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Abstract

A lead market (LM) describes an area where a new innovation design is successfully adopted prior to any other markets (Beise, 2004), and can be used to understand the diffusion of new products and services. While previous LM literature does well in defining national characteristics, the role of the state and explaining consumer behavior, those distributing the new innovations have been neglected. This study fills the previous gap in literature by addressing how the Norwegian LM adoption of EVs have impacted the country's authorized suppliers, and to what extent they perceive that being early is an advantage. By conducting interviews with managers on topics related to new car sales, used car sales, service and import, this study finds that the overall implications from a LM adoption is not necessarily beneficial for the suppliers. The value of the current study is to understand how the LM suppliers are impacted, and can be influenced related to the diffusion of new innovations. This may be particularly meaningful when deciding on governmental interventions to enhance market penetration of new green technologies.

Acknowledgments

Dear reader,

this thesis represents the end of two fantastic years at BI. The work has been time consuming, but most of all highly rewarding and fun. We would like to express our special thanks of gratitude to our devoted supervisor Erik L. Olson, the respondents participating and our family and friends.

Best regards,

Martin and Kristian

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1.0 Introduction

With the diffusion of new innovations into the global economy, some markets tend to adapt certain products, services or systems before others. For this, the terminology of lead and lag markets can be used. The definition of a lead market (LM) describes an area where a new innovation design is successfully adopted prior to any other markets (Beise, 2004). The markets that subsequently adopt this technology will thereby be defined as lag markets.

Around 2010, several large car manufacturers launched their first electric models (EVs), entering a market previously dominated by “microcars” from smaller niche brands. As the new EVs resembled the traditional fossil car’s characteristics to a much greater extent, it arguably represented a significant innovation in the product's design. As a result, EVs were for the first time able to be commercialized on a larger scale, something which contributed to an around 800% increase in European EV sales from 2010 to 2011 (Tsakalidis & Thiel, 2018). Already prior to 2010, Norwegian car owners had been motivated towards buying EVs with the use of multiple different monetary and non-monetary governmental incentives. Norwegian consumers were therefore among the first to rapidly adapt the new models, a market penetration growing continuously ever since. Norway is today the country having the highest share of EVs among new cars sold, the highest cumulative share of EVs and the highest EV per capita rate internationally (Regjeringen, 2021). Thus, Norway can easily be defined as the world's most significant LM for the new innovation design of EVs.

The amount of existing literature on the field of LM theory is limited, with the previous focus being either theoretical (Beise, 2004) and/or focused on government and consumer elements (Jänicke & Jacob 2005; Olson 2018). Thus, no focus has been given to the distributors who make the product available and service it. As Norwegian suppliers are the world's most experienced with import, sales and maintenance of EVs, their knowledge could be utilized to provide a unique literary contribution to both the automotive field and to the lead market field in general. The contribution of this study is therefore to empirically focus on the Norwegian importers and dealers of EVs, and answer: *How has Norway's lead market adoption of EVs affected the country's suppliers, and has their lead market status given them any advantages or disadvantages?*

2.0 Literature Review

2.1 Lead Market Theory

The most significant contribution to the body of LM theory is arguably done by Marian Beise. Beise (2004) studied national success factors for LMs and how international differences in these factors can explain country-specific adoption patterns. Some of the previous research reviewed by Beise (2004) restricted LMs to the country where an innovation was first invented. He does however expand the term, and defines LMs as the country where the innovation first obtained widespread adoption. This definition emphasizes national market conditions and local preferences, and is independent of the innovation's origin (Beise, 2004).

Beise (2004) argues that the country-specific factors can be split up in five different groups of "lead advantages", concerning demand, price, transfer, market structure, and export. Common for all of these is that they describe conditions related to national structures or policies, and the resulting effect this has on domestic industry, local consumers and the country as a whole. Beise's (2004) theoretical framework is crucial for recognizing the qualities and characteristics of LMs, and a modern base for the concept in itself. The research does however not include the implications LM adoption can have on those distributing foreign innovation designs or the local distribution channels in general.

Another contribution to the LM literature is done by Jänicke and Jacob. In two studies they first discuss the role of the state in LMs of environmental innovations (2004) and secondly the creation of LMs and their role in the global innovation process (2005). They follow the same type of definition as Beise (2004), and denote LMs as countries with a faster and more complete rate of market penetration for innovations that subsequently got adopted by other countries without major changes (Jänicke & Jacob, 2004).

In the first study the authors find that environmental innovations highly depend on governmental actions, and are not only driven by environmental initiatives from the consumers (Jacob & Jänicke, 2004). Furthermore, if new green technologies bring the consumers additional costs without additional benefits, regulatory interventions seem even more important for adoption and diffusion. Thus, the

state and its policy setting is said to be a crucial determinant for LMs of environmental innovations (Jacob & Jänicke, 2004). In the second study LMs are said to play a major role in both innovation and diffusion of environmental technologies, thus national LMs are needed for a global adoption of such (Jacob & Jänicke, 2005). Despite contributing greatly to how lead markets of environmental innovation designs emerge and the role of governmental policies, distributors are not included. Thus, the literature yet again emphasizes on defining overall governmental characteristics of a lead market and the effect this has on producers and consumers.

Olson (2018) expanded the LM literature by adding valuable insights on consumer preferences in relation to the diffusion of EVs, learning from the lead markets of Norway and California. He found evidence of EV supporting policies from the government to be the main reason for early adoption in the two markets, mainly because of impediments like technological insufficiencies and high prices of EVs compared to ICVs (Olson, 2018). This supports Jacob & Jänicke's (2004) statement about how LMs of environmental innovations have mostly emerged by governmental actions, particularly if the innovation does not benefit the consumers without them. Olson's (2018) study focused on LM consumers, capturing their perspective in more detail. Earlier studies had just briefly touched upon the consumer groups in the form of defining their overall characteristics. Despite Olson (2018) contributing with more knowledge on consumer drivers related to the adoption of EVs, the suppliers are excluded from his study as well. Thus in conclusion, there is no available literature on LM learning from the perspective of importers and dealers within the automotive industry, nor for importers, distributors or retailers in general.

2.2 The Role of Suppliers in Lead Markets

With current LM literature neglecting the suppliers, their role in the creation of LMs is also unaccounted for. That the seller plays a crucial role in the consumers purchase decisions is well established from the extensive literature done in marketing and sales. Thus, suppliers may heavily influence the adoption of a new innovation, meaning that without their cooperation a LM diffusion can not happen. Clear indications on this can be seen for the diffusion of EVs. While

Norwegian suppliers are found to support the market penetration, lag market suppliers are found to serve as a major obstacle for the uptake of EVs due to the lower profitability (Zarazua de Rubens, Noel & Sovacool, 2018). Thus, learning how a LM adoption of a new innovation has impacted the LM's suppliers may be essential for understanding what actions that should be taken to utilize the roles of suppliers in other countries in order to achieve a global diffusion.

2.3 EV Caused Implications on Suppliers in a Lead Market

For authorized dealers, new car sales do not only represent a potential direct profit from the car itself, but also a basis to an almost subscription-like period where more profits can be yielded along the way (Sovacool, Kester, Noel &, Zarazua de Rubens, 2020). The volume and specifications of the cars sold are therefore of great importance for both present and future income. Existing literature from other markets already points towards EVs being unprofitable in several areas, and thus being less favored to sell by dealers (O'Neill et al., 2019; Richtel, 2015; Kress, 2015; Karwa, 2016). However, none of these studies is conducted in LMs, meaning that the respondents don't have experienced the business implications resulting from a widespread EV adoption.

The isolated profits dealers get from new car sales in itself generally don't represent their area of biggest margins (Eslava-Bautista, Cottrill & Beecroft, 2021), but it does seem to be a common concencius that cars with a higher base price (often larger in size) increases the room for dealers to add to their profits (Snyder, 2017). However, as previous reports on profitability are based on ICVs, to what extent this also applies for EVs is more uncertain. Nevertheless, larger, more expensive cars did not match the consumers' initial preferences for EVs, with early demand favoring smaller sizes (Hidrue, Parsons, Kempston & Gardner, 2011) and price having a large negative impact on the perceived EV utility (Liao, Molin & Wee, 2017). These findings are however mature taking the rapid EV development into account, and with the introduction of several larger EV models in the later years, the consumer preferences may have changed.

An important question in relevance to the profits from new car sales is therefore to what extent EVs have changed the total volume and sales mix in the new car market. Research from Norway has found that EVs are often being purchased as a car number two (Holtmark & Skonhøft, 2014), indicating a potential market increase. It does, however, not take into account a possible decrease in the sales of ICVs as secondary cars. The diverse effort from OEMs in developing EVs are likely a factor here, for while the volume may have gone up for dealers selling leading EV brands, others may have faced a decrease. The OEMs may naturally also affect the dealers sales mix, because even though EVs have grown both in size and price class, there is still a lot of variation between OEMs related to where the EVs are placed in their model range. Thus, causing the dealer's demand to be affected accordingly.

In addition to the margin made on the base price itself, several other factors impact the dealers profit on new cars. Among these are the sales of extras and if regular financing or leasing are chosen (Cooper, 2019). Resale anxiety is reported to be a common consumer barrier towards EVs (Berkeley, Jarvis & Jones, 2018), and can be attributed to lack of trust in EV durability (Lim, Mak & Rong, 2014). However, leasing is found to be a possible solution to this (Lim et al., 2014), potentially explaining why research has found EVs more preferred to lease than ICVs (Liao, Molin, Timmermans & Wee, 2018). The profitability with leasing is highly dependent on the correct calculation of the car's residual value (Lessmann, Listiani & Voss, 2010), but reports still point towards leasing being generally more profitable for dealers than other finance methods (Plaehn, n.d). Thus, a potential increase in leasing deals may affect dealer profits from new car sales positively.

Existing research on leasing preferences do however not take the Norwegian incentives into account. Higher subsidies make new cars cheaper, thus reducing the motivation for buying second hand, and thereby the perceived second hand value (Brückmann Wicki & Bernauer 2021). With lower residual value, dealers set lease prices higher, potentially explaining why leasing is less common among Norwegian EV owners (Skogstad, 2021). This may also impact profits from extended warranties and extra equipment negatively, because although research finds EV owners generally positive towards such (Lim et al., 2014), reports

indicate that extras are easier sold through leasing deals (Plaehn, n.d). However, the impact of a decreased demand for leasing is also likely to hit dealers differently, as leasing is shown to be more popular for higher priced OEMs (Røed, 2018).

Another possible consequence of EVs related to new car sales could be changes in brand loyalty. Previous research finds that emotional, functional and conditional value is significantly influencing brand loyalty among car owners (Moosa & Hassan, 2015), and that the quality of a dealer is much more important for brand loyalty than the quality of the car in itself (Jørgensen, Mathisen & Pedersen, 2016). However, both of the above studies are somewhat mature, and none of them take EVs into account. In addition, there are several findings indicating that consumers' perceptions of the previously mentioned values may have changed with EVs. Other research finds that consumers may perceive EVs as ugly (Zaunbrecher, Beul-Leusmann & Ziefle, 2014), possibly affecting the importance of emotional value (Desmet, 2003; Rafaeli & Vilnai-Yavetz, 2004). The importance of functional value may also be affected, as findings report driving range to be the most important attribute for EV consumers (Olson, 2018).

In conclusion, there is literature on how consumer preferences for new cars have changed with EVs, and indications towards how this may have affected dealers in terms of new car sales. However, few of them take the Norwegian incentives and LM adoption into account, and given the fast changing market, several are also mature. Furthermore, most previous research emphasizes on changes in revenue without assessing if EVs have made changes to the dealers costs. Lastly, variation between OEMs is likely to be a dependent factor, making it hard to derive a definite answer from the existing literature on how EVs have affected the new car sales for Norwegian dealers in general. Thus, the first research question is:

RQ1: How has the transition to EVs impacted new car dealer sales on new vehicles?

The second hand market for cars is generally both larger in volume and allows higher profit margins than obtained when selling new cars (Threewitt, 2015). Thus, selling used cars is also a considerable income source for authorized new

car dealers. Although rapidly increasing in new car sales, the growth in the EV second hand market has been slower. A lot of this may naturally be attributed to the younger age of the EV fleet, but findings also indicate that multiple other factors potentially further delay it (Sawicki & Scherer, 2020).

The limited amount of literature related to the second hand market for EVs reports somewhat mixed findings. Research on ICV owners perceptions of used EV values suggests a general skepticism (Pedrosa & Nobre, 2019), something also found as a barrier for EV adoption in the first place (Berkley et al., 2018; Lim et al., 2014). Other findings support this uncertainty among ICV owners, but report less uncertainty among the EV owners themselves (Assum, Kolbenstvedt & Figenbaum, 2014). A recent Swiss study even reported that consumers perceived used EVs to have a higher value than used ICVs (Brückmann et al., 2021). Despite this, another study looking at actual sales data from Switzerland found used EVs to be generally valued less than used ICVs. (Sawicki & Scherer, 2020). This is also supported by early Norwegian numbers (Ekhaugen & Rasmussen, 2015). Similarly to new cars, a higher price is said to allow for a greater profit margin on used cars as well (Christiensen, 2011). Thus, EVs being worth less than ICVs in the second hand market may affect the dealers profits negatively. The impact of this is however likely to vary, as findings also report a strong OEM dependency related to the price fall on used EVs (Sawicki & Scherer, 2020).

Despite a generally lower resale value for EVs, dealers may still be able to control their margins to a certain extent. Time-correct information on second hand prices can enable dealers to adjust their offers when sourcing used EV inventory. This is however not as easily done with leasing. Unforeseen technology changes may affect the future second hand value, making it hard to set the correct residual value years ahead (Lessmann et al., 2010). Thus, EVs from the dealers own expired leasing deals may potentially even generate a loss when sold. Leasing could therefore further harm the second-hand profits, especially for dealers of OEMs which more commonly get leased.

In addition to the opposing findings, there are several limitations with the current literature on the EV second hand market. Firstly, many of the studies finding skepticism towards used EVs is done on ICV owners in countries with a low EV

adoption. Thus, the Norwegian EV incentives and LM adoption is not taken into account. Secondly, given the rapid development in EV technology, some of the studies are also somewhat mature. Furthermore, no studies have looked at how the high sales of new EVs affects the sales of used ICVs, still accounting for the majority of the second hand market. However, most importantly, all previous research emphasizes on the consumers perceptions of used EVs, without addressing how the sales of used EVs have impacted dealers. As a result of the second hand market's importance and the gaps in the current literature, the second research question is:

2. How has the transition to EVs impacted new car dealer sales on used vehicles?

The service department is stated to account for around 50% of the average car dealer's profits (Eslava-Bautista et al., 2021), and is highlighted as their biggest source of profit (Zarazua de Rubens, Noel, Kester & Sovacool, 2020). Thus, EV caused changes to the service market may naturally create huge implications. There is already a common agreement that EVs need less service and maintenance (Eslava-Bautista et al., 2021; Dombrowski & Engel, 2013; Prümper, 2020; Voelcker et al., 2012), mainly because of the reduced number of wear parts and lack of oil (Guillaneuf, 2018; Truett, 2017). However, just how much the service profits will decrease is unagreed on in previous literature. While some findings predict that EVs may generate as little as 80-90% less maintenance revenues than ICVs (Deloitte (n.d.); Zarazua de Rubens et al., 2020), others report a more modest decrease of 30-70% (Guillaneuf, 2018). The latter, more optimistic findings does however assume that EVs will follow the same standard service intervals as ICVs, while other research highlights longer service intervals to be one of the core challenges with EVs (Truett, 2017).

As a result of less moving parts, EVs are also predicted to have a reduced need for repairs (Eslava-Bautista et al., 2021; Guillaneuf, 2018) However, in contrast to the general consensus on reduced service profits, current literature reports somewhat mixed findings regarding how EVs will impact repairs profits. Some findings suggest that the repair profits will stay stable given that labor rates and parts retail at the same price (Guillaneuf, 2018), or because losses will happen slow enough

for component price inflation to catch up (Schartau & Indino, 2021). When including battery packs, findings even suggest that EVs may serve as a temporary opportunity for authorized dealers to increase their profits due to the current reliability issues (Dombrowski & Engel, 2013; Truett, 2017; Eslava-Bautista et al., 2021). However, as battery packs are expensive, the profits made from this may be limited if the consumers find it more beneficial to buy a new car instead (Eslava-Bautista et al., 2021). The motivation for this is also indicated to be further enhanced by the Norwegian EV incentives. Reports have found that the high amount of newer EVs being scrapped in Norway is a result of consumers getting tax reliefs on purchase, but not on parts and repair (NRK, 2021)

The current research on how EVs will affect the service market delivers insights on how EVs differ from ICVs with respect to service and repairs, and several numeric forecasts on implications are derived. However, common for all the existing literature is that the future predictions are heavily assumption based, and no real data from dealers facing a LM adoption of EVs is provided. Another limitation with the current literature is that while the reduced profits are emphasized, a potential increase in costs are neglected. There are already reports suggesting that the service sector must undergo extensive training in order to work with EVs (Fechtner, Fechtner, Schmuelling & Saes, 2015; Brown, 2022) but no research looking at EVs impact on service departments takes these costs into account. As no former research can establish how dealers working with a large share of EVs actually has been impacted by the rapid EV adoption, the third research question is:

3 How has the transition to EVs impacted new car dealers' service departments?

There is a distinct lack of literature on how EVs have impacted the importers. According to early research on the dealer-importer relationship, importers are generally affected through their authorized dealers business results and their satisfaction with the brand (Meinig, 1998). Although these findings are from before the introduction of EVs, the supply structure is mainly the same. Thus, the importer's respective OEMs model range, the demand for these, and the general

satisfaction level of the authorized dealers are likely to determine the implications for the importers (Meinig, 1998).

According to Assum et al. (2014), importers were found to be generally positive towards EV adoption. The only challenges emphasized was the potential removal of the incentives, as this could obstruct further sales. More recent studies show that these incentives have created a huge Norwegian demand for EVs, and production constraints for the OEMs have therefore resulted in long waiting lists for certain models (Zarazua de Rubens et al., 2020). This has been speculated to be highly profitable for the Norwegian importers, as they are said to take a price premium compared to importers in other countries (Moberg, 2021). However, this would affect the importer's dealers ability to deliver cars to the consumers, resulting in delivery delays. As a consequence, the dealer-importer relationship could potentially be harmed as it was found to be dealers biggest source of dissatisfaction (Meinig, 1998).

Another potential negative implication of the long delivery time is that EV buyers may have been "forced" over to the second hand market (Munford, 2020), which also may have increased the demand for used imports (Skogstad, 2021). As the majority of used imports are brought in by unauthorized dealers or the consumers themselves, it can be said to compete directly with the role of the importers. The threat of this competition will depend on national and international subsidy levels, and to what extent a difference between them represents an arbitrage opportunity for those importing used EVs (Jordheim, 2021).

In conclusion, there are indications towards importers potentially having increased their profits due to the EV adoption, thereby the exact opposite of what existing literature suggests for dealers. However, as research on the dealer-importer relationship states that the importers will be affected through their authorized dealers, these findings are somewhat conflicting. As a result of this, and the distinct lack of time relevant and general EV literature on importers besides popular media sources, the fourth and final research question of this thesis is:

RQ 4: How has the transition to EVs impacted car importers?

3.0 Research Methodology

3.1 Choice of Approach

In the coming section the method and practical approach of this study will be introduced. When choosing the method, the aim was to ensure that the unique LM experience Norwegian car suppliers possess were captured in the best way possible, strengthening this study's literary contribution. In order to achieve this, and create an initial foundation in the existing gaps in literature, an explorative research approach was chosen. With a practical constraint concerning the number of respondents on the supplier side, a qualitative design was further chosen to utilize the potential of the explorative approach. As the answers to the RQs in this study were expected to depend on several underlying factors, semi-structured interviews (SSI) were chosen as the data collection method. This method's potential for an in-depth conversation was important to not only get a picture of today's situations, but also understanding what the key factors were, and why these had been decisive.

3.2 Interview Guide Development

The general basis for the interview guide consists of 10 main questions and was developed with the aim of yielding the most honest and informative replies. The first questions concern the respondents' perceptions on overall market implications, as a non-personal start were assessed to reduce the chances of response bias. The questions then shift to how EVs have directly impacted the respondents' own business, as this would enable a more in-depth continuation of topics discussed at an overall level, as well as capture potential inconsistencies. All questions were formulated in a broad and open way in order to not initially limit the respondents' answers to a given subject, but rather get the respondent talking freely. Thus, the questions ask the respondents to mention positive and negative implications of EVs and the related governmental policies, and to what extent this has been more positive or negative. The latter in order to ensure a clear confirmation regarding the total impact. The only exception from this is question 9, specifically asking the respondents for potential LM benefits or disadvantages.

While the broad nature of the main questions allowed them to be used interchangeably across all four RQs, a set of specific probes were developed for each one. The subjects of each probe were decided based on the gaps and indications discussed in the literature review, and were used if a respondent did not initially comment on subjects important for answering the RQs. In addition to the predefined probes, spontaneous follow up questions were also asked when necessary. A full interview guide for each research question can be found under appendices.

3.3 Selection of Respondents and OEMs

To both ensure that all respondents were eligible to contribute in the best way, and capture possible variation caused by the differences between the respondents respective OEMs, a purposive sampling technique was used. All respondents therefore had to comply with a predefined set of overall selection criterias, and were recruited strategically based on their OEMs characteristics.

In order to ensure that the respondents had experience from an area reflecting Norway's LM adoption of EVs, a geographical criterion was defined. Thus, only respondents from the cities and surroundings of Oslo, Bergen and Stavanger were recruited, representing the areas with the highest EV per capita rate in Norway (Norsk elbilforening, 2021). A second criterion was set to ensure that the respondents had the best and most updated knowledge. In order to arrange this, the respondents workplace had to be an OEM authorized business. This was also important as non-authorized businesses can avoid negative implications from EVs by altering their offerings. Another important aspect in the selection was access to important information regarding overall profits or other numeric metrics. All respondents therefore had to have managerial positions in order to comply with this criterion. The fourth criterion that was set for the selection was that the respondents had to work for an OEM(s) that offered both fossil and electric engines, which would make it possible for them to compare EVs and ICVs. Lastly, in order to ensure that the respondents were able to comment on the business implications of EVs, the final criterion was therefore that the respondent had to have relevant experience from before their OEM(s) released EVs.

Several factors were emphasized when deciding what OEMs the respondents included in this study should represent. Firstly, in order to capture possible variations related to the diverse efforts between OEMs in the development of EVs, respondents were recruited based on when their OEMs first entered the Norwegian EV market. Respondents were defined as either a “EV leader” or “EV laggard”, with the boundary being whether the respondents OEM had EVs available in Norway within or after 2015. Secondly, in order to capture possible variation related to Norwegian market shares, respondents were strategically recruited based on both their OEMs EV market share and total market share. This was based on the OEMs average market shares in Norway between 2011 and 2021, calculated on statistics obtained from OFV. Market shares are either defined as high (top 5), medium (top 10) or low (below top 10). Lastly, in order to capture possible variation related to different price levels, respondents from both “economy” and “premium” OEMs were recruited. The boundary between the definitions were set to be whether the MSRP for the OEMs most expensive EV were below or above 800k NOK, respectively. For all factors of possible variation between the OEMs, a roughly equal number was recruited.

New respondents with relevant expertise were recruited until a clear pattern was established within the different RQs, and the table below summarizes the total sample in this study. Names / OEMs were anonymized in order to get more honest answers.

| Respondent | Position | Leader / Laggard | OEM total market share | OEM EV market share | Price class | RQ1 | RQ2 | RQ3 | RQ4 |
|------------|---------------------------|------------------|------------------------|---------------------|-------------|-----|-----|-----|-----|
| 1 | New car sales manager | Leader | High | High | Premium | X | | | |
| 2 | Sales & marketing manager | Laggard | Medium | Low | Economic | X | | | |
| 3 | New car sales manager | Laggard | Medium | Medium | Premium | X | | | |
| 4 | New car sales manager | Laggard | High | Low | Economic | X | | | |
| 5 | New car sales manager | Leader | Low | Low | Economic | X | | | |
| 6 | Used car sales manager | Leader | Low | Medium | Economic | | X | | |
| 7 | Used car sales manager | Laggard | High | Low | Economic | | X | | |
| 8 | Used car sales manager | Leader | Medium | High | Economic | | X | | |
| 9 | Used car sales manager | Both | High / Medium | Medium | Premium | | X | | |
| 10 | Service manager | Laggard | Medium | Low | Economic | | | X | |
| 11 | Service manager | Leader | High | High | Premium | | | X | |
| 12 | Service manager | Laggard | High | Low | Economic | | | X | |
| 13 | Service manager | Leader | Low | Low | Economic | | | X | |
| 14 | Importer | Both | High | High / Medium | Both | | | | X |
| 15 | Importer | Both | Medium | Medium | Both | | | | X |
| 16 | Importer | Leader | Medium | High | Economic | | | | X |
| 17 | Sales manager | Leader | High | High | Economic | X | X | | |
| 18 | CEO | Laggard | Medium | Medium | Premium | X | X | X | |
| 19 | CEO | Leader | Low | Low | Economic | X | X | X | |
| 20 | CEO | Leader | Medium | High | Economic | X | X | X | |

3.4 Data Collection and Analysis

Several systematic measures were taken both during and after the SSIs in order to strengthen the quality of the data collection and analysis in this study. Both authors were always present during the interviews, and notes were taken legibly and chronologically. All interviews were also recorded to prevent data loss. After the interviews a verbatim transcription was created based on the recordings, and a simplified summary was sent back to the respondents for approval. The latter to avoid misinterpretation and thereby improve the reliability of the data.

When approval was granted on the summaries, the data analysis began. An excel table was developed for each RQ, and followed the same structure as the interview guide. Thus, each table was built up by rows reflecting the topics of the predefined probes, in addition to a row highlighting other relevant information obtained. The verbatim transcriptions of each respondent were reviewed, and the table cells were inserted with a simplification of the respondents answer on the given topic. In order to control for which topics the respondents had freely mentioned and what topics the respondents had to be probed with, a star “*” was used to mark the topics the respondents unsolicitedly brought up. In addition, each table cell also received a color code based on the respondents' further elaboration on the topic. This was done in order to signal if the respondent perceived the result of the given implication to be positive (green), negative (red) or neutral (yellow). The color codings also made it easier to highlight areas of consistency / inconsistency both between the respondents own answers and across all respondents. The complete tables were used to analyze what topics the respondents most commonly brought up as positive and negative implications of EVs, look for variation between OEMs, draw conclusions on how the majority perceived that EVs had impacted Norwegian suppliers, and check to what extent this cohere with previous research.

4.0 Results

In the coming section, the findings from the interviews will be presented. The results are structured after the interview guide, meaning that each research question is divided into *overall market implications* and *direct business implications*. In addition to the commentary on the respondents' answers, a table summarizing the key findings are presented for each RQ. The tables used in the analysis, summarizing all findings, are found in the appendices. Lastly, the findings regarding lead market benefits obtained across all four RQs are presented together in an independent section at the end.

4.1 RQ1: New Car Sales

4.1.1 Overall Market Implications

RQ1 asks how EVs have impacted authorized dealers on new car sales. The topic most respondents (6/9) brought up when asked to freely name how EVs had affected the new car market positively on **interview question 1**, was the effect EVs had on the consumer's willingness to pay. As a result, EVs were stated to have changed the sales mix towards larger, more profitable cars, as explained by R2: *"The consumers are pushing themselves, they can go up several hundred thousand (NOK) in price because they see that the operating costs are significantly lower with EVs."* When asked, the remaining 3 respondents also agreed to this, but some respondents like R19 also emphasized that this was a recent and not necessarily lasting change:

"It's the government in Norway who decides what cars people buy. People bought bigger cars because of the incentives, and with the proposed removal of the VAT exemptions, the sales mix will go down again. People care about the environment all the way to their own wallet."

Another topic many respondents also freely brought up as a positive implication of EVs, were that they in some way or another, had increased the total market volume. The reason for this was stated by 5/9 respondents to be an increased number of cars per house, while the remaining brought up a reduced time of ownership per car. The latter was stated to be due to the rapid improvements in

EV technology. However, 3 respondents emphasized that this varied greatly between the different OEMs, as explained by EV laggard R4: *“The total volume have been driven up by those selling EVs, while the dealers without the “right” models have experienced large sales vacuums for a couple of years”*

When asked to freely name overall negative implications of EVs on **interview question 2**, respondents generally brought up topics unrelated to RQ1. R3 did however mention that EVs had reduced the number of models dealers can rely on for sales, by explaining: *“As a brand you get much more dependent on 1 or 2 models. With long delivery times and impatient Norwegians, you don't really have anything to offer them.”* The only other negative mention that was directly related to new car sales was brought up by R2, which stated that EVs had reduced the consumers brand loyalty. When asked, all other respondents agreed on this, as exemplified by R1: *“The consumers are not loyal in the same way any more. Previously families drove the same brand for generations, now people buy the newest cars with the longest range. They can buy one brand now, and a “China brand” the next.”*

After having answered the open questions regarding positive and negative overall implications, there were still several topics not all respondents had unsolicitedly brought up. A topic no respondents brought up on either question 1 or 2, were how EVs have affected car financing. When asked, all respondents with the exception of R17, replied that EVs had caused a negative decrease in the demand for leasing. R4 did however highlight that this was not a consumer driven change: *“It's controlled by the importers. Everything got leased, and those having their own financing companies panicked and adjusted down the residual values. When the lease gets expensive they earn way more on loans.”*

Another topic no respondents brought up was if EVs could affect the number of dealers. When asked, 5/9 respondents stated this to be unchanged, mainly due to the same reasons as R18 pointed out: *“More happens online, but dealers will stay relevant due to service, used cars and for those actually wanting to experience the cars physically before buying.”* The remaining 4 respondents thought the number of dealers would decline. While R2 and R4 agreed on a reduction in smaller dealers, the latter predicting an increase in mergers, R19 and R1 stated that we

would see a reduction in general. R19 attributed this to the lower profitability of EVs, but R1 stated: *“There will be a decrease in dealers, but EVs are not the main reason for this. OEMs will take over the supply channels like Tesla.”* When asked if EVs were more easy to directly distribute than ICVs, R1 agreed.

Some respondents had already brought up changes to the overall profitability in the new car market under questions 1, but when the remaining were asked, the results showed that 4/9 perceived that this had strictly increased. The remaining respondents also agreed on an increase, but emphasized that this was only for certain dealers. R5 among others stated: *“For those who have had an OEM making EVs, the transition has been very profitable.”*

Interview question 3, asking whether EVs have been more positive or negative for the overall new car market, showed that 6/9 respondents found EVs to have been more positive, while the rest stated that EVs had been more negative. Respondents on both sides mainly reasoned their answer on the topics discussed above, emphasizing positive or negative effects on volume and profits, and the dependency of the OEMs available models. R19, being the most negative, referred to his initial answer on question 1: *“Great for the environment, but for dealers, nothing. Rather the opposite.”*

On **interview question 4** about to what extent the Norwegian EV policies have been positive or negative for the new car market, respondents were generally in line with their previous statements. The same 6/9 that found the overall implications of EVs to be more positive, also stated that the incentives had been positive. The most common reason for this was an increase in sales volume. R4 found the incentives to be *“mediocre”*, while R5 and R19 found them to be negative. R5 explained: *“They have generally only created an unpredictable situation for the business, and still do to an increasing extent. Look at the sales of hybrids.”* When the respondents were probed about the quality of the dialogue between the government and the Norwegian car industry, the answers were more negative. 5/9 stated that the dialogue had been insufficient, mainly because of the lack of predictability as explained by R19: *“We are in two different chairs. Probably a bit better than 20 years ago, but everyone running a business needs*

predictability.” The remaining 4 respondents found the dialogue to have been sufficient.

4.1.2 Direct Business Implications

When asked to freely name how EVs had positively impacted their own business on **interview question 5**, a wide array of topics were brought up. The most common mentions were an increased volume and a higher willingness to pay among their consumers, brought up by 4/9 and 8/9 respondents, respectively. The majority of the respondents therefore stated that their sales mix had been positively affected by EVs, as R18 pointed out: *“It is wild! We have never sold so many expensive cars, the sales results last year were all time high with above 90% EVs.”* There were, however, a more scarce amount of answers given when asked how the EV adoption had impacted their own business negatively in **interview questions 6**. The only negative implications mentioned unsolicitedly were R19 bringing up less profits, and R5 stating that their volume has seen a decrease due to fewer sales of hybrids.

Although all respondents had already stated EVs to have affected brand loyalty negatively when probed about this for the overall market, no respondents chose to unsolicitedly bring this up when asked about their own business implications. However, when asked directly if the decline in brand loyalty applied for their own customers as well, 8/9 respondents somewhat agreed to this. R18, being the only exception, stated: *“I don't think we have lost so many customers. The (EV model) has been a top seller. Good attributes!”* R3 was in addition prompted on the statement he made regarding fewer good selling models on question 2, to which he answered: *“Yes, it affects us too, but the future looks bright! In about 4 years we will have electric alternatives in all segments.”*

All respondents, again with the exception of R17, were negative towards their decreased demand for leasing when asked. R18 explained: *“The decrease has been bad as customers often spec their cars higher with leasing. Easier to pay a couple of hundred NOK more a month, than 50K NOK up front. Generally our own fault though, as the residual values were set too low.”* Despite this, all respondents answered that their sales of extras and upselling in general, were

equal or larger prior to EVs. The reasons were stated to be an increased sales focus in order to cover losses elsewhere, and that customers often spent more money on EVs. In addition to the decreased amount of leasing deals, all respondents also agreed that their sales process and delivery times had seen negative changes lately. Common for both was however that most respondents did not blame this on EVs alone, but mostly on other factors such as Covid-19.

Respondents were also probed about to what extent EVs had affected their variable costs, and if so, how. 5/9 stated that their variable costs were similar prior to EVs, while the remaining respondents stated that their costs had been reduced to a various extent. R18 summarized the reasons well: *“Our operating costs have been dramatically reduced. Large gas and toll expenses every month connected to running loan and demo cars. Costs have gone down by 75% with EVs.”*

When asked to give a numeric estimate on how their sales volume had been affected by the EV adoption, only 2/9 respondents initially portrayed a decrease. One of these, EV laggard R4, stated that they saw a long term decrease, but an increase after the EV release. The other, EV leader R5, described the exact opposite situation. While 3/9 generally stated that their volume had been unaffected, the remaining 4/9 all stated that their sales numbers had seen large increases due to the demand for their EVs. However, as one of them (R18) suggested comparing the 2021 sales figures with 2018, the years previously described as the best and the worst respectively, he agreed to a lower increase when prompted to compare the last ten years instead.

When asked how EVs had affected the average profit per car sold, some respondents struggled with giving a numeric estimate on the change in actual profits. 4/9 respondents stated that there was generally no difference in margin percentage between EVs and ICVs, and that the monetary value of the profits varied greatly between their available models. 2/9 stated that their profits had increased, with one of them estimating EVs to yield around 100% more per car. The remaining 3/9 respondents stated that their profits had decreased with an estimated value between 2% and 10% per car. However, R19 was asked how his profits could have decreased with 2% when he had previously stated that his sales

mix had increased in price, as well as his customers willingness to pay. To that he replied: *“We are treated like tenant farmers most of us, the OEM sets my prices.”* Whether the transition to EVs had been more positive or negative for the respondents own business was asked as **Interview question 7**. The results showed that most respondents' answers regarding their own business cohered with their overall market characterizations. 5/9 respondents found the total implications of EVs to be more positive and 3/5 found it to be more negative. R4 stated it to have been neither positive nor negative, with the following explanation: *“Neither. We have had some sales vacuums, but sales after the release of the (EV) have made up for that again.”*

On **interview question 8**, respondents had mixed opinions towards the proposed governmental policies and how they would affect their business in the future. Regarding a possible 2025 sales ban of ICVs, respondents were either negative due to loss in sales (6/9), or neutral as EVs already account for most of their sales (3/9). Concerning a possible removal of VAT exemptions on EVs, respondents were either negative as it increased their EV prices (7/9), or positive in the case where this increased the sales of ICVs and PHEVs (2/9). However, except for R19, all respondents had positive general future prospects.

The table below summarizes the key findings on RQ1:

| Respondents | 1 | 2 | 3 | 4 | 5 | 17 | 18 | 19 | 20 |
|-------------------------------------|---------------|--------------|---------------|----------------------------|-------------------|---------------|------------------|----------------|----------------|
| Overall market implications | Positive | Positive | Positive | Negative | Negative | Positive | Positive | Negative | Positive |
| Impact of EV policies | Positive | Positive | Positive | Mediocre | Negative | Positive | Positive | Negative | Positive |
| Change in sales volume | Over 100% up | Over 100% up | No change | Down first, up 200% lately | Up first, so down | No change | 200% up* | No Change | Large increase |
| Change in profit per car | No difference | More per EV | No difference | No difference | Less per EV | No difference | 100% more per EV | 2% less per EV | 0-10% less EV |
| Direct business implications | Positive | Positive | Positive | Neither | Negative | Positive | Positive | Negative | Positive |

*Between 2018-2021, less between 2011-2021

4.2 RQ2: Used Car Sales

4.2.1 Overall Market Implications

How the transition to EVs has impacted authorized dealers sales of used cars is asked as RQ2. On **interview question 1**, asking the respondents to freely bring up how EVs have affected the second hand market positively, 7/8 respondents

initially mentioned a massive increase in demand as a general positive effect of EVs. As a result of the increased demand, 3 respondents also unsolicitedly mentioned that the price fall on used EVs had been much lower than expected. R7 even stated:

“Something previously only seen with premium brands for ICVs is that used EVs keep their value extremely good in the second hand market. People are even speculating, buying new cars and flipping them for 20-30k NOK more 2 weeks later. Authorized dealers can't do that of course, as we are not allowed to sell used cars for more than new ones.”

When asked, the 6 remaining respondents also agreed that EVs have had lower price fall than expected, thus affecting the general price level in the second hand market positively. However, 3/8 respondents emphasized that this was a recent effect of covid and delivery delays on new cars, as explained by R18: *“During the last 2 years, 2,5 years soon to be, we have seen customers be willing to spend more money on used EVs. This is of course due to the waiting lines on new ones.”*

Few respondents initially brought up any negative EV caused changes to the second hand market, when asked about this in **interview question 2**. However, in contrast to the increased demand for EVs, R6 brought up a general price decline for used ICVs, and R19 stated: *“The most negative change that has come with EVs is that it has decreased our opportunities to make good deals, as only a few segments face a profitable demand.”* When asked, the other respondents also agreed that the demand for ICVs, and thereby price levels, had seen a decline. However, most respondents commented that diesel had maintained itself surprisingly well. R7 elaborated: *“Rather unexpectedly, the market also sees a crazy demand for used diesel cars. I guess the consumers are not agreeing with the government that the time for these are over.”*

No respondents initially brought up if EVs had changed the effect of brand value on price fall. When asked, this was a topic few respondents elaborated much on. Still, all agreed that premium brands generally experience a lower price fall on their used cars, and that this had seemingly not changed with EVs. When probed about potential changes to the second hand market sales mix, it was a common

consensus that this reflected the new car market. Thus, having an increased demand for larger cars, something particularly stated for used diesels. 6/8 respondents also confirmed this to affect the profits positively, while the remaining 2 emphasized that this was highly dependent on the purchase price.

Even if several respondents brought up an increase in demand, none unsolicitedly brought up if EVs had affected the second hand market volume either positively or negatively. When asked, half of the respondents stated that the overall second hand market volume had seen a decrease lately, while the remaining respondents stated it to be unchanged. Those reporting a decrease did however not attribute this to the qualities of EVs, but rather that the demand was far higher than the current supply, as R18 stated: *“The market is almost vacuumed for used cars as the demand is so high.”* R7 elaborated with a numeric estimate on the decrease: *“The demand has surely increased, but the overall volume has decreased for a couple of years. There are currently around 60 thousand cars on finn.no, it used to be around 70-80 thousand.”* When asked how EVs have affected the profitability of the second hand market, 4/8 respondents stated this to have been positively affected, with the reason mainly being the increased demand for used EVs. The remaining 4 stated it to be equal to prior to EVs, with the reasons being that the demand for EVs canceled out with the decline for ICVs, or limited supply.

Another topic not initially brought up by any respondents was if EVs had affected the number of dealers. 3/4 respondents (R17-R20 was asked this in relation to RQ1) believed that this would generally stay unchanged, while R7, being the exception, stated: *“The number of second hand departments in authorized dealers will be the same, but the number of smaller independent used cars stores will decline. People choose to sell their cars over Nettbil and other platforms”.*

Interview question 3 about to what extent the transition to EVs has been more positive or negative for the overall second hand market, showed that 7/8 respondents perceived that EVs had been more positive. The only exception was R19, finding the demand for fewer types of cars to be more negative. However, some respondents, like R9, also emphasized that the positive implications were recent: *“Increasingly more positive. 3 years back maybe neither, but prior to that worse. The batteries are better than expected, and the demand is huge.”*

On interview question 4, asking to what extent the governmental EV policies had been more positive or negative for the second hand market, 6/8 respondents perceived that they had been more positive. The most commonly mentioned reason for this was that the increased amount of new sales had benefited the volume in the second hand market. The 2 respondents finding the incentives to be negative, namely R6 and R19, supported their answer by stating that a cheaper price on new cars damaged the price level in the second hand market. As this was an issue covered by the predefined probes, the 6 initially positive respondents were also asked about this. Some respondents, like R9, then somewhat agreed: *“The question dont have the same effect because of covid, but yes, cheaper new EVs does of course reduce the price level of used cars.”*

4.2.2 Direct Business Implications

When asked to freely bring up how EVs had positively impacted their own business on **interview question 5**, respondents generally reported that their business had been affected similarly as the overall market. Yet again, the most common mention was the increased demand for used EVs, brought up by all respondents to have positively impacted their business. Thus 7/8 were also positive towards the reduction in the average listing time for their used cars, as R18 stated: *“Large demand for used cars! The (EV) sells as fast as they get in.”* However, R19 emphasized that this was highly dependent on the model.

There were however few negative mentions when **interview question 6** openly asked the respondents how EVs had negatively impacted their second hand business. The only exceptions, R6 and R20, both brought up that EVs had made it more unpredictable, as explained by R20:

“The market has become more unstable. When Tesla delivered 5000 model 3s during march 2019, many of our customers dumped their old cars into the market. The number of (EV) on Finn.no doubled during that month. The prices collapsed, so I lost a lot of money until the end of August that year. That's a market correction I have never seen with ICVs.”

Despite mentioning the above, R20, and 6 other respondents positively reported that their used cars generally sold for more today than prior to EVs, when probed about the price level of their used cars. The reasons for this were stated to be due to the currently close to non-existent price fall on used EVs. Several respondents also stated that their used ICVs sold for decent prices, despite reporting a general decline in their demand for the overall market. When asked to explain this, R7 among others, stated that this was due to the low age of their ICV inventory: *“We normally only take in used cars that are within warranty time, so our second hand stock still fetches good prices.”* R18 also added that this was particularly true for their larger diesels:

“There has been a price-fall on petrol and diesel in general, but we leased out many (ICV SUV) some years ago, and they sell for good prices when we get them back. Hits a segment who wants a large diesel engine, not comfortable with charging, drives to their summer houses in Europe or needs something to pull horse trailers with.”

No respondents directly brought up changes to their second hand sales mix, that being car segments, in question 5 or 6. When asked, respondents were generally neither very positive nor negative towards this. The most common answer was that the second hand sales mix reflected the sales in the new car market well, and that for ICVs, larger diesels were most popular. R9 summarized: *“Its sheer mathematics as most of our used cars comes from expired leasing deals. What rolled out the doors three years ago is what we get back now. But the mix is unproblematic for us, maybe we are lucky with our brand.”*

When asked how EVs had affected the accuracy of the residual values on cars from expired leasing deals, most respondents reported the values for EVs to be higher than initially expected. The reasons for this were said to be better batteries and high demand. However, based on available information, EV leader R17 was prompted on if the times prior to covid-19 had been more uncertain. He then admittingly replied:

“That is probably correct. During summer 2019 there were many cars in stock, often too many. We and other dealers selling (brand) were dreaded

to receive leasing cars because we predicted that it would be losses. Often 20-30k per car. But then came covid. Took a while from the first wave in March before we saw the results, but suddenly people started buying used cars. People were going on road trips and wanted cars fast. It turned to profits a few months later. Saved many dealers accounts I believe.”

Two topics no respondents initially commented on, were if EVs had affected the way they sourced used inventory or their costs related to customer complaints. When asked, all 8 respondents stated that they much more actively purchased used cars today due to the increase in demand. This was generally denoted as positive. Regarding customer complaints, 6/8 respondents agreed that complaint costs with used EVs could be much higher than with ICVs, and that this was negative. However, as 5 of these again reported to sell cars within warranty time, only R20 mentioned an increase in his own costs. The reason for this was stated to be that correcting deficiencies with used EVs were more expensive. The majority’s opinion on this question was summarized by R6: *“Don't think many authorized dealers experience an increase in this, but way more risky for independent dealers selling older EVs outside the warranty.”*

When asked to give a numeric value on how EVs had affected their yearly used car sales volume, all respondents reported a positive increase. Just how much, and if the respondents were able to give a numeric estimate varied. Regarding the average profit per car, all respondents also stated that this had been positively increased as a result of EVs in the current market. However, some respondents like R17 and R19, also admitted that it had for certain time periods in the past been affected negatively. In terms of specific percentages, few respondents were able to derive a numeric estimate on just how much the current profits on used cars differed from prior to the EV adoption, as R19 summarized: *“Selling used cars is a craftsmanship and a form of art, it totally depends on how good deals you are able to make when buying inventory.”* The ones who did give a numerical estimate, described a 40 to 150 percent increase in margin per car.

Interview question 7, asking to what extent the EV adoption had been more positive or negative for the respondents' second hand business, showed that 8/9 reported it to be more positive. Some did, however, point out that this was due to

the currently high demand in the second hand market for EVs. R19 found the EV adoption to have impacted his second hand sales more negatively, with the reasons being previously mentioned points regarding less demand for ICVs.

On interview question 8 about future proposed policy changes and how this can affect the respondents businesses, all believed that a removal of VAT exemptions on new EVs would either have no effect or affect their second hand sales positively. The 3 predicting it to have a positive effect mainly reasoned that a higher price on new cars would lead to a higher demand for used cars. R8 summarized the reasoning for those predicting minimal effects well: *“On the basis of 30 years experience, I'd say that this would blow over. Similarly to the reintroduced VAT on cars above 500k, you get out in March-April next year, and the price lists have adjusted. No, not any major effects.”* All respondents did however predict an increase in used ICV prices in the case of an implementation of the 2025 new ICV ban. R9 explained: *“a 2025 ban on ICVs will have major consequences, as used fossil cars will go up in value a lot. As a politician, you can club it down because you as a politician think it is a good idea, but the voters do not want it.”*

The table below summarizes the key findings on RQ2:

| Respondents | 6 | 7 | 8 | 9 | 17 | 18 | 19 | 20 |
|-------------------------------------|-----------|-----------|----------|----------|---------------|----------|---------------|-----------|
| Overall market implications | Positive | Positive | Positive | Positive | Positive | Positive | Negative | Positive |
| Impact of EV policies | Negative | Positive | Positive | Positive | Positive | Positive | Negative | Positive |
| Change in sales volume | Increased | 20% up | 15% up | 25% up | Increased | 100% up | 10-20% up | 50% up |
| Change in profit per car | Increased | Increased | 40% up | 50% up | Increased now | 150% up | Increased now | Increased |
| Direct business implications | Positive | Positive | Positive | Positive | Positive | Positive | Negative | Positive |

4.3 RQ3: Service and Repairs

4.3.1 Overall Market Implications

The third research question asks how the transition to EVs has impacted new car dealers’ service departments. The results of **interview question 1** showed that the respondents generally struggled to freely bring up EV adoption effects on the service market that has been positive for the Norwegian car business overall. 5/7 respondents did, however, mention one positive effect on the service market to be that they had to start thinking new, adapt to the new changes, learn new skills and

detach themselves from old traditional mechanical work that they have done in several decades. R10 summarized this general consensus well by saying: *“At the time I can’t say anything specifically positive about the service market yet. One thing I can mention that has been good is that the evolution has forced us in the car business to think new and be a part of the new journey.”*

Thus, all respondents brought up huge educational costs when asked to freely name negative implications of the EV adoption on **interview question 2**. This was stated to be necessary in order to meet the rapid changes, and R12 added: *“Even if huge resources are spent on education for dealers’ staff, cars are being pushed into the market much faster than dealers can educate.”* However, the negative implication all respondents emphasized the most was how EVs need less service, something exemplified by R10 who said: *“There have been large changes in the service market. EVs can literally go an unlimited amount of distance in the two first years before any service is needed. That equals roughly 70k NOK of service for an ICV.”* All respondents also touched upon the technical differences between EVs and ICVs, with the only thing that differed was how detailed their explanations were. R19 stated: *“Well, that’s the big bad wolf. EVs need much less service. They have few mechanical parts and need in general less oil change. The major obstacle for the service market will be how to take it back”*, and R12 added: *“It’s not just less service due to fewer oil changes and less mechanical parts, but much less needs to be done with the brakes. EVs regenerates when the electrical motor breaks, which results in the brakes being less used, especially the rear ones”*.

Although all respondents initially brought up the declined need for service, not all respondents elaborated on to which extent EVs also needed less repairs. When asked, the results showed that all respondents agreed to a declined need for repairs as well, but 4/7 mentioned that the volume was currently kept up by the increased amount of warranty work from the high sales numbers of new EVs. R10, being the only respondent who were somewhat positive towards EVs in terms of repairs, said:

“The repair volumes have been maintained since the EV adoption due to warranty work covered by the factory, but repairs done covered by the

customer will go down in the short term. However, Dealers will gain some profit on this in the long term due to more expensive parts being changed”.

As all respondents initially stated the volume from service had been affected negatively, they were probed about to what extent they believed that this could affect the number of service departments. 3/7 respondents thought there would be no change, stating that the need for service would always be present and that service departments would adapt to the new changes. R11 stated that there would be a decrease in independent workshops, but no change in authorized departments. The remaining 3/7 stated that it was too early to say whether there would be a change or not. Despite this, there was a clear agreement on **interview question 3**, asking whether the EV adoption had been more positive or negative for Norwegian service departments. All 7 stated that EVs were more negative due to their lesser need for service.

Interview question 4 showed that 5/7 respondents perceived the governmental EV policies to be more negative than positive for the service market. The main reason for this was simply that the incentives motivated the purchase of cars less profitable for the service departments. R18 was neutral towards the incentives in terms of their effect on the service market, and R10 found the incentives to be more positive. The reason for this was stated to be that the incentives had increased the number of new cars sold to a point where it actually benefited the repair volume.

4.3.2 Direct Business Implications

The respondents generally brought up the same topics they had mentioned for the overall service market when asked to freely name how EVs had affected their own business positively in **interview questions 5**. Thus, several respondents brought up that they had gained an increased knowledge as a positive implication of EVs. R11 further added that he perceived that their business had gained competitive advantages over independent workshops:

“Mechanics have possibly been in a hibernation earlier, sitting on the same competence as the ones at independent workshops . If one wants a job, he or she must stay updated. Our position has therefore been strengthened versus independent workshops that don't have the right computer systems, courses and internal network for our OEM(s). They may face hard times ahead.”

This was initially not something that the authors had foreseen, but as the point was interesting, it was followed up on. All respondents interviewed after R11 were therefore asked if EVs had caused any changes to the competition between authorized service departments and independent workshops. Of those asked, everyone with the exception of R20, also brought up that they perceived that their positions were strengthened versus the non-authorized businesses. R20 did, however, have a different view due to their lead experience:

“We have had many repairs over the years because of EV consumers dodging services thinking that there are no costs to them. This meant that they had a high price sensitivity, which resulted in some of them choosing other independent workshops over us after the warranty time. However, we have had some major problems early on with some of our EVs, even resulting in technicians being flown in to solve the issues. This gave us insight that no one had at that time. So I think that the advantages only might be temporary until the independent workshops catch up”.

When asked to freely mention negative business implications on **interview question 6**, 6/7 respondents initially brought up a decline in service volume. R20, being the exception, did however state that they have had a slight increase lately:

“The service department has seen an increase in volume for service, but this is solely an effect from the increase in sales that we have had and the new methods we have implemented. To keep maintaining this volume we need to be much more active in outreach marketing activities. That means contacting customers with cars older than 5 years, which is the warranty time, and new owners in the area. It is a struggle!”

All respondents, except R20, did therefore also mention a decline in profits generated from service in question 6, and R19 had this to say: *“The most profitable part for us is oil, and as you surely know EVs don't need oil. That is an income lost. Much less service costs for the consumers means loss in turnover for us”*. When R20 explained that their profits from service had been maintained throughout, he was asked to explain how. He had recently stated that they have had customers dodging services, replacing them as their service point, and that they even have had such complex problems that specialists needed to be flown in. All this before they actually implemented their new service strategy. When prompted on this, he admitted after a while that the times before implementing the new strategy were difficult. All respondents were probed about to what extent the changes in their service volume and profits had increased the importance of secondary income sources in the service department. Everyone agreed that this had become much more important, and all respondents reported that they already had started offering one or more of the following services: tire storage, car detailing, window change, paint protection foil (PPF) or wrapping.

Regarding repairs, 4/7 respondents reported a decline in volume. The remaining respondents did, however, state that their repair volume had increased. The reason for this was explained by all 3 to be that the new EV technology and high sales numbers had caused their amount of warranty cases to increase, as exemplified by R10 and R18:

R10: *“We have had a new model which we have had plenty of problems with. We have therefore had many of the same cars returning to the workshop multiple times. This is something that can be seen on newer models, resulting in more for us to do regarding repairs temporarily”*.

R18: *“Due to the massive increase in sales, our workshop has never had so much to do! Our waiting time has gone from 1 to 8 weeks after we launched our first EV model.”*

In terms of repair profits, 4/7 respondents stated that their profits had increased as a result of EVs, mainly due to more expensive parts, while the remaining stated that their repair profits were unchanged.

A topic no respondents initially brought up were to what extent EVs and ICVs differed in terms of time and resources spent on service and repairs. When asked, all 7 respondents stated that servicing EVs was generally less time consuming than with ICVs. All respondents did, however, agree on the opposite in terms of repairs. The reason was highlighted to be that troubleshooting the electric engine was far more complex than with ICVs.

When asked to give a numeric estimate on how EVs have affected their total yearly volume (both service and repairs), only 3/7 respondents reported a total increase. While R10 and R12 stated that their volume had increased by around 40% and 10-15%, respectively, R18 stated that their volume was 8 times higher as a result of their waiting time increasing from 1 to 8 weeks. After being prompted on how this could affect their workload if they were already fully booked, R18 replied: *“Even if we have gotten more cars in need of repairs and service, we still have 7,5 hours long days with limited space in the workshop. It's true that an increase from 1 to 8 weeks of waiting time for the consumers has no impact on our actual volume before we learn to be more effective.”* Of the remaining 4 respondents, 1 stated their total yearly volume to be unchanged, while the 3 others stated a decrease.

When asked to give a numeric estimate on the difference between their EVs and ICVs in terms of the average yearly profit generated per car, all stated that their EVs generate less profits. However, 4 respondents emphasized that if one were to isolate repair profits, EVs currently generate more per car. Despite this, the results showed that most respondents estimated IVCs to generate around 100% more yearly profits, with one respondent unable to derive any numeric estimate.

On **interview question 7**, asking to what extent the EV adoption had been more positive or more negative for the respondents' own service departments, 5/7 answered that the current effects were more negative. R10 and R18, both being EV laggards, answered that they currently did not see any positive or negative effects. On **interview question 8**, no respondents elaborated much on how future governmental policies could affect their service departments. However, they were all generally negative towards the future, with R10 being a bit more positive than

the others. The reason for this was that he stated the repair profits could increase due to more expensive parts being changed in the future.

The table below summarizes the key findings on RQ3:

| Respondents | 10 | 11 | 12 | 13 | 18 | 19 | 20 |
|-------------------------------------|--------------|----------------------------|----------------------------|----------------------------|-------------------|----------------------------|-------------------|
| Overall market implications | Negative | Negative | Negative | Negative | Negative | Negative | Negative |
| Impact of EV policies | Positive | Negative | Negative | Negative | Neutral | Negative | Negative |
| Change in service volume | 40% up | 20% down | 10-15% up | 20% down | 800% up | 10% down | 0% change |
| Change in profit per car | More per ICV | At least 100% more per ICV | At least 100% more per ICV | At least 100% more per ICV | 100% more per ICV | At least 100% more per ICV | 120% more per ICV |
| Direct business implications | No change | Negative | Negative | Negative | No Change | Negative | Negative |

4.4 RQ4: Import

4.4.1 Overall Market Implications

How the transition to EVs has impacted the Norwegian importers is asked as RQ4. On **interview question 1 and 2**, openly asking for positive and negative overall implications of EVs for Norwegian importers in general, all three respondents immediately pointed out that this was highly dependent on the various importers' OEMs. R15 explained:

” It is hard to give an answer to what has been overall positive and negative, because those who have gained benefits, have gained those on the expenses of others. Look at Honda and Subaru, they have completely plummeted. Because of that, some other brands have gained volume.”

All respondents therefore emphasized in some way or another, that depending on the different OEMs, changes in volume were generally both the most positive and negative implication of EVs. In addition to that, R14 also highlighted the lower need for service as a strictly negative effect of EVs. Regarding the general import mix, all respondents referred to the sales trends in the new car market, and emphasized that this was highly dependent on the models the different OEMs saw high demand for. None of the respondents gave a clear answer to what extent the higher sales of larger cars were more positive for importers in general.

As none of the three respondents initially brought it up, they were also asked how EVs had affected the overall competition in the market, and to what extent this

had impacted the number of Norwegian car importers. They yet again emphasized that due to the differences in the OEMs production of EVs, some importers had gotten competitive advantages, and vice versa. They also agreed that EVs had caused the number of importers to decrease through acquisitions, but no predictions regarding future purchases or mergers were given.

Regarding the overall profitability in the import market, the access to EVs were yet again highlighted, and the profitability for those without EVs were stated to have declined. However, as the OEMs were said to take a higher margin with EVs due to their higher costs of production, respondents did not perceive that those with access to EVs had increased their profitability dramatically. The respondents did also give coherent answers regarding to what extent the profitability for the dealers and importers had been impacted equally from the EV adoption. They all pointed out that the sales profits were tightly connected, and although the service profits had decreased for dealers, this again also affected them. R16 stated:

“It has had both positive and negative effects for both parts, but just what has been positive and negative is different. Our sales are naturally correlated, but the dealers earn less on service, particularly oil change. We earn less on parts and other equipment. For instance, when the (EV) first got released, it did not have an option for a towbar. That has always been our best selling part. This is available on the newest version though.”

Interview question 3 and 4 showed that the respondents had mixed opinions both regarding to what extent the EV adoption had been more positive or negative for the market, and towards the policies concerning them. While R14 both found EVs and the incentives more positive due to increased sales, R15 and R16 were neither very positive or negative towards any of it. R15 elaborated:

“Been very positive for getting EVs on the road, but premature in relation to the rest of the industry. More positive or negative is hard to say, again that depends on what OEMs you represent, and if they offer EVs. But I think the general answer would be that the Norwegian car business would have wished that it was more in line with the rest of the world, meaning that the incentives should have been introduced about now.”

All three respondents did however agree that the dialogue between the government and Norwegian importers had room for improvement when probed about this in relation to question 4. As with respondents from other RQs, the need for predictability was emphasized from the importers as well. R16 summarized this:

“The challenge is always, across all industries, predictability. This is particularly important for us given the amount of capital involved. The national importer association has worked hard with lobbying, and they get heard on some topics. However, in the end, our business preferences are not top of mind for the politicians.”

4.4.2 Direct Business Implications

On **interview question 5**, asking the respondents to freely name how EVs had impacted their business positively, the respondents all went straight to discussing their overall profits. R16 stated: *“We have had a fantastic product to sell which still sells really well, and that has of course affected our results positively.”* R14 and R15 both gave answers in a similar manner. However, when openly asked how EVs had affected their business negatively on **interview question 6**, R15 did mention that the import mix in itself had seen a negative change: *“It has had a positive effect on our overall profits, but it has created a change in our car park that is less profitable per car.”* R14 and R16 were both generally positive towards the changes in their import mix, but repeated that the new EVs did not increase the margins much, as the OEMs had larger production costs.

When asked, all respondents agreed on a negative increase in delivery times. None of the respondents did however directly attribute this to EVs itself, but to covid-19 and the shortage of semiconductors. All respondents did also agree that this had increased the amount of used imports of their brands, but to what extent they perceived this as negative varied. R15 and R16 stated:

R15: “Yes, since the OEMs want other emerging markets to grow faster, there has been a lot of non-sustainable sales in other countries. That is

frustrating since we could have sold the cars here, reducing the waiting lines, and because the cars end up being privately imported to Norway after a few months anyways.”

R16: *“Not only independent dealers, but we also see that our authorized dealers to a much greater extent want to import cars from other markets due to the shortage of second hand cars available here.”*

As R20, the CEO in one of R16’s authorized dealers had already mentioned this, R16 was prompted on if this was negative for them as an importer. He replied:

“It is important for us that our dealer networks do well. So we have our own used car program to make sure that cars traded within the EU are made available for our dealers to purchase.”

Noteworthy, this did not correspond with R20’s earlier statement:

“(…)The importer is making crazy money on the popularity of our EV, and the proof of this is best seen when looking at their view on used imports. We wanted to bring in some almost new cars on our own, but they refused us to place them in our second hand showroom We believe that it is better that we, as an authorized dealer, get to use this resource, instead of some guy on the corner bringing in 10 cars without being able to offer warranties or after-sales. Even though it hurts seeing that independent dealers can buy the same cars as us for 20 thousand NOK less and still make more money per car, we are determined to win the customers back when they come to us for service.”

None of the respondents were able to give a numeric value on the change in their volume as a result of EVs. R14 stated that their volume had seen a modest increase, particularly for one of the OEMs they represent. R15 stated that their total volume was generally unchanged, but that there had been changes within the different OEMs they represent. R16 stated that their volume had gone in a curve, initially having a large increase, before going down to the level prior to EVs. He did however add that they had many pre-orders on their upcoming EV model, but

would not go into specific numbers. When asked about the profits per car, all respondents refused to give a numeric value and therefore digressed. They did, however, all state that the profits per EV were less than the profits per ICV, although some in a more confusing way than others:

R16: "The numbers on the margins are confidential, and we also belong in a group. We buy the cars from the factory, and sell them to the dealers, so there are margins on different levels here. But, we are still one company, so I can tell you that the numbers are discussed back and forward within the chain."

R15: "I can not go into the actual numbers, but I can say that since EVs are more expensive to produce, there has been an increased pressure on the margins. Thus we get less margin per ev than what we do with ICVs."

When asked how they perceived that their own authorized dealers had been impacted by EVs, and if their dealers were better or worse off than themselves, the respondents answered in line with what they had stated for the general market. R14 summarized:

"As said, we both lose profits related to service. but it is probably worse for the dealers, because although we sell less parts, the oil revenues are more important for them. Another important factor is the time it takes to service. EV service takes way less time, so they lose earnings related to that, as they can charge for fewer hours."

When asked to elaborate on how this had affected their importer-dealer relationship, all respondents stated this to be unchanged. R16 did however add:

"The cooperation and relationships we have had with our dealers have always been that you of course have some disagreements and conflicts, but you solve this in different ways. I don't think I would say that this has changed as a result of EVs. At least not for us, but I think for those brands who have not been selling EVs, the discussions have gotten tougher."

Interview question 7, asking to what extent the EV adoption had been more positive or negative for their own business, showed that the three importers had mixed opinions. Despite having answered positively regarding their own total profits, both R15 and R16 stated it to be more negative:

R15: *hard to tell where we would have been without EVs, but if you isolate “ev or not ev”, not ev is the preferred answer.*

R16: *if you had taken a scenario without EVs, we would have earned more money per car. so we would have had a better everyday life if EVs never existed. but now they do, and it will only increase.*

R14 did, however, answer that the overall result of the implications had been positive for them as an importer:

“Both positive and negative. If you look at it from the factory's point of view, this project is a big loss as there is not enough volume to profit yet. High volume in Norway is irrelevant, because the market is just a fraction. We get a lot of credit from the factory, so we have some room for trial and error. Thus we don't face the biggest losses, and the increased demand is profitable. We are lucky that our OEM has been kind, and looked at us as a test market for EVs.”

On **interview question 8** about future proposed policy changes, all three respondents were generally negative towards a too rapid ICV ban and the removal of EV incentives. R15 summarized this well: *“We have adapted to today's situation. New policies create large consequences for us. We need time to implement new measures, and 2025 is far too soon. But it will not happen that fast.”* Despite this, the three respondents did have positive future prospects.

The table below summarizes the key findings on RQ4:

| Respondents | 14 | 15 | 16 |
|-------------------------------------|----------------|--------------|--------------|
| Overall market implications | Increased sale | Neither | Neither |
| Impact of EV policies | Increased sale | Neither | Neither |
| Change in sales volume | Increased sale | Neither | Neither |
| Change in profit per car | Less for EVs | Less for EVs | Less for EVs |
| Direct business implications | Positive | Negative | Negative |

4.5 Lead Market Benefits and Disadvantages

Question 9 asked all respondents across all research questions if they perceived that they had gained benefits or disadvantages from operating in the lead market of Norway. For RQ1, several respondents answered that the Norwegian market had gained an increased international attention. As a result of this, 4/9 respondents brought up lead market benefits in terms of increased delivery quotas from their OEMs, and that unveilings of new EVs often took place in Norway. This was said to both benefit the dealers' sales and the consumers through access to new green technology. For RQ2, no specific lead market advantages or disadvantages were mentioned. In RQ3, no respondents found any advantages with being first out, but 4/7 stated it to rather be a disadvantage. The reason for this was mentioned to be that new emerging markets could learn from their mistakes, with R10 adding that the lead market adoption could have disadvantages for the consumers as well

“Since the demand in Norway happened so soon, too soon honestly, there has been sold a lot of cars here that have had some major technical problems and been underdeveloped. There are probably a lot of customers that are not super happy with the product they have received.”

On RQ4, all three respondents brought up lead market advantages in terms of more attention from the OEMs and higher quotas. R14 also pointed out that they got better prices due to their lead market position:

“The market size of Norway is insignificant, but market shares are highly important for the OEM. Since the EV sales have given us a much larger market share than what our OEMs have in other countries, we have

gained influence over the factory. Bigger quotas, better prices, that's the name of the game.”

However, R16 pointed out that their benefits in terms of larger quotas not necessarily were lasting:

“(…) But at the same time they also want to increase the sales in other bigger markets, so we do experience that our quotas are getting gradually less prioritized.”

Lastly, R15 also named a potential lead disadvantage that applied for all suppliers in Norway.

“As Norway is the first country facing a full demand for EVs, there has been a large skewness regarding what the OEMs, and thereby the suppliers, can offer. This will not be a problem in other countries, because by the time the rest of the world has the same demand as Norway, every OEM will be offering EVs.”

5.0 Discussion

The overall findings in this study shows that the Norwegian LM adoption of EVs have impacted the authorized suppliers both positively and negatively. RQ1 demonstrates that those selling new EVs have been impacted positively, not because EVs are more profitable in itself, but due the increased volume and favorable changes in the sales mix. Similarly, RQ2 demonstrates that although the demand for used ICVs have gone down, the impact has been more positive due to the currently high demand and price levels for second hand EVs. RQ3 shows that EVs have decreased the profits and volume from service, which has forced the service departments to look for other sources of income. However, repair volume and profits have been kept up for some due to the high sales of new cars with current reliability issues. Despite this, the total impact on the service department is found to be more negative. Lastly, the Norwegian importers are found, in RQ4, to have been impacted by EVs both positively and negatively. The current margins on EVs are lower, but the extensive volume growth for some brands has been favorable.

As the results above are generally more positive than what previous literature suggested, this study's limitations should be taken into account when discussing to what extent the findings indicate the true long-term implications of EVs, or the results of short-term trends. Firstly, there have been temporary internal market effects like the anticipated reduction in EV subsidies. This may have not only heavily influenced consumers in the market to speed up their purchase, increasing the volume of new cars sold, but also increased sales of more expensive EVs. The latter, as a most probable effect from the government pondering the removal of the VAT exemptions on EVs above 500K.

Temporary external market factors may also have affected our results. The lack of social expenses due to Covid-19 may have increased the consumers spendings on new cars, causing both the volume and sales mix to shift thereafter. The current component shortage, and resulting delivery delays of new cars have on the other hand likely regulated the new car volume in the opposite direction. However, as confirmed by our findings, this has highly benefited the second hand market. Rapid technology changes may also serve as an explanation for why our answers

may differ from previous research. Taking both past and future EV development into account, it is likely to assume the current price consumers need to pay in order to cover their driving needs from EVs represents a peak. With longer range economy EVs on the horizon, the sales of premium EVs may be reduced.

As a result, multiple findings may therefore have been reported more positively. Respondents in RQ1 have most likely stated way higher new car sales, especially higher priced ones, than they would have when excluding temporary factors. The same could be said for RQ3, where the increase in repair volume due to more new EVs sold was stated to be one of the main reasons for not facing bigger losses. Service departments have therefore arguably not faced the full effects from EVs yet. As for respondents in RQ2 stating an increase in used car sales and prices lately, this is more or less all results from the delivery delays on new cars as a result of component shortage. There is also a final limitation connected to the chosen approach of this study. Although several measures have been taken throughout in order to ensure honest answers, the probability of response bias will always be present. This may be particularly true when taking the mentions above into account. Respondents may have intentionally presented the current situation as the norm, without elaborating on potential problems experienced in the past, or expected in the future.

5.1 Implications:

5.1.1 Lead Market contribution

As mentioned in section 2.2, the contribution of this study and meaning of including suppliers in the LM literature, is understanding their role and how to utilize it for further diffusion. This is now done, and while previous literature on LMs defines a series of advantages for both countries as a whole, producers and users of new technologies, our findings indicate a more diverse situation for the suppliers.

On a national level, we found that the LM suppliers to a larger extent gets more dependent on their OEMs efforts, meaning that suppliers representing laggard OEMs may suffer large losses in market shares when operating in a LM, and vice

versa. However, as our findings suggest that LM consumers become less brand loyal, market shares may shift continuously until the development of the innovations' main attribute has reached a point where the consumers are more indifferent towards new updates. This is likely something that only will be seen in LMs, because by the time the innovation reaches widespread global adoption, the OEMs offerings will seemingly be more similar. While representing a laggard OEM in a LM will most certainly be negative in all cases, the benefits of being a supplier for a lead OEM may also be discussed. In the case where an OEM's national market share initially is low, changes in demand may possibly result in an extensive volume growth favorable for the respective suppliers. However, for suppliers representing OEMs with formerly well established market positions, the unpredictable changes in demand are seemingly less favorable, assuming that their market shares have less room for growth to begin with. Well established suppliers may therefore have "all to lose", particularly in the case where the distribution of the innovation brings additional costs or removes former sources of income.

Our findings also suggest that there are both advantages and disadvantages of being a LM supplier on an international level. If the innovation brings the suppliers new costs and challenges, a LM status can be argued to be a disadvantage. The reasoning for this is that suppliers in later emerging markets may have the opportunity to learn from previous mistakes, and implement new strategies and training at a lower cost. Our study does, however, highlight that LM suppliers may get an international advantage related to prioritized deliveries, bigger quotas and possibly also better prices. However, to what extent these benefits are lasting may strongly depend on the size of the market. If the market is small and makes up for an inconsiderable share of the OEMs total sales, these advantages are likely to be passed on to larger emerging markets in the future.

When it comes to the supplier's role, our findings suggest that in a LM with consumer-oriented subsidies, it is actually close to insignificant. The key-factor here is substantial governmental policies directly targeting the consumers and not the suppliers. This means that even if the technology is less profitable for the suppliers, they still have to sell it to maintain their volume. Selling the less profitable innovation could be avoided in the case where all suppliers work

together on not offering it. However, they will always have incentives to deviate, as this would ensure them large market shares. As a result, all suppliers will always offer the less profitable innovation, much like the economic theory commonly known as the “prisoner's dilemma”.

5.1.2. Managerial implications

As mentioned above, the Norwegian LM suppliers are to a large extent dependent on their OEMs effort in developing EVs. Thus, the variables arguably having the largest effect on the profitability are out of their control. This is particularly true for RQ1, RQ2 and RQ4, as the models available for sales and import are decided by the OEM. The managerial implications emphasized therefore concerns the measures which can be implemented to counteract the negative implications reported in RQ3. All respondents stated that EV service was less time consuming, and this is something that should be utilized by developing service strategies that allows for a greater daily volume. An example of that could be to spread the customers' service appointments throughout the day, avoiding bottlenecks and full workshops before and after normal office hours. Another action should be to further develop secondary income sources, and offer most, if not all of the following: tire storage, car detailing, window change and paint protection foil (PPF) to cover some of the reductions in profits.

5.1.3 Public Policy Implications

LM experiences from how governments can affect EV adoption has already been examined. The role of the government in both implementing and discontinuing the right policies at the right time has been credited as the most important by previous literature, as generous amounts of introduced subsidies will ease some of the consumer barriers found to be highly negative for adoption of EVs (Olson, 2018). This will also increase OEMs' ROI, as we found EVs to bring huge costs and little income for them (low margin), meaning that they need to sell more to actually benefit from production. Subsidies were therefore found by suppliers (RQ1, RQ2, RQ4) to be highly necessary for attracting both consumers and OEMs towards EV adoption and production, respectively (Olson, 2018). As suggested by some of the respondents in our study, implementing subsidies could be delayed until most of

the OEMs have a couple of EV models each, maintaining competition level and market structure. Another important action that we found highly necessary from the government, was to adequately communicate any future implications to suppliers. This ensures predictability, and gives the suppliers a sufficient time frame for implementation of potentially necessary new measures.

As for withdrawal of subsidies, it was highlighted in all the mentioned RQs above to be way too early. Effects from such premature withdrawal of subsidies can be witnessed as Denmark and Hong Kong's consumer demand totally collapsed (Ip, 2017; Olson, 2018). It shall, however, be noted that this choice can potentially be made after EV technology and cost of production are more inline with ICVs (Olson, 2018), reducing consumer barriers (Egbue & Long, 2012), or after supplementary actions are taken by the government. Among these is setting a higher tax on petrol/diesel, which could be more beneficial for the state than introducing subsidies in the first place, increasing revenue and obtaining a double dividend (Goulder, 1995). Another alternative is to ban sales of new ICVs. However, this is unlikely to be beneficial before EV technology and infrastructure has reached a fully developed state. If done prematurely, consumers are likely to avoid the restrictions by purchasing second ICVs instead.

By intervening, our results show that the government can positively support their actors towards further EV adoptions, even suppliers, and hence coming closer to environmental improvement. However, subsidy policies are advised by suppliers to be continued, and may therefore still account for huge costs for the country as a whole, especially when influencing toll and road tax income in a negative way over a long period. Thus, the effect of the extensive Norwegian government's supporting policies have been decent, but not efficient. As for lag markets, all of the experience acquired from the Norwegian LM mentioned above can be used in increasing their success in adapting EVs. However, this is as mentioned expensive, and they may therefore wait for, or support, changes to the technology and/or production instead (Olson, 2018).

6.0 Conclusion

Lead markets are important for understanding and potentially influence the diffusion of new products and services. However, no studies have been conducted on those actually distributing the new innovation, and how they are affected by the diffusion or the following governmental interventions. This study covers the previous gap in literature by looking at how the Norwegian automobile suppliers have been affected by the country's LM adoption of EVs. The findings show that several Norwegian suppliers have been affected more positively than what previous EV literature suggested. This is however not due to EVs being more profitable in itself, but rather due to the extensive governmental policies favoring them. In fact, not being able to supply EVs can be highlighted as the biggest negative of them all. As a result of the latter, a LM status is arguably the source of more disadvantages than advantages for most suppliers. Potentially large costs related to the implementation of training or new strategies, and upheavals in the demand causing unpredictable changes in market shares, are only made up for with potentially temporary benefits from the supplier's OEM.

The findings in this study present a static picture of a fast moving industry. Furthermore, several external market factors have arguably also caused the industry to experience two of its most abnormal years, resulting in a large potential for future development on the topic. This is something which should be given attention. Thus, the current research should be repeated after the market has fully recovered from the external disruption. In addition to that, further research should also be conducted on LM suppliers in other trades, particularly markets where the suppliers themselves are subsidized.

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8.0 Appendices

Appendix 1: Interview guide RQ1

Q1) Over the past 10 years the EV market has gone from a relatively small niche with a 3% share of new cars sales in 2012, to the dominant selling type of vehicle sold in Norway with above 80% share so far in 2022. In what ways (if any) would you say that this development has affected the new car market positively for the Norwegian car business in general?

- Why and in what ways specifically?

Q2) In what ways (if any) would you say that this EV development has affected the new car market negatively for the Norwegian car business in general?

- Why and in what ways specifically?

Q3) Overall, would you say that this EV development has affected the new car market in a way that has been more positive or more negative for the Norwegian car business in general?

- Why and in what ways specifically?

Q4) Overall, would you say that the Norwegian Governmental EV policies have affected the new car market in a way which has been positive or negative for the Norwegian car business in general?

- Why and in what ways specifically?

Q5) Based on your own experiences, in what ways (if any) has Norway's transition to EVs been positive for your business related to new car sales?

- Why and in what ways specifically?

Q6) In what ways (if any) has Norway's transition to EVs been negative for your business related to new car sales?

- Why and in what ways specifically?

Q7) Overall, would you say that Norway's transition to EVs has been more positive or negative for your business related to new car sales?

- Why and in what ways specifically?

Q8) Do you think potential future changes to the Norwegian EV policies (removal of incentives, 2025 goal etc.) would be more positive or negative for your business related to new car sales?

- Why and in what ways specifically?

Q9) Do you perceive that your business, or the general Norwegian car business have obtained any lead market advantages / disadvantages related to new car sales?

- Why and in what ways specifically?

Q10) Are there anything relevant you feel we haven't touched upon that you would like to add before we end this interview?

Appendix 2: Interview guide RQ2

Q1) Over the past 10 years the EV market has gone from a relatively small niche with a 3% share of new cars sales in 2012, to the dominant selling type of vehicle sold in Norway with above 80% share so far in 2022. In what ways (if any) would you say that this development has affected the second hand market positively for the Norwegian car business in general?

- Why and in what ways specifically?

Q2) In what ways (if any) would you say that this EV development has affected the second hand market negatively for the Norwegian car business in general?

- Why and in what ways specifically?

Q3) Overall, would you say that this EV development has affected the second hand market in a way that has been more positive or more negative for the Norwegian car business in general?

- Why and in what ways specifically?

Q4) Overall, would you say that the Norwegian Governmental EV policies have affected the second hand market in a way which has been positive or negative for the Norwegian car business in general?

- Why and in what ways specifically?

Q5) Based on your own experiences, in what ways (if any) has Norway's transition to EVs been positive for your business related to used car sales?

- Why and in what ways specifically?

Q6) In what ways (if any) has Norway's transition to EVs been negative for your business related to used car sales?

- Why and in what ways specifically?

Q7) Overall, would you say that Norway's transition to EVs has been more positive or negative for your business related to used car sales?

- Why and in what ways specifically?

Q8) Do you think potential future changes to the Norwegian EV policies (removal of incentives, 2025 goal etc.) would be more positive or negative for your business related to used car sales?

- Why and in what ways specifically?

Q9) Do you perceive that your business, or the general Norwegian car business have obtained any lead market advantages / disadvantages related to used car sales?

- Why and in what ways specifically?

Q10) Are there anything relevant you feel we haven't touched upon that you would like to add before we end this interview?

Appendix 3: Interview guide RQ3

Q1) Over the past 10 years the EV market has gone from a relatively small niche with a 3% share of new cars sales in 2012, to the dominant selling type of vehicle sold in Norway with above 80% share so far in 2022. In what ways (if any) would you say that this development has affected the service market positively for the Norwegian car business in general?

- Why and in what ways specifically?

Q2) In what ways (if any) would you say that this EV development has affected the service market negatively for the Norwegian car business in general?

- Why and in what ways specifically?

Q3) Overall, would you say that this EV development has affected the service market in a way that has been more positive or more negative for the Norwegian car business in general?

- Why and in what ways specifically?

Q4) Overall, would you say that the Norwegian Governmental EV policies have affected the service market in a way which has been positive or negative for the Norwegian car business in general?

- Why and in what ways specifically?

Q5) Based on your own experiences, in what ways (if any) has Norway's transition to EVs been positive for your business related to service and repairs?

- Why and in what ways specifically?

Q6) In what ways (if any) has Norway's transition to EVs been negative for your business related to service and repairs?

- Why and in what ways specifically?

Q7) Overall, would you say that Norway's transition to EVs has been more positive or negative for your business related to service and repairs?

- Why and in what ways specifically?

Q8) Do you think potential future changes to the Norwegian EV policies (removal of incentives, 2025 goal etc.) would be more positive or negative for your business related to service and repairs?

- Why and in what ways specifically?

Q9) Do you perceive that your business, or the general Norwegian car business have obtained any lead market advantages / disadvantages related to service and repairs?

- Why and in what ways specifically?

Q10) Are there anything relevant you feel we haven't touched upon that you would like to add before we end this interview?

Appendix 4: Interview guide RQ4

Q1) Over the past 10 years the EV market has gone from a relatively small niche with a 3% share of new cars sales in 2012, to the dominant selling type of vehicle sold in Norway with above 80% share so far in 2022. In what ways (if any) would you say that this development has affected the import market positively for the Norwegian car business in general?

- Why and in what ways specifically?

Q2) In what ways (if any) would you say that this EV development has affected the import market negatively for the Norwegian car business in general?

- Why and in what ways specifically?

Q3) Overall, would you say that this EV development has affected the import market in a way that has been more positive or more negative for the Norwegian car business in general?

- Why and in what ways specifically?

Q4) Overall, would you say that the Norwegian Governmental EV policies have affected the import market in a way which has been positive or negative for the Norwegian car business in general?

- Why and in what ways specifically?

Q5) Based on your own experiences, in what ways (if any) has Norway's transition to EVs been positive for your business?

- Why and in what ways specifically?

Q6) In what ways (if any) has Norway's transition to EVs been negative for your business?

- Why and in what ways specifically?

Q7) Overall, would you say that Norway's transition to EVs has been more positive or negative for your business?

- Why and in what ways specifically?

Q8) Do you think potential future changes to the Norwegian EV policies (removal of incentives, 2025 goal etc.) would be more positive or negative for your business?

- Why and in what ways specifically?

Q9) Do you perceive that your business, or other Norwegian importers have obtained any lead market advantages / disadvantages?

- Why and in what ways specifically?

Q10) Are there anything relevant you feel we haven't touched upon that you would like to add before we end this interview?

Appendix 5: Coding - New Car Sales

| Respondent | | 1 | 2 | 3 | 4 | 17 | 18 | 19 | 20 |
|-------------------------------------|-------------------------------|------------------|-----------------------------------|------------------|-----------------------------------|------------------|------------------|-----------------------------------|------------------|
| Overall market implications | | | | | | | | | |
| Q1 & Q2 | W.T.P | Up* | Up* | Up* | Up* | Up* | Up* | Up | Up |
| | Sales mix | Up* | Up* | Up* | Up* | Up* | Up* | Up, but not lasting | Up |
| | Market volume | More per housing | Reduced time of ownership per car | More per housing | Reduced time of ownership per car | More per housing | More per housing | Reduced time of ownership per car | More per housing |
| | Brand loyalty | Decreased | Decreased* | Decreased | Decreased | Decreased | Decreased | Decreased | Decreased |
| | Financing | Less leasing | Less leasing | Less leasing | Less leasing | Neither | Less leasing | Less leasing | Less leasing |
| | Number of dealers | Down due to OEM | Decreased for authorized | Unchanged | Decreased for authorized | Unchanged | Unchanged | Down | Unchanged |
| | Market profitability | For some | Increased* | For some | For some | Increased | Increased* | For some | Increased |
| | Other mentions | | | Fewer models | | | | | |
| Q3 | More positive or negative | Positive | Positive | Positive | Negative | Positive | Positive | Negative | Positive |
| Q4 | Impact of EV policies | Positive | Positive | Positive | Mediocre | Positive | Positive | Negative | Positive |
| | Communication with government | Sufficient | Sufficient | Insufficient | Insufficient | Sufficient | Sufficient | Insufficient | Insufficient |
| Direct business implications | | | | | | | | | |
| IQ5 & IQ6 | W.T.P | Up* | Up* | Up* | Up* | Up* | Up* | Up* | Up* |
| | Sales mix | Up* | Up* | Unchanged | Up | Unchanged | Up* | Up | Unchanged |
| | Customer loyalty | Down | Down | Down | Down | Down | Unchanged | Down | Down |
| | Leasing | Decreased | Decreased | Decreased | Decreased | Decreased | Decreased | Decreased | Decreased |
| | Extras | Increased | Increased | Unchanged | Increased | Increased | Increased | Unchanged | Increased |
| | Sales process | Negative | Negative | Negative | Negative | Negative | Negative | Negative | Negative |
| | Delivery times | Negative | Negative | Negative | Negative | Negative | Negative | Negative | Negative |
| | Variable costs | Decreased | Unchanged | Decreased | Unchanged | Unchanged | Decreased | Unchanged | Decreased |
| | Volume | Above 100% up | Above 100% up | Unchanged | Down first, up 200% lately | Unchanged | 200% up | Unchanged | large increase |
| | Profit per car | No difference | more per EV | No difference | No difference | No difference | 100% more EV | 2% less EV | 0-10% less EV |
| IQ7 | More Positive or Negative | Positive | Positive | Positive | Neither | Positive | Positive | Negative | Positive |
| | Other mentions | | | | | | | Less profits | |
| Q8 | 2025 sales ban | Negative | Negative | Negative | Negative | Neither | Neither | Negative | Neither |
| | Remove EV incentives | Negative | Negative | Negative | Negative | Negative | Negative | Positive more ICV | Negative |
| | General | Positive | Positive | Positive | Positive | Positive | Positive | Negative | Positive |

Appendix 6: Coding - Used Car Sales

| Respondent | | 6 | 7 | 8 | 9 | 17 | 18 | 19 | 20 |
|-------------------------------------|---------------------------|--------------------|--------------------|--------------------|--------------------|---------------------|--------------------|--------------------|--------------------|
| Overall market implications | | | | | | | | | |
| IQ1 & IQ2 | Price fall EVs | Low | Low* | Low | Low* | Low | Low* | Low | Low |
| | Price level EVs | Increased | Increased* | increased, recent | Increased* | Increased | Increased, recent | Increased, recent | Increased* |
| | Price level ICVs | Decreased* | Decrease | Decrease | Decrease | Decrease | Decrease | Decreased* | Decrease |
| | Brand Value on Price | No change with EVs | No change with EVs | No change with EVs | No change with EVs | No change with EVs | No change with EVs | No change with EVs | No change with EVs |
| | Sales Mix Used Car Market | Larger cars | Larger cars | Larger cars | Larger cars | Larger cars | Larger cars | Larger cars | Larger cars |
| | Market Volume | No change | Decrease | No change | Decrease | Decrease | Decrease | No change | No change |
| | Profitability | No change | No change | Increased | Increased | No change | Increased | No change | Increased |
| | number of dealers | No change | Down for smaller | No change | No change | RQ1 | RQ1 | RQ1 | RQ1 |
| IQ3 | More positive or negative | Positive | Positive | Positive | Positive | Positive | Positive | Negative | Positive |
| IQ4 | Government Policies | Negative | Positive | Positive | Positive | Positive | Positive | Negative | Positive |
| Direct Business Implications | | | | | | | | | |
| IQ5 & IQ6 | Average Listing Time | Shorter | Shorter | Shorter | Shorter | Shorter | Shorter | <u>Depends</u> | Shorter |
| | Other Mentions | Unpredictable | | | | | | | unpredictable |
| | Price Level | Higher than before | Higher than before | Higher than before | Higher than before | Higher than before | Higher than before | Higher than before | Higher than before |
| | Sales Mix | Per new car | Per new car | Per new car | Per new car | Per new car | Per new car | Per new car | Per new car |
| | Residual Accuracy | Negative | Better than exp | Better than exp | Better than exp | Negativ in the past | Better than exp | Better than exp | Negative |
| | Source Inventory | More active | More active | More active | More active | More active | More active | more active | More active |
| | Complaint Costs | Could be more | Could be more | Could be more | No difference | Could be more | No difference | Could be more | More costs |
| | Volume Percent | Increased | 20% up | 15% up | 25% up | Increased | 100% up | 10-20% up | 50% up |
| | Profit Per Car Percent | Increased | Increased | 40% up | 50% up | Increased now | 150% up | Increased now | Increased |
| IQ7 | More Positive or Negative | Positive | Positive | Positive | Positive | Positive | Positive | Negative | Positive |
| IQ8 | Remove VAT | Positive | No effect | No effect | No effect | Positive | No effect | Pos | No effect |
| | 2025 Ban | ICV increase | ICV increase | ICV increase | ICV increase | ICV increase | ICV increase | ICV increase | ICV increase |

Appendix 7: Coding - Service and Repair

| Respondent | | 10 | 11 | 12 | 13 | 18 | 19 | 20 |
|-----------------------------------|--------------------------------------|--|--|--|--------------------|--|--------------------|--|
| Overall market | | | | | | | | |
| | Volume Service | Down * | Down * | Down * | Down * | Down * | Down * | Down * |
| | Volume Repairs | General Decrease: Increased due to warranty work * | Decrease | General decrease: Maintained due to warranty work * | Decrease | General decrease: Maintained due to warranty work * | Decrease* | General decrease: Maintained due to warranty work * |
| | Need training and investments | Increased: Good for knowledge in the business, but costly* | Increased: Good for knowledge in the business, but costly* | Increased: Good for knowledge in the business, but costly* | Increased: costly* | Increased: Good for knowledge in the business, but costly* | Increased: costly* | Increased: Good for knowledge in the business, but costly* |
| | Number of service departments | Unchanged | unchanged for authorized, decrease for Independent | Unknown | Unknown | Unknown | Unchanged | Unchanged |
| | More positive or negative | More negative | More negative | More negative | More negative | More negative | More negative | More negative |
| | Effect of incentives | Positive | Negative | Negative | Negative | Neutral | Negative | Negative |
| Direct market implications | | | | | | | | |
| | Increased knowledge | Increased: Good for knowledge in the business, but costly* | Increased: Good for knowledge in the business, but costly* | Increased: Good for knowledge in the business, but costly* | Increased: costly* | Increased: Good for knowledge in the business, but costly* | Increased: costly* | Increased: Good for knowledge in the business, but costly* |
| | Other mentions | | Comp. advantage | Comp. advantage | Comp. advantage | Comp. advantage | Comp. advantage | Temporarily |
| | Service volume | Decreased* | Decreased* | Decreased* | Decreased* | Decreased* | Decreased* | Slightly increased |
| | Service profits | Decreased* | Decreased* | Decreased* | Decreased* | Decreased* | Decreased* | Stable |
| | Importance of secondary inc. sources | Increased | Increased | Increased | Increased | Increased | Increased | Increased |
| | Repair volume | Increased | Decreased | Increased | Decreased | Increased | Decreased | Decreased |
| | Repair profits | Increased | Increased | Increased | Unchanged | Increased | Unchanged | Unchanged |
| | Total volume | Up 40% | 20% down | Up 10-15% | 20% down | Up 800% | 10% down | 0% change |
| | ICV profit per car relative to EV | More per ICV | At least 100% more | At least 100% more | At least 100% more | 100% | At least 100% more | 120% |
| IQ7 | More positive or negative | Unchanged | Negative | Negative | Negative | Unchanged | Negative | Negative |
| IQ8 | Future government | No opinion | No opinion | No opinion | No opinion | RQ1 | RQ1 | RQ1 |
| | General future prospects | A bit positive | Negative | Negative | Negative | Negative | Negative | Negative |

Appendix 8: Coding - Import

| Respondent | | 14 | 15 | 16 |
|------------------------------------|---------------------------------------|----------------------|----------------------|----------------------|
| Overall market implications | | | | |
| IQ1 & IQ2 | Volume | Increased for some* | Increased for some* | Increased for some* |
| | Sales mix | More expensive | More expensive | More expensive |
| | Competition | Increased | Increased | Increased |
| | Number of importers | Decreased | Decreased | Decreased |
| | Overall profitability | Increased for some* | Increased for some* | Increased for some* |
| | Dealers vs. importer impact | Quite similar | Quite similar | Quite similar |
| IQ3 | More positive or negative | Increased sale | Neither | Neither |
| IQ4 | Incentives, more positive or negative | Increased sale | Neither | Neither |
| | Communication | Insufficient | Insufficient | Insufficient |
| Direct market implications | | | | |
| IQ5 & IQ6 | Total Profits | Increased* | Increased* | Increased* |
| | Changes in import mix | Positive | Negative * | Positive |
| | Delivery times | Bad, but not EV | Bad, but not EV | Bad, but not EV |
| | Competition from used imports | Increased | Increased | Increased |
| | Volume | Increased | Neither | Neither |
| | Profit per car | Less per EV | Less per EV | Less per EV |
| | Effects on authorized suppliers | Worse | Quite similar | Quite similar |
| | Dealer-importer relationship | Unchanged | Unchanged | Worse for laggard |
| IQ7 | More positive or negative | Positive | Negative | Negative |
| IQ8 | Future government | Negative if too fast | Negative if too fast | Negative if too fast |
| | General future prospects | Positive | Positive | Positive |