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How has the increased popularity of electric vehicles impacted car dealer's businesses and their future prospects in the Lead Market of Norway?

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# Preface

Dear readers,

This bachelor thesis was written by two students in connection with the end of the three-year bachelor's degree in business and administration at Business School at the University of Stavanger. The work within this assignment was challenging and time-consuming, but it was an interesting topic that gave us a broad knowledge.

We would like to thank all the participants who took part in the interview process. They were a great asset to this thesis and provided us with enough information to base our research results and analysis.

A special thanks goes to our supervisor Erik Lee Olson, who guided us well and the commitment he had to the task as a team. His feedback helped us to maintain motivation through the bachelor thesis.

Enjoy your reading!

# Abstract

Lead Market is described as a specific design of an innovation that spreads worldwide after successful adoption by a single country. The country that is Lead Market is usually not the country that invented the new innovation that was successfully adopted. The Lead Market country was able to set international standards. Norway became the nation that massively adopted electric vehicles (EV). The Norwegian government implemented EV policies and incentives, and the result of this was that the sales of electric cars increased dramatically compared to other countries, showing that Norway is a Lead Market of electric cars. The Lead Market concept has generally focused on explaining the global diffusion of new innovations. However, the Lead Market literature has neglected Lead Market distributors who are responsible for importing, selling and maintaining new innovations. These are addressed in this research paper by examining *how the increased popularity of electric vehicles impacted car dealers' businesses and their future prospects in the Lead Market of Norway*.

In this bachelor thesis we conducted a qualitative research, where we interviewed car dealers from different geographical areas in Norway who sell new cars and those who are involved in the aftermarket. We were able to critically discuss whether the popularity of electric cars has an impact on car dealers and the future plan for Norway by linking the constraining literature available to us. We concluded that car dealers had a significant influence after electric cars entered the market, and that plans to eliminate/reduce electric cars in 2025 are still a topic of differing views.

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# 1. Introduction

History shows that globally successful innovations tend to be preferred and adopted massively in one country before they become popular internationally (Beise, 2004; Beise & Rennings, 2003). That one country or region is usually described as a Lead Market and the following countries of Lead Market are called Lag Market. Inventions and discoveries usually take place in countries other than the country where the innovation design is successfully adopted. This particular country sets a global standard by providing information and awareness of the innovation, which can reduce the risk and uncertainty, making it easier for another country to implement the new technology design and thus become a leading market for the new innovation (Beise, 2004; Beise & Rennings, 2003).

There is little literature that deals with the concept of Lead Market. Most literature on this subject generally focuses on countries that are or may become a Lead Market. Studies on this topic are mainly researched by Marian Beise, where he defined Lead Markets, the possibilities of becoming a Lead Market and the advantages/disadvantages of being a Lead Market. Overall, he analysed markets at the country level and the population of the Lead Market countries (Beise, 2001; Beise, 2004). Beise & Rennings (2003) also investigated why Lead Market governments actively seek to support the production and adoption of green innovations. In their research, Beise & Rennings (2003) discovered that environmental innovations are an important trade-off to solve a country's environmental problems without the risk of reducing economic activity. However, the authors (Beise, 2001; Beise, 2004; Beise & Rennings, 2003) who wrote about Lead Market did not mention the distributors who import, sell and service the new technology, and failure to do results in unattained Lead Market status, which means that it is important to understand them.

Norway is an ambitious country where they massively adopted electric cars (EV), which makes them a Lead Market. The country has introduced EV incentives and policies in order to meet environmental goals. EV policy in Norway is enduring, no-nonsense policy that consists of fiscal incentives that favour zero emission vehicles and make it more efficient to buy electric vehicles. A result of the generous EV policy, Norway's EV market share is over 50%, and more than 340 000 pure electric vehicles are registered in 2021 (Norsk elbilforening, 2021; OFV, 2021). Moreover, the Norwegian government sets enthusiastic

goals as to phase out sales of all new gasoline/diesel vehicles by 2025 (Regjeringen, 2019). This goal is only a plan, yet data shows that Norway has some possibilities to achieve this (Norsk elbilforening, 2021; Regjeringen, 2017; Regjeringen 2019). Therefore, most car dealers in Norway have more experience in how to sell electric cars to end users and how to maintain the electric vehicles, something that other dealers in the world struggle to do. This makes Norwegian distributors a good example to focus on. Thus, our research contributes to look at the gap in Baise's studies (Beise, 2001; Beise, 2004; Beise & Rennings, 2003) and the EV market in Norway from the car dealers' perspective.

Lead Market and electric vehicles from the perspective of the car dealers have not been studied before. Most studies deal with buyers and consumers, how the high sales of electric cars are caused by government subsidies, and what impact electric cars have on the environment. We want to apply the Lead Market concept to Norwegian car distribution channels to determine the impact of electric cars on their business, as they have more experience with electric cars than importers/dealers in any other market in the world. Therefore, our study will focus on car dealers who sell and service vehicles in EV markets. This will allow us to investigate how car dealers in the Lead Market of electric vehicles in Norway are affected by the popularity of electric cars, and what their expectations or opinions are about the future prospects of reducing fossil fuel cars in 2025.

The study examines the following question: *How has the increased popularity of electric vehicles impacted car dealers' businesses and their future prospects in the Lead Market of Norway?* This study relies on existing literature review and car dealers' interview answers to determine what changes have occurred in car dealers' businesses, what consequences Norway's stimulation to buy electric cars have led to, and what perception car dealers have about existing incentives and Norway's plan for 2025.

## **2. Literature Review**

In this chapter, we will present existing literature and other research about Lead Market, EV market, and car dealers. The aim of this chapter is to help us to develop the research questions, as well as get deeper knowledge about our topic in order to successfully conduct our study.

### **2.1 Lead Market**

Most of the literature about Lead Market concept generally focuses on countries that are or may become a Lead Market. The author, Beise (2004), had done most of the research on Lead Markets and had mainly focused on the definition of Lead Markets, ways to become a Lead Market, and the advantages/disadvantages of being a Lead Market. In his works he gave three main definitions of this term: (1) the country where innovation was invented, (2) the country where a multinational firm develops a global marketing strategy for a new product, (3) the country that is the first to adopt a globally acknowledged innovation (Beise, 2001; Beise, 2004). Thus, Lead Markets should not necessarily invent the technology itself, the quick and successful adoption of the innovation is enough to call the country for the Lead Market. The opposite for Lead Markets are the following countries, also called for Lag Markets (Beise & Rennings, 2003).

According to Beise (2004), the Lead Market role of a country depends on the innovation that a country is trying to adopt and not the total new technology adoption level in the country. The country could lead to adopting one global innovation and be the Lag Market for another one. Countries or regions become Lead Markets because they have one or more factors that contribute to developing a leading market position. These factors can be price advantages, demand advantages, transfer advantages, export advantages and market structure advantages (Beise, 2001; Beise, 2004; Beise & Rennings, 2003). For example, people are going to demand a new green technology only if they meet not just the environmental criteria, but also performance criteria. Additionally, in order to be able to meet demand advantages, new



environment friendly innovations should have no, low, or even negative additional costs in comparison to the less green alternatives (Beise & Rennings, 2003; Beise, 2004).

Beise (2004) showed in his research that other countries and foreign companies should study Lead Markets, because this can help other nations or regions to forecast and guide future adoptions. Analyzing existing Lead Markets can help to forecast the market's demand for a particular innovation, as well as to recognize competitive opportunities. Since Lead Markets are usually a source of new innovation ideas, researching them can contribute to reduction in market research costs and making the right market decisions on the basis of the Lead Market experience.

In general, Beise (2004) examines markets at the country level and the citizens of Lead Market countries. However, he did not examine the other important market actors - distributors that are an important intermediary between the government and citizens in the Lead Market, as they import, sell, and service the new technologies. Distributors' primary motivation is their utility maximization, and therefore they tend to act from their own interests. The governance mechanisms and distributors' roles should fit each other, otherwise *“distributors are puzzled and confused about the supplier's actions and their underlying meanings”* (Dong, Tse & Hung, 2010, p. 5). That is why Lead Market's government should act taking into consideration distributors as well in order to eliminate uncertainty and adaption problems that can occur. The more distributors are motivated and controlled by governmental mechanisms, the more willing they are to adapt to the changing market conditions (Dong et al. 2010). This Lead Market learning about distributors is potentially very important, therefore we build our research thesis with regard to Lead Market distributors.

## **2.2 Lead Market of Norway**

In relation to the country's population, Skillebæk (2020) pointed out that there are more electric cars on the roads in Norway than in other countries in the world. For instance, the U.S, new electric vehicles account for only 2% of total vehicle sales, while Norway has a

market share of more than 50% (Jones, 2020). Attachment 1 shows a study by Fridstrøm (2021) in which he collected data from 2019 summarizing the market share of electric vehicles in the European Economic Area (EEA) countries, and the results showed that Norway has the highest market share of battery-electric vehicles in the EEA with 42.4 percent in 2019. Furthermore, Fridstrøm & Østli (2021) presented another research that incorporated Norway and electric vehicle market share. Data in Attachment 2 show that Norwegian EV market share has grown rapidly since 2011, while gasoline and diesel car market share have simultaneously decreased (Fridstrøm & Østli, 2021).

If we go back to the Beise (2001) definitions of Lead Market, the last definition corresponds the most with this situation. Norway is not the country that has been successful with the production of the new cars and car brands, and EV innovation itself does not belong to Norway (Amundsen, 2020; Chau, 2015). However, this country is the country number one in the world that leads the EVs adoption (Jones, 2020). Norway's leading position is very strong when it comes to the market share of electric vehicles, therefore we can call Norway as Lead Market for electric vehicles. Moreover, this makes car dealers in Norway to be more experienced with electric vehicles than in any other market.

One of the main reasons that Norway was able to become an EV Lead Market is the natural country's advantage. In terms of oil and gas revenues, Norway is one of the richest countries in the world. Although they have oil and gas, they use renewable energy as their power source. Additionally, Norway has other factors that contributed to smooth and fast adoption of electric vehicles: *“cheap and abundant electricity, strong grids, (semi-) detached housing with garage or driveway, ample roadside space for fast charging facilities, slow roads, strong governance, and widespread tolling and ferrying”* (Fridstrøm, 2021, p.10). This made it easy for them to switch to electric cars, compared to other countries that use heavily polluting coal-fired power plants as their energy source and do not have suitable road conditions for electric cars (Nikel, 2019; Fridstrøm, 2021). Additionally, Aasness & Odeck (2015) stated that only countries that produce hydropower electricity may copy Norway's incentives, because only this type of electricity impacts the greenhouse gas emissions positively.

According to Musti & Kockelman (2011), fuel economy, price and reliability are attributes that potential buyers look at before purchasing a car. However other researchers as

Hannisdal, Malvik & Wensaas (2013), Holtmark & Skonhoft (2014), and Vilchez et al. (2019) concluded that one of the factors that helped Norway to become a Lead market is government EV incentives. Incentives are what primarily attract potential customers to buy electric vehicles, because driving an electric car involves lower costs for the owner due to Norway's EV policy. Also, Aasness & Odeck (2015) researched Norwegian electric vehicle incentives more closely. Norway firstly introduced an exception from on-off registration tax and annual vehicle tax in 1996 on a trial basis (Aasness & Odeck, 2015). While today in 2021 electric vehicles are completely exempted from annual tax for electric vehicles, purchase/import tax, and the VAT exemption on purchase or leasing of electric vehicles, as well as warranties, service agreements and car accessories for EVs (Norsk elbilforening, 2021; Birger N.Haug, 2021; Wallbox, 2021). Aasness & Odeck (2015) concluded that these incentives are the main reason the purchase and use of electric vehicles in Norway have increased so much. It is cheaper to buy and use electric vehicles compared to gasoline/diesel cars, that is the main reason why Norwegian citizens are so encouraged to buy EVs. Also, it is important to have in mind that such incentives cause some adverse effects as for example, exemption from tolls leads to weakened road infrastructure (Aasness & Odeck, 2015).

Olson (2018) researched Norway as EV Lead Market. He examined how government subsidies influence EV preferences at the Lead Market in terms of technical and environmental characteristics, how most consumers express the desire to be green, and how technical improvements in EVs may influence EV owners' preference over internal combustion vehicles (ICV). Same as previously mentioned researchers, Olson (2018) found out that the most motivating factor to buy electric cars for Norwegians is a combination of government operating subsidies and government purchase and ownership benefits, and he claimed that the absence of these EV subsidies could lead to market failure instead of the successful adoption of new technology. However, the government subsidies are not enough to overcome electric car's disadvantages, Olson (2018) research showed that the driving range is another most important attribute for EV buyers in Norway. At the same time, his research results showed that environmental benefits are the least motivating factors.

As we see, most of the previous studies involved researching why citizens of Norway buy electric vehicles. However, there was no similar research done on why car dealers sell electric cars and how government incentives affect them. Car dealers are an important part of the selling-buying process, and high EV market penetration depends on the acceptance by

both consumers and business. Therefore, their role in the development of the EV market in Norway is colossal, which leads to our main thesis question: *How has the increased popularity of electric vehicles impacted car dealers' businesses and their future prospects in the Lead Market of Norway?* Further, given some set of the same research findings about purchase intentions of EVs, that are old enough to question those findings in 2021, our first research question addresses the influence of governmental subsidies, environmental concerns, and EV qualities:

**RQ1.** What do car dealers believe are the most influential purchase factors for electric vehicle consumers in Norway?

Further, Norway is an ambitious country, and this is what made it a Lead Market. Norwegian government sets enthusiastic goals as to phase out sales of all new gasoline/diesel vehicles by 2025 (Regjeringen, 2019). This is only a plan; however, figures show that Norway can achieve this plan. At the end of 2019 there were more than 250 000 registered electric cars, while today there are already more than 340 000 pure electric vehicles registered in Norway. And these numbers continue to grow as the Norwegian government actively stimulates citizens to buy zero-emission vehicles in order to meet environmental goals as well as achieve the goal that all new cars sold will be pure electric vehicles by 2025 (Norsk elbilforening, 2021; Regjeringen, 2017; Regjeringen 2019).

However, in late 2020, Norstat conducted a nationwide survey on behalf of AMCAR (2021) on Norway's plan to ban the sale of petrol and diesel cars. The result of the survey was that two out of three of the informants thought it was unrealistic that Norway's goal is that only zero-emission cars will be sold in 2025, and seven out of ten were against a ban on the sale of new fossil cars after 2025. Furthermore, results in a study by Gregersen (2021) showed that the majority is skeptical about this proposal and that there should be a possibility to buy new fossil cars after 2025. However, when it comes to removing subsidies for electric cars, China began cutting subsidies for electric cars by about half in 2019, as well as removing subsidies for vehicles with a range of less than 250 km, leading to a 4.7 percent drop in electric car sales from 2018 to 2019 (Soat, 2019). According to Levring (2017), the same thing happened in Denmark. Denmark decided in 2017 to reduce incentives for electric cars, which led to a sharp drop in electric car sales in early 2017. Furthermore, in Georgia (USA), the state decided to eliminate the \$5,000 tax credit for electric car purchases in July 2015. This resulted in electric car sales falling by about 80% in the last half of 2015 (Walton, 2017;

Kane, 2015). As car dealers have an important role in the future development of EV market, and as we want to research the car dealer's side of the Lead Market of Norway, our second research question examines whether Norway's plans seem realistic to car dealers or not, and whether the removal of electric car subsidies will have a positive or negative impact on them in the future:

**RQ2.** Do car dealers look positively or negatively on the future where EV incentives are eliminated and they sell only pure electric vehicles?

## **2.3 Car Dealers and the EV Market**

The most literature that deals with the car dealers of electric vehicles covers only EV Lag Markets, and investigates what problems car distributors have in the case of electric cars. EV Lag Market studies show that car dealers are sceptical about selling EVs to their customers, and usually do not even want to offer to buy an electric car (Kress, 2015). Thus, previous literature shows that car dealers' EV sales do not increase as the government would like, however figures of new registered EVs in Norway increase drastically over time (OFV, 2021). These figures have to impact car dealers as well as they are the main intermediary in selling and buying process, therefore, our next research question covers whether increased EV sales in Norway had impact on car dealers' sales or not:

**RQ3.** How have high EV sales impacted car dealers' annual sales?

Guillianeuf (2018) studied how electric cars affect the aftermarket. The results of the studies showed that zero-emission cars will have a negative impact on the repair and maintenance sales of dealers' aftermarket. The study indicated that this would happen to a limited extent but will become more serious if electric cars stay on the market longer. Further, Cahill, Davies-Shawhyde & Turrentine (2014) conducted a survey with dealers and manufacturers, where they found that dealers are dependent on revenue from their service and parts

departments and therefore are not likely to promote electric vehicle sales. Both Guillianeuf (2018) and Cahill et al. (2014) concluded that there will be a large negative impact on the aftermarket where profits will decrease, resulting in salespeople likely to steer customers away from EVs. However, Cahill (2015) had some contradicting data in his research. He found out that on average car dealerships get more gross profits while selling electric vehicles. He stated that the profit will depend on the car type and the car model (Cahill, 2015). None of these previous research has actually investigated the overall car dealers' profit changes, especially in the Lead Market circumstances, which leads to the following research question:

**RQ4.** How have high EV sales impacted car dealers' overall profits?

Tromaras, Aggelakakis & Margaritis (2017) investigated the challenges that car dealers face in selling electric cars in the Greek market. The results of this study showed that the sales process of electric cars takes much longer than fossil fueled cars because customers have more questions about the vehicle, which takes a longer time to inform them. Similar to Tromaras et al. (2017), Cahill et al. (2014) also found that selling electric cars takes significantly more time than selling a fossil car. Cahill et al (2014) pointed out that the long use of time means that they lose other potential customers by spending more time with the potential EV buyer. According to Richtel (2015), this can have a negative impact on the value of the seller's time.

Further, Evarts (2014) highlighted that few sales personnel are able to provide decent answers on the customer's question about electric cars. At the end of his article, Evarts (2014) advised his readers to search information about the car purchase by themselves, because it is a bad idea to rely on car dealer's knowledge. Cahill et al. (2014) conducted an analysis of survey data from EV customers in California and found that sales personnel have knowledge deficits about electric car features and service, which is a major barrier for consumers, and lack of knowledge can cause bad purchase experience for the customer. Consumers have higher expectations of sales personnel when it comes to electric cars than they do for fossil fueled cars. Cahill et al. (2014) showed that sales staff should have more knowledge about supporting products, charging stations, local and national incentives, and services, which is less relevant when buying fossil fuel cars.

As all these research about more time consuming sales process and the lack of knowledge from sales people were conducted in the non-Lead Markets, as well as these studies are old enough to be sceptical about the findings, the research question five asks whether car dealers have experienced other or similar changes in the way of selling:

**RQ5.** How have high EV sales impacted the way of selling cars in terms of advertising, promotions, and training of sales personnel?

Prümper (2020) looked at how service will need to adapt after electric cars are on the market. He pointed out that they need to consider the safety of the technicians when repairing electric cars, where they need to invest in safety equipment and be able to update software as this is one of the standard elements in the maintenance service of an electric vehicle. For example, to improve range or braking distance. Additionally, they need to invest in training service personnel to have knowledge and understanding of electric cars, but Prümper (2020) claimed that it will not be long before software updates are automatic via the internet without the customer having to visit the service department. According to Richtel (2015), car dealers are concerned about their bottom line. He pointed out that EV does not make as much profit as emission cars do in service areas. These cars have several 100 parts that can be damaged, and for every time these car parts are broken, there is a business opportunity for car dealers. While EV does not need, for example, routine oil changes and service agreements that emission vehicles need. This is a profit that disappears from routine maintenance in the service and parts department, something that car dealers earn extremely much on (Kress, 2015).

Previous studies mention that service profits are important for car dealers, and that electric cars impact this area negatively. However, previous research has not studied car workshops separately from car dealers, as well as these researches have been done in countries that have not much experience with selling and servicing electric cars as Norwegian car dealers do. Therefore, at the end, we decided to look separately whether service departments of car dealerships have been impacted by EV popularity or not:

**RQ6.** How have high EV sales impacted the service department of a car dealership in terms of car servicing volume, workshop's profits, and additional knowledge requirements for service personnel?

## **3.0 Method**

In this research, we want to explore the personal experiences of car dealers in managing their business in the era of electric vehicles. The information we want to gather is to compare car dealers' business before Norway became the Lead Market for electric vehicles and after (today). None of the previous research have studied car dealers in the Lead Market conditions, therefore we chose to follow the exploratory research design that is aimed to explore an absolutely new area that no one has studied before. The limitation of this research design is that the steps of the research are not clearly defined, and the direction of the study may change repeatedly (Neuman, 2014). Knowing this, we will be aware of any unforeseen obstacles and be prepared to change the direction of our research as needed. Further, this study is conducted through the means of qualitative research and semi-structured interview, because this data collection method will allow us to go in depth into some specific survey units and thus identify what is special between these (McGivern, 2013; Dalland, 2012).

### **3.1 Interview Guide Development**

A semi-structured interview involves having prepared questions in advance and knowing what topic the researcher wants to explore. This gave us the opportunity to ask follow-up questions during the interview, meaning we could include or exclude questions depending on which informant we were interviewing. Therefore, firstly, we needed to develop an interview guide in order to have the questions ready in advance when we start conducting the interview. The type of interview we chose allows us to vary questions from one interviewer to another, as each informant answers the questions differently (Saunders, Lewis & Thornhill, 2019). Thus, we ended up developing two different interview guides, the templates for which can be found in Attachments 3 and 4. These different interview guides were used to interview individuals with different job positions: new car sales managers and service managers.

The topics used to develop the interview guides were the most interesting to us and would help us answer our thesis question, as well as our additional research questions developed



on the basis of the existing literature in part two of our thesis. In developing the interview guides, we used the following topics: sales mix, annual sales, employee training, other areas of selling/repairing cars, ways of selling cars/services, profits, and future prospects. Besides the main questions in the interview guide, we developed some supplemental questions to help get just the information we needed from the respondent if he/she did not answer the main question in enough detail. In addition to the questions, we made some notes in the interview guide to help us briefly capture the essence of the main question and improvise on the additional questions if needed. Since we used an exploratory research design, we also tried to be prepared for unpredictable interview outcomes. We developed our interview guide in that way that we have more questions than we need to answer the research questions. This was made in order if some of the questions were not answered, so we could steer our research in a slightly different direction.

The other important thing that we needed to take into the account is that during the research interview the informant must be objective, so that researchers do not influence the informants with their personal opinions. In other words, our own opinion must not be visible to the informant, because it could influence the result and further work in the wrong way (Dalland, 2012). Therefore, our aim was to formulate neutral questions for our interview guideline as possible, and we tried to avoid showing our own predictions in the questions.

## **3.2 Selection of Informants**

After developing the interview guide, we needed to select the interview participants. Firstly, in order to accomplish our research, we chose 11 different informants that work at different car dealerships in Norway. Our main focus was on the car dealerships that sell new cars and focus on selling and servicing specific car models. The reason for this was Norway's goal that all new sold cars by 2025 will be pure electric vehicles, in the mean of that car dealers that sell new cars will be affected the most. Also, we decided to look at the situation from the service side, and therefore we interviewed informants from the auto repair workshops. Besides, it is important to mention that the selected car dealerships and auto repair

workshops are located in different parts of Norway in order to see if different regions and temperature conditions have affected the sales of electric cars in Norway.

Our selection of informants was based on what car brands the car dealership sells, as well as how much experience the dealerships have selling gasoline/diesel and pure electric vehicles. For example, some of them have been selling electric vehicles for years, while others have only recently started offering their EV models. After selecting car dealerships, we needed to choose the interview participants. Based on the type of information we wanted to get, we decided to go with the employees who had enough experience at their dealerships and who had a business view of the company they worked for. Also, we wanted to look at two sides of the dealerships: sale and service. Therefore, we wanted to interview sales managers, service managers, and if possible general managers. All the contact information has been gathered through car dealerships' own websites.

The analysis consists of data obtained through interviews with 11 different informants, 6 of them were either new car sales managers or general managers, and 5 of them were service managers. Sales managers and service managers are responsible for the sales or service departments accordingly. While the general manager is responsible for the entire car dealership including the sales and service departments. Therefore, being able to interview general managers would give us some deeper information about their car dealerships.

### **3.3 Selected Car Brands**

As mentioned earlier, we based our selection of interview participants on different car brands. In order to get the most accurate data from the interview, we had two main criteria for choosing car brands. Firstly, we wanted to get the car brands that have been offering pure electric vehicles for a long time and have EV models that are popular in Norway. That is, car dealers that sell such brands have enough experience selling EVs. We used the website [elbilstatistikk.no](http://elbilstatistikk.no) to evaluate the popularity of different car brands. According to the website [Elbilstatistikk](http://elbilstatistikk.no) (2021, April 6), the best-selling EV model in Norway is currently Nissan Leaf. Therefore, we wanted to contact a car dealer that sells Nissan cars. Other car brands that we got from this category are Audi, Kia, Mercedes-Benz, and Renault.

Secondly, we wanted to get the opposite view of the situation with EVs in Norway. That is, we chose car dealerships that sell car brands such as Citroën and Mazda. These car brands have not had EV models in Norway for a long time. So, the car dealerships of these brands have less popular EV models and less experience with selling electric vehicles.

These two criteria were crucial in choosing a brand of car. Since many car dealerships do not sell only one car brand, we also included such brands as Mitsubishi and Peugeot in this research. These car brands have an average popularity of their EV car models in Norway as well as an average experience in selling EVs.

In contrast, we did not select such car brands as Tesla and Toyota because researching them would not give us the results that we are looking for. The first one has never had any experience selling gasoline/diesel vehicles and the last one has no experience selling pure electric vehicles in Norway. In other words, it is not possible to compare the sales of these brand dealerships before and after electric vehicles became popular in Norway.

Table 1 on the next page shows the summary of selection criteria and information for each car dealership where we conducted interviews. It describes what car brand a dealership represents, where it is located, how much experience it has with electric vehicles, how their electric cars are popular, and who we conducted interviews with at this car dealership.

	<b>Informant</b>	<b>Car Brands</b>	<b>Location</b>	<b>Experience with EVs</b>	<b>Popularity of EV Models</b>	<b>Interviewer's Work Position</b>
<b>New Cars</b>	<b>1</b>	Audi	Vest Norway	considerable experience	very popular	sales manager
	<b>2</b>	Nissan	East Norway	considerable experience	very popular	sales manager
	<b>3</b>	KIA, Mercedes-Benz, Peugeot	East Norway	considerable experience	very popular and less popular	sales manager
	<b>4</b>	Renault, Mitsubishi	North Norway	considerable experience	very popular and less popular	sales manager
	<b>5</b>	Citroën	Vest Norway	little experience	less popular	sales manager
	<b>6</b>	Mazda	Vest Norway	little experience	less popular	general manager
<b>Service</b>	<b>7</b>	Audi	Vest Norway	considerable experience	very popular	service manager
	<b>8</b>	Nissan, KIA	East Norway	considerable experience	very popular	service manager
	<b>9</b>	Renault, Mitsubishi	North Norway	considerable experience	very popular and less popular	service manager
	<b>10</b>	Citroën	Vest Norway	little experience	less popular	service manager
	<b>11</b>	Mazda	Vest Norway	little experience	less popular	service manager

Table 1. Car dealers and service workers that interviews were conducted with.

### **3.4 The Interview Process**

We used telephone and/or email to get in touch with informants. All contact information such as email address and phone number were taken from the car dealers' websites. Attachment 5 is an example of the invitation emails that we sent to potential informants in advance. However, the most successful way to get in touch with potential informants was to call them directly by the phone. It gave us the opportunity to get a quick and direct response from the individuals whether they wanted to participate in the research or not; as well as arrange the meeting in case of the positive response. In this case, we read out what was in the invitation letter over the phone. We conducted all interviews either at the informant's workplace, by phone, or digitally using Teams. Since this was an oral interview, we took audio recordings of the interviews to retell the answers of the participants in the best possible way.

We knew that noise can be an influential cause of the error in our result. Interruptions due to external factors may cause the informant to have difficulty continuing the conversation where he/she was interrupted, so some information may be lost (Dalland, 2012). To avoid interruptions, we chose quiet places where doors could be closed to conduct phone/digital interviews. In the case of physical interviews, we always asked informants to close their private office doors.

Additionally, we used informed consent, which is a key concept in ethical research practice. It involves giving participants clear information about what the research project entails and allowing them to decide whether or not they want to participate in the project. That is, those who will be conducting the project need to inform participants what the research is about, why one is conducting such research, what will happen to the result, how the result will be disseminated, and how confidentiality will be handled. It is also important to inform potential participants that they are not obligated to participate in the research and that they can withdraw from the research at any time without consequences (Wiles, 2012). Therefore, before the interview began, we informed participants who we were, why we wanted to interview them, and what to expect during the interview. We assured them that the interview would be confidential so that they could not be identified in any way, and thus we obtained verbal consent from them.

### **3.5 Processing and Organizing Interview Data**

After we had conducted all the interviews, we needed to process the information we had received. When conducting an interview, incorrect interpretation of information can occur, and these are called sources of error. This can affect the reliability and validity of the research and therefore one needs to be aware of the sources of error that occur (Jacobsen, 2015). To avoid any errors, we transcribed all audio recordings into writing. This was done to not miss any small details of what the informants said. This also helped us to fully describe the results obtained, with the possibility of quoting the informants. Additionally, transcribing is a great way to refer back to the interview response when needed, especially when contradictions arise, or we find that information could be misinterpreted.

In this step of our research confidentiality has been considered. Confidentiality means that the identity of the participants is known to the researchers and that it is protected by the researchers from being discovered by others. That is, personal information and data obtained in connection with the research will not be disclosed, so that participants' personal information cannot be misused (Fossheim, 2015). To maintain the informant confidentiality, we keep both the city where the car dealership is located, the name of the car dealership, and the informant's name anonymous in our research. Instead we use numbers from 1 to 11 (Table 1) to distinguish informants from each other and to describe our results.

Because of the large amount of data obtained, we summarised everything in the Excel tables. We tried to use the same words describing the same situation, such as "increased" or "decreased", or to use as few words as possible describing the informant's answer in the table. This gave us the ability to easily compare the responses of different interview participants and get the data we wanted if needed.

## 4. Results

The interview result summaries are presented in Table 2, Table 3, and Table 4 at the end of each chapter (pages 23, 29, 32), and show answers on our research questions. The grey areas in the tables mean that we did not get answers from car dealers on that particular question. In the descriptions of the results we used numbers from 1 to 11 (see Table 1) to represent the responses of the different interview participants.

### 4.1 Importance of EV Subsidies and Future Prospects

RQ1 asks what car dealers believe are the most influential purchase factors for electric vehicle consumers in Norway. The results showed that 100% of car dealers believe that most who buy electric cars buy them because of government incentives, that make it economically beneficial to buy and own an EV, and not because they are environmentally friendly. Also, informants named additional purchase factors as it is more fun to drive an electric car than a gasoline/diesel one, or that electric vehicles are the future. The example of the broadest answer on this question is:

Informant 2: *“Price, car range, and size of a car are most important.”*

RQ2 asks whether car dealers look positively or negatively on the future where EV incentives are eliminated and they sell only pure electric vehicles. The interview results show that 3 out of 11 informants (27%) look positively forward to the perspective that all new sold cars by 2025 will be zero-emission vehicles. This point of view is illustrated in following answer:

Informant 2: *“Car manufacturers’ plan is to stop producing gasoline cars by 2025, so I think the biggest car brands will be able to offer only electric cars then.”*

Informant 8: *“Norway has money and infrastructure, so they can try to make this happen.”*

4 out of 11 informants (36%) expressed that they look positively on Norway’s plan, and that it can happen, but not in 2025, meaning this is too early. The remaining 4 informants (36%) said that this will never happen, answering:

Informant 3: *“It is not a good thing; districts are not ready for this.”*

Informant 4: “Hybrids will never be gone, there will be both hybrid cars and pure electric ones in the future.”

Further, 4 out of 6 informants (67%) believe that elimination of EV subsidies will result in decrease of electric vehicle sales and increase in gasoline/diesel cars. While the remaining two informants said that in the future there will be only electric cars, so people will have no other option to buy. For example, dealer 2 said: “So far other car producers will find the right EV model, they will shift to producing only electric cars.”

<b>Informants</b>	<b>EV subsidies vs. Car benefits</b>	<b>What happens after subsidies are reduced/eliminated?</b>	<b>Plans for 2025</b>
1	The most buy EVs because of financial benefits and because it is the future	EV sales will decrease and will increase for gasoline/diesel. But we will never be back to only selling fossil fueled cars.	Not going to happen fully by 2025, maybe later
2	The most buy EVs because of financial benefits	Nothing will change. In the end there will be only EVs anyways.	This will happen
3	Price, car range, and car size are the most important	EV sales will decrease because people buy these only because they are cheap.	This will never happen
4	The most buy EVs because of financial benefits	Nothing will change. In the end there will be only EVs anyways	There will be only hybrids and pure electric cars in the future
5	The most buy EVs because of financial benefits	EV sales will decrease because people buy these only because they are cheap.	This is not going to happen
6	The most buy EVs because of financial benefits	EV sales will decrease	2025 is too early for this
7			2025 is too early for this
8			This can happen
9			This is not going to happen
10			This is going to happen
11			2025 is too early for this

Table 2. Summary of results about importance of EV subsidies and future prospects (RQ1 and RQ3).



## 4.2 Car dealers' Sales Department

### 4.2.1 Impact on Sales

RQ3 asks how high EV sales have impacted car dealers' annual sales. We have divided the term sales into three categories: sales mix, annual sales, and purchase methods as cash/financing/leasing. Our research results show that 5 out of 6 (83%) car dealership's **sales mix** consists of more than 70% electric vehicles. The following answer illustrates this:

Informant 2: *“There are more and more people who are starting to use electric vehicles in their daily lives, and they see that this is the car that meets the needs they have in their everyday life.”*

The exception of this high ratio of electric vehicles in their sales mix, is the car dealership number 4, they sell only 20% pure electric vehicles. This is due to the high popularity of hybrid cars which sales share is about 70%.

Further, 100% of dealers said that **annual sales** have increased since they entered the EV market. For example, dealers' 3 and 4 experienced an increase by 20-30%. On the other hand, all informants replied differently about the changes in their cash/leasing/financing mix. 3 out of 6 dealers (50%) did not experience any change in this area. For example, informant 1 said:

*“We have the same amount of leasing agreements as we had when we were selling only gasoline/diesel cars.”*

The remaining three answered differently about changes in **leasing or financing**. Informant 1 said that both leasing and financing ratios have decreased, while Informant 2 revealed that leasing has decreased, while financing has increased. Another informant answered that there was an increase only in the financing area. The examples of their answers are as follows:

Informant 1: *“Customers in our region have money, and thus they choose to buy the electric car with cash rather than with financing or leasing.”*

Informant 2: *“We have noticed that two years ago there were many more customers that were interested in leasing cars. This was due to the greater uncertainty about electric cars.”*

Informant 6: *“This is the trend on electric cars that they loan more money on electric cars than they did on fossil fueled cars.”*

#### **4.2.2 Impact on Profits**

RQ4 asks how high EV sales have impacted car dealers’ overall profits, and to answer this question deeply, we asked our interview respondents additionally about changes in average transaction price, in financing/leasing profits, and profits in other areas.

When it comes to **average transaction price**, 2 out of 6 dealers (33%) answered that the price at the whole car dealership was decreased because their electric car models are cheaper than fossil fueled ones. However, a car dealer that sells different car brands, mentioned that car prices can vary from one brand to another: in some cases, price was reduced, while in other cases price is the same. For example, dealer 6 said:

*“It has decreased, because our EV model is a small and light car with short range compared to their gasoline/diesel car models. For example, our electric car costs NOK 250 000, while gasoline/diesel cars cost approximately NOK 450 000.”*

Two car dealers were not able to answer this question, while another two dealers (33%) said that the average transaction price has increased, naming us two different reasons for this:

Informant 2: *“Now we generally sell more cars than before. Also, electric cars we sell are bigger and therefore more expensive car models compared to the fossil fueled ones.”*

Informant 5: *“Our gasoline/diesel cars are cheap, small and compact cars, while an electric car model is slightly more expensive. For example, a fossil fueled car costs on average NOK 280 000, while an electric car costs NOK 320 000.”*

Further, 4 out of 6 informants (67%) answered that there was no profit change in **leasing/financing** area, reasoning this with either no changes in this area at all, or leasing decrease and financing increase, that offset each other. The remaining two dealers had opposite changes in this area: reduction and increase, which are due to decrease and increase in financing/leasing mixes accordingly.

When we asked about changes of sales/profits in **other areas** of their businesses, our informants talked about either service or car accessory sales. 4 out of 6 dealers (67%) said that their profits from **service** have decreased. The reason for this is shown in this example:

Informant 3: *“Our service profits have decreased by 20-30% due to lower demand in service. When it comes to EVs, we cannot sell car oil, oil filters, and other parts that only fossil fueled cars have.”*

1 out of 6 dealers (17%) revealed that their sales and profits in the car **accessory** area have increased. Informant 1 explained: *“Firstly, we sell more accessories because we sell overall more cars. Secondly, when someone buys, for example winter tires, they buy those without the tax, so this makes it more favorable.”*

2 out of 6 dealers (33%) answered that they have not seen any profit change in other areas, reasoning this as:

Informant 2: *“The workshop needs to work more harder and more effectively than before to get the same profits, due to less demand for the workshop and lower servicing prices for electric vehicles. However, we were able to not lose profits in this area.”*

Informant 6: *“Since we have not had electric cars in a long time, it is still too early to have any changes in car accessory or service area”.*

Finally, 2 out of 6 dealers (33%) reported that their **overall profits** have increased after they entered the EV market, explaining that this is because they sell many more cars today than they did before. 1 out of 6 dealers answered that overall profits have decreased, while another car dealer said that they had no change in profits at all. Their answers are displayed in following quotes accordingly:

Informant 4: *“Because of lower profits in the service area, the overall profits have slightly decreased as well.”*

Informant 2: *“The profit is the same actually, however the profit margin is slowly dwindling as more competitors enter the market.”*

While the remaining two dealers were not able to estimate changes in the overall car dealership’s profits, because they have entered the electric vehicle market very recently. However, both informants reported that before they entered the EV market, their overall profits have significantly declined after electric vehicles became popular in Norway. Both car dealers have noticed positive changes in the sales, and they hope that their overall profits will increase as well.

### **4.2.3 Impact on the Way of Selling Cars**

RQ5 asks how high EV sales have impacted the way of selling cars in terms of advertising, promotions, and training of sales personnel. Additionally, we asked dealers whether it is easier or more difficult to sell cars today. 3 out of 6 dealers (50%) answered that their employees required additional **training** when they began to sell electric cars, because electric vehicles require a different and much deeper understanding of technical car aspects than fossil-fueled cars. The examples of their answers are as follows:

Informant 1: *“Modern customers are more informed about cars than before because of the Internet. They have more complicated and more detailed questions about electric vehicles than gasoline/diesel ones.”*

Informant 2: *“This is crucial to be able to deliver the correct information about the car to the customers that will guide them to buy the right car.”*

2 out of 6 dealers (33%) said that the way they sell cars is the same as before. For example, Informant 3 replied: *“There are just a few additional elements in selling as we need to consider a car range, home charging station requirements, and other similar additional details that are important only for electric car customers.”*

Only one of the car dealers that the way they advertise and present their car to the customers was changed, while there was no special change in training of personnel. Informant 6 said: *“Our EV model has a short driving range, while Norwegians prefer to buy the cars that can stand long distances. That is why we have to advertise this EV as a car number two of the household, while their fossil fueled cars have always been presented as a car number one.”*

Further, when it comes to the changed **difficulty** of selling cars, 3 out of 6 dealers (50%) answered that it is very difficult to sell fossil-fueled cars because EVs have significant financial benefits. However, Informant 3 named a different reason for this: *“In the new car market it became more common to buy EVs because of the social acceptance to buy environment friendly cars.”*

Two dealers said that the overall difficulty of selling cars has changed. We got opposite answers from these two informants:

Informant 1: *“It is more complicated to sell cars today, because of the need for higher sales personnel qualification.”*

Informant 5: *“Before we entered the EV market, it was very difficult to sell cars because we could offer only fossil fueled cars. Today we have that car type that customers demand, so it became much easier to sell cars.”*

The remaining one dealer revealed that there was no change in difficulty of selling cars. Informant 4 answered: *“In our region there are not so many “bomstasjoner”, so people here do not get as many advantages from buying electric cars as do people in West Norway for example. Maybe in other cities it became easier to sell cars.”*

New Car Sales Department							
	Informant	1	2	3	4	5	6
	Car brand	Audi	Nissan	KIA, Mercedes-Benz, Peugeot	Renault, Mitsubishi	Citroën	Mazda
Impact on sales	Sales mix	90% are electric	92% are electric	70% are electric	70% are hybrids; 20% are electric	70-80% are electric	80-85% are electric
	Annual sales	Increased	Increased	Increased by 30%	Increased by 20%	Increased by 60-70%	Increased
	Cash/ financing/ leasing mix	Decreased leasing and financing	Decreased leasing; increased financing	No change	No change	No change	Small increase of financing
Impact on profits	Average transaction price	Increased		No change for Mercedes; decrease for other brands		Increased	Decreased
	Financing/ leasing profits	Decreased	No change	No change	No change	No change	Small increase
	Profits in other areas	Increased for accessories and decreased for service	No change	Decreased by 20-30% for service	Decreased in service area	Decreased in service area	No change
	Overall profits	Increased	No change	Increased	Decreased	Decreased before they entered EV market	Decreased before they entered EV market
Impact on the way of selling	The way of selling	Additional training of sales personnel	Additional training of sales personnel	No changes except small additional elements	No changes except small additional elements	Additional training of staff	Different marketing and presentation of EVs, no changes in training of sales personnel
	Easier/more difficult to sell cars	More difficult	More difficult to sell gasoline/diesel cars	More difficult to sell gasoline/diesel cars	No change	Easier	More difficult to sell gasoline/diesel cars

Table 3. Summary of results: new car sales department personnel (RQ3, RQ4, and RQ5).

## 4.3 Service Department

RQ6 asks how high EV sales have impacted the service department of a car dealership in terms of the way of servicing cars, car servicing volume, and workshop's profits.

### 4.3.1 Impact on the Way of Servicing Cars

All five informants (100%) said that their service personnel needed to go through additional courses for EVs, because EVs are very different from gasoline/diesel cars, and repairing electric vehicles requires greater competence. These are some of the example of their answers about this:

Informant 7: *“Because of the high voltage in electric cars, mechanics must be highly educated to work with such elements, otherwise it can be mortally dangerous to repair some of the electric vehicle parts. We have 14 mechanics and only 4 of them are allowed to repair batteries.”*

Informant 10: *“Now service personnel must have more focus on car brakes and tires, as well as car software and upcoming updates”*

2 out of 5 service managers (40%) said that also the way they get EV customers to the workshop has changed. Their answers were:

Informant 7: *“EV customers in the sales department purchase service agreements more often today, because these agreements are tax-free and therefore, they are much cheaper than for fossil fueled cars.”*

Informant 9: *“Nowadays we should go other ways to get the electric vehicle owner into the workshop, because EVs have no car oil for example, so there are much less reasons to come to the workshop.”*

Further, 4 out of 5 informants (80%) said that now it is more difficult to repair cars, because electric vehicles require more technical knowledge. For example, they answered:

Informant 10: *“Services have become easier while repairs are more difficult and require more competence from service personnel.”*

Informant 11: *“There are much more safety settings when electric vehicles are repaired. Therefore, mechanics should be very careful with car batteries and similar car parts, and it also takes extra time.”*

While the remaining informant (20%) said that it has become easier to repair cars, because service operations for EVs are less complicated.

### 4.3.2 Impact on Servicing Volume and Profits

Two workshops (10 and 11) that we conducted interviews with have not experienced any change in servicing volume, average price for a service, profits in other areas, and overall profits yet, because their sales departments began to sell electric vehicles very recently. While the remaining three car workshops have experienced an increase in **servicing volume**, because today, in order to get the same profits as before, they must increase their servicing volume. For example, their answers were as follows:

Informant 8: *“Today, instead of having 35 cars at the workshop per day, we must have 60 cars at the workshop per day.”*

Informant 7: *“Service volume has increased, because the sales department sells many more cars today. Also, the number of warranty work has increased as well because car owners have different expectations for electric vehicles than for gasoline/diesel ones.”*

Further, before asking about overall profits, we also asked about changes in the average price for a service and profits in other areas. Only two informants were able to answer whether the **average price for a service** has changed, and they both said that it has decreased, because EVs have less checkpoints and less replacements of car details, so the service for electric cars is cheaper than for gasoline/diesel ones. Also, Informant 8 said: *“From the customer's perspective the average price for a service has been reduced by 40 percent. However, from the perspective of the workshop, the price is the same.”*

2 out of 3 informants expressed that they have not noticed any change in profits in **other areas** such as warranty work and purchase of car accessories. While Informant 7 stated that profits in other areas have increased, explaining this: *“EV owners buy more accessories for their cars like winter wheels and car ski boxes due to exemption from paying taxes on these.”*

2 out of 3 service managers (67%) said that workshop's **overall profits** have increased, while 1 informant answered that there was a decline in overall profits.



Service department						
	Informant	7	8	9	10	11
	Car brand	Audi	Nissan, KIA	Renault, Mitsubishi	Citroën	Mazda
Impact on the way of servicing cars	The way of servicing cars	Service clients come because of the bought service agreement. Need for much higher service personnel education	Need for much higher service personnel education	Need for different ways to get clients into the workshop. Need for higher education	Service personnel require higher qualification	Addition courses about Evs
	Easier/more difficult to service cars	More difficult	More difficult	Easier	Services are easier; reparations are more difficult	More difficult
Impact on servicing volume	Servicing volume	Increased	Increased	Increased by 60%	No current change	No current change
Impact on overall profits	Average price for a service	Decreased	Customer:decreased by 40%; workshop: the same		No current change	No current change
	Profits in other areas	Increased profits from accessory sales by 50%	No change	No change	No current change	No current change
	Overall Profits	Decreased	Increased	Increased	No current change	No current change

Table 4. Summary of results: service department personnel (RQ6).

## 5. Discussion

Most car dealers in Norway have experience with electric cars, which makes them suitable to give opinions on what it is like for people to buy electric cars. Olson (2018) pointed out that it is the government incentives that play a big role when potential customers want to buy an electric car. The same is true for Hannisdal et al. (2013), Holtsmark & Skonhoft (2014) and Vilchez et al. (2019), where they concluded that generous government incentives are what makes Norway a Lead Market of electric cars. This is in line with our RQ1 results, where 100% of car dealers emphasized that most consumers do not think about the environmental benefits at all, while preferring financial benefits that exist because of Norwegian EV incentives. Additionally, car dealers' responses showed that their businesses and their profits are highly impacted by EV subsidies as well. Because of VAT exemption, consumers buy not only cheap electric cars, but also, they are much more likely to buy service agreements and car accessories as these are also tax free and seem cheaper in comparison with gasoline/diesel cars, and as a consequence, car dealers' profits increase. Furthermore, Olson (2018) augmented that additionally to government incentives, car range plays an important role in purchase decisions as well. Our research showed that car dealers also believe that car range is very important for customers, as sales personnel have to present this factor to the buyer and explain that car range can vary according to different driving or weather conditions.

It was easy for Norway to adopt electric cars since they use renewable energy, which electric vehicles use as fuel. Based on the natural advantages Norway has, such as the revenue they receive from oil and gas, make it possible for Norway to have an environmental goal to reduce gasoline/diesel vehicles from the road, and their plan to phase out sales of new gasoline/diesel cars after 2025 compared to other countries. There are several studies (Gregersen, 2021; AMCAR, 2021) on this plan that stated that residents are skeptical and think it is unrealistic, also RQ2 results in this study showed the same. Car dealers who did not have electric cars in the long time emphasized that it is unfair that the Norwegian authorities want to favor only one car type. Moreover, even though Norway can afford to subsidize "clean" EVs because it makes a lot of money selling "dirty" oil, which many other countries cannot, Norway's contribution to climate change is so tiny, with only 5 million people, that the EV policy makes no difference to the climate in a world of 7 billion people where 99% of cars are diesel or gasoline. When it comes to eliminating electric vehicle

subsidies, most car dealers believe it will have a negative impact on their business. The high sales of electric cars were driven by incentives, as the RQ1 results showed. 67% of dealers believe that the end of EV subsidies will lead to a decline in EV sales and an increased sales of gasoline/diesel cars. This has been proven in Denmark, China and Georgia (USA) where EV subsidies were stopped/reduced, and as a consequence, EV sales have dropped dramatically (Levring, 2017; Soat, 2019; Walton, 2017; Kane, 2015). These other countries' examples can also be a reason for high EV sales in Norway, as consumers may fear that EV subsidies would end and it would no longer be possible to get a cheap new car.

Our results addressing RQ3 clearly confirm the initial perception that increased EV market shares in Norway has also impacted car dealers' sales, as the most of informants sell more than 70% electric vehicles, and this is because of increased EV popularity in Norway. However, there is one exception with car dealer 4 that sells hybrids the most, while EV sales share is only 20%. Firstly, this is a car dealership that is located in North Norway. Pure electric vehicles tend to show worse performance in the cold weather conditions, while North cities of Norway are known for their long winters and the good car range is also important for people in that region. So, we can conclude that it is more practical to buy hybrid cars in North Norway. Secondly, as the informant said, citizens of North Norway get less benefits connected to owning EVs. For example, electric cars are fully or partly exempted from paying toll roads in Norway. While in some regions in Norway people should pay a lot for toll roads, in North Norway it is the opposite situation.

Further, regarding RQ2, we can conclude that car dealers' opinion about Norway's plan for 2025 can be dependent on their location. 2 out of 2 informants (100%) from North Norway do not believe that Norway's plan will happen. The majority of car dealers from Vest Norway (67%) believe that this will happen later than in 2025, while 2 out of 3 informants from East Norway (67%) look positively on the future where they sell only zero-emission cars. These three regions have different characteristics: North Norway can be characterized as rural region where it is important to have a car with high range, East Norway can be characterized as urban region where it can be enough with short car range, and Vest Norway is a mix of both urban and rural regions where car range importance depends on the particular customer.

From our results addressing RQ4, we can conclude that overall profits changes depend on the brands that car dealers represent. Three car dealers that sell the most popular electric cars

in Norway have experienced either no change or increase in total profits, while the remaining dealers that sell less popular cars had a decrease in profits. The reason for this is that the first group sells many more cars as well as car accessories today than they did before, so profit decrease in other areas did not impact the total revenues. While the other group is highly dependent on the aftermarket profits, that have decreased due to EVs. Also, car dealers that are new to the EV market and are less popular among Norwegians, had experienced a decrease in overall profits after electric cars became popular and until they began to sell EV models. This is due to the fact that they did not have that product that the majority of customers demand, as well as a consequence of that their car manufacturer had not produced electric vehicles until last year.

Previous studies showed that EV selling process is more difficult and time consuming, as well as, sales personnel lack knowledge about electric cars and have a need for extra training (Tromaras et al., 2017; Evarts 2014; Cahill et. al 2014). While this study results addressing RQ5 show that sales personnel indeed needed to go through additional training regarding electric cars. However, 50% of dealers said that they always arrange new courses when new car models come out. Of course, they had additional courses about EVs, but they would have those courses as well as for new fossil fueled car models or hybrids. Further, the majority of car dealers (83%) think that it is easier or the same to sell electric cars. They explained that car selling is not the same as before, because today customers enter the store already knowing what they want because they can find all information on the Internet. If a car dealership has that demanded product, then it sells it easily and successfully. These contradictions between previous and this research is probably due to different years studies have been conducted in. Electric vehicles began to be popular approximately after 2010, so in 2014 it was still an early stage of adoption of this new technology, especially in non-Lead Markets (Fridstrøm & Østli, 2021). We can assume that in 2014 people had poor knowledge about EVs, because there was not as much information on the Internet about this technology as it is today. Also, in 2014 many car dealers could not believe that electric vehicles may become very popular cars and that they are actually our future, so they did not think that it is important to educate themselves about electric vehicles. This is very positive that sales personnel have a different relationship about EVs today, the acceptance of new technologies help them to sell more cars, as well as get higher profits.

Previous studies showed that service personnel require higher education for electric vehicles, as well as EVs have a negative impact on workshops' servicing volume and profits (Prümper,

2020; Richtel, 2015; Kress, 2015). Thus, the RQ6 results show some contradictions with previous research. Firstly, EVs indeed require less servicing, however car workshops (3 out of 3 experienced services) were able to increase their servicing volume. The reason for this increase is that their car dealers sell overall more cars. Secondly, 2 out of 3 service managers (67%) answered that after EVs became popular, they have higher overall profits. This is a result of increased servicing volume. However, our results correspond with Prümper (2020) research - service personnel indeed require more knowledge and more education due to more challenging and even dangerous high voltage technologies. We can again assume that Richtel (2015) and Kress (2015) research are not valid for the Lead Market of Norway situation due analysis of different countries, as well as that researches are old enough to not be relevant for 2021.

## 6. Conclusion

New innovations enter the market, but many of them fail to achieve widespread adoption, despite much finance and assistance in the private and public sectors. This makes Lead Market a valuable concept to understand, because it explains the global diffusion of new innovations. What has been neglected in the previous Lead Market literature are Lead Market distributors, which are important to understand because they are significant intermediaries between the government and consumers in the Lead Market that import, sell, and service new innovations. The current research addresses this gap in the literature by surveying car dealers in the Lead Market of electric cars in Norway. Car dealers in Norway have more experience in selling and servicing an electric car compared to other countries. This makes it easy to show how the success of electric car adopters has affected car dealers in Norway. The result of this survey is that the increased popularity of electric cars has had a significant impact on car dealers in the Lead Market of Norway, while their future prospects are still uncertain.

There are some potential limitations of our research. Firstly, we were able to get interviews only with 6 managers at sales departments, while interviewing more car dealers would give us more accurate results about the impact on their businesses. Also, getting results from car dealers that represent other car brands could possibly result in different conclusions. That is why our biggest limitation is the lack of quantity of samples and lack of diversity of informants. Secondly, a used car department at a car dealership is an important source of income and using used car dealers' experiences could give us a deeper understanding of overall profit changes at the whole car dealership. Unfortunately, we were limited by interviewing only new car sales managers and service managers.

Technologies are changing very fast, and similar research done in 4 years could have different research results. In 2025 it is possible to conduct the same research as we did, and in order to get deeper results we would suggest trying to conduct interviews or surveys with even more informants. Also, we could not conduct interviews with big car brands such as VW and BMW, and many car brands such as Toyota who do not sell electric vehicles yet, so we would suggest to repeat this research in the future with more car brands and see what has changed.

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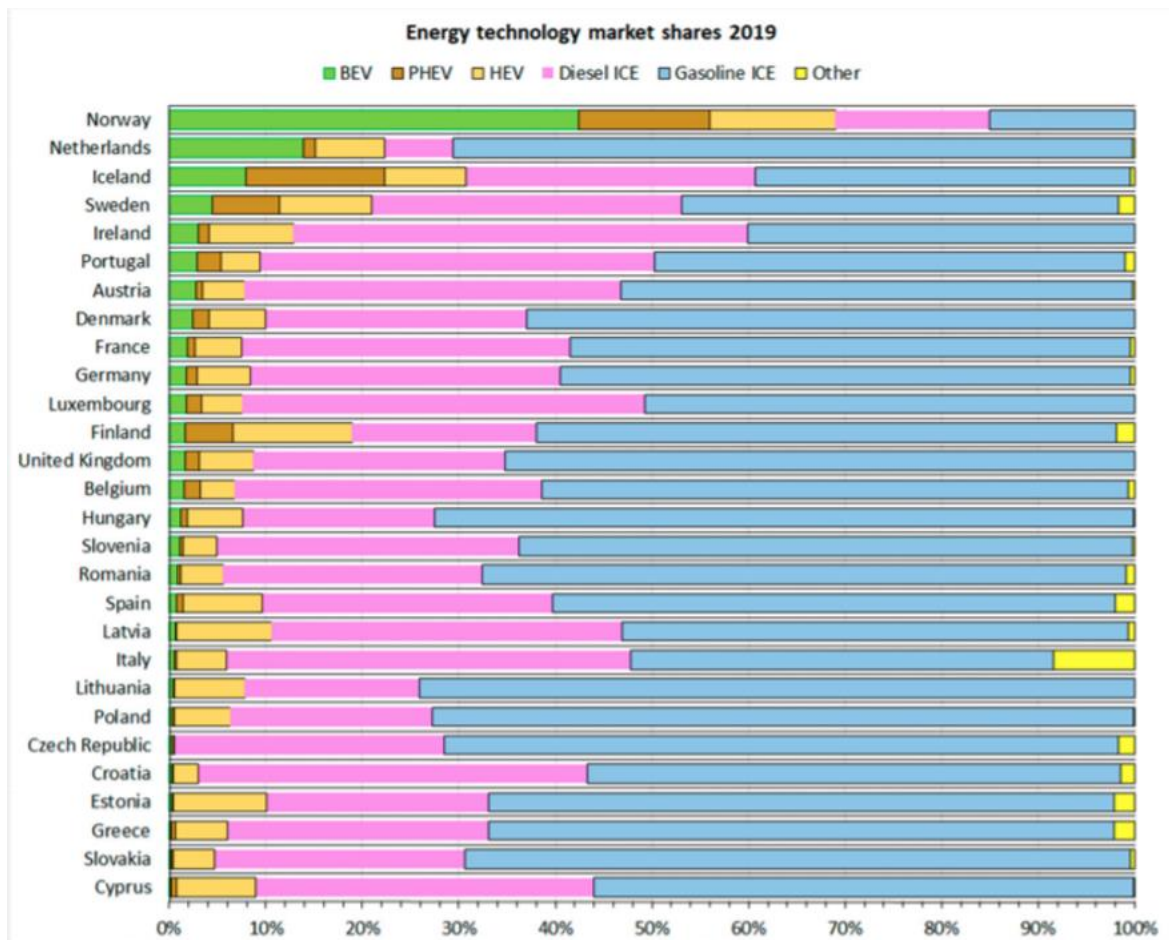
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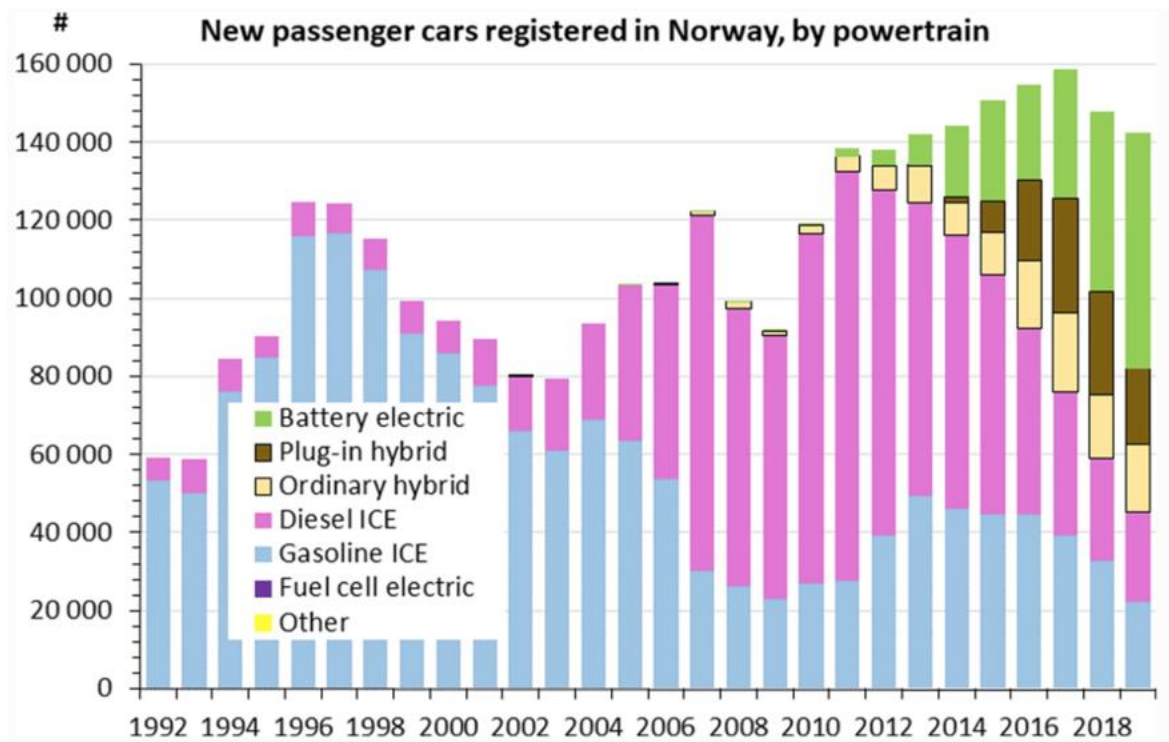
# Attachments

## Attachment 1



Attachment 1. Energy technology market shares for new passenger cars in the European Economic Area 2019, by country. BEV = battery electric vehicle; PHEV = plug-in hybrid electric vehicle; HEV = ordinary hybrid electric vehicle; ICE = internal combustion engine. Source: (Fridstrøm, 2021)

## Attachment 2



Attachment 2. New passenger cars registered in Norway 1992-2020, by energy technology.

Source: (Fridstrøm & Østli, 2021)



## **Attachment 3: Interview guide for new car sales managers**

### **Before the interview begins:**

Before we begin this interview, we want to inform you what this interview involves. We are writing our bachelor thesis where we are trying to find out how the increased sales of electric vehicles has impacted car dealerships in Norway. Questions that you can expect during the interview are how electric cars have changed your sales mix, revenues and profitability from sales and service of cars in percent, and based on your own experience what you think will happen with the car market when there will be less sales of new fossil fueled cars in 2025.

Also, we want to assure you that this interview is confidential and will be anonymized. Recording that we are taking now will be only available for us and our supervisor, and it will not be used in any other way than for analysis of this bachelor thesis. Do you consent to this interview?

### **Questions for new car sales manager or personnel:**

1) How has the popularity of electric cars in Norway impacted your new car **sales mix**?  
- What % pure electric vs. diesel, hybrid, or gasoline?

2) How much in percent has electric car sales impacted your **annual new car sales**?

*(If the average annual sales of new gasoline/diesel cars you sold before electric cars became popular was 100, approximately how much has electric car sales impacted your **annual new car sales**? (i.e. 90 would mean electric cars have reduced the average annual sales by 10%, while 150 would mean electric cars have increased the average annual sales by 50%?)*

3) How much has electric car sales impacted the **average transaction price** for your new car sales?

*(If the average transaction price of a new gasoline/diesel car you sold before electric cars became popular was 100, approximately how much has electric car sales impacted the **average transaction price** for your new car sales (i.e. 90 would mean electric cars have reduced the average price paid by 10%, while 150 would mean electric cars have increased the average price paid by 50%)?)*

4) Has the popularity of electric cars changed the mixture of new car purchases with **cash** or **financing** versus new car **leasing**?

*(i.e. are electric car buyers more likely than gasoline/diesel buyers to pay cash, finance, or lease their new vehicle?)*

- If it has changed, how much in percent and why?

5) How much in percent has electric car sales impacted your **financing/leasing profits**?

*(If the average profit made from financing/leasing new gasoline/diesel cars you sold before electric cars became popular was 100, approximately how much has electric car sales impacted your **financing/leasing profits**? (i.e. 90 would mean electric cars have reduced the average by 10%, while 150 would mean electric cars have increased the average by 50%).*

6) Has the increased popularity of electric vehicles impacted your sales/profits in **other areas** such as purchase of extended warranties, service plans, or accessories?

- Approximately how much in percent has electric car sales impacted your profit from the sale of these extras?

7) Overall, would you say that EV popularity in Norway has increased or decreased your **overall profits** from selling new cars?

- Do you think the brand you sell has benefited or been hurt from Norway's push to promote electric cars sales?
- Why or why not?

8) Has the increasing popularity of electric cars changed the **way** you sell new cars in terms of advertising, promotions, training of sales personnel, etc.?

- how?
- What about changes in training of sales personnel?

9) Overall, would you say it is **easier or more difficult to sell** new cars since EVs became popular in Norway?

- Do your salespeople find it easier or more difficult to sell electric cars than gasoline or diesel cars?
- Why?
- Do customers have more or greater concerns about new electric car reliability/durability than new gasoline/diesel vehicles.

10) How important are the EV subsidies versus EV driving qualities, the range of EV sizes and vehicle types, or environmental benefits of electric cars in driving their popularity?

11) What do you think will happen to your new car sales and profits when electric car **subsidies** are reduced or eliminated?

- Will EV sales decrease and will sales increase for gasoline or diesel cars? Why or why not?

12) Norway is planning that all new sold cars by **2025** will be electric vehicles–

- Do you think this will actually happen, and if it does do you feel this is a good thing for your dealership and the Norwegian car market?
- Why or why not?

13) Any other comments you would like to make about how electric cars have changed your new car business?

## Attachment 4: Interview guide for service managers

### Before the interview begins:

Before we begin this interview, we want to inform you what this interview involves. We are writing our bachelor thesis where we are trying to find out how the increased sales of electric vehicles has impacted car dealerships in Norway. Questions that you can expect during the interview are how electric cars have changed your sales mix, revenues and profitability from sales and service of cars in percent, and based on your own experience what you think will happen with the car market when there will be less sales of new fossil fueled cars in 2025.

Also, we want to assure you that this interview is confidential and will be anonymized. Recording that we are taking now will be only available for us and our supervisor, and it will not be used in any other way than for analysis of this bachelor thesis. Do you consent to this interview?

### Questions for service manager or personnel:

1) How has the popularity of electric cars in Norway impacted your **car servicing volume**?

- Do electric cars require less service and repair than gasoline or diesel cars?
- What sorts of service and repairs have become more or less common with electrics?

2) How much in percent has electric cars impacted your **annual service/repair volume**?

*(If the annual **number of gasoline/diesel cars** that your department serviced and repaired was 100 before electric cars became popular, approximately how much has electric cars impacted your annual service/repair volume? (i.e. 90 would mean*

*electric cars have reduced the average annual number of cars serviced/repaired by 10%, while 150 would mean electric cars have increased the average annual volume by 50%).)*

3) Has the increasing popularity of electric cars changed **the way** you sell car servicing and repairs in terms of advertising, promotions, training of service department personnel, etc.?

- How?

4) Would you say it **is easier or more difficult** to service/repair cars since EVs became popular in Norway?

- Do your service people find it easier or more difficult to service/repair electric cars than gasoline or diesel cars? Why?

- Do customers have more or greater **frustrations** about used electric car reliability/durability than used gasoline/diesel vehicles?

5) How much in percent has electric car sales impacted the **average price** for a service or repair?

*(If the average **price for a service** or repair for a gasoline/diesel car was 100, approximately how much has electric car sales impacted the average price for a service or repair (i.e. 90 would mean electric cars have reduced the average price paid by 10%, while 150 would mean electric cars have increased the average price paid by 50%)?)*

6) Has the increased popularity of electric vehicles impacted your sales/profits in **other areas** such as warranty work or purchase of accessories?

- How much in percent has electric cars impacted your **profit** from the sale of these **extras**?

*(If the average profit made from these “extra” accessory type purchases related to gasoline/diesel cars you serviced before electric cars became popular was 100, approximately how much has electric cars impacted your profit from the sale of these extras?)*

7) Overall, would you say that EV popularity in Norway has increased or decreased your **overall profits** from servicing/repairing cars?

8) Norway is planning that all new sold cars by **2025** will be electric vehicles –

- Do you think this will actually happen, and if it does do you feel this is a good thing for your dealership and the Norwegian car market?
- Why or why not?

9) Any other comments you would like to make about how electric cars have changed your service and repair business?

## **Attachment 5: Invitation emails**

### **Invitation to research interview about:**

*How do car dealers in the Lead Market of Norway feel about the high sales of electric vehicles and how it has impacted their business and future prospects?*

We invite you to participate in a research interview about how the increasing sales of electric vehicles have affected car dealers in Norway. We will inform you in this writing what is the purpose of this interview, our bachelor thesis we are writing, and what it will mean for you as participation.

### **Purpose**

Our names are Nasra and Julia. We are two students studying economy and administration at the University of Stavanger. We are now working on our bachelor thesis where we are trying to find out how the increasing sales have affected car dealers in Norway. To answer the research question, we need you to consent to a qualitative interview. We want to invite different Norwegian car dealers to participate in our survey where we have interviews with sales managers and service managers. Do you want to be one of the participants?

### **Interview**

If you decide to participate in this study, you will have a personal interview with us (Nasra and Julija). The interview can take place either digitally, by telephone, or physically. It will be confidential and anonymous. That is, we will only use the name of the car brand you sell in our research. We will not use your name or where in Norway your company is located. As in, you will not be recognized in our bachelor thesis. The interview will not take longer than 15-20 minutes. Since the interview is oral, your answers will be recorded in an audio recording. The recording will only be available to us and our supervisor (Erik Olson) who is a professor at BI Oslo, and it will in no way be used other than this assignment. As a participant, you can withdraw from the research at any time without any consequences.



### **Questions you can get during the interview**

Questions that you can expect are how electric cars have changed the sales mix, profit, and profitability from sales and service of cars in percent, and based on your experience what you think will happen to the car market when there are fewer sales of new petrol/diesel cars in 2025.

### **The reason we contacted you**

We chose your car dealership according to how popular your electric vehicle models are, how long you have had electric vehicles, and how many electric vehicle models you have. Additionally, you are a car dealer who is located in Norway.

### **With best regards**

Nasra Abdille

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Julija Tisko

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