority-provider whilst the service contributes only with a minor part.

On the opposite side of the continuum are the services the main part of the offering and the product act as an add-on. The main share of the value creation derives from the service and the product is merely a small part of the value creation. The transition over this continuum is starting with an extended service business to the core product to ending up with several service offerings (Gebauer et al., 2005). As can be understood through the product-service continuum, various forms of servitization exist. One related field within this view of product-service continuum is that of product-service systems (Baines et al., 2009). There are several definitions of PSS but in general, the PSS is “...a system of products, services, supporting networks and infrastructure that is designed to be: competitive, satisfy customer needs and have a lower environmental impact than traditional business models” (Mont, 2002 p. 239). This definition is aligned with the initial definition by Vandermerwe and Rada (1988) and highlights the similarities between the two streams, namely combinations of products and services which provides value-in-use (Baines et al., 2009).

4.1.6 Organising for services

4.1.6.1 Service design

The design of services or service design thinking is an interdisciplinary field, which has, as with the definition of services, no agreed description. It is argued that this is an evolving field, which could be limited or constrained by a common definition, even if it could improve the development of service design as a field (Stickdorn & Schneider, 2012). The same authors argue for that service design thinking lays upon five principles, somewhat similar to the characteristics of services. Firstly, it is *user centred*, which means that the customer has to be involved since it is in the interaction between the service provider and the customer that services are created. It also correlates with the main intention of creating services, namely to meet the customer's needs and demands and thus talking the customer's language. Secondly, and connected to the first principle, is that services are *co-creative*. Co-creation involves identifying the possessed needs in the different customer groups as well as engaging different actors, stakeholders and interfaces within the company's environment. Thirdly, service is *sequencing* and thereby is a dynamic process over a timeline. This timeline is essential to consider while designing services, since the pace of the service influence the customer. Forth, designing services includes making the intangible service tangible, since it is *evidencing*. The reason of the evidencing is to make the customer aware of the services and its certain aspects or process, which enables the service provider to demonstrate values and the customer to create appreciation of the service experience. Finally, services are *holistic*, which means that when the service provider designs the services, the physical context and its connected artefacts should not be forgotten.

4.1.6.2 Process of developing services

As with several other authors, both Stickdorn and Schneider (2012) and Tether (2014) have examined the operational process of servitization, i.e. how services are developed and contribute with general stages in how can develop services.

Both contributions agree that the first stage is to study the front-end activities to be able to look into possible threats or opportunities in the environment. The ability to identify problems by observation is a key to develop services. Stickdorn and Schneider also emphasise that the companies should to start with creating understandings internal in the company, to assure there is a common agreement. In addition to identifying possible problems, both contributions suggest the companies to use structured ways to create the understanding of the customer problem and to be able to visualise it. The visualisations provide simplification of complex and intangible processes and Tether suggest "Service blueprint" as a tool to map out the processes.

The second stage is about creation or building the services, but Stickdorn and Schneider have divided this step into two separate step, the first one a conceptual level and the second on a testing level. Within the second stage, Tether highlights the problem of the intangible nature of

services, and thereby the difficulty to prototype the service, compared to physical products. However, the author suggests several tools to manage this issue, e.g. service blueprint, storyboard and role-play, in order to create a shared mental model of the service with the different stakeholders. Stickdorn and Schneider on the other hand presents sticky-notes as tools to map out the insights from the exploration stage and also suggests companies to make as much mistakes as possible in this stage and then prototyping and testing. Further, both contribution underline that many stakeholders and departments are engaged within the process and the visual aspect of the second stage is essential to create common understandings. Both contributions although highlights the importance of generating space for reflection before moving on to the implementation.

The final stage in the development of services is the implementation. The two contributions frame this stage a bit different but have some common points. Communication and involvement with several of departments with the employees are necessary to succeed in this stage as well as creating a full understanding of the service.

4.1.6.3 Innovation of services

In general, innovation of services can involve the introduction of new services which can include different level of engagement by the client. A service can be innovated for the client or with the client, and fundamentally the service replaces or substitutes for the activities that the customer would have done for him or herself. Overall, it is not very common with radical innovations of services, unlike physical products or technologies. This can be understood by the nature of services, i.e. that they are closely connected with the user of it and hard to scale. Considerable innovation of services often involves innovations of business models and essential changes in the organisation of the service provision. As with other innovations, service innovation needs alignment with a strategy, effective processes and sufficient resourcing to be effective. Effective service innovation processes often challenge organisational practices, and can therefore be hard to implement (Tether, 2014). Innovation of services can thus be interpreted as an essential part of the process of servitization.

Companies should give attention to the diverse spaces, or dimensions of service innovation (Tether, 2014). den Hertog et al. (2000) perceives service innovations as a multidimensional phenomenon and proposes six various dimensions, where service innovations can take place in the business: service concept; customer interaction; business partner; revenue model; personal, organisational, culture delivery system and technological delivery system. Separate or in combination, these dimensions can lead to renewed or new service functions. In addition to the dimensions, the author has also identified six dynamic capabilities, which the company can draw on in order manage the innovations. The identified capabilities are: 1) signalling user needs and technological options; 2) conceptualising the service; 3) (un-) bundling the service; 4) co-

producing and orchestrating; 5) scaling and stretching the innovation and 6) learning and adapting how to manage service innovations.

The outcome of services is often depending on a large amount of actors or organisations, acting together to provide the service. The effective orchestration of the service demands the actors to work along each other, and it is within the interface of these actors that service innovations occur. The inter- and intra-organisational cooperation is therefore a very significant aspect of service innovations (Tether, 2014; den Hertog et al, 2000). Each actor in a collaboration or a network complement another actor, with a core competence or assets which there is a lack of, such as market access, technology or certain skills. Both actors in a partnership can benefit from learning and assimilate knowledge, which are currency for innovation. Developing trust internally with customers and suppliers, and engaging with them, together with collaborating with other external partners, are vital to relationship capital building (Agarwal and Selen, 2013). The broad variety of knowledge is a good starting point for obtaining and combining knowledge for new service innovation, and companies are encouraged to be open in their consideration of the contributions of service innovations (Nätti et al., 2014).

One well-mentioned barrier to service innovation concerns how companies can protect their inventions and innovations against copying or imitation, and how to obtain commercial value from them. In general, companies can use two sorts of protection, formal or strategic forms, whereas formal forms include intellectual property rights and strategic forms rather is connected with secrecy, reputation, social capital and complementary assets (Tether, 2014). Issues with appropriability are also connected with the level of openness in service innovation networks, and should be actively facilitated in order to increase trust between the actors (Nätti et al., 2014).

4.1.7 Challenges of servitization

Despite numerous examples of success stories of companies which have been servitized, there are also examples of fails, which indicates that the transition of servitization is not without challenges or barriers and does not always generate expected results (Kowalkowski et al., 2017). There are several challenges connected with the servitization, such as cultural and attitudinal challenges (Vandermerwe & Rada, 1988; Kowalkowski et al., 2017; Baines et al., 2009; Turunen & Neely, 2012) and can be categorised into broader groups, for example: integrated product – service design, organisational strategy and organisational transformation (Baines et al, 2009).

Changing mind-set of the number of employees within organisations can be a primary barrier in the aim of transiting to becoming a service provider. Given the collaborative nature and dependence of many firms on suppliers and partners, the cultural change might also affect a larger context than the company. Moreover, connected to the cultural and attitudinal challenges is the managerial aspect of the servitization. The requirement of leadership skills to drive the change management and to build the culture is interlinked with the skill of being agile to keep up

with new competitors (Kowalkowski et al., 2017). As mentioned earlier, servitization demands a developed relationship with customers and stakeholder from transactional to relational, which can be a challenge for companies (Neely, 2009). Because of the nature of services, e.g. their intangibility and difficulties to define, they are different from physical products to design and to innovate (Tether, 2014). This starting point may dampen firms from expanding its service provision, especially since they need to take increasing competition among the firm into consideration (Vandermerwe & Rada, 1988; Oliva & Kallenberg, 2003). If companies decide on a service-dominant strategy, they need to adapt essential organisational structures and processes (Gebauer et al., 2005) and embrace the service orientation, but also value services within the organisation (Oliva and Kallenberg, 2003). However, even if companies manage the service transition, they may still suffer from not generating enough value to the company, also named as “the service paradox” (Gebauer et al., 2005).

4.1.7.1 Service Paradox

Connected to the economic rationale of servitization is the phenomenon of the so-called service paradox, initially introduced by Gebauer et al. (2005). When companies are adding services to their previous product offering, there are also layers of complexity which are added in the ambition to provide solutions to the customers (Green et al., 2017). The transition to service is not always without challenges and one of these challenges is how to deliver expected returns on the investments in the service design (Neely, 2009). Neely (2009) reports that there is a larger share of bankrupt servitized companies in the sample of the paper than expected, and the results demonstrate that small companies seem to benefit more from servitization compared to larger manufacturing companies. The extended level of service through considerable investments leads to boosted offerings and higher costs but does not generate the estimated higher returns. The investments thus fail to meet indented objectives and can threaten the viability of the companies (Gebauer et al., 2005). The authors provide recommendations in order to circumvent the service paradox, namely that companies needs to overcome hurdles and challenges connected with extended service business by an increased level of service awareness, acceptance of the risks and beliefs in the economic potential of services. Moreover, changes in the organisational structure are required, as well as improving the implementation of necessary changes by managing impact of related side effects (ibid).

4.1.8 The role of digitisation

The provision of services is increasingly depending on digital technologies, also known as digital servitization. These digital technologies and smart products disrupts the manner in how companies compete and offer services (Lerch & Gotsch, 2015; Porter & Heppelmann, 2014), where one example is how the structure of the supply chain transforms (Vendrell-Herrero et al., 2017). Overall, the dematerialisation of physical goods is merging the two streams of digitisation and servitization. Whilst it is doable to develop towards services without digitising the offering, and vice versa, the two concepts are strongly inter-linked (Lerch & Gotsch, 2015).

Coreynen et al. (2017) examine how digitisation can enable servitization for manufacturers. The authors present a framework in which they suggest three different pathways that manufacturers have potential to increase their service offerings through digitisation. These pathways are: industrial; commercial and value servitization. The two former pathways enable services which support users to perform tasks on their own. Examples of these tasks are advice, consulting and self-service management tools. Digitising is supporting these pathways through either back- or front- end operations and by combining the two pathways in one offering, companies can take over activities, usually executed by the end-users. The latter pathway, value servitization, permits firms to unburden customers from specific activities more quickly. Value servitization includes a more radical shift in provider-customer relationship by the introduction of new digital products. Aligned with the literature on digital servitization, Cenamor et al. (2017) contribute to the field by arguing how a platform-centred architecture enables servitization by allowing coordinated attempts to achieve customisation and operational efficiency, and thus avoid the service paradox. The platform architecture allows a holistic overview in which products, services and information are all recognised as key pieces in the service offering. By arguing for the possibilities with platforms, the authors illustrate that servitization, in opposition to the conventional view of the field, not necessary have to be a linear process. A platform approach enables companies to identify new modules and possibilities, by restructuring their modular architecture as a portfolio, without replacing the complete offering (ibid).

4.1.9 Deservitization

There are several examples in literature of companies which have managed the transition into becoming service providers such as IBM, after selling its personal computer division to Lenovo changes the registration on the New York Stock Exchange from product to service company. Another common example in the literature is Rolls Royce, which pioneered the aircraft industry by initiating their “power-by-hour” service contract. Despite all of these success stories, there is also evidence that companies are moving in the opposite direction and starting to “deservitize” their business (Kowalkowski et al., 2017). As mentioned in the paragraph of challenges to the servitization, many of the companies in several sectors are struggling with the transition, and some of them are not managing to overcome the service paradox, i.e. when the heavy investment fails to generate sufficient value from the service business (Gebauer et al., 2005). Neely’s (2009) empirical investigation of the service paradox, revealed that more companies in the study’s sample went bankrupt than expected. One case of the deservitization is Xerox, which divided into two separate companies in order to respond to demands from shareholder about unsatisfactory market capitalisation. Even if companies manage to overcome the service paradox, other challenges such as cultural, attitudinal and managerial are present (Kowalkowski et al., 2017).

4.1.10 Summary

The literature, which is examining the field of servitization, is, as can be understood from above depiction, wide-ranged and has developed into several streams. The streams cover the development of the field, pros and cons with servitization as well as processes and the enabling aspects of technology and innovation for servitization. However, much of the literature is although on a conceptual level, such as the suggested process of developing services and without robust recommendations or advices of how to develop services. The downside with this kind of argumentation is that it becomes rather general, which could indicate that there is a lack of useful examples for companies to get inspired by. The literature regarding the so-called service paradox, with arguments for the servitization without clear directions of how, could be interpreted as a result of this issue, namely that the literature is rather conceptual and thus without sufficient authentication. In addition, even if the term of servitization and the topic has been examined in more than two decades, it is surprisingly little agreement about definitions and key concepts, making the area somewhat sparse and difficult to grasp.

The depiction of the literature field above facilitates an understanding of the term and concept of servitization in order to respond to the stated aims and research questions. Moreover, the depiction also facilitates understanding of the chosen case companies reality in relation to development of services. Especially the literature about definitions and natures of services, as well as challenges with servitization enables insights into the difficulties that companies is confronted with when they develop services. Moreover, the literature that covers the reasons for and the value created by services, supports perceptions of why companies are developing services. The literature regarding a view of a continuum enables an understanding and a comparison of companies and their development, and is thus important for the aim of developing a maturity matrix. Literature, which is covered within the topic, but lacks the opportunity to answer to the aims and research questions of the study are for example innovation of services, the role of digitisation and the movement of deservitization. Since the areas were not directly connected to the purpose of the thesis, they were rationalized away from the analysis, according to limitations of the study.

Accordingly, the sections that foremost will be examined and analysed further on are: the definition of servitization, the nature of services, rationales for services, value creation through services, forms of services, service design, process of developing services and challenges related to services.

4.2 Collaborative development

4.2.1 The shift towards a more collaborative environment

In many industries has innovation and development within technology been the driving force for evolution (Lara et al., 2005). The outcome from the R&D activity, which both could have positivity or negativity result, often affect the whole company's performance. One well-used strategy to overcome the varied consequences of R&D development has been to collaborate with other actors (ibid). In order to sustain competitive, describe Chesbrough (2003) the more open approach among companies, which enables them to involve external actors inside their business. Moreover, the competitive landscape is seen as the reason behind the increased collaboration among companies, since the high competition in the market has forced actors to cooperate in a larger extent (Müller Guerrini et al., 2015, Pai et al., 2012). The shift towards a more collaborative business environment has been significant during the latest years (Müller Guerrini et al., 2015), whereas also collaboration with actors in different countries and cross-industries has increased (Pai et al., 2012). Collaboration enables companies to operate more agile, and to rapidly react on market changes or needs. Partnerships, joint ventures, collaborative networks and integration of different business units have been the solutions towards the changing environment (Müller Guerrini et al., 2015, Lara et al., 2005, Ylimäki, 2014). Significant for joint R&D, is that it is a common way to collaborate among companies within medium and high-tech industries (Lara et al., 2005). Whereas the definition of business collaboration is explained as the relationship between different actors operating together (Müller Guerrini et al., 2015).

4.2.2 Opportunities of collaborative development

Collaboration is used as a way to share knowledge, access knowledge or to jointly develop new concepts, without the requirements to hire expertise (Müller Guerrini et al., 2015). It is through interaction and collaborations with customers, communities, suppliers and rivals, new knowledge can be absorbed (Müller Guerrini et al., 2015, Barbaroux, 2012). The collaborative concept has been used as way to overcome the company's individual limitations, and opening up new opportunities for the company (Lara et al., 2005). By building the development on the actors' different capabilities, new products, technologies or ideas can evolve, which would not have been possible without the cooperation. Moreover, develop collaborative business ideas require deep commitment, involvement and co-creation of value between the involved actors (Fernandes et al., 2016).

Furthermore, collaboration can result in companies developing existing internal capabilities. By collaboration, each company can focus on their internal strength and develop them further (Fernandes et al., 2016). The collaboration enables increased resources within the operation, with a more diversified business and technology base (Lara et al., 2005). Ylimäki (2014) argues that

successful new products require mixture of both internal and external knowledge. Collaborations based on customers or suppliers also result in a long-term relationship between the units, which can be beneficial for the company (ibid). Another advantage by collaboration, is that companies increases their ability to operate outside their regular core business and tries to explore new business opportunities (Müller Guerrini et al., 2015).

Another advantage of collaborating within developments is mentioned to be economical reasons (Swink, 2006, Pai et al., 2012). Lower R&D expenditures and decreasing development time, could mean significant cost-savings for all involved actors into the collaboration. By sharing expenditures means companies also share risks and losses, which can be costly within development projects (Müller Guerrini et al., 2015). By collaboration, the focus of the development will mutually be more increased, as well as the the ability to solve early problems during the process. Especially when it comes to front-end collaborations, there is a higher cost awareness among all the participants. This will result in budget plans will be more strictly followed (Langner et al., 2009).

The purpose of collaboration is that it should benefit all the involved participants and increases their existing profit (Müller Guerrini et al., 2015). In addition, in order to create a long-term relationship, the relationship should be based on win-win strategy, where all actors gain advantages from the collaboration. Moreover, a successful collaboration requires mutual trust and communication between the partners are important (ibid).

4.2.3 Challenges of collaborative development

It is clear that different collaborations can have a positive influence on business result (Swink, 2006). However, challenges with collaborative development can also arise. According to Müller Guerrini et al. (2015), Ylimäki (2014) and Barbarouw (2012), can collaboration be negatively affected by several internal and external factors.

Some of the mentioned internal factors were management resistance, lack of employees' motivation and organisational culture. According to Langner et al. (2009), is managers' attitude thus crucial for a rewarding collaboration. Managers within all the partner companies can prepare the company for collaboration, by creating a good collaborative internal environment through promoting cooperation between departments in-house (ibid). Another challenge with collaboration is the motivation level among the employees. If there is lack of motivation, the collaborative performance will be affected negatively (Ylimäki, 2014). Therefore, is it important to emphasise motivation among all the employees, in order to create a beneficial collaboration with other actors (ibid). To create an organisational culture which enables mutual trust and understanding can be time demanding for the actors (Müller Guerrini et al., 2015). However, the relationship among the actors and the internal culture impact the sharing of tacit knowledge. Resistance of sharing information between actors is therefore a complex issue within

collaborations. Furthermore, the participants' values and norms influence the collaborations' performance highly (Barbaroux, 2012), and it is therefore beneficial to discuss them before the cooperation starts.

When it comes to external challenges the integration level between the companies and developed implementation phase are considered (Müller Guerrini et al., 2015, Barbaroux, 2012). These organisational challenges need to be handled, in order to create a successful collaboration (Müller Guerrini et al., 2015). The integration level between the different actors needs to be well-developed within collaborations, where it has to be a mutual engagement between all the participants (ibid). Moreover, collaboration between actors requires that both organisations are susceptible for a multi organisational culture, and are prepared for working with heterogeneous employees (Barbaroux, 2012). Another external challenge with collaborations, is according to Langner et al. (2009) the risk of increasing the development times. Several studies show that collaboration can have the opposite effect with longer development processes, if the integration between the actors do not work good as desired (ibid).

4.2.4 A new era of collaboration

Involving and collaborating with customers and suppliers in development projects was seen as a radical transformation from previous traditional collaborations (Ylimäki, 2014). The reason behind the involvement of customers and suppliers is the knowledge and insights they could provide to the company. The earlier the company get the information from customers or suppliers, the better outcome from the development (Petersen et al., 2005). The radical change by involving new actors has resulted in successful product developments, and therefore a long-term relationship between the actors becomes valuable for the company. The contribution from key customers and key suppliers, as complementary knowledge, forces companies to open up and share information. Ylimäki (2014), describe the collaboration as ultimate, since customers provide the company with their "need", and suppliers provide complex information on a "solution" to solve the customer needs (Ylimäki, 2014).

4.2.4.1 Involving customers

Customer involvement means several advantages such as increased innovation performance, new ideas based on the market and technology need, improved product quality, customer service and higher flexibility within the development process. Customer involvement is described as the interplay between the design of the development process and the customer viewpoint (Ylimäki, 2014: Kaulio, 1998). Kaulio (1998) has separated customers' involvement within product development into three different levels, depending on customer's contribution in the design work. The type where the company takes the most responsible of the development and design the product for the customer is termed *design for customer* (Ylimäki, 2014). In order to get the customers viewpoint, traditional market research as interviews and surveys are performed, which

later is used as base for the design. Moreover, development, based on traditional theories and findings, are also usual within the design for customer level. However, the customer's opportunity to influence the design, is still very small within the category. The second form of customer involvement is termed, *design with customer*. This type of involvement requires deeper relationship with the customer, whereas both the customers and suppliers cooperate in the development process. The collaboration between the customers and suppliers is a dynamic process during the whole development, as they bring up solutions together. The solution follows the demands from the customer needs and preferences (Kaulio, 1998). In the third form of customers' involvement, the customer has received a significant role of the development. The third form is named *design by customer* and the design is completely driven by the customer. The customer is solely managing the development process and takes all decisions about the delivered solutions. Within the design by customer level, the customers' role is more extended and has the ability to take decisions (Ylimäki, 2014).

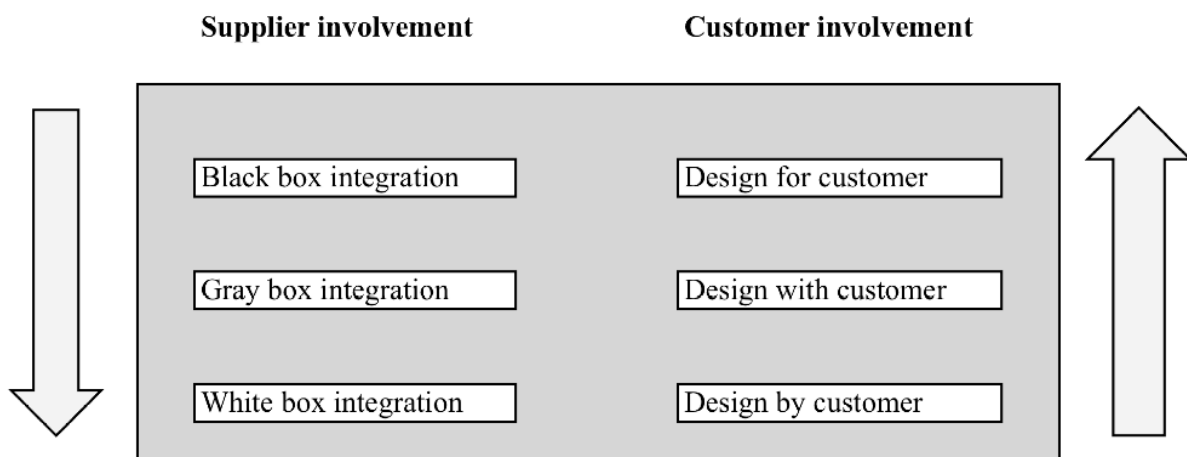


Figure 1. Types of suppliers and customers involvement and their relative positions

4.2.4.2 Involving suppliers

According to Petersen et al. (2005), has the supplier's involvement within product development lately received more focus in practice. Moreover, suppliers are seen to be more engaged in the development of the company's process or service, which enables customers' satisfaction. The development process is dependent on which stage suppliers get involved, the earlier the faster process (Petersen et al., 2005). There are several ways of collaborating with the suppliers, Ylimäki (2014) has categorises supplier collaborations into three different levels (Figure 1). Within the *Black box integration*, the suppliers have the most responsibility in the development of the product or service, to facilitate the customers' requirements. The customers have previously handed over strict requirements to the company, which the supplier fulfil within their contribution when developing a component or a part. The *Gray box integration*, is categorised by

the cooperation between different actors and mutual responsibility of the development. This level forces the involved actors to share information and knowledge, which make it possible for companies to effectively include suppliers within the process. The third type of suppliers' involvement is termed the *White box integration*. This kind of collaboration is exclusively driven by the customer, whereas the suppliers deliver components or parts to the design. In comparison with the *Black box integration*, the responsible of the development between the supplier and customer has shifted within the *White box integration* (ibid).

4.2.4.3 Collaborative development within the automotive industry

One of the most common ways to collaborate within the automotive industry is between automotive firms, OEM, and experienced automotive suppliers. Historically, cooperation between these two parties has not been seen as possible. The shift has resulted in new compositions, since suppliers could be introduced into the collaboration from the front-end stage to the launch phase. Nowadays, numerous automotive firms engage suppliers within development of new concepts, where the different parties share losses and rewards from the development (Langner et al., 2009).

Collaboration within the automotive industry has several advantages. However, the increased involvement of suppliers within collaborative development has also resulted in challenges for companies. The collaborative environment could as an example result in a negative relationship between actors. According to Langner et al. (2009) could collaboration with suppliers implicate high costs, in order to organising and maintain a good relationship between the actors. At the same time, the collaboration can include risks for the OEM, by losing competitive advantage from shared significant knowledge and information. Another challenge with collaborative development for OEMs is that they can be dependent or locked-in with a specific technology. From the suppliers' perspective, collaboration with OEMs can involve access to developed technologies, which later can be offered to other automotive firms. Even though collaborative projects can result in no return on investment for suppliers, the economical outcome is often positive and increases their internal innovative ability. In order to create a favourable collaboration, mutual trust and respect between the actors are crucial (Barbaroux, 2012).

4.2.5 Summary

The previous section 3.2 Collaborative development, has provided a literature review of the topic, including its opportunities and challenges. The shift towards a more collaborative environment has been highlighted by and argued for in the literature. However, collaborative activities between actors is not a completely new phenomenon, since companies have been collaborating in the past, even though the literature do not stress these activities. Nevertheless, the literature highlights the increased collaboration among companies within medium and high-tech industries, it would be reasonable to assume similar collaborative conditions within the low-tech industry.

Moreover, the customers and suppliers' roles within collaborations have been examined within this section. Regarding the model presented by Ylimäki (2014), it appears like the involvement in development could either be high from the customer or supplier. The question is though whether one of the actors needs to outperform the other. According to the literature, in collaborative development several actors could simultaneously participate within the performance, as well as customers and suppliers. Moreover, it is clear from the literature that the customer's role has increased significantly. However, that the customers' high involvement with product and service development has been a new sensation could be discussed. In order to sustain in business, it would be irrational to argue that companies historically have neglected customers' demands and requirements. Since the aim of the study is to investigate how companies develop service offerings through collaborations within the automotive industry, some parts from the literature will get minor emphasis. In the literature of servitization, the customers' role is essential for service development. Therefore, the role of the customer will also be emphasised, and the perspective of suppliers will have a minor role.

Furthermore, the section is the foundation of some parts of the interview guide. The parts that foremost will be examined and analysed further on in the thesis are: the collaborative environment; opportunities with collaborative development; challenges with collaborative development; and customer and supplier role within collaborations.

4.3 Maturity matrix of servitization

One of our aims with the thesis is to create a maturity matrix of how well-developed the different case companies are in their transition of becoming servitized. A maturity matrix can enable a comparison and an outline the chosen case companies through pinpointing their position in relation to each other. Moreover, a maturity matrix can permit a proper illustration and thus a good overview of the present situation for some actors in the automotive industry. The maturity matrix is created in order to answer the research question *How do companies develop service offerings through collaborations within the automotive industry?* Based on primary and secondary data, such as gathered information from interviews and company reports, the case companies will in following chapter *Analysis* be placed in the matrix. The maturity matrix consists out of two parameters: the role of service in the companies' customer offerings and the level of collaboration with customers.

The parameter on the y-axis is based on the servitization continuum, described in the chapter of *Conceptual Background*, and more precisely in the section 3.1.5 *Forms of Servitization* by Oliva and Kallenberg (2003); Gebauer et al. (2005) and Baines et al. (2009). The axis comprises what role services have in the customer offering. At one end, the service has no crucial role or doesn't

exist at all, and thus all focus is on the core product. In the middle of the axis, the service has the role as an add-on to the core product, whereas the main part of the revenues, profit and customer satisfaction is depending on the core product. On the other end of the axis, the service is the essential part of the customer offering and the physical product acts like an add-on. The main portion of the value creation originates from the service and the product is only a smaller part of the value creation.

The parameter on the x-axis defines the level of customer involvement in service development. Based on the previously presented model, conducted by Ylimäki (2014) in the *Conceptual Background*, customers and suppliers' involvement within product development could be categorised into different levels (fig 1). Because of the significant role of the customers within the servitization, the conducted matrix is solely based upon the customers' involvement within service development. As mentioned earlier, the customers' role is a key component within the servitization. Based on Ylimäki (2014) model, three types of customer involvement are identified: *design for customers*, *design with customers* and *design by customers*. In similarities with Ylimäki (2014), the matrix demonstrates how the level of customers' involvement differs among companies in service solutions from low to high.

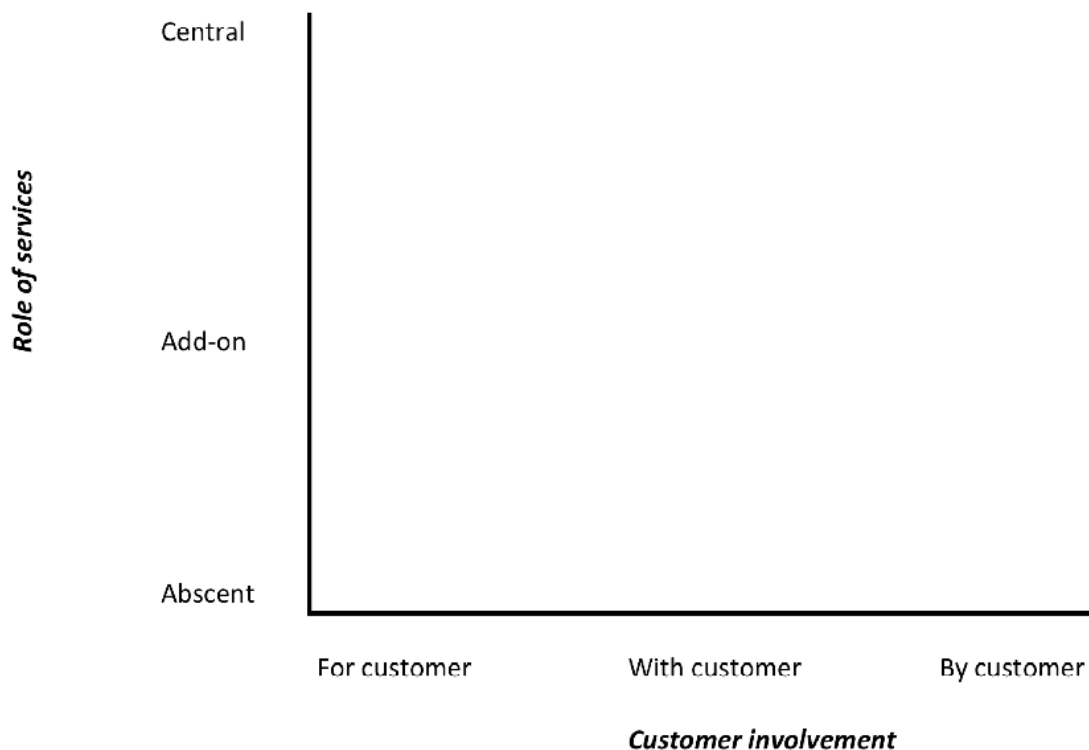


Figure 2. Maturity Matrix of Servitization

5 Results

The following section summarises the collected empirical data, which was gathered from the interviews held at each case company. In order to examine the case companies' existing perception of their service development, areas in the Conceptual Background are covered within this section. However, since the established concept of service development is rather exceptional within the automotive industry, the gathered data is based upon the respondents' personal perception of the terms and concepts.

The empirical data can be categorised into two fields, servitization and collaborative development. Moreover, the construction of the results follows the structure of the interview guide as well as the structure of the Conceptual Background. In order to create a clear overview of the collected data, the respondents' answers are summarised in text-format with some quotes based on the different categories. The two fields are also summarised with connections to the research questions. The complete interview guide with all questions can be found in Appendix 8.1.

5.1 Servitization

5.1.1 Definition and nature of services

All but one of the respondents had vast difficulties with defining what services are and the attempts to define the concept of services differed widely. There was a broad range for the level of insights into what the service concept means, but also regarding the ability to put their own words into the description. The range of answers consisted from an unwillingness to stick a label of the concept to a traditional view of services as customer service, i.e. an activity that mainly sales people perform. Rather than succeeding to define what services are, the majority of the respondents attempted to describe what services means in their company context.

Two of the three respondents from Lynk & Co had a rather conscious picture of the definition of services. LC2 described services as a facilitating effect which saves people from doing things by themselves in their everyday life, and noteworthy in the context was that LC2 distinguished the notion of services in two separate parts in Swedish: one aspect of it has to do with the specific activity which is performed, whilst the other aspect has to do with the perceived inter-personal meeting. All of the three definitions had to do with some kind of inter-personal aspect, but LC3 had a rather simplified definition of services as a behaviour that can make the customer happy. As for the three respondents from Autoliv, all of them had a fairly traditional view of services and attempted to describe it as understandings of, interactions or communication with the customer. The respondent from Volvo Group didn't succeed in defining services, but instead demonstrated insights into the concept and knowledge about different kinds of services in the organisation. At Volvo Cars, VCC2 had difficulties to put a specific definition of services, but

had a good overview of the present service offerings that the company has, whilst the other respondent attempted to provide a description of the characteristics connected with services.

..I really don't know how I would define it, it's rather difficult (VCC2)

Regarding the nature of services or characteristics associated with services, it seemed to be a common difficulty to outline it, similar with the difficulties of defining services. There was barely any agreement on specific characteristics of services, although a couple of the respondent stated that it was user-centred and customer focused. Not even between respondents from the same companies was there a clear agreement of the nature of services.

The respondents from Volvo Cars connected it to the customer, but VCC1 described it as simplifying for the customer, while VCC2 instead focused on the origin and the motivation of services: that services should be based on customer needs and experiences. The three respondents from Autoliv framed it through relationships and two of the respondents, AL2 and AL3, underlined that it has to do with understandings of the customers, while AL1 mentioned the perception of the company by the customer as an example. LC1 and LC3 agreed upon that the nature of services has to do with building the brand, and LC1 and LC2 shared a description that it has to do with creating value for the customer in different ways and creating value for the company.

If you consider the service to be a form of packaging of several pieces... You've bought a holistic package. It's probably the big characteristics. You do not have to choose straws yourself, but you get a unity in what you buy. (LC2)

5.1.2 Rationales of services and value created through services

According to the statements from the respondents, there was a full agreement of for whom the services were developed and offered for, namely the customers. Who the customers were, was naturally depending on what kind of company it was, if they performed business-to-business (b2b) or business-to-consumer (b2c). What was also notable was that the majority of the respondents also identified a target customer group. For those who worked with b2c, the target group was similar to or corresponded with the group of urban millennials, the generations of people who are born between 1980's and early 2000's (Investopedia, 2017).

LC1, LC2 and LC3 at Lynk & Co all agreed that services are developed for their future customers, and LC3 specified it even more and divided this group into two: the ones who will be part of their customer club and also potential members of this club. Also at Autoliv there was an agreement that services are for external customers, both the OEMs but the end-customer was also mentioned by AL1 and AL2. AL1 also added that services should be for internal customers as well, which also VG agreed upon. Both VCC1 and VCC2 indicated a problem that the target

group of the services are millennials but the present buyer of a Volvo car today, is around 50 something.

So there is a slight clash, when thinking about services created for a different target group than for those buying cars right now (VCC2)

The reasons and rationales for why services are developed within the companies had both some similarities but also some differences between the respondents. The majority of the respondents, six out of nine, expressed that it is customer requirements or demands that is the reason for why the companies develops service offerings. Other common reasons were to differentiate themselves from competitors and a couple of the respondents had identified growth possibilities.

There was some consistency and overlaps within Autoliv and also some individual contributions. AL3 stated that both differentiation and customer requirements are main reasons for developing services, while AL1 agreed on the customer requirements aspect but also added growth possibilities as a rationale. AL2 mentioned the differentiation aspect and added that services are in line with the company's vision. Lynk & Co had no consistency regarding this point, for example mentioned LC1 the customer demands as reason, while LC3 meant this is a differentiation strategy because of the large amount of auto brands in China. At Volvo Cars, there was a uniform agreement about the customer requirements and differentiation strategy as reasons for the service development. Both of the respondents argued that the products within the car industry is rather similar and that it will be the services which will differ the different companies from each other. VG described this phase as a technological maturity, which will enable services to increase the operating margin for the companies.

It is the services that will take over the stage, and become the most important thing when buying a car (VCC1)

The value created through services was a topic with a widespread consistency among the respondents. All of them mentioned that it is customer value that is created through services, even if they framed it differently. Another common value that was described was different sorts of strategic value for the companies, such as increased competitiveness, retaining customers, differentiation and closer relationship with the customers.

VCC1 and VCC2 both focused on the value created for the customers, VCC2 stated that saving time and increase convenience for the customers are the main created value. VCC1 framed the value created in a time perspective, and meant that today are services added value for the customer, while the services will be the main created value in the future for customers. Both VG and LC1 underlined the services as a new business model for the companies to leverage from. LC2 and LC3 stated strategic advantages for the company as the created value, for example, LC2 mentioned a closer relationship with the customer, and LC3 said brand building and retaining

customers as two examples. LC3 added to that by describing that services are valuable for Chinese people in the daily life, but the country is not as developed as European countries. Two respondents from Autoliv differed a bit from the other respondents in general by focusing on increased safety as the created value for the customer, and AL3 saw the increased competitiveness as the created value.

The real value is not in the product, but in the experience (LC1)

5.1.3 Forms of servitization

Regarding the meaning of services in companies, it differed between the companies but there was some consistency between the respondents from same companies. Overall, the character and the age of the different companies seemed to determine the direction of the companies for the importance and meaning of services in the companies.

For Lynk & Co, a rather new initiative, all of the three respondents underlined that services constitutes a big part of the company's identity. LC3 mentioned the services as one of the company's brand pillar, but stated that at the moment the Chinese market is not very fond of soft offers, but if the company can manage the development Lynk & Co can lead the industry. LC1 stated that services will create experiences for the customer and LC2 claimed that services will enable simplicity to move from point a to point b for their customers.

The respondents from both Volvo Group and Volvo Cars described some kind of shift in the industry at the moment, regarding the importance and meaning of services. VCC2 stated that the concept of services is getting a new role in the company. When employees talk about services today, they are referring to customer service, but the new role means that the company look at the whole flow for the customer and instead talk about online services. VCC1 was on the same page, and meant that earlier, the car was something you drove back and forth to the workplace, but today the car can enable other kind of activities, such as shopping and become the workplace of the future through automation. VG stated that the company has had a target for both product and services for a lot of years, however the old view included a rather traditional perception of services. For example, are spare parts included in the service model. VG continued to describe that it is during the last years, especially the last 18 months, that the company truly has challenged its view of services and consider leaving products and instead creating revenues from the usage of the products. The respondents from Autoliv demonstrated a slightly different perception of services compared to the other companies. All of the respondent underlined that one importance of services is to understand their customers, and AL2 and AL3 also meant that services in their context includes educating the customer of their products. AL1 showed a somewhat different perspective by describing that they offer solutions through product systems to their customers.

The service starts from our sales people and every one of us. To understand our customers and their products. (AL1)

The current service offerings were in particular very depending on the nature and kind of company, as with the meaning of services. In general, Lynk & Co will include the same connectivity services as Volvo Cars has already developed and is offering today, plus further more. According to the respondent at Volvo Group, the company is in a position where it is testing different sorts of service models to selected customers. Autoliv has fairly traditional offerings, which rather includes customer service, and not specific service offerings.

The three respondents at Lynk & Co reported that the service offering is still under development and the included services are not fully decided yet, partly because the company has not yet launched to the market. Overall, the services which will be included can be divided in two categories: either brand-enhancing or activities which enhances value for the customers, according to LC3. Both LC1 and LC2 described the offering as a sort of package, which aims to simplify for the customers, both in the selection of the car, the ownership, but also in the every day life through a range of connected services such as deliveries and relocation. VCC1 and VCC2 gave a consistent picture of their company’s service offerings. The offerings mainly, in addition to traditional services, include connected and online services such as a smartphone application called Volvo-on-Call, which gives the customer remote access to their car in different aspects on distance. The company also offers In-car-delivery of food and mail to the trunk of the car, without face-to-face interaction between the customer and the provider. VG specified the company’s on-going development of services through a warranty service to selected customers, which should include to provide solutions to the customer, no matter what, and a pay-per-mile concept, instead of a time charge. VG continued and described that also financial service and more traditional services are included in their present offering, which are more related to aftermarket activities. The respondents from Autoliv did not describe any developed or online service to their customers, but rather underlined that their services constitute of understanding of the customer, market knowledge and sometimes also education to the customers.

To simplify, we have the application... We also have these delivery things to the car... We are trying to get more things in the car and it comes more and more. (VCC1)

Comapny	Present Service Offering
Autoliv	Active saftety technology, Customer service, Education to customers
	<i>Core Business soft offers</i> : Home delivery, Insurance, Premium service offer, Winter tire service, Certification of used vehicle, Loyalty program, Subscription model
	<i>Brand building soft offers</i> : Electric charger finding, Fuel service finding, P2P sharing, Position-based advertismet, Mobile app, Gamification, Co-lab, Sharing service, Customer service, Connectivity, Car Karaoke
Lynk & CO	In-car delivery (delivery service), Volvo On Call (mobile app, gives custmer control), Connectivity, Apple Car play,
Volvo Cars	Customer service, Leasing, Skype
Volvo Group	Financial services, Warranty, Insurance, Customer service, Testing pay-per-mile

Table 2. Overview of present service offerings, based on respondents’ sayings.

5.1.4 Organising for services

Regarding processes for developing services, the common view was that it seemed to be a lack of official, well-used processes. The different sayings from the respondents regarding the level of maturity were, naturally, also connected with the previous paragraphs of meaning and diffusion of services.

As stated above and understood from the modest age of the organisation, Lynk & Co has not yet manage to define specific processes for developing services. All the three respondents from the organisation described the development of services as some sort of brainstorming activity, where all kinds of thoughts are welcomed and the respondents further mention one aspect each. LC1 emphasised the advantages with providing the development some structure and give the business model canvas as a proper tool. Both LC2 and LC3 highlighted that the company starts from the customer needs and demands, LC3 described market research as one way and LC2 told of a concept which will include external people's ideas through a so-called Co-lab. Also VCC1 underlined that the development of services starts from external voices, through market research centres in several countries and collaborations with other businesses, but there is no formal process of development. VCC2 agreed with the latter point, and explains that hirs team has designed their own temporary process, consisting of idea-conceptualisation-experimentation-launch elements. VG described that there was formal process in the company for a couple of years ago, but not anymore because of a changed direction in the company. Today they don't have an official service development process but rather take inspiration from innovation processes. None of the respondents from Autoliv could identify any specific process for developing services and AL1 explained it most thoroughly, by stating that since they are a manufacturing company, they do not have processes for developing services and the service works as an enabler for the product.

Do you want an honest answer? We take a coffee and come on that we should have a bicycle.
Today there is no process. (LC2)

On a general level, and similar to the processes of development, there seemed to be a lack of a consistency regarding the decision paths for service development in the case companies. The respondents gave examples such as a rather flat hierarchy where everybody can have an opinion, to more traditional paths through project steering committees.

As with the lack of processes, Autoliv did not seem to have specific decision paths. AL1 although explained that there are separate decision paths for the active safety segment and passive safety segment, and that they use project steering committees for taking decisions. For the Chinese part of the company, AL1 is involved within the majority of important decisions for projects. VG also stated that the company have established decision paths for the traditional services, e.g. related to aftermarket. But for the more innovative service projects, VG aims to make sure that there is a

business case, a prototype and some kind of interaction before it is brought to a global level of decision. VG also highlighted the importance of trial and tests with services, before one makes decisions. At Lynk & Co, there did not seem to be any clear decision paths according to the respondents. Instead, LC1 underlined that it is important that everybody can have an opinion but that processes are requested regarding this issue and at this point they are using a business model canvas as a tool for decisions. LC2 confirmed a similar picture when stating that every department have an opinion regarding the feasibility of the services. In Volvo Cars, the respondents did not give a crystal clear statement regarding decision paths. VCC1 mentioned the difficulty of deciding early on which services that will be included in the offering because of long lead times in the car development. The company does benchmarks against competitors' offerings, and project management then decides what they should invest in. Both VCC1 and VCC2 stated that the decision paths are an on-going process of a iterative nature, and VCC2 explained that his team are basing their decisions on a service strategy.

It's an on-going process. And then it's hard to say who takes the decisions and so on, because we are 8000 people working with development, it's not like two persons sitting there and take the decision, but it's many levels. (VCC1)

5.1.5 Challenges with service development

There seemed to be no common challenge that all the respondents describe, the sayings rather differed widely, both between companies and between colleagues. Some of the examples concerned internal resistance, immature markets and difficulties in the development of business models.

All the respondents from Lynk & Co discussed monetary challenges with the development of services in different ways. LC2 highlighted the difficulties with finding the right price point and an appealing combination of services in the offering to the customer. LC1 touched upon the same topic, and described challenges with finding a profitable business model but also to break the status quo both on the market and internal in the company. LC3 added to the topic of costs and resources, and described difficulties with the usage of resources that the Chinese government holds, such as land areas. The opinions differed between the respondents within Autoliv. AL1 described the competition and shortened development cycles for active safety as most challenging, while AL3 described difficulties with changing employees' attitude into having a service mind-set. AL2 brought up mainly two challenges with developing services, namely to create understanding for their product in the public but also to develop product for the Chinese market, which differ from Europe or US markets.

VCC1 highlighted a broad customer base as a challenge connected with the development of services since the services are developed for another target customer than those who buys a car today. The respondent continued and further described a challenge to motivate the customers to

buy a car from the company in the future. The technology will allow autonomous vehicles, such as taxis, to drive in city centres and decrease the dependency to own a vehicle. VCC2 agreed with the latter challenge, and also added that this is an issue of motivating employees internal, that the development of services is the right way to go for the company. VCC2 further described a challenge of being an established brand, since there is much to lose if the services do not succeed. Another aspect VCC2 added is also that Volvo Cars is a traditional product-oriented company, with a mixed perception of services and no adapted processes for developing services. VG had a similar opinion when stated that the company doesn't have any extensive experience in developing or selling services. VG also added that for their customers, the services are something new, which will demand Volvo Group to take a larger responsibility for the customer and its business.

The biggest challenge is that Volvo has been, and still is, a product company. And how services are perceived within Volvo right now, is that it should be something that supports the product. We who work with services view the service as central to the future, with cars that support the service. (VCC2)

5.1.6 Relevance for research questions

This section has presented results in relation to servitization, and accordingly, it is foremost the research questions *How are services perceived* and *How companies develop service offerings* that are addressed within this section. Regarding *How are services perceived*, the statements reveal an overall difficulty to define and describe characteristics of services. Moreover, it is clear that an increased amount of value is created through the offering of services, even though the views differ a bit of what specific value it is. What is noteworthy in the context, is that services in the customer offering has a differentiated role in the case companies, but as the results suggest, services receive gradually more attention and are increasingly more valued.

The latter research question *How companies develop service offerings* is addressed through the statements regarding how the companies are organising for developing services but also the perceived challenges they confront. There is a lack of processes and decision paths dedicated for service offerings, and the descriptions by the respondents reveal that the development of service offering in the present mode is rather ad-hoc. Finally several perceived challenges with developing services such as limited resources, problems of finding profitable business models and internal resistance are presented, in order to connect to *How companies develop service offerings*.

All together, the two sub-questions are also contributing of addressing the main research question *How do companies servitize through collaboration*.

5.2 Collaborative development

5.2.1 The shift towards increased collaboration

Based on the conducted interviews, the respondents' opinions regarding the development of collaboration have similarities. Respondents from all case companies stated that they had experienced a transformation regarding collaborations within development in their work in the automotive industry. Several of the respondents described the new role of involvement from other actors and how it has affected their traditional business.

The concept of collaboration has acquired a new meaning in the automotive industry, according to respondent VCC2. The respondent expressed how partnership previously only comprised supplier relationships, not involving other actors. Moreover, the respondent explained that it has shifted: today should services be discussed with and developed by a third party. The shift follows the organisations vision. According to respondent VG, this transformation has been clear within the Volvo Group. Both VCC2 and VG highlighted the organisational effects of collaborating within service developments.

In the past Volvo Group has been doing everything by themselves, internally engineered that has been a big change for us. ... we have basically halved our portfolio from what we used to do internally so half of that is going to be outsourced (VG)

Moreover, the respondent VCC1 explained how partnership and collaboration with other actors have increased during the latest years and underlined the technology's involvement in the transformation. The respondent explained collaboration within Volvo Cars as an increasing phenomenon. The progress within technology the latest years has made it become more important with collaborations. Moreover, the respondent highlighted the company's need of involving new actors, in order to gain more business ideas. According to the VCC1, are Volvo Cars depended on other actors' technology. In similarities with the respondent VCC1, answered one of the respondents from Autoliv, AL1, that the collaborations have become more usual within their business. The respondent did also comment the perception of increased collaboration within the company.

We have always collaborated, and we do it more. It is increasing (AL1)

The respondent LC1 highlighted the importance of cooperation and described how it will increase further in the future. Furthermore, the respondent emphasised the future role of collaboration as crucial for companies for staying in business. Collaborative development and partnerships have not been as important as today, claimed the respondent. In similarities with respondent LC1, claimed LC3 that collaborating characterizes the whole company. The candidate claims that collaborations are the purpose of Lynk & Co. The collaboration could both be valuable since the

necessary for car building, but also for their brand value. Within development in the future, the respondent VCC2 described how collaborative partners got a new role from nowadays, from the beginning of the development process. The shift has resulted in Volvo Cars scaling along with partner and works the whole process with other actors. In line with previous respondent, argued the respondent VG that they still used partners, but those partners are also going to change. The change of collaborations and partners' role within the developments was stated by several of the respondents.

I can say with the conviction that the Co in Lynk & Co, has nothing to do with one company. It is about mutual, has to do with cooperation, collaboration. It will get stronger and more and more important. We were so serious about it that we put it in our name (LC1)

Only one of the respondents pointed out challenges based on the transformation with increased collaborations in the automotive industry. The respondent VG described how involving other partners and collaborating could create internal resistance. The candidate continued and stated that the biggest friction is from internally, and the company still have a long way to go. None of the the respondent from the other case companies, Autoliv, Lynk & Co and Volvo Cars, did not mentioned any challenges or risks by the transition with more collaborations within the industry. Based on the the answers, differs VG perception slightly from the other respondents. Whether the other respondents perceived any challenges by transformation, was not showed from the interviews.

It's still a heavy source of debate of conflict. What I am communicating is that to show how it is and we see some people support it, but also a lot of people who are more traditional in their approach and only see risk, no value (VG)

5.2.2 Opportunities with collaborations

During the conducted interviews, all respondents clarified how they saw the value of collaborating with other actors in the service development. Even though different positive aspects within the case companies were highlighted, they all agreed upon numerous opportunities by collaborating.

One aspect which was stressed by several respondents, was the benefit of accessing multiple perspectives. All respondents from Lynk & Co mentioned accessing several perspectives as a benefit from collaborate with other actors. LC3 described how collaborations could result in the company being more dynamic. Moreover, collaborations could enhance value creation to the brand through different ideas. In similarities with LC3, mentioned LC2 benefits from collaborations through additional viewpoints. Moreover, LC2 emphasised that the company could gain from collaborating with actors by involving different customer groups. By operating with different actors, much could be learned from other markets and increasing the company's

knowledge about the customers. LC1 answered the question in a similar way and stressed the opportunities by collaborating.

It is really good to have others experts, capabilities and to use those (LC1)

Also both candidates from Volvo Cars underlined how collaborations could result in other perspectives. VCC2 described that by working together with other players, one gets a completely different overall perspective. VCC1 expressed the collaborations as crucial for their business. Moreover, the respondent VCC1 highlighted how traditional companies have been outcompeted by new actors on the market. VCC1 emphasised that it is important to be agile and not to continue to work as the company always have done, otherwise the company can be outcompeted by new actors as Netflix and Uber.

So, that is why I think it's important that when it comes to new ideas or new companies. That we allow them to be involved, so that we follow the trend with their new technology being part of our car (VCC1)

Two of the respondents, VG and LC2, mentioned the umbrella strategy as one benefit from collaborating with other actors. The umbrella strategy was perceived as the driver of accessing different opinions and perspective from external players. Moreover, both respondents saw the strategy as a way to get another drive to develop customer-driven services. The umbrella perspective was described as driving customer groups with different approaches. The strategy was mentioned as significant, since the companies was dependent on more ideas and perspectives within their service development. By using the strategy, the companies could develop new products and services based on ideas from other actors.

So where it makes sense to collaborate is where you have an umbrella strategy, where you we are going to offer the customer a complete solution... (VG)

Regarding the benefits of collaborating in service development, three of the respondents VG, AL1 and AL2, emphasised the economic reason for cooperation. The rest of the respondents did not mention the economic reason, when asked about benefits by collaborating. VG mentioned that collaboration could be costly short termed, but longer collaborations as joint ventures could result in cost savings for the company. On the other hand, AL1 expressed the opportunities with greater resources by collaborating with other actors. AL2 followed this argument, by arguing that every actor, including themselves, contributes with internal resources into the collaboration. Based on the collaboration, the resources increased and the outcome becomes better when collaborating, according to AL2.

By collaborating with others you have better resources. You don't need to spend resources on everything. With collaborations, you could expect a better outcome, that could be shared with each other (AL1)

Several of the respondents specified how collaboration could be beneficial, in the way that the organisation could focus upon their internal strengths. In order to stay competitive, the respondents pointed to the importance of focusing on the company's strength. LC1 claimed that the organisation cannot do everything by themselves, and if they would, they would be inefficient. VCC1 from Volvo Cars declared that pure performance terms, it is not possible for Volvo Cars to make the services themselves and they are dependent on other actors. Other actors' resources and strengths are central in developing services. Moreover, the importance of understanding the company's internal core competence for a successful collaboration was highlighted of both LC1 and two of the respondents from Autoliv, AL1 and AL3. According to AL1, joint effort or joint teams create a better outcome, than from operations based on only individual players. AL3, claimed that it is through collaboration that the company could create insight about their own business.

It is through collaboration you will understand your weakness, advantage and benefit. You learn what you need to improve. It is during the collaboration you can understand yourself, your company more. Definitely, we also need to increase our collaborations (AL3)

5.2.3 Challenges with collaborations

When asked about risks and challenges by collaborate with other actors, the answers were widely spread among the respondents. Some of the respondents saw clear risks while other did not see general risk by collaborating. Among the case companies, various opinions about collaborations were mentioned.

Three of the respondents, VCC1, AL3 and LC1, saw relative limited risk by collaborating with external actors. All the three respondents emphasised how the business climate today include cooperation, and it could be risky to not be part of it. Moreover, AL3 expressed how collaborations always is the key for successful performance. When finding the right partners, right relationships and right individuals, LC1 stated that there are no disadvantages with collaborations. One of the respondents from Volvo Cars, VCC1, highlighted the importance of create an openness in the organisation. The openness included sharing information and experience inside the organisation.

The only thing is that I think it's good to have it open. If people jump from Volvo to Mercedes and have inside information, it will be worse. To cooperate makes both companies stronger (VCC1)

The respondents who identified challenges to collaborating, mentioned it was complex to share information with external actors. The amount of the shared knowledge within collaborations has traditionally been very sensitive, since it handles of competition on the market. VG highlighted the organisational barrier of giving away valuable information. Furthermore, challenges as

agreements and which part of the business you are opening up are mentioned. In similarities with VG, LC2 described the fear of how much information the company should give away. Risks as getting ideas stolen, was expressed by the respondent. Also VCC2 answered that sharing information was complex since one has to balance how much to share and involve other actors. In comparison with VCC2, LC2 identified the act of finding the right partner as complex in collaborations. In order to be able to share information with the other actors, LC2 saw the solution as finding partners in other industries, at the same time as the actor could be valuable and bringing value into the business.

You do not want to release too much information at the same time it has to be communicated outside and the customers and the market must be involved in order to be able to produce good services (VCC2)

Moreover, internal challenges were also highlighted by the group of respondents, which identified collaborations as challenging. Two of the respondents, VG and VCC2, described internal issues by collaborating with other actors. VCC2 described how the internal process needed to be less complicated for cooperation. Both the respondents, VG and VCC2, explained the necessity of changing existing agreements, in order to make the organisation more suitable for collaborations. Even though, LC1 expressed that the risk by collaborating was small, the respondent described how internal bureaucracies could destroy good ideas. In similarities with VCC2, identified VG the organisational structure as a critical factor for successful collaborations. Resistance among the company's employees was exemplified by VG. AL1 also identified internal issues by collaborations, but instead described the internal issue of not sharing enough information within the company.

Last point is how you organise internally – if you keep the same organisation you have now that is not going to work in partnership agreement (VG)

5.2.4 Customers new role in collaborative development

According to the answers from the respondents, customers' involvement within the development differentiated. Based on the empirical findings, the respondents perceived various involvements of customers in the development within their company.

One of the candidates at Autoliv, AL2, explained how the company in research project sometimes involved customer. Moreover, the candidate clarified that some research activities required interaction with customers. Beyond research activities, the respondent perceived the customer's involvement in development activities in China as limited. On the other hand, AL1 claimed that customers and OEMs are involved in their service development. When asked if customers were involved within Autoliv's service development, AL1 answered yes. The two respondents' perception about customer involvement within service development at Autoliv differs vastly.

No, we do not often use customer involvement, at the moment in China (AL2)

The respondent from Volvo Group, VG, explained how the company is trying to create suitable solutions towards the customers' requirements. Moreover, the respondent underlined how the new CEO has started to create a transformation within the organisation with a higher customer focus. Therefore, the customers' involvement has increased during the latest within the organisation. In order to create good solutions, an understanding of the customer is crucial according to VG. In similarities with candidate AL2, was a similar view expressed by VCC1 about customers' limited involvement in the Swedish market. The customers are not as involved in Sweden as in China, according to VCC1. The reason behind is explained as the company believe that they already have information and knowledge about the customer segment in Sweden. The candidate highlighted that Swedes must learn what other customer segments want, since the requirements differs highly in China, Spain or the United States. On the other hand, the respondent pointed that the customer's' involvement in other parts of the world was perceived as more significant. Furthermore, the respondent explained the customer's' involvement as high within the company. In similarities with respondent VCC1, VG described how the company interact with customer by using focus groups in the development process.

When we develop technology, we test it with customer focus groups. And that's a lot, especially in England, US. and China (VCC1)

The other respondent from Volvo Cars, VCC2, described the customer's' involvement to be focused mainly in the experimentation phase. Moreover, after a concept is developed, the customer is involved by trying out the service. How customers' involvement differentiated among countries within the company, was not mentioned by the respondent.

...when we have tested the service in-house with only Volvo employees, and then develop the service further, and then we go out with an external pilot, is the most usual phase when we involve the customer (VCC2)

Several of the respondents, both from Volvo Cars and Lynk & Co, highlighted the use of market research in order to get access to the customer's perception. The respondent VCC2 highlighted how customers are parts of market studies, as a way for the company to interact with customers. Lynk & Co are also using market research as a foundation for their service development. According to the respondent LC3, market research is frequently used within the development. Moreover, market research is mentioned as a convenient way to understand the customers needs, according to LC3.

Moreover, respondent LC3 also described how they used interviews as customer involvement within the development process. Moreover, LC3 claimed that they interviewed some of the thoughtful customers and invited them to talk about their own ideas. This was made in order to

get the customer to join the idea thinking process with the company. A similar picture of customer significance in Lynk & Co, was given by candidate LC2. The candidate emphasized the high customer involvement based on the community the company is building up. Also LC3 exemplified how customers were involved within collaborative development through their Co-lab department. The Co-lab was described as the department where all kinds of opportunities could be presented. Through Co-lab external people can come up with ideas for services, that the organisation later can create as concepts, based on the answer from LC2. Furthermore, the respondent LC2 also highlighted the importance of regular communication with the customers, in order to get valuable information into the organisation. By integrating customers, new ideas and opportunities can evolve.

...we will have an open dialogue with clients and those (actors) we want at fact. Co-club is actually a membership with Lynk & Co., where we want your opinions. You have an opportunity to be part of this community, that we are presenting (LC2)

On the other hand, respondent LC1 described the complexity of involving customers, since it could be complicated to understand what the customer actually wanted and needed. According to the respondents, customers were not always aware of what they desired. Moreover, the candidate explained that it sometimes is more beneficial to not involve customers. At the same time, LC1 identified the positive consequences by actively engaging customers in development processes. The respondent continued to describe the challenge by understanding the customer's need. In similarities with LC1, AL3 underlined the challenges of understanding what the customer requested.

Then build up those opinions slowly and then try to build up solutions for them. And then try to see if they make sense and see if they still are attractive (LC1)

Another way of collaborating with customers was exemplified by VCC1. The respondent saw the opportunity in China through involving customer to executing different services linked to their service offers, demanded by other customer. Moreover, the respondent highlighted that China has a great opportunity with this kind of customer collaboration. In comparison with Sweden, would this type of customer involvement be more suitable for the Chinese market, according to the respondent.

In China are there good opportunities to get people to perform services, much better opportunity than we have in Sweden (VCC1)

5.2.5 Suppliers role in collaborative development

When asked about which external actors that are part of collaborations, several of the respondents mentioned suppliers. The respondents agreed upon that type of development that is created, determine the involved external partners. Different service developments require different external partners.

All the respondents from Lynk & Co described how suppliers are involved within service development. Moreover, the respondents from the studied company highlighted the importance of involving IT and technical companies. The reason of collaborating with telecom company was according to LC3, depending on their need of data. One supplier that two of the respondents from Lynk & Co, LC1 and LC2, mentioned was Ericsson.

Ericsson is the main partner of the connectivity part (LC2)

In similarities with LC1 and LC2, VCC1 also mentioned Ericsson as one of the key suppliers within collaborations. Also in this case, was their knowledge about connectivity the reason for collaborating. VCC2 described Volvo Cars dependence of newly started technical companies, which provided the company with advanced technology. VCC1 also mentioned the joint venture with their supplier Autoliv, which is newly created. It was clear that Volvo Cars involved their suppliers within service development.

We have started a new joint venture with Autoliv. We work a lot with involving suppliers in the process (VCC1)

The respondent from Volvo Group did also mentioned how the company involved suppliers within collaborative projects. One of the reason was described as the access to technical solutions, which also was highlighted by all the candidates from Lynk & Co and Volvo Cars. However, VG pointed that the organisation could work in different ways, due to the large size of the organisation including several brands. The respondents from Autoliv differ from the other respondents' perception of involving suppliers. As an example, two of the respondents, AL2 and AL3, mentioned that collaborations with suppliers was not common. The involvement of suppliers as an external actor in collaborations was only done occasionally. When asked in which fields suppliers was involved, AL2 mentioned advanced technological areas. But both AL2 and AL3 agreed upon the limited involvement of suppliers. On the other hand, AL1 described suppliers as involved within development process. The answers from the respondents from Autoliv differ vastly. What was not mentioned by the respondents, was the frequency of suppliers' involvement in collaborative developments.

Suppliers involvement? Not that much (AL3)

5.2.6 Relevance for research questions

In order to answer the research question *What is the role of collaboration in service development*, several questions regarding the subject was asked during the interviews. Based on the respondents' answers, it is clear that collaboration has an essential role within service development. Respondents from all case companies stated that they had experienced a transformation regarding collaborations within development in their work in the automotive

industry. Moreover, the role of collaboration in service development has affected their business in every day life. Based on the respondents' answers it is clear that collaborations have resulted in several advantageous aspects for their business. What differs among the respondents are their view of risk and challenges of collaborating, some of the respondents saw risks while other did not see general risk by collaborating.

Several different partners were mentioned by the respondents as participants during the development of services. Moreover, several respondents highlighted the customers and suppliers' role within service development. How and why the case companies differ regarding the involvement of customers and suppliers in service development will be further analysed in following chapter.

6 Analysis

The following section contains an analysis of the empirical finding in relation to the case companies and areas emphasised in the conceptual background. Thus, the section compares the conceptual background in relation to the results, and similarities and differences are analysed. Each sub-topic is also connected to the research questions through a short summary in the end of the section.

6.1 Servitization

6.1.1 Nature of services

As reported on in the chapter of 4.1.1 *Results*, there is a common difficulty to define and give detailed descriptions of what services and service offerings are. This may be perceived as something sensational because the majority of respondents work with or are indirectly connected with service development. The answers also differ a lot between the respondents from the different companies, which is understandable if one considers in what extent the case companies include services in their present customer offerings. At Lynk & Co, there seem to be a rather conscious depiction of what services are, and the company is also characterised by an image of being service focused, as the external material by Savov (2016) and Lynk & Co (2016) in the 3.4 *Empirical Background* suggest. On the opposite side, the respondents from Autoliv, have a fairly traditional view of the meaning and definition of services, which also connects to one of the two aspects as LC2, mention as included in the definition of services, namely the inter-personal meeting with customers.

This broad range of definitions and meaning connects to what literature suggests, namely that they are very hard to define. This difficulty is based on that services are both the outcome and the activity that is performed. The service offering is thus a process, act or performance, inseparable from the outcome, which makes it hard to delimit and distinguish (Tether, 2014). The difficulties of defining services are likewise linked with the nature of true services.

When asked to provide characteristics of services, there was barely any agreement throughout the band of respondents. Although, almost all of the respondents from the companies stated that characteristics or the nature of services has something to do with the customer. The details of this customer-focus spanned between that services should be based on customer preferences and demands, to different kind of relationships with the customer. According to Tether (2014), true services are distinguished from products through four characteristics, which was presented in the 3.1.2 *Conceptual Background*, namely: intangible, inseparable, perishable and heterogeneous. In short, these characteristics means that services are immaterial and thereby impossible to touch upon and connected to that, they cannot be separated from their units of establishment and thus

are consumed when they are performed, i.e. co-produced. Moreover, because of this, they are temporal, which makes them impossible to store and finally, because the service is performed, and often by a person, it is hard to standardize and is thus depending on the person who creates it.

None of the respondents managed to define the nature of services according to Tether (2014) characteristics. Regarding the intangible character of services, the results rather suggest that this is something unspoken and implicit. The respondents do not define it as intangible but does not either formulate it as something physical or as a product. Instead, according to the sayings in the results, the majority of them touches upon the inseparable aspect of services, namely that it is something relational instead of transactional. Since the customer focus is a fairly recurrent theme among the respondents, an understanding of the co-production element seems also to be present among the companies. It is also apparent that the inseparable aspect of services is perhaps the clearest characteristic, even if the respondents do not define it as Tether (2014) does. Neither the characteristics of perishable nor heterogeneous are brought into discussion, and are perhaps not as apparent or understandable as the first two discussed characteristics.

6.1.1.1 Relevance for research questions

It is these characteristics which makes it so hard to put definitions and descriptions of what services are, what they mean, and even to have a common understanding of it. It is obvious, based on the statements from the results, that there is a lack of consistency of what services are. Moreover, the lack of consistency of understandings makes it hard to talk about, to work with, to develop and to offer services. It is these characteristics that is the foundation of the broad range of suggestions of what service offering means in their company context, from customer treatment to services linked to connectivity technology. When connected to the research questions *How are services perceived*, an incompatible image of services makes it undoubtedly harder to develop and work with them. A common understanding and definition is thus a starting point into the work.

6.1.2 Rationales for servitization

Connected to the reasons of offering services, is the argument of to whom the services are developed and offered. The respondents are fully consistent in that services are developed for their customers. The reasoning is also a bit differentiated and specified depending on the respondents. The majority of the respondents identify a specific target group for their services, and for those working with b2c, the millennials are in the spotlight. Some of the respondents further on make distinctions between internal and external customers, and stresses that the services also can benefit internal customers. What is significant from the results is that the target customer group for the developed services, is not the same as the present buying group.

What is clear from the 4.1.2 *Results* is that there is somewhat of recurrent argument for why the companies develop services. On a general level, there is some consistency between respondents at the same company. As an example, the respondents from Volvo Cars give the same arguments and also at Autoliv, there are some overlays regarding the arguments. The most recurrent argument for developing services is that the customers are demanding it, with or without a conscious need for it. Other frequent arguments are more of strategic nature. Both growth opportunities and relations to the vision are stated among the respondents, but the most distinctive strategic argument is that services are differentiation mechanisms. The differentiation aspect of service offerings is seen as keys to contrast the companies from each other, since there is some of a technological maturity in the industry. Financial arguments are also mentioned among the respondents, such as possibilities to increase the operating margin.

The results are somewhat in line with the main rationales mentioned in the literature. Baines et al. (2009) and Gebauer et al. (2005) argues for three main groups of arguments for services, namely financial, strategic and marketing. As can be seen from the result, it is primarily the first two arguments that are recurring among the respondents, and especially the strategic arguments of different art. None of the respondents stated explicitly that a marketing perspective is a reason to offer services, but as Vandermerwe and Rada (1988) argues, the marketing rationale is also a way to create customer loyalty. The creation of customer loyalty can also be seen as closely associated with strategic rationales since customer loyalty is an extensive process of building relationship with the customers, often during a longer time perspective. Baines et al. (2009) further argue that service offerings also can enable a company to get more thorough customer insights, which can be interpreted as something that is also perceived by the companies. It is evident that the companies have a clear picture of for whom they are developing services for. The insights about the customers are apparently essential for the companies, and they seem to understand that they can benefit from a closer relationship with the customers through the service offerings. The service offerings thereby facilitate an advantageous pattern for the companies.

None of the respondents' state environmental reasons as rationale for providing services, as one of the provided reasons in literature. Especially the PSS stream of literature argue that service offerings can enable a reduction of the environmental impact from products when companies develop business models and customer's change their perception of ownership (Mont, 2002). This a bit remarkable since several of the companies, e.g. Volvo Cars and Volvo Group communicate a clear sustainable and environmentally friendly image of their companies. As suggested by literature though, the environmental rationale is although not the most common driver of servitization (Neely, 2009). This is perhaps also mirrored in the respondent's perception of services, maybe it is not clear enough neither in literature or practice how services can decrease the environmental impact.

6.1.2.1 Relevance for research questions

Regarding the awareness of reasons for developing services, the opinions differ slightly and are not fully consistent with literature. Value creation for customer and strategic reasons are perhaps the most accessible argument for developing service offering, whilst the economic and environmental arguments are thus not as easy to get to or to fully realise. An identification of the rationales for services offerings by the case companies is relevant in the quest to understand their perception of the importance of services and thus the research question *How are services perceived*. The various reasons give a hint about the extent to which there is an understanding of offering services. Companies realize to some extent who they offer services to, the customer, and that customer requirements are also one of the main reasons for developing and offering services.

6.1.3 Value creation

In contrast to other areas of servitization, the value created through services is a topic which has consensus among the respondents. One full agreement concerns that services creates value for the companies' customers. Moreover, a further commonality among the respondents is that the majority also states that, connected to the rationales for services, services also create different kind of strategic value for the companies. These strategic values covered increased competitiveness, customer loyalty, new business models, differentiation and closer relationship with the customers. Two of the respondents from Autoliv stand out slightly from other respondents by saying that the primary value for the customers created by services is safety.

Much of the results confirms what the literature suggest, namely that services enables companies to generate additional value through added capabilities and, in long term, improved competitive advantages (Baines et al., 2009; Turunen & Neely, 2012). Baines et al. (2009) suggest long-lasting lifecycles and differentiation toward low-cost competitors as two strategic values. The respondents do not cover the strategic values connected with service offerings at this detailed level, but were more general in their description of the value creation. As an example, when talking about differentiation as a created value, the respondents do not define toward whom, in contrast to literature. This could be connected to a lack of understandings about the extent of value that services could provide to their business. Connected to the rationales for offering services, as described above, the provision of services is driven by customer demands of multifaceted nature (Baines et al., 2009). This is confirmed by the second of the two main value creation categories, namely the value creation for the customers.

The reasoning among the respondents although connects to what Vargo and Lusch (2004) describe as the goods-logic whereas the company define the value, not the customer. In comparison, the service-dominant logic changes the locus of value creation to the customer. It is the customer who defines and perceives the value, through a co-creation procedure. From the results, it is foremost the respondents from Lynk & Co that move the focus from the companies

to the customers, especially through their Co-Lab concept. By placing customers' views at the centre, the companies can make it possible to move the value creation locus. In that position, the companies move from creating value for the customer to creating value with the customers, and thus move from exchange-value to value-in-use (Vargo & Lusch, 2004).

6.1.3.1 Relevance for research questions

The respondents demonstrate a consensus regarding the value created and also confirms much of what literature suggest, in that companies create additional value through services. The various aspects of creating value is closely associated with the research question *How are services perceived*. By perceiving services as a key of creating value for the companies and for their customers, the companies also understand that services are of importance for their future success. Therefore, for example when companies identify growth possibilities and competitive advantages through services, they also see potential value that services can provide for the business.

6.1.4 Forms of servitization

When the respondents are asked to describe the meaning of services in their business, differences between the four case companies occur rather clearly. It is perhaps also within this area that the consistency between respondents from the same company is most constant. The statements from the respondents at Lynk & Co indicate that services constitute an important part of the company. Services are mentioned for example as a brand pillar, what their customers experience and as an enabler simplicity for their customers. The meaning of services occurs to be relatively similar between Volvo Cars and Volvo Group whereas all the respondents report of a shift in the industry. This shift means that more emphasis is placed on services in various areas such as the internal role, in the meaning for the car and in the business model. According to the responses from the respondents at Autoliv, the company appears to be little behind the other companies regarding their transition into servitization. The present meaning of services in their context seem to be of understanding their customers, educating the end customers and offering solutions through product systems, which are more of traditional services.

Very closely associated with the meaning of services is the diffusion of services in the companies. As with the meaning of services in the different case companies, the spread of services in their customer offerings depends highly on what kind of company they are. The b2c companies, Lynk & Co and Volvo Cars, appears in general to have come further in offering true services compared to the b2b companies, Volvo Group and Autoliv. Lynk & Co offers two categories of services to their customers, either brand enhancing or activities which enhance customer value. These services are offered in packages that should simplify every part of using a car but also everyday-life through connected services. Volvo Cars is currently offering, in addition to traditional services such as customer services and financial services, services linked to connectivity. This includes for example distance remote of the car and deliveries to the car, via

online services. Volvo Group appears to approach the two first by beginning to offer total solutions. These are offered to specially selected loyalty customers to whom they provide a pay-per-mile offering. As with the meaning of services, the respondents from Autoliv describe a diffusion of traditional services, similar to customer service.

As described in 3.1.5 *Forms of servitization*, there is a stream in the literature that views the transition towards servitization as an evolutionary development. This evolution contains stages in which services become more and more important to the business. In the final step of the evolution, the parts of goods, services, support, knowledge and self-service are included (Vandermerwe & Rada, 1988). This evolution is also framed as product-service continuum, where goods or products are the main part of the offer with services as add-ons in one end to the opposite relationship in the other end. In the most developed end on the continuum is services the main part of the customer offering and the product is an add-on (Oliva & Kallenberg, 2003; Gebauer et al., 2005; Baines et al., 2009). The continuum means that different forms of servitization exists and thus companies can be placed in different positions of the continuum.

As the 4.1.3 *Results* suggest, the different case companies have reached different levels in their evolution towards servitization. The company that has come the furthest in their offerings towards customer is Lynk & Co. According to the statements, services do have an essential meaning in the company, and even though they are on a conceptual stage, their offering is clearly invoked with several forms of services. Also regarding the diffusion of services, as stated above, they offer a range of different kind of services. Moreover, considering that they have categorised the services into “brand enhancing” and “value increasing for customers”, they appear to have a well-developed strategy and thorough thoughts with their services. As in the servitized end of the continuum that e.g. Oliva & Kallenberg (2003) describes, the physical product becomes more of a secondary priority in the customer offering. In the case of Lynk & Co, this means that the car itself becomes subordinated to the service of mobility, everyday facilitating services and car possession. In that sense, Lynk & Co communicates that they do not sell a car but rather mobility to their customers, and thus achieve a significant level of servitization with regards to the described product-service continuum. On the other hand, Lynk & Co is in its infancy and one should notice that it is one thing to have a deliberated concept and another to realise it together with customers.

As the respondents at Volvo Cars and Volvo Group report of a perceived shift in the industry where services become more important in the customer offering, the services acquire a different meaning for the companies. In the case of Volvo Cars, the respondents also report an upshift in their services offering since the company has started to offer connectivity services in addition to traditional services during the last years. Furthermore, more services are under development, which indicates a new direction in the company towards servitization. Volvo Cars is thus not at the same level in the continuum as Lynk & Co, but is clearly starting to move towards servitization. This paradigm shift is not completely hassle free considering the clash that is

described when the present target customer is not the same as the future which the services are developed for. When placing the company into the continuum, its position will be somewhat in the middle, illustrating that this is an on-going development which has started but have some way to go. In the case of Volvo Group, the company is not very far behind Volvo Cars into the servitization transition according to the statements. Services have received a new meaning in the company, even if the more traditional services and activities are still included in their offering. This could indicate a form of consciousness in the company but that the strategy and execution is lacking a bit behind. The company is trying out different kind of total solution offering to selected customers, which indicates a direction towards the middle of the product-service continuum. The position is although in the lower end of the continuum since the product, for example trucks and buses, still appears to be the primary part of the offering.

As reported, Autoliv, seems to have a fairly traditional view of services, even if some insights appear in some statements. The discourse among the respondents differ a bit from the respondents from the other case companies, which could indicate a different meaning of services. Understanding and education of the customers are well mentioned by the respondents, which are parts of the most evolutionary stage of servitization according to Vandermerwe and Rada (1988), but it is not directly connected to the services. Instead, this is the service according to the respondents. A limited meaning of services and lack of diffusion of services in the company positions the company at the lower end of the product-service continuum.

6.1.4.1 Relevance for research questions

As can be understood, the case companies are placed at several positions on the product-service continuum, with Lynk & Co placed in one end of the continuum, Volvo Cars in the middle, similar to Volvo Group and with Autoliv in the other end of the continuum. Moreover, it is clear that the companies have reached various stages of the transition towards servitization with regards to meaning and diffusion of services in the business. These insights support the understanding of the research question *How do companies develop services*, since it pinpoints how well developed they are and what kind of services they currently offer to customers.

6.1.5 Organising for services

Overall, there is a consistency in the lack of formal processes to develop services from the results. Moreover, it appears to be various thoughts and initiatives in the different case companies. When coming up with new services or developing services at Lynk & Co, the respondents report brainstorming as a common way and customer needs influence the development. Additionally, the company will develop a forum for co-creation with customer, where the company uses external ideas provided by customers. Moreover, some methods and tools are used in a more informal way today. In addition to the lack of formal processes at Volvo Cars, there seems to exist a working way of using external voices in the development of services through market research and collaborations. Volvo Group on the other hand, has done an

opposite development: from having an established service development process to reducing the number of processes within the organisation, and thus no longer have a specific process for service development. At Autoliv, the lack of consistency regarding the meaning and understanding of services could be a source of a non-existing process for service development.

As the 4.1.4 *Results* suggest, neither decision paths for service development seem to be very developed in the case companies. As for the case of Autoliv, they differ between active safety and passive safety development but the respondents do not explain whether these decisions paths differ in any way. The stated decision way is rather conventional as well, with steering committees making decisions. Neither at Volvo Group is it clear whether the decision paths differ in any sense compared to other processes of development, e.g. product or technological development. The respondent states that when it comes to decision regarding more innovative service project, there have to be a solid business case and the idea is prototyped and tested before it is presented to decision makers. At Volvo Cars there is a use of benchmarking against competitors when deciding which services that should be included in the offering, which is done by project management. The decision paths are stated to be iterative in their nature but that long lead-time in car development is an issue for choosing projects. At Lynk & Co a business model canvas is given as an example of a tool for decision making, but that processes for decision making is requested from the business.

Similar to the reported 4.1.4 *Results* of inconsistency, the literature argues for that the *design of services* is an evolving process (Stickdorn & Schneider, 2012). Stickdorn and Schneider (2012) have although formulated five principles which service design should lay upon, namely that it should be user centred, co-creative, sequencing, evidencing and holistic. The case companies use these principles in various ways, some of them use the majority of the principles while other barely use any of them and especially Volvo Cars and Lynk & Co demonstrate these principles. Lynk & Co is the company, which according to the respondents, uses the five principles to the largest extent. As reported, the customer needs are in focus when developing services, which could thus be considered as user centred. Regarding the co-creative principle, the company will develop the so-called Co-lab, which is a clear initiative in line with this principle. Volvo Cars use the principles of user centred, co-creation, sequencing and holistic the most. The first one is in line when the company is developing their services based on customer needs which they for example receive from market research and focus groups. The respondents also report on different collaborations with external actors in the development of services, similar to the co-creation principle. The respondents report that the process is an iterative process, which move back and forth, fully in alignment with the sequencing principle. Finally, the holistic principle is demonstrated through the Volvo-on-call application where the customer can use the phone as a remote for their car for a number of services. Both Volvo Group and Autoliv use the principle of user centred to some extent when they report that customers' needs and demands are essential regarding development of services for the companies, but do not use the principles of co-creation, sequencing and holistic to a large extent.

As described in 3.1.6 *Process of developing services*, Stickdorn and Scheider (2012) and Tether (2014) provide stages of how services can be developed. In sum, the stages can be summarised into three, namely the stage of identifying and understanding the needs, the second step contains the creation and building the services, with testing and prototyping included. The final step of developing services covers the implementation of services where focus is on communication and involvement. In this three-step model provided by the above-mentioned authors, the process of developing services is mapped out in a rather structured way and it is a useful model to examine the case companies. From the results, only Volvo Cars appears to have a similar process as the three-step model, and this process is said to be unofficial and only used by VCC2's team. The team's process consisted of the steps idea-conceptualisation-experimentation-launch, which is rather similar to the model from literature. The biggest difference between the two processes is the first step where the literature suggests a step, which focus on the identification and understanding of the customer's needs. But what is also stated from the other respondent is that they use input from both customers in market research and from business collaborations with other actors too. The step is thus not forgotten by the company, but rather not formulated into the temporary service development process. Lynk & Co is reported to leverage from external insights by engaging their customers in the Co-lab forum. This forum can increase possibilities to receive important information to the first of the three steps in the model from literature. Moreover, the company is currently using tools for structuring the process of development; similar to those that is recommended by Stickdorn and Schneider in the second stage of the model. Also Volvo Group is connecting to the second step in the model by underlining the importance of testing and prototyping service development ideas before sending it to decision makers. None of the case companies put a lot of emphasize on the final step of implementation, which the literature states to be important in order to create a clear message, both internal and to customers. Why this is done could be linked to the companies perhaps perceives the two first steps more clearly with service development.

6.1.5.1 Relevance for research questions

To sum up, it is obvious that the case companies do not have formulated and formal processes of developing services, according to the argumentation above. There are initiatives and parts of the steps and processes suggested by literature which the companies follow, but far from implementing all of them. One common area where some of the companies appear to understand parts of the fundamentals of developing services is the engagement of the customers. When services are developed in interaction with customers, there is a co-creation between the two actors and thus the user who determines the value, namely value-in-use as argued by Vargo and Lusch (2004). By mapping out the process of development and the design of services, the main research question *How do companies servitize through collaborations in the automotive industry* can be addressed in addition to the research question *How do companies develop services*. Through this argumentation, one might understand that service development is far away from

official processes and more of an ad hoc activity that is performed in the case companies. On the other hand, an excessive amount of structure and processes can prevent the agile and flexible state that many companies pursue, and should therefore be introduced with thoughtfulness and moderation.

6.1.6 Challenges of servitization

As reported in the 4.1.5 *Results*, it appears to be a broad range of services that are perceived by the respondents. Moreover, a large number of challenges are brought up and a few of them match or overlap. From the respondents at Lynk & Co, challenges with a profitable business model and finding the right combination of services are discussed as well as limitations of resources. Another topic is internal resistance, which is also brought up by respondents from Volvo Cars and Volvo Group. Also at Autoliv are difficulties with changing the internal mind-set into services described. Another common topic is challenges related to an immature market which is not used to the services. Both Volvo Cars and Volvo Group points to a challenge with being a traditional product-oriented company with no or less experience with developing and selling services. Volvo Group also adds the point of having another kind of relationship with their customers through increased responsibility for the customer's business.

Much of what is reported from the 4.1.5 *Results* can also be confirmed by literature. Cultural and attitudinal challenges are two examples which the literature suggest (e.g. Vandermerwe & Rada, 1988; Kowalkowski et al., 2017; Baines et al., 2009; Turunen & Neely, 2012). As Kowalkowski et al. (2017) argues, changing mind-set of a large number of employees could be a primary barrier into the becoming a service provider, which is confirmed by a number of respondents in different ways. Another confirmed challenge is the changed relationships with stakeholders and customers. Tether (2014) describes this development as a movement from transactional to relational relationship, as the respondent from Volvo Group reports. Gebauer et al. (2015) describe the challenge with finding a profitable business model as respondents from Lynk & Co reports on, through the so-called service paradox. This is connected to the financial rationale for offering services. As Neely (2009) argues for, it is not very clear for the companies how they are going to deliver expected returns on investments allocated for the service transitions. The literature also suggests organisational and structural challenges (Gebauer et al, 2015), which is not explicitly brought up by the respondents. This although related to the lack of dedicated processes and decision paths reported by the respondents. Even if structural and organisational challenges are not given as an example, the respondents still expressed a need for more structure in the development process. Neither the nature of services is said to be challenging, as suggested by Tether (2014). This could perhaps be understood by the obvious difficulty that the respondents had of describing services, and perhaps demands reasoning on a higher level of abstraction, which might not been possible in the context. A challenge that is described in the results but not explicitly by literature is the immature market. This connects although to a more general risk of being a first mover on the market. No matter of it is a new technology or feature of neither the

customer offering nor a new market, there is always a risk connected to first movers (Schilling, 2013) and thus not specifically linked to services as such.

6.1.6.1 Relevance for research questions

In sum, there are several challenges identified by both literature and primary data such as internal resistance through a changed mind-set, finding a profitable business model for the services and organisational challenges. The nature of services is suggested to be a challenge for developing services, which is not confirmed by primary data. An aspect that is not covered in literature clearly is the difficulties with being a first mover on the market through the service offerings. This instead connects to literature in innovation management stream, and not specifically to servitization literature. To identify the challenges connected with the development of services can facilitate the process of development, and thus supports to answer to the research question *How do companies develop services*.

6.1.7 Servitization based on a Chinese and Swedish perspective

Regarding the definition and nature of services, are there some small differences between the representatives from Sweden and China. As stated above, all the respondents from Autoliv have a fairly traditional definition of services compared to the other respondents. Also LC3 differ from the Swedish colleagues by stating a simplified definition of services. The nature of services does not appear to have any obvious country-specific differences; instead it is differences from individual respondents.

There are no country-specific differences regarding the target customer for services among the companies but rather company-specific differences. Regarding the rationales for developing services, one can outline minor differences. As an example, the majority of representatives from the Chinese business state that services are a form of a differentiation strategy whilst Swedish representatives demonstrate other rationales. One example of the arguments of perceiving services as a differentiator is based on the large amount of car brands in China. There is consistency regarding the value created through services and thus no differences between the countries can be read out. One respondent from China although states that one perception of China is that the country is lagging behind Europe in the development.

From the results, no specific country differences regarding the meaning of services in the business can be found, but it is instead company-specific differences. Autoliv stands out from the other companies regarding this point when they present the meaning of services in their context. The similar implication can be done regarding the diffusion of services in their businesses. There are no country-specific differences but rather company-specific differences where Autoliv stands out from the other companies through a limited selection of services to the customer, which are closely linked to the definition of services. When having a traditional view of services, the

services offered to the customers will also be accompanied by the view. Something interesting regarding the topic though, is that the Chinese respondent from Lynk & Co states that the Chinese market is not very fond of services yet.

What is similar between the two countries and also for all companies is that there appears to be a lack of both processes for developing services and clear decision paths. Since service development is a slightly new phenomenon for these companies, none of them seem to have formal or dedicated way to support the development of services. No evident differences regarding challenges of developing services can be outlined from the results. What is interesting though, is that one respondent from Autoliv states that there are challenges with the present development of offerings since they are targeting US or European markets, not Chinese markets. Another noteworthy statement is done by the Chinese respondent from Lynk & Co who underlines the role of the Chinese government as a challenge for the company.

6.1.7.1 Relevance for research questions

To sum up, there are some differences in general between the respondents representing China and Sweden. Concerning the definition of services, there are some alterations and foremost from the respondents from Autoliv. It could thus be interpreted as more company-specific differences than country-specific. This distinction in the definition of services is also to some extent the constitution for differences in other topics. One example is the rationales for developing services. If the definition and meaning of services differ, the rationales for developing them will also be affected. Especially regarding the rationales of developing services, there are differences between China and Sweden. Because of the fierce competition and wide range offerings in China, services can operate as a differentiator while the case is not the same in Sweden. What is interesting though, is that China appears to be not as developed as Sweden or Europe in the perception of services. Even if no apparent differences are demonstrated in the results regarding the challenges of developing services, some dissimilarities can although be read out. Some of the Chinese respondents underline that distinctions between European and Chinese markets generate different forms of challenges for China and Sweden. Overall, there are some evident differences between China and Sweden regarding servitization, but the main distinctions appear between the different case companies.

6.2 Collaborative development

6.2.1 The shift towards increased collaboration

As showed in the result, several of the respondents perceive an increased collaboration between different actors in their industry. The most remarkable finding is that all respondent the perception an increased collaboration with other actors. All respondents shared the same opinion, and there was no disagreement between the different case companies.

A similar description as the respondents was explained in the 3.2.1 *Conceptual Background* by Müller Guerrini et al. (2015), which described a transformation regarding a shift towards a more collaborative business environment. In order to adapt to the transformation, partnerships, joint ventures and integration of different units has become more common in the business field. The reasoning is in line with the answers from the respondents. External actors' involvement has become more common in development projects, based on the respondents' answers. Moreover, that co-operation will be of importance in the future, was also highlighted by several respondents.

When asked about collaboration within development projects, several candidates mentioned the competitive environment as the reason behind the shift. Increased competition has forced their companies to collaborate more frequently with other actors. The respondents' perception follows the arguing from Pai et al. (2012), who claim the increased competition in the market was seen as the reason behind collaboration within the R&D field. Moreover, the authors imply that collaboration across countries has become more common, which was not mentioned by the respondents. However, several respondents highlighted the shift of collaborating and involving companies across industries, and start-ups and technology companies was mention as examples. This goes in line with Ylimäki's (2014) findings of collaborations across industries.

6.2.1.1 Relevance for research questions

To sum up, based on the 4.2.1 *Result*, all respondents perceive similar thoughts and insights about the increased collaboration. They all agree upon the shift towards increased collaboration within their company and the reasons behind it. All respondents, regardless of case company and the geographical location of the company, understand the importance of collaborations. What could be understood from the respondents' answer, is that the shift within the automotive industry has been significant. Moreover, the respondents identify the shift with collaboration as essential for their future business. In relation to the research question *What role does collaboration have in service development*, it is showed that cooperation is of great importance for service development in the automotive industry.

6.2.2 Opportunities by collaborations

What was significant from the 4.2.2 *Results*, was that all respondent saw predominant advantages by collaborating in service development. Even though different positive factors within the case companies were highlighted, the respondents agreed upon numerous opportunities by collaborating with external actors.

Based on the 4.2.2 *Results*, accessing multiple perspectives was the most significant factor mentioned by the respondents. All the respondents from the manufacturing case companies, saw the benefit of collaborating with others in order to accessing several perspectives and viewpoints. In comparison with the litterateur, a similar reason of collaborating is mentioned by Fernandes et al. (2016). According to the authors, collaboration enables new business ideas and insights, which

is seen as valuable for the company's existents. Moreover, Swink (2006) claims that collaboration have resulted in several new business improvements, based on the higher variety of ideas. The reasoning is in line with the mentioned respondents' answers. Based on the answers from the manufacturing companies, accessing more perspective was seen as crucial for staying in business. Moreover, at Lynk & Co, one respondent mentioned how different ideas enabled the company to act more dynamic. The reasoning follows the argumentation by Müller Guerrini et al. (2015), who claim that collaborations allow the company to perform in a more agile manner. By operating more agile, the company have a higher chance to react on changes in the market. The increased competitive environment in the automotive industry is showed in the respondents' answers, where multiple perspectives from the market and ability to act agile is high valued. One of the respondents from Volvo Cars, highlighted several examples on how traditional companies have been outcompeted by new actors on the market. Whether the respondents from Autoliv saw the advantage of accessing several perspectives from collaboration, was not mentioned by any of their respondents. In comparison with the other case companies, the answers differ from Autoliv in this area.

On the other hand, several of the respondents from Autoliv declared the economical motive as one of the reasons for collaborating with other actors. By collaborating, they argued that the expenditures are shared between the different actors and the available resources in total become higher. In line with the literature, are economic reasons common for collaborating. According to Lagner et al. (2009) and Pai et al. (2012), lowers collaboration the R&D expenditures and development time by collaborative development. Decreasing the development time could mean significant cost-savings for all involved actors. The respondent from Volvo Group did also mention the economical advantages by collaborating. However, the respondent highlighted that collaboration could be costly short termed, but longer collaborations as joint ventures could result in cost savings for the company. Even though cost savings could be done by collaboration, only the respondents from Autoliv and Volvo Group mentioned them. When it comes to opportunities of collaborating within service development, the case companies' Volvo Cars and Lynk & Co, seems not to perceive the economical motive as a primary reason.

Several of the respondents mentioned how collaboration could strengthen the company's internal capabilities. By collaboration, the organisation could focus upon their internal strengths. In order to stay competitive, some respondents highlighted the importance of only focusing on a few specific areas. Moreover, respondents from Lynk & Co and Autoliv describe the importance of understanding their own companies' internal core competence, in order to create a successful collaboration. The opportunity of developing internal capabilities during the collaboration was mentioned by all case companies except Volvo Group. In similarities with the literature, perceived several respondents how internal competences could be developed by collaborations. Fernandes et al. (2016), confirm the argument, and explain how internal abilities can gain from more focus of collaborations with other actors. Several of the case companies have seen their

own limits and restrictions in service development, and use collaboration in order to overcome the problems.

6.2.2.1 Relevance for research questions

To sum up, there are several opportunities identified with collaborations by both the literature and primary data such as multiple perspectives, access to more knowledge and economic reasons. In order to fulfil the study's aim, were opportunities with collaborations examined. In line with the literature was also internal advantages highlighted by several of the respondents, such as the opportunity to focus on their internal core capabilities. In order to answer the research question *How do companies servitize through collaborations within the automotive industry*, the respondents' perception of advantages of collaboration needs to be analysed.

6.2.3 Challenges of collaborations

When asked about risks and challenges by collaborate with other actors, the answers were widely spread among the respondents. Significant from the 4.2.3 *Result* was that the answers from the respondents differ highly between and within the case companies.

Three of the respondents from the case companies, Autoliv, Volvo Cars and Lynk & Co, identified relative limited risk by collaborating within service development. The respondents highlight the risk of not collaborating, since the competitive environment requires collaborations and partnerships. These respondents agree that successful business is dependent on good collaborations, and that the overall risks are perceived as small. However, the three respondents identified some risks by choice of partner. They agree upon the importance of finding the right partner to collaborate with. Müller Guerrini et al. (2015) have a similar viewpoint, when they describe the significance of a developed integration between the different actors within the collaboration. The relationships between the partners are crucial for creating beneficial outcomes. Barbaroux (2012) expresses a similar standpoint, where the author claims that a successful collaboration requires collaborative- mature organisations. If the different actors not are prepared and suitable for collaboration, the co-operation will be complicated. Moreover, the internal organisational values, culture and norms affect the collaboration (Barbaroux, 2012). Even though the literature and the mentioned respondents shared the same opinion regarding importance of collaborative partner, the literature describes collaborations as more complicated and challenging than the mentioned respondents' perception of collaboration. However, both the literature and mentioned respondents highlight the necessity of collaborating with others in order to become a competitive actor.

A more risk-aware perception of collaboration was also declared in the 4.2.3 *Results*. Some respondents from Volvo Cars, Volvo Group and Lynk & Co, share an opinion of the complexity with collaboration in service development. Factors as sharing sensitive information, losing

competitiveness and opening up is described as challenging by all case companies except Autoliv. The reason behind that Autoliv is not mentioning external challenges with collaborations is difficult to answer. Whether it is based on their role as a supplier in the industry or their limited experience within collaboration in service development, Autoliv's answer distinguishes from the rest of the respondents. In comparison with the literature, the respondents from Volvo Cars, Volvo Group and Lynk & Co highlight similar external challenges with collaborations. Barbaroux (2012) describe how the relationship among the actors impacts the sharing of tacit knowledge. Sharing tacit knowledge could be a valuable source of information for the performance. Resistance of sharing knowledge between the actors within the collaboration is therefore highly affecting the achievement (Barbaroux, 2012). In line with Barbaroux (2012), VG describes the challenges with resistance of sharing information and the organisational barrier of sharing valuable information. What can be understood from the interviews is that it is difficult to determine how much information could and should be shared between the actors. Some information and knowledge might be the reason for the company to be competitive, and would disadvantage the company if it spread further.

Even though the respondents from Autoliv do not mention external challenges with collaboration in service development, internal issues are declared. They describe the internal issue of not sharing enough information within the company. Also the rest of the case companies highlight internal issues with collaborations. Common between all the case companies, is their description of how their internal process needs to be less complicated for cooperation. Moreover, internal bureaucracies could destroy good ideas and profitable collaborations. Langer et al. (2009) highlight the necessity of creating an internal collaborating environment. In comparison with the respondents, the authors emphasise the manager's role in order to prepare the organisation for collaboration. None of the respondent, mention how managers can improve the situation for collaboration within service development. The respondent identified a more organisational perspective, in order to improve the difficulty.

6.2.3.1 Relevance for research questions

To sum up, there are some differences between the respondents representing the different case companies. In order to fulfil the study's aim, challenges and complications with collaborations was examined. What was significant from the conducted interviews are the respondents' frustration over internal challenges with collaboration. Internal bureaucracies, tacit knowledge and internal challenges are described. The common view is that it seems to be a lack of official, well-used collaborative processes. All cases companies provide the same picture, by showing that the companies are not internally prepared to react to the shift towards a more collaborative environment. In relation to the research question *How do companies servitize through collaborations within the automotive industry*, it is shown that some of the respondents saw challenges by collaborations.

6.2.4 Involving customer in collaborative development

A difference regarding the view on customers' involvement in developing services is shown. The answers can be separated into two different segments: perception of high involvement and low involvement. In order to analyse the case companies' involvement of customer, the respondents' answers are compared with Ylimäki's (2014) categorisation of involvement levels, which was presented in the 3.2.3 *Conceptual Background*.

The perception of the respondents at Autoliv, is that the company involves customers in different research project. Mentioned activities are market research and projects. Even though the company claims that customers are involved, the respondents from Autoliv are critical to the low extent of involvement in China. However, it is important to include OEMs in the term customers, since Autoliv act as a supplier. In relation to Ylimäki's categorisation, Autoliv's involvement of customer seems to follow the requirements for *design for customer*. Development of services seems to follow a traditional process, where customers' involvement is limited. In line with *design for customer*, Autoliv practices market research in order to understand the customer need. Moreover, the customers' opportunity to influences the service offerings is limited, which also follow the requirements for *design for customer*.

At Volvo Group, describes the respondent how the company is trying to create service offerings based on customers' requirement. Moreover, the respondent underlines how the new CEO has created a transformation within the organisation connected to a higher customer focus than earlier. A shift, like this can be time demanding in a large organisation with over 100 000 employees. However, it seems like the customer involvement can be developed within the company. In comparison with Ylimäki's categorisation, it seems like Volvo Group, based on the respondent's' perception, follows the requirements for *design with customer*. Within the level, the customer relationship is high and the offered solution is developed in order to fulfil the customer requirements. However, it is important to note that the perception of Volvo Group relies upon only one respondent.

The perception of customer involvement within Volvo Cars, was varied for different markets. In the Swedish market, customer involvement is seen as limited, based on the interviews. However, one of the respondents from Volvo Cars claims that the customers' involvement in other parts of the world are perceived as more significant since the company has less experience from those markets. In relation to Ylimäki's categorisation, Volvo cars involvement of customers appears to follow the requirements for *design with customer*. Since the respondents describe that their company interact with customers through various ways, such as testing groups and market research, their operations relate to the definition of *design with customer*. Within the level got customer the opportunity to influence the design, which relates to the testing groups Volvo Cars

uses in service development. Moreover, the deep customer relationship which was mentioned during the interviews, is also typical for the specific level.

At Lynk & Co, a deep customer relationship is described by the respondents. All of the respondents share a similar view of the company's customer interaction. Market research was frequently used within the development of different service offerings, which follows the rest of the case companies. What distinguishes Lynk & Co from the other case companies, is their view of customers. Based on the interviews, the company uses the customers as a source of ideas and insights. Significant for Lynk & Co, was the company's development of the Co-lab department. The Co-lab was described as the department where all kinds of opportunities could be presented by customers and other actors. In relation to the literature, Lynk & Co's customer view follows the level *designed by customer* presented by Ylimäki (2014). Since the customer's role is significant in development of service offerings, their importance is high for the company. The customers' high ability to influence, which is one of the requirements for *designed by customer*, is showed by their department Co-lab.

6.2.4.1 Relevance for research questions

To sum up, it is obvious that the different case companies have different experiences of involving customers within their service development. As showed above, some case companies involve customers to a high extent, while other companies do it to a lower level. Through analysing their customers' involvement within service offerings from Ylimäki's categorisation, could a clearer picture of the case companies' view of their customers be demonstrated. Moreover, in order to answer the research question *How do companies servitize through collaborations within the automotive industry*, different actors' involvement in the development process needed to be analysed.

6.2.5 Supplier involvement in service development

As presented in the 4.2 *Results*, state several of the respondents the suppliers' role within service development. The companies' suppliers are mentioned to be the most participating external actor in service development. However, the respondents agree that the type of creating service offering determines which external partners that will be involved. Significant from the 4.2.5 *Results*, are that all case companies state the importance of supplier involvement within the technological field.

When asking Lynk & Co about involved external actors, suppliers are mentioned as an important actor. The respondents from the company describe how IT and technological suppliers constitute an important part of the service offering. The need for technical assistance within developments seems to be the reason behind involving technical suppliers. The respondents give similar

responses from Volvo Cars and Volvo Group, where the suppliers' role was clarified as important within service development. The reason of involving suppliers is mentioned to be the same as Lynk & Co: technical solutions require support from suppliers within the three case companies. According to Langner et al. (2009), has the previous relationship and roles between automotive firms and suppliers changed dramatically, where more collaboration has become more common. Historically has it not been possible for firms to collaborate with their suppliers. Based on the conducted interviews, is it shown that the mentioned companies involve their suppliers and identify the benefit of doing it. Petersen et al. (2005) describe the advantages by involving supplier in development phases. Moreover, the authors state that the faster involvement of suppliers, the faster development process (Petersen et al., 2005). Suppliers can be involved from the beginning of the service development within these mentioned case companies, as understood by the interviews.

The perception of suppliers' involvement within Autoliv differentiates from the other three case companies. Two of the three respondents state that the collaboration with suppliers is not very common within Autoliv. Involving suppliers as an external actor in service development is only done in occasional projects. However, when asked about in which situations the suppliers were involved, one of the respondents answered advanced technological fields, which follows the argument from the other case companies. The reason behind why Autoliv is not involving suppliers to the same extent as the other case companies, can be due to their role as a supplier. At the same time, the respondents answer that the company collaborated with their OEMs, which is the most common way to collaborate within the automotive industry according to Langner et al. (2009). Ylimäki (2014) describes that involving customers and suppliers in collaborative developments has previously been considered impossible. Based on the responses from Autoliv, can their view of suppliers' involvement be perceived a bit traditional.

6.2.5.1 Relevance for research questions

To sum up, much of the results confirm the suggestions from literature. Suppliers' role within the automotive industry has been, and still are, a valuable actor within development projects. According to the literature has the suppliers' importance also increased. As mentioned, some answers from Autoliv differ regarding their perception of involving suppliers. On the other hand, Autoliv's role as a supplier could be the reason behind the respondents' answers. Relevance for the research questions is to investigate which actors that are involved within service development projects. As shown from the result, the role of suppliers is important within these kinds of development projects, addressing the research question *What is the role of collaborations in service development.*

6.2.6 Collaboration based on a Chinese and Swedish perspective

As shown in the 4.2 *Result*, the perception of collaboration in service development differs slightly between the respondents from China and Sweden. Even though all respondents shared the same opinion about the shift towards an increasing collaboration within the industry, differed the answers from the respondents from China regarding the importance of involving external actors. Based on the respondents' perceptions, it seems like the Chinese respondents collaborate with service development to a lesser extent than the respondents from Sweden.

According to the Chinese respondents from Autoliv, it seems like the customers and suppliers have limited roles of the company's development of services. The company performs the service development itself, without extensive support from customers and suppliers. This perception differs from the responses from respondents from Sweden, where the customers' and suppliers' opinion is highly valued. On the other hand, the Chinese respondents from Lynk & Co and Volvo Cars' identify the opportunity of involving customers and suppliers within service development to a higher extent. VCC1 highlights the opportunity by involving customer in a higher extent in China, by allowing other customers perform the offered services. On the other hand, this kind of collaboration is not yet well developed in China, according to VCC1. That customers could become more involved in service development in China, was clearly stated by the respondent. Moreover, the Chinese respondent from Lynk & Co has a different opinion, when answering that the Chinese market is not ready for service offering as the European market.

When it comes to the answers from the respondents from Sweden, customers and suppliers' involvement is valued highly within service development. All the Swedish respondents from Lynk & Co, Volvo Cars and Volvo Group describe the importance of involving customers. Based on the conducted interviews, it appears to be a difference in the perception of involving other actors in China and Sweden.

6.2.6.1 Relevance for research questions

In sum, the respondents have similar perceptions on both the increase of co-operation in service development, and the pros and cons of collaborations. The answers where neither country specific or case company specific within these subjects. What differs between the respondents' answers, are their perception of involving other actors, as customers and suppliers, in service development. What can be interpreted from the result is that the respondents with the Chinese perspective perceive the external actors' involvement more limited, than the Swedish respondents. However, it is important to consider that the reason why the respondent from Autoliv stood out, could depend on their role as a supplier, and not that the respondents provided a Chinese perspective. The topic was examined in order to fulfil the proposed research aim regarding the comparative perspective of China and Sweden.

6.3 Maturity matrix: Companies outlined

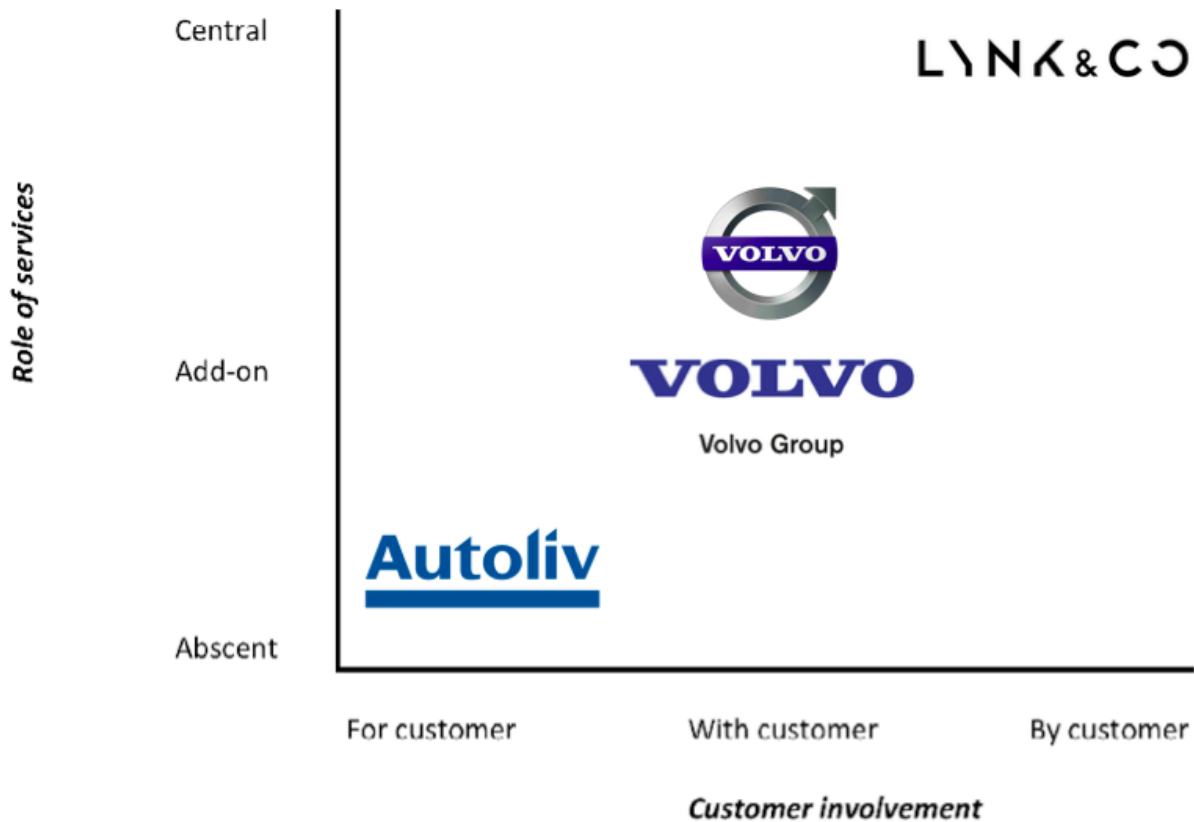


Figure 3. Maturity Matrix of Servitization with companies outlined

In order to fulfil our proposed aims, the different case companies are positioned in a maturity matrix, based on primary and secondary data. The maturity matrix can also provide responses to our research question *How do companies develop service offerings through collaborations within the automotive industry?*. Moreover, such an illustration can provide an understandable overview of the transition into servitization of the case companies. As provided in the earlier paragraph 3.3 *Model: Maturity matrix of servitization*, the two parameters which constitute the matrix are *The role of services* in the companies' customer offerings and *The level of collaboration with customers*.

As stated in 5.1.4 *Forms of servitization*, Autoliv does not provide any services in their customer offering, in addition to traditional customer service, and services are underused. The company is thus positioned at the lower level of the y-axis. Moreover, the company currently designs offerings for the customers and thus the customer's role in the service development phase is limited.

Volvo Group is positioned in the matrix's middle level on the y-axis, based on their present service offering. The company is currently trying out some service models with key customers, but this is only in a development phase of the company. Even though the CEO of the company is emphasising the importance of the customer and the company is starting to be more customer focused, it appears that the company still struggle with involving their customer to a higher degree in service development. However, the company is using the voice of their customers and thus placed in the *design with customer* on the x-axis.

In the case of Volvo Cars, the company has since a couple of years begin to offer connectivity services as an add-on to their customer offering. The company can thus be placed a bit in front of Volvo Group, since the service offering is targeting more than a test group. The company appears to follow the requirements for *design with customer*, since they interact with customers through various ways, such as market research and testing groups.

Lynk & Co is placed in the upper-right corner since services are a large part of their customer offering, and the car has more the role as an add-on. Moreover, they are offering a wide range of services to all of their customers, and have well-established service strategy through the two categories of services that they offer. What more distinguishes the company compared to the other case companies is their customer involvement. As frequently mentioned, Lynk & Co use the concept of Co-lab in order to involve and connect to customers. Thus the company is placed in the category *design by customer*.

7 Conclusion

This section derives conclusions from theory and analysis in order to present the most noteworthy findings. Moreover, the conclusion includes possibilities for future research as well as limitations to the study.

The thesis demonstrates an overall depiction of how collaborations are used as a mechanism for developing service offering in the automotive industry. Moreover, the thesis contributes with a comparative perspective in the topic between China and Sweden. The purpose of the study was to examine servitization through collaborations in a traditionally product-focused industry with a country comparison. In order to do so, following main research question was formulated to guide the study:

How do companies servitize through collaborations within the automotive industry?

To investigate how companies develop service offerings through collaborations, the starting point required to be structured around what the existing perceptions are of services. The literature review revealed that there are a wide range of aspects regarding services that are presented, such as the nature of services, rationales for service offerings and value creation through services. Moreover, much of the literature regarding service development are concerning service industries, and thus not industries which are traditionally product-dominated. The empirical findings from the automotive industry in this thesis demonstrate that there are no overall consistency regarding how to define services and what characterize services. There are although, some insights about the strategic and financial reasons of developing services, even if the latter is not clear of how. Moreover, companies demonstrate understandings of the potential value creation for the companies' customers through services.

As previously demonstrated, there are suggested principles for service design and specific step by literature (Tether, 2014) that can be included in the operational process of developing services. The way to develop services in practice is although without formal or formulated processes and decision paths. Companies are using minor parts of the design and development of services that is suggested by literature. There are some initiatives among the companies which are similar to those advised by literature, but it is far from official, well-established processes. The customer involvement is although an element which most understand as essential in their service development, but to different degrees. The development of services instead appears to be an ad-hoc approach, where the companies are testing different methods and tools to structure their development.

A shift towards a more collaborative business environment is argued for in literature (Guerrini et al., 2015). This is confirmed by the empirical findings, whereas it is described that external actors

are involved to a larger extent in development projects. An increased competitive environment is argued to be the main reason behind the extended collaborations beyond organisational boundaries. Moreover, and in line with literature, collaborations across industry borders is increasing among the companies when developing services. What is also of significance is that the described shift in collaborations is perceived as essential for future business.

How companies are developing services through collaborations is depicted in the analysis through a created maturity matrix, which is founded on variables from literature (Oliva & Kallenberg, 2003; Gebauer et al., 2005; Baines et al., 2009; Ylimäki, 2014). The two variables are *Role of services* in companies and level of *Customer involvement* in the development. The findings from the model are that Lynk & Co is in the forefront of developing services through collaborations. This can be understood by the usage of services as a central part of their customer offering, and engaging the customers in the development to the extent that services are created by customers. Both Volvo Cars and Volvo Group are positioned approximately in the middle of the model, and Autoliv is positioned well behind the other companies. This is explained by the lack of formulated service offerings towards customers, and that customers are involved by the sense that the company develops offering for the customer.

The comparative perspective between China and Sweden in the thesis did not reveal immense differences between the two countries. The biggest distinctions appeared instead between the case companies and were thus company-specific rather than country-specific. Especially in the case of Autoliv, the company distinguished from the other companies, as described in the previous paragraph. One should note though, that Autoliv has a different position in the value chain as a supplier to OEMs, and thus no direct connection with the end-user. This could provide some clarification of the difference in comparison to the other case companies. What was read out, however, was that some voices argued that China currently does not have as much interest or maturity for services as some of the European countries.

In practice this study has contributed by identifying a lack of structure regarding service development among the companies, and a pronounced need for it too. This finding distinguishes from the literature, which suggests clear and distinctive steps to take in order to design and develop services (e.g. Tether, 2014). Because of the nature of services, the companies do have difficulties of defining and capture the meaning of services. In general, the steps for developing services are addressed toward to create understandings among involved actors. The companies are thus proposed to formulate coherent strategies, processes and decision paths, as to improve their efforts. Moreover, the empirical findings support the view from literature of increased collaborations across organisational, industrial and professional boundaries, and confirm the perceived benefits with these collaborations. The companies are therefore advised to increase their collaborations with different sort of actors in order to improve their service development.

Overall, this study has contributed to the literature of servitization by outlining some applications in practice of service development in a traditionally product-focused industry, as requested by e.g. Kowalkowski (2015). Moreover, by using existing literature in the field, a model of a maturity matrix has been developed in order to position companies' relation to each other in their transition towards servitization. Furthermore, this study has contributed to the field of new service development by illustrating how companies develop service offerings through an increased use of collaborations across boundaries, and thus adds to the contributions of Schleimer and Schulman (2011), Santos et al. (2016) and Hsieh and Tidd (2012).

This study is limited by the context and the four organisations studied. Therefore, the empirical data should not be taken as representative of all sectors and countries. Moreover, the number of respondents from each organisation is rather limited and likewise with the country representation, which could have affected the results. Similarly, the company positions of the respondents might have narrowed their knowledge of service development and collaborations, especially in the case of Autoliv. Finally, language barriers might have affected the statements from the respondents representing the Chinese perspective.

The study has demonstrated a need for further research into development of service offerings in the automotive industry. As suggested in the introduction, much literature focus on the operational process of servitization in service industries, but more is needed in traditionally product-focused industries, particularly with a larger sample of companies and respondents. Because little is known in literature and in practice of how the transition should be done, more research is needed in order to aid our understanding of the operational processes. Moreover, the findings in this study may be outlined in other industries than the automotive and more countries, in order to contribute to literature of servitization in traditionally product-focused context.

The thesis focused on providing a broad overview of how companies currently develop services through collaborations by conducting multiple case studies. The purpose was not to provide in-depth information of the various cases but to illustrate an overall depiction. An area outside of the scope of this study was thus to examine the specific practicalities around the development of service offerings through collaboration, such as required resources, protection of intellectual properties and diffusion of technology. Further research could therefore benefit from focusing on such managerial challenges.

Finally, future research could tell if and how servitization supports the automotive industry of transforming into a mobility industry.

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9. Appendix

9.1 Interview guide

Research question: How do companies develop service offerings through collaborations within the automotive industry?

- How are services perceived?
- How do companies develop service offerings?
- What is the role of collaborations in service development?

Background

Name, Age, Nationality, Gender

Which organization do you work for?

What position do you have?

What are your responsibilities?

For how long have you had that position?

Perception of services

How do you define services?

What does services mean in your company context? (Time perspective)

What characteristics do you associate with services? (Natures of services)

What services do you offer?

What is offered in the service solution?

For whom are services developed and offered?

Why are services developed and offered? (Rationales)

Process of development

How is it developed – how does the process look like

What value is created through services?

What are the challenges with developing services?

How is it decided which services that will be offered?

When or at what stage are other actors involved?

Actors

Which departments are involved in the development of services? (Internal)

Which stakeholder/actors are involved in service development? (External)

How do you involve customers in your service development?

What current partnership do you have in the development of services?

(Customers/suppliers/small companies/internationality)

Do you use partnerships for service solutions and if, how has it developed over time?

Perception of collaboration connected to services

How do your company work with sharing information with other actors?

What are the benefits with collaboration?

What are risks/disadvantages?

What is important to think of in the collaboration with other actors?

For which markets are the services developed? (Future, existing)

What are the rationales for collaborate with other stakeholders/actors?

What are the challenges with collaboration together with other actor?