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&
KNOWLEDGE-BASED ENTREPRENEURSHIP

New market penetration by start-ups, how managers within new ventures can efficiently penetrate the EV repair market in Norway.

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A single case study on AdaptFuture

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Abstract

Electric vehicles are arguably the future of transportation, as a transition to electric vehicles is necessary to limit the ecological footprint and slow down global warming. A country that has been majorly successful in this transition is Norway. It is important to outline the success factors and market conditions, not only as an inspiration for other countries but for companies wanting to operate in the market as well. Therefore, this thesis aims to analyze the electric vehicle market in Norway and provide suitable penetration strategies for the market. To achieve this, literature about the Norwegian EV market and penetration strategies was reviewed and semi-structured interviews with seven industry experts were conducted. From the findings, two main themes were derived using thematic analysis. The themes identified were; *factors affecting the EV market in Norway* and *The effect of increases in EVs on the service and repair market*. Based on the findings, a PESTEL and Five forces analysis was conducted as well as an analysis of potential strategies. Based on this, the researchers were able to conclude that the Norwegian EV market is highly characterized by the political, legal, and technological environment as well as opportunities and growth potential. Furthermore, a model for efficient market penetration by a tech startup in the Norwegian EV repair market was constructed. The model and the concluded characteristics will contribute to theory and fill a gap in the literature regarding market penetration for tech startups in emerging markets. In addition, the practical contribution of this thesis consists of recommendations provided to the case company, AdaptFuture.

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List of abbreviations

EV	Electric Vehicle
BEV	Battery Electric Vehicle
PHEV	Plug-in Hybrid Electric Vehicle
ICE	Internal Combustion Engine
ICEV	Internal Combustion Engine Vehicle
TVS	Traction Voltage System
RSD	Remote Service Diagnostic
SME	Subject Matter Expert
OTA	Over-the-air

1. Introduction

Global warming is a growing concern, and the transportation industry is largely at blame. Transports are responsible for almost 30% of the EU's total CO₂ emissions, and passenger cars account for about 43% of emissions caused by transport (Fevang et al., 2021). Thus, there is a broad consensus among scholars that a transition to alternative power sources is necessary (Figenbaum, 2016; Hardman 2019; Fevang et al., 2021). According to Hardman (2019), BEVs and PHEVs will help solve problems not only with climate change but also with air pollution and fossil fuel resource depletion. Figenbaum (2016) adds to this and states that EVs could be three times as energy-efficient as ICEV. To transition to alternative power sources is however rather difficult, as it comes with both financial and technical barriers (ibid).

Interestingly, one of the world's major oil producers has rather successfully managed to transition to electric-powered engines and become a world leader in this area too (Lempfers, Bernstein, Hoffman and Wolfe, 2022). According to Fridstrøm (2021), the number of EVs and PHEVs in Norway has grown continuously since 2010, a growth incomparable to that of any other country. In 2015, the market share for EVs and PHEVs was 18% of new vehicles, whereas a vast majority of other countries had corresponding numbers of below 1% (Figenbaum, 2016). Market shares for EVs and PHEVs continued to grow and reached 52,3% and 20,4% respectively in 2020, accounting for a combined market share of 72,7% (Fridstrøm, 2021; Fevang et al., 2021). The last year where statistics are available showed a further increase, to 86,16% of new car sales (Elbilsstatistikk, 2021).

Such a rapid increase in EVs has made for a rather interesting yet uncertain market, especially for the repairs and service market. This study aims to gain an understanding of the Norwegian EV market and its characteristics as well as examine how the service and repair market can be penetrated by a tech startup.

1.1. Background

Today the number of electrical vehicles is increasing significantly and had a 98% growth rate in terms of volume in 2021 with a total of 6.4 million EV sales (EV-Volumes - The Electric Vehicle World Sales Database, n.d.). This creates both challenges and opportunities for

businesses, society, and policymakers. It is important to adapt toward the electrification of the automobile for a sustainable world. With new innovations, new services, and products introduced to the market. When the market starts to accept the service or the product, new opportunities and threats occur for already existing businesses. By replacing the traditional internal combustion engine with the electrical motor, workshops will start to face challenges to adapt because of the knowledge gap.

AdaptFuture offers hardware and software-related products that gives workshops the right conditions for adapting to the transition of EVs. The company was founded in 2019 in Gothenburg and offers three main products, those are, TVS-IoT, TVS-Rig, and RSD, which will be explained in detail in a separate section.

The huge demand from workshops puts pressure on AdaptFuture, hence a penetration strategy is essential when the company is to capitalize on the future market. A market penetration strategy is important for AdaptFuture in order to seize future market share in Norway. Another aspect is to study how well a market penetration strategy fits with an emergent market. Since there is scarce research on the topic of how to penetrate emerging markets, the project also aims to fill the current research gap.

According to (Bigley, 2018) an incremental opportunity is defined as a financial opportunity in either an exploitative or explorative space. Adapt Future's products are categorized within the latter space, creating market capitalization challenges due to a weak market definition. In order to penetrate a market one could use a pricing strategy to "disrupt" already existing competitors (Chandola and Fu, 2017). Conducting a competitor analysis could bridge the gap between the pricing strategy which creates conditions for a more overall penetration strategy.

1.2. Problem Discussion

Carbon dioxide is today the main contributor to global warming and human activities such as driving with an ICE car increase CO₂ concentrations in the atmosphere which traps sunlight from reflecting back to space causing a greenhouse effect (Causes of climate change, 2020). As global warming constitutes a global risk to human and environmental systems such as agriculture, inland flooding, and increased sea temperatures, policymakers have started to adapt through new climate policies to reduce the stated risks (IPCC Summary for

policymakers, 2022). According to the Ministry of Transport in Norway, politicians have responded to the risks posed by global warming by incentivizing more people to buy EVs over ICEVs through tax exemptions and other implementations such as reduced road tolls. The transition and the adoption of EVs is however faced by technological barriers like access to replacement parts and workshops (Guno, Collera & Agaton, 2021). To keep up with the increased demand and sales of electric cars (EVO Report | BloombergNEF, 2022), contractors, managers, and entrepreneurs must adapt and seek opportunities in the EV repair market by educating and training mechanics to be able to handle electric cars. The increased transition to OTA updates within car manufacturers will according to IHS Automotive save these companies \$35 billion this year (Halder, Ghosal and Conti, 2020). This in combination with fewer moving parts in an electric car exposes the aftermarket industry to the risk of long-term losses in revenue. Since there is limited research on the aftermarket industry in Norway, this report will therefore explore the aftermarket industry in Norway through a single case study with AdaptFuture to understand and find recommendations for how start-ups can efficiently penetrate the market.

1.3. Purpose and research questions

The purpose of this report is to analyze the Norwegian EV market and its characteristics, as well as to develop a suitable market penetration strategy for AdaptFuture based on the analysis. There are limited studies in the field of new market entry which cover the aftermarket industry in Norway, therefore it is also within the purpose of this study to contribute to theory building. This work will provide AdaptFuture and similar start-ups within the aftermarket industry with strategic recommendations on how they could capture market share in emerging markets.

To fulfill the purpose of this report, the following research questions have emerged:

Research Question 1: *What are the main characteristics of the EV market in Norway?*

Research Question 2: *How could a tech startup operating in the electric vehicle industry efficiently penetrate the emerging market of EV repairs in Norway?*

1.4. Delimitations

The report intends not to examine industries other than the Norwegian electric car industry and its aftermarket industry, therefore other global markets in these industries outside Norway will be delimited from the report. Other relevant markets such as the boat market for electric boats and the ongoing electrification of the heavy equipment market will not be addressed in this report even if AdaptFuture's products allow these markets.

Since the report is conducted as a case study of a start-up company, the conclusions from the report can be limited to similar companies as AdaptFuture. However, the report welcomes managers, contractors, and leaders outside the electric car industry to take part in the knowledge presented, for example, some of the strategies presented in the conclusion can be applied in other areas and industries.

1.5. Disposition

After the introduction of the thesis is presented, the thesis starts with contextual information about the case company and the Norwegian market. Later a literature review on two models is presented in conjunction with literature on strategies, policies, and the EV repair market in Norway. Specifically, the two models which are reviewed are Porter's Five Forces and the Pestel framework. In chapter 4 the methodology of the report is presented, followed by the empirical findings in chapter 5. After that, an analysis based on the empirical findings is presented in chapter 6 which then forms the conclusions and the recommendations of the report in chapter 7.



Figure 1. An overview of the outline of the thesis.

2. Case background

In this chapter information about the case company and its products will be presented. Some information about the Norwegian EV market will also be presented.

2.1. AdaptFuture

AdaptFuture is a start-up based in Gothenburg, Sweden. The company was founded in 2019 by the three founders, Niclas Ericsson, Rolandas Rimdeika and Evaldas Stucinskas. Niclas is the CEO and Head of IT, Rolandas initiated the idea and is Senior Advisor, and Evaldas is Head of Sales and responsible for Business Development (Ericsson, 2022).

The company operates in the aftermarket industry for electrical vehicles but is not limited to the electric vehicle market segment within the industry due to the flexibility of its products. Since Adapt Future is in an early stage of development, the founders believe that it is not possible to specify current market shares in the market. It is therefore said that the current market share is 0%. As of December 2021, the company received funding of 3-9 million SEK from FoF Family Office for further product development and marketing.

The company specializes in remote competence by developing and offering a platform for educating and certifying technicians. The two products forming the platform are TVS and TVS-RIG. A complementary part of the product line is the RSD product which operates as a remote diagnostics platform for workshops and technicians. See more about the products in section 2.2 (AdaptFuture, n.d).

2.2. Products

The Traction Voltage System (TVS) is an educational product used to educate technicians and allow supervisors to create training programs. Specifically, the TVS-IoT module comes with software displaying the results and activity logs. TVS-IoT is a product that is aimed at OEMs who want to build it into their rig. While TVS-Rig is aimed at education centers and independent workshops that do not have the opportunity to develop their own rigs. The product can simulate a 1000V battery without a cord to the wall or a large battery, which enables training without compromising safety. With TVS-Rig, AdaptFuture sells a certificate that you get from having completed education and verified your knowledge with the help of

TVS-Rig. These certificates are valid for 24 months and need to be renewed after (AdaptFuture, n.d).

When an owner of an EV encounters any problems with the vehicle, the vehicle is often delivered to a workshop. The workshop can trace and run diagnostics through the RSD product to analyze what the problem is. If the problem is software-related, workshops can then connect remotely with Subject-Matter-Experts (SMEs) in order to be guided and receive on-demand help through OTA updates. The OTA functionality allows workshops to communicate and consult with SMEs without the need to obtain certifications or EV training, creating flexibility for already established workshops. An overview of the process is presented below in figure 2.

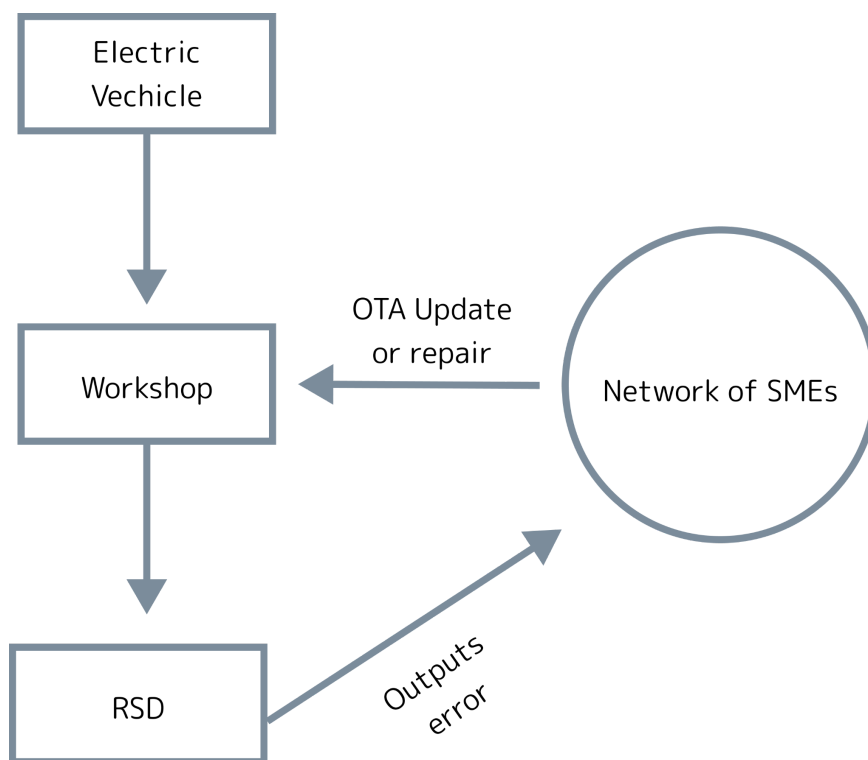


Figure 2. An overview of how the RSD product operates together with a network of SMEs.

The RSD product is similar to OBD (On-board diagnostics) but differs from an OBD in the number of operations. RSD can execute read and write operations while OBD only allows read operations. RSD is also compatible with a broad range of vehicles such as boats, electrical vehicles, hybrids, and ICE (Internal-Combustion-Engine) vehicles. The business

model for the product is at the moment vague, but a discussion with the co-founders suggests that revenue and profit should derive from every solved case. Another potential revenue stream is through a subscription model for those individuals, workshops, and carpools who need the RSD hardware (AdaptFuture, n.d).

2.3. Norwegian market

As mentioned, transitioning to alternative power sources comes with barriers, which Norway was successful in overcoming. Since the 1970s, Norway has been a wealthy country due to the development of the oil and gas industry, which eases some financial barriers to the transition (Lemphers, Bernstein, Hoffman and Wolfe, 2022). The real transition started years later when the growth in the oil and gas industry became stagnant and politicians and business leaders were forced to explore other opportunities. Norway did not have any car manufacturers but ship manufacturers who were looking to diversify, which created a strong organizational support system for economic development driven by electrification.

Furthermore, Norway has a very important natural asset enabling electrification, which is hydroelectricity. Hydroelectricity is close to emission-free and very inexpensive (ibid). Zarazua de Rubens, Noel, Kester and Sovacool (2020) consider EVs to be the most feasible option to decarbonize passenger transportation, especially when combined with low carbon powers systems, like hydroelectricity. According to Figenbaum (2016), 96% of Norway's electricity is produced in hydroelectricity plants, making electricity very cheap, while their fuel prices are among the highest in Europe. Powering all passenger vehicles in Norway would only consume about 5% of the hydroelectricity normally produced in a year (ibid). Hence, the financial barriers mentioned could be comparatively lower in Norway, than in other European countries.

Other aspects have enabled the development of EVs in the Norwegian market as well. For example, 75% of Norwegians can park on land they own, which enables the installation of charging stations (Figenbaum, 2016). However, the main reason Norway has achieved such growth in EVs and related economic development is the country's policies and incentives for the use of EVs (Figenbaum, 2016; Hardman, 2019; Fridstrøm, 2021; Fevang et al., 2021; Lemphers, Bernstein, Hoffman and Wolfe, 2022).

3. Literature review

In this chapter, previous research on the Norwegian EV market as well as the service and repair market will be presented. The literature was used to gain an understanding of the market conditions in Norway. Furthermore, literature on market analysis and market penetration was reviewed to successfully analyze the Norwegian market and develop a suitable market penetration strategy.

Literature review disposition

The structure of the literature review is presented in the following table:

Disposition of Literature review
3.1. Policies and incentives in Norway 3.1.1 Financial, non-financial, reoccurring and one-time incentives 3.1.2 Negative aspects of policies and incentives
3.2. EV Service and Repair market 3.2.1 Aftermarket sales & Maintenance
3.3 Porter's Five Forces 3.3.1 Threat of new entry 3.3.2 The power of suppliers 3.3.3 The power of buyers 3.3.4 The threat of substitutes 3.3.5 Competitive rivalry
3.4. Pestel Framework 3.4.1 Political 3.4.2. Economic 3.4.3. Social 3.4.4. Technological 3.4.5. Ecological 3.4.6. Legal
3.5. Market Penetration, Growth & Strategies

Table 1. The disposition of the literature review

3.1. Policies and incentives in Norway

The Norwegian government started to encourage the transition to electric-powered engines in the 1970s and 1980s when it began supporting the R&D of domestic EV manufacturing through subsidies (Lemphers, Bernstein, Hoffman, and Wolfe, 2022). In the 1990s, the government decided to further incentivize the use of EVs and started to provide financial incentives for the purchase of EVs. Domestic production ceased in the 2000s as it could not compete with large international manufacturers. The government then continued the path started in the 90s, making the purchase of EVs more attractive in the eyes of the consumer, through incentives intended to increase the ease of use (ibid.). However, many incentives did not yield the desired result until 2010, when manufacturers started producing EVs with higher-performing Li-Ion batteries (Figenbaum, 2016). Besides the production of Li-Ion batteries, the key drivers behind the success of the policies and incentives introduced by the Norwegian government have been normalization and capacity building (Lemphers, Bernstein, Hoffman, and Wolfe, 2022). Environmental norms have for a long time been important in Norway, and they have only been strengthening since the introduction of incentives in the 70s. Furthermore, capacity building has also contributed to the set of environmental norms present in Norway, as it aims to educate on how to act on climate change. The capacity building combined with the normalization process has contributed to the rapid growth of EVs in the Norwegian market, and the economic development that comes with it (ibid.).

3.1.1. Financial, non-financial, reoccurring and one-time incentives

There are different kinds of incentives in the Norwegian market, financial and non-financial, and one-time and reoccurring (Hardman, 2018). A common misconception is that the growth in sales of EVs is due to subsidies towards the purchase, which is not the case according to Fridstrøm (2021). So, rather than subsidizing the purchase, EVs are exempt from most taxes vehicles with ICE is required to pay (Fridstrøm, 2021; Fevang et al., 2021; Lemphers, Bernstein, Hoffman, and Wolfe, 2022). As the transportation industry in Norway is quite heavily taxed, with registration taxes, annual taxes, and fuel taxes to name a few, the exemption from these taxes lowers the barriers for Norwegians to choose a green alternative to ICEVs (Lemphers, Bernstein, Hoffman, and Wolfe, 2022). These tax exemptions seem to be vital for the growth of EVs as 63% of EV users would not have made the purchase otherwise, according to a survey by Norsk elbilforening (ibid.).

According to Fridstrøm (2021), there are several fiscal incentives that are all CO₂ differentiated, meaning they are aimed at promoting alternative energy sources. Some of these incentives are the full or partial exemption for the following taxes:

1. One-off registration tax (fully exempt)
2. Reregistration tax on secondhand sales (fully exempt)
3. Annual circulation tax (fully exempt)
4. Fuel tax (not applicable)
5. Income tax on private use of company vehicle (partially exempt)
6. Value added tax (fully exempt)

According to Fearnley, Pfaffenbichler, Figenbaum, and Jellinek (2015), incentives that reduce the purchase price have proved to be most effective in the process of evening out the price differences between EVs and ICEVs. Aarestrup Aasness and Odeck (2015), add to this and state that financial incentives are the most important and solely responsible for the increase in EVs in the Norwegian market. In addition to these incentives, which are nationwide, local incentives have been implemented in Norway (Fevang et al., 2021). These include other financial incentives, that are reoccurring, like exemption from road toll charges, reduced ferry rates, and free parking, but also non-financial incentives like special lane access (carpool lanes, bus lanes, etc.) (Figenbaum, 2016; Hardman, 2018; Fevang et al., 2021; Fridstrøm, 2021).

3.1.2 Negative aspects of policies and incentives

There are however scholars who, despite the significant increase in EVs, critique the Norwegian EV policies. Holtsmark (2012) argues that EVs should not be exempted from fees for things such as road use, parking, and ferries as it means a loss of revenue for the government. Furthermore, the author argues that EVs should not have access to special lanes, such as bus lanes (*ibid.*). This could be understood as the number of EVs increases, the more crowded the special lanes become, which ultimately defeats the purpose of the incentive. In another article examining the Norwegian support and subsidy policy, the authors found that the usage of EVs implies low costs, which leads to an increased usage of the vehicle (Holtsmark and Skonhoft, 2014). The increase in usage of EVs is at the expense of other

modes of transport, like cycling or public transport, which are even more sustainable than EVs. Furthermore, the relatively low costs of EVs in Norway, combined with their short range, incentivized households to purchase a second car, again at the expense of other modes of transport. The authors conclude that the policies relating to EVs should be terminated and do not recommend other countries implement them (ibid.). Others argue that the policies relating to the purchase are enough to incentivize a purchase and that other incentives should be terminated, as they have adverse effects (Aarestrup Aasness and Odeck, 2015). Road tolls are meant to support the maintenance of infrastructure but as EVs are exempt from tolls, while still wearing on infrastructure, the support might be insufficient. Furthermore, parking fees are meant to reflect the alternative cost of parking, which arguably should be the same for every vehicle, as they occupy the same amount of space. This constitutes an adverse effect because it translates to an economic loss for the government. Lastly, the use of special lanes is considered an adverse effect since the number of EVs is growing and the special lanes become more crowded which not only limits the incentive but also hinders public transport (ibid.). Even though the incentives have achieved the desired result, which is to increase the number of EVs and move away from ICE, there are some incentives that could have adverse effects. Hence, new incentives might be needed to avoid adverse effects while continuing the growth of EVs.

3.2. EV Service and Repair market

To completely transition to EVs, there are still several structural challenges to be overcome, as became evident in the interviews conducted by Zarazua de Rubens, Noel, Kester, and Sovacool (2020) with 227 experts across the Nordic countries. The authors claim that EVs currently face an unfavorable business case due to the market conditions and the legacy of ICE manufacturers. This results in an unsuitable business model and supply chain which can compromise the production of EVs as well as the market offerings. According to the authors, the problem is that despite the inherent differences between EVs and ICEVs, the industry continues to manufacture EVs in the same way as ICEVs. The reason manufacturers in the industry do so is twofold. There is a lack of knowledge on how to develop EVs and move them downstream, but manufacturers are also unwilling to adapt, due to significant investments in the infrastructure of ICEV. This results in unaffordable vehicles for the consumers, and thus, unprofitable product lines for the manufacturers. Thus, for the success

of EVs, new business models are likely required, as well as structures suited to the technology. Examples of current structures severely affected by the development of EVs are the product lines, refueling networks, component manufacturers, selling methods, and maintenance networks (ibid.). For this research, the structure most relevant is the maintenance network.

3.2.1 Aftermarket sales and Maintenance

After-market sales and especially maintenance is very low with EVs, thus constituting a key barrier for the industry. EVs do not require nearly as much maintenance as ICEVs. There is less that can break and there are no oil changes required. In interviews conducted by Zarazua de Rubens, Noel, Kester, and Sovacool (2020), experts stated that EVs require 80-90% less maintenance compared to ICEV. Therefore, manufacturers either need to increase the price or find another way to recover the lost revenue, as their sale of spare parts will be significantly reduced. Furthermore, for car dealerships, service, and maintenance account for roughly 50% of their business, which means a full transition to EVs would result in that half of their business would cease to exist. According to experts, this creates a large concern for the automotive industry and there is a critical need for them to develop new revenue streams if EVs are to become the mainstream option. One expert stated that car dealerships will have to change their business model and can no longer afford things such as large showrooms, and if they do not change, they will go out of business. The lack of after-market sales in EVs will force the automotive industry to be innovative and potentially go outside their core business, which could potentially lead to better things. However, as of now, the lack of after-market sales is just a disincentive to sell EVs (ibid.).

Besides the problem with the lack of after-market sales, EVs constitute further challenges for the service and repair market. Most mechanics of today are trained in working with ICE, and EVs are completely different. Therefore, there are few mechanics available who know how to fix an EV (Lampton, 2011). The problem of insufficient knowledge of mechanics is evident in the roadside assistance organizations as well, according to Manning (2019). Roadside assistance has trouble training their technicians for EVs not only because of the complexity involved but also because of the dangers related to repairing such a high voltage system. Doing so without sufficient knowledge can have severe consequences (ibid.). Hence, the

major problem is that there are not enough mechanics who can work on EVs, and the slightly minor problem is that developing such skills is somewhat complicated.

3.3 Porter's Five Forces

According to Porter (1996), a problem for organizations developing a strategy is the failure to distinguish what a strategy is, as it is often used interchangeably with operational effectiveness. Even though both are essential for performance, they work in different ways. Operational effectiveness is essentially to perform similar activities as competitors, but better. The activities performed can be better in the sense that they, for example, utilize inputs better than competitors which can reduce price and increase quality. The quest for operational effectiveness has spawned several useful management tools and techniques, such as TQM, benchmarking, and outsourcing. However, operational effectiveness is rarely sufficient to achieve superior performance in the long run. The reason is, according to Porter (1996), that there is rapid diffusion of best practices, meaning that competitors can rather easily copy the best management techniques or new technologies. Thus, to achieve superior performance in the long run operational effectiveness needs to be combined with a competitive strategy. A competitive strategy is to “deliberately choosing a different set of activities to deliver a unique mix of value” (ibid.). Hence, establishing a strategy is essential for the organization to understand the market it operates in as well as its competitors.

It is very difficult to develop a strategy for an emerging market with new technologies, as the level of uncertainty is high according to Porter (1996). In an emerging market, there is uncertainty regarding the needs of the customers, which products or services will be sought after, and which combination of activities and technologies will best deliver them.

Organizations in this situation usually try to hedge and imitate others as much as possible, to minimize the risk of missing out and being left behind. Though costly and risky, emerging markets have the potential for rather explosive growth which can lead to high profits.

However, as the risk of imitation from competitors is high, it is essential for organizations to early define and embody their activities in a unique competitive position. Otherwise, the potential success risks being short-lived (ibid.).

To establish a strategy and attain a competitive position it is as mentioned essential to understand the market and the competitors. Michael Porter developed a framework in 1979 to

help organizations gain an understanding of their competitors and the market in order to shape a strategy. The framework is called Porter's five forces and describes the forces affecting competitiveness and ultimately the profit potential in the market. Markets might appear different, but the underlying drivers of profitability are the same meaning that the framework is applicable to any market (Porter, 2008). The framework will be outlined below.

3.3.1 Threat of new entry

The first force in Porter's framework is the threat of new entrants. New entrants in a market pose a threat as they bring new capacities and an ambition to gain market shares. This will result in increased pressure on prices, costs, and the rates of necessary investments. The threat of new entrants is especially large if the new entrant diversifies from another market, as it likely has sufficient cash flow and capabilities to seriously affect the competitiveness. Hence, the threat of new entrants puts a limit on the profit potential in the market. The degree to which new entrants pose a threat depends on the height of entry barriers present in the market. If the barriers are low, new entrants can operate without retaliation from incumbents. This means that the threat of new entries is high, and the profit potential is thus limited. Barriers to new entries are essentially advantages incumbents have over new entrants and they stem mainly from the following seven sources:

1. *Supply-side economies of scale.* Economies of scale are a means of decreasing the cost per unit by producing large volumes. When producing larger volumes, the fixed costs can be spread out over more units which makes the cost per unit lower. This creates a barrier as new entrants are forced to either produce similar volumes to also achieve economies of scale or be at a cost disadvantage. Economies of scale can be achieved not only in production, but in research, marketing, and services as well.
2. *Demand-side benefits of scale.* These benefits arise when a buyers' willingness to purchase a company's product increase with the number of other people who are willing to purchase the product. People are more prone to trust larger companies, which is also known as brand recognition.
3. *Customer switching costs.* These are the costs incurred by buyers when switching suppliers. Switching costs can arise due to a need to alter product specifications or

train employees in using a new product. The higher these switching costs are, the more difficult it will be for new entrants to attract customers.

4. *Capital requirements.* Entering a new market can be quite capital intensive as investments are necessary not only for fixed assets but for building inventory and extending customer credit. Furthermore, a new market entry might require investments in research and development and up-front advertising. Markets requiring large investments create a high barrier and will likely deter new entrants.
5. *Incumbency advantages independent of size.* These are advantages incumbents might have over new entrants regardless of their size. Examples of such benefits are cost and quality advantages stemming from sources such as proprietary technology, access to the best raw materials, or preemption of favorable geographic locations.
6. *Unequal access to distribution channels.* New entrants need distribution channels to be able to sell their products or services. Hence, in a market where distribution channels are few, the barrier to new entrants is high. The barrier is especially high if incumbents have the distribution channels tied up through agreements.
7. *Restrictive government policy.* Government policy can both hinder and aid new entrants, as well as amplify or nullify the other barriers. Government policies can directly prohibit new entrants, by licensing requirements and restrictions on foreign investment. In contrast, governments can enable new entrants through subsidies or funding of R&D (ibid.).

3.3.2 The power of suppliers

A market with powerful suppliers is likely to be less profitable as suppliers capture more of the value for themselves, according to Porter (2008). Powerful suppliers can use their bargaining power and increase prices or limit quality or service. Thus, they can increase their own profitability and reduce the buyer's profitability. This is especially true in markets where buyers are unable to pass on cost increases to customers by raising their own prices.

According to Porter (2008), a supplier is to be considered powerful if it fulfills some or all the following requisites.

- The market is dominated by a few suppliers and is more concentrated than the industry it sells to.
- The supplier has unique products for which there is no substitute.

- The supplier has differentiated products attractive to the buyers.
- The supplier is not dependent on the industry as a revenue stream. A supplier heavily dependent on one industry is likely to be more reasonable when it comes to pricing.
- Buyers face high switching costs when changing suppliers.
- The supplier can credibly threaten to forward integration (ibid.).

3.3.3 The power of buyers

Just like a market can have powerful suppliers, it can have powerful buyers. Powerful buyers have the same powers as powerful suppliers, but the opposite. They can force prices down and demand better quality and service, which increases costs for the suppliers. As with powerful suppliers, Porter (2008) has established requisites for a buyer to be considered powerful:

- The buyer is one of few in the market.
- The buyers purchase in large volumes.
- The buyers purchase standard or undifferentiated items, and alternative suppliers are available.
- The buyer's profit margins are low, which incentivizes to reduce purchasing costs.
- The item's quality is unimportant to the buyer.
- The buyer can credibly threaten to backward integrate (ibid.).

3.3.4 The threat of substitutes

A substitute is according to Porter (2008), an alternative to the product sold that has essentially the same functions and performs the same, but by a different means. Hence, products that have substitutes are easily replaced. Substitute products limit the profitability of an industry as they constitute a price ceiling. Therefore, it is vital for companies operating in industries with a high threat of substitutes to distance themselves from those substitutes by means such as marketing or superior product performance. It is not uncommon that substitutes are overlooked, as they often are different from the product sold or originating from another industry where they had another purpose. For that reason, strategists should be alert to changes in other industries. Porter (2008) considers the threat of substitutes high if the substitute offers a favorable trade-off at price-performance, thus offering higher value. He also states that if the switching costs are low, the threat of substitutes is high (ibid.).

3.3.5 Competitive rivalry

According to Porter (2008), competitive rivalry is the competition for customers by means such as new product introductions, discounts, and advertising campaigns. When the competitive rivalry is high actions such as discounts are common, which of course limits the industry's profit potential. The degree to which profitability is affected by competitive rivalry depends on the intensity and basis on which they compete. Porter (2008) states that the competitive intensity is high if:

- There are many competitors.
- The competitors are about the same size in terms of power, and there is no clear industry leader.
- The industry growth rate is slow.
- The exit barriers are high.
- The competitors are highly committed to the business and aspire to become industry leaders.
- There is a lack of knowledge and familiarity with the competitors.

The basis on which they compete is essentially by which means companies compete, i.e., discounts, new product introductions, etc. What affects the profitability of the industry most in this regard is price discounts. As discounts are easy to notice for competitors, they are likely to retaliate and discount their prices as well, which then leads to a loss for every one except the buyers. Other means of competitive rivalry, like new product introductions, do influence profitability, but not to the same extent as they improve the value for the customer which justifies a higher price (ibid.).

For the sake of the industry, it is best that companies compete on different dimensions and aim to meet different needs. For example, if most competitors strive for the highest possible quality, there would likely be one who performs better, resulting in zero-sum competition. However, if some companies sacrifice quality to reduce the price and thereby target other needs, competitive rivalry can become beneficial and increase the profitability and growth of the industry (ibid.).

3.4. Pestel Framework

The PESTEL framework is an analytical planning tool used to evaluate the impact of certain external factors on an organization (Perera, 2017). The framework is beneficial to use as it ensures all potential problems and risks are captured. Furthermore, the framework helps draw conclusions on market potential, industry attractiveness, and future trends, which all are beneficial in the strategy formulation. It is however important to note that the application of the model is highly dependent on the industry or market the organization operates in, meaning that factors in need of consideration might differ from industry to industry. PESTEL is an acronym for the external factors capable of affecting an organization; Political, Economic, Social, Technological, Environmental, and Legal (ibid.).

3.4.1 Political

The political factors pertain to the degree of influence the government has over the market, the industry, or a company. These factors include but are not limited to laws and regulations organizations must adhere to. The government can also influence using various policies, for example, monetary policies, fiscal policies, and foreign trade policies, to name a few. Furthermore, when analyzing the political factors, it is important to consider political stability or instability, as political instability can result in significant political changes. The political aspect is especially important if operating in a foreign market since foreign companies are more exposed to political changes. Overall, the political environment is essential to analyze as it can have a significant impact on an organization (ibid.).

3.4.2. Economic

The economic environment might be considered most important since it to a large extent determines profitability. In the economic environment, a lot of factors are considered. Some relate to the customers, such as educational level, disposable income, and age structure. While others relate more to the market, such as tax rates, inflation rates, and, exchange rates. A market with an unattractive economic environment is not suitable for investments, will not experience growth, and survival in such a market is unlikely (ibid.).

3.4.3. Social

The social environment is largely dependent on the environment's norms and ethical values, which originate from things such as traditions, cultural aspects, and religious beliefs. These

are factors that affect purchase behavior which of course is relevant for a business, which makes the social and business environment interlinked (ibid.).

3.4.4. Technological

As technology has progressed, the technological environment has become increasingly important. Technology has become essential for everyday business, with the internet being one of the most prominent examples. Hence, it is important to have an environment supporting technology with factors such as technical infrastructure and technical competence (ibid.).

3.4.5. Environmental

Similarly, to the technological environment, the ecological environment has experienced increased importance as well. The pressure on organizations to become more sustainable and limit their environmental footprint has increased as governments have set climate goals for the future and customers have become more environmentally aware. Factors to be considered when analyzing the environment are among others the industry average carbon footprint, energy efficiency, and environmental pollution concerns (ibid.).

3.4.6. Legal

The legal environment differs significantly from industry to industry and is made up of laws, regulations, rules, principles, guidelines, and acts. According to Perera (2017), complying with legalities is not only necessary to avoid negative consequences but can also lead to a strategic advantage over competitors. Furthermore, the legal environment benefits ethical business (ibid.).

3.5. Market Penetration, Growth & Strategies

Market penetration becomes relevant once companies decide to expand their business globally. As it is a part of a growth strategy, companies need to consider several variables such as entrepreneurial characteristics, the number of accessible resources such as financial and human resources, strategies, type of industry, and the organization's internal structures and systems (Gilbert, McDougall & Audretsch, 2006).

Entrepreneurs must be able to make important decisions in order to survive but also to make the company continue to grow. The strategic decisions that an entrepreneur must make include the decision about the product and market, determining the purpose and goal of the target market, deciding the entry mode, deciding what their marketing strategy should look like when penetrating a market, and lastly deciding how to control the performance in the new market they want to penetrate. When co-founders, managers, and board members elaborate, discuss and conceptualize the decision categories, it is only then, that the first steps towards a market penetration strategy can be initiated (Koch, 2001).

Koch (2001) elaborates more specifically on decisions involving the market selection process and the different market entry modes. It is presented in his literature that a market selection process involves three stages, a screening stage, an identification stage, and the final selection stage.

As a business expands, the tasks can no longer be assigned to only the co-founders themselves and therefore needs to be delegated to other team members. Literature reflects upon this particular issue and indicates that the entrepreneur has to choose growth based on existing new-business growth models. It is through available resources, strategies that promote growth, actions in which the entrepreneur creates value for the industry, and lastly through the continuous development of internal structures and systems where growth can occur (Gilbert, McDougall & Audretsch, 2006, eg, Baum et al., 2001; Box et al., 1993; Chrisman et al., 1998; Thakur, 1999).

Ansoff (1957) describes four key segments for how a business can grow. These four segments are also the building blocks for the Ansoff Matrix. Growth can occur through market penetration, market development, product development, and diversification. Each approach introduces different levels of risk depending on how new the product and the market are.

When implementing a successful market penetration strategy, businesses should consider growth as something that can be measured. The number of sales, number of employment, and market share are measurements that should be used by new organizations and businesses when measuring growth (Gilbert, McDougall and Audretsch, 2006).

Based on an extended model which is derived from the traditional academic model of new venture performance, Sandberg and Hofer (1987) describe new venture performance as a function of the entrepreneurial characteristics (E), industry structure (IS), and the venture's strategy (S). Hence, a mathematical model was developed between new venture performance and its affecting variables:

$$NVP = F(E, IS, S)$$

More specifically, Sandberg and Hofer (1987) use return on equity as a guiding principle for new venture performance while Gilbert, McDougall and Audretsch (2006) consider sales, rate of employment, and market share as measurements for growth. It is not within the interest of this study to debate the different approaches one could take to measure venture performance since there are numerous ways to measure organizational performance (Dollinger, 1984). The measurements presented by Sandberg, Hofer, Gilbert, McDougall and Audretsch for measuring growth and performance could instead create a holistic view of what this study defines as efficiency.

The literature presents several options to penetrate a market and the definition of what a market penetration strategy is, can be ambiguous. The common perception is that a market penetration strategy acts as a superset to a subset of strategies. According to Ansoff (1957), market penetration is an attempt to increase a company's sales without the need to compromise its existing product-market strategy. As a result, the company's objective is to increase business performance by selling current products to either new or existing customers. For the established customer base companies need to increase current sales (Ansoff, 1957).

In Anders Pehrsson's (2009) proposed model, new market entry strategies are divided into two components. The market strategy components are product differentiation and product/market scope. Product scope is the breadth of one or more product lines as well as the number of features and characteristics the products provide (Blais, 2012). The market scope involves the different customer segments and becomes together with the product scope a set of commercial activities.

Sandberg and Hofer's (1987) description of business strategies concludes with a table of three strategic categories. The competitive sub-strategies, the political sub-strategies, and business definition sub-strategies. Strategies such as product cost reduction, buying artifacts with a lower price, offering a better product, finding a specified niche or segment, creative marketing, and so-called imitative entries, for example entering supply shortage industries; all of these sub-strategies are a composition of the competitive strategies.

The political sub-strategies defined by Sandberg and Hofer (1987) are some of the strategies that Vesper describes as other entry wedges. The three approaches used by Sandberg and Hofer are, customer contract, favored purchasing, and rule changes. Customer contract refers to the approach in which the entrepreneur seeks out businesses or governments in order to sell a service through a contract. For example, the entrepreneur has identified a venture's need for programming skills and is therefore offering this service through an IT consultant contract. In a strategical context, a service contract could be a lucrative starting point for the business since it provides the business with a guaranteed revenue stream. Favored purchasing in regard to the political context is the approach in which the entrepreneur actively learns how he or she can benefit and learn from official contracts. Specifically, the entrepreneur learns how governments operate when negotiating with businesses, gaining valuable insights in order to obtain the contracts. Rule changes, lie within the nature of governments to make changes in society, for example, the need to build a certain path that can affect the buildings around the zone. These kinds of governmental actions where rules changes can become lucrative opportunities for the entrepreneur (Vesper, 1990).

Business definition sub-strategies are categorized as focused, differentiated and undifferentiated strategies. Focus strategies refer to one or two market segments and depend on specific products, adapted to suit customers within these market segments. Differentiated strategies involve several products from the product line and affect a broader market segment. A successful undifferentiated strategy is when the same product can appeal to all customer groups. These strategies often appeal to common products such as bread, toothpaste, and gas (Sandberg & Hofer, 1987).

4. Methodology

In the following section, the research methodology will be outlined. The research strategy and research design will be presented along with the reasoning behind the methodological choices. Furthermore, the data collection and analysis will be described and the quality aspects of the research will be discussed.

4.1. Research Strategy

When choosing a research strategy, it is important to consider several aspects to ensure the strategy's suitability for the research (Bell et al., 2018). For example, the research question, the purpose, and the use of theory are aspects to consider when choosing a research strategy (ibid). Thus, the proposed research strategy to answer the research question is an exploratory qualitative approach using abductive reasoning. An abductive approach is a form of reasoning where explanatory hypotheses are formed and evaluated (Thagard & Shelley, 1997). It involves an iteration between theory and empirical data to seek the most likely conclusion (Bell et al., 2018). In the context of the proposed research, an abductive approach would allow the researchers to form and evaluate potential market penetration strategies based on existing theory and empirical data. Hence, an abductive approach would be most suitable for the proposed research.

The exploratory research approach can be beneficial when there is limited literature and a lack of knowledge about the chosen topic (ibid). This research topic is not extensively explored in the existing literature and there is limited knowledge about the most suitable strategy for AdaptFuture to enter Norway. More specifically, there is limited knowledge about how start-ups should penetrate the EV market and its aftermarket in Norway. Hence, it can be argued that the specific topic is unexplored, and an exploratory approach is suitable. To complement this, a qualitative method approach using abductive reasoning has been used.

Qualitative research is often considered a more open-ended research approach compared to the quantitative approach (ibid). One advantage of the qualitative approach is the flexibility that the associated research methods offer, and the flexibility to change the direction of the research investigation (ibid). In business research, it can often be time-consuming and resource-intensive to gain access to representatives from companies (ibid). Therefore a part of the research strategy has been to conduct qualitative online interviews with company

representatives. Since a qualitative approach offers the researchers to go in-depth within the topic, this approach has been vital for understanding the Norwegian EV market in order to develop a viable market penetration strategy.

4.2. Research Design

The research design describes the framework or structure used to collect and analyze data in relation to the research method. The research question and the purpose of the study determine which research design is preferable (Bell et al., 2018). To answer the research questions, the proposed research design is a single case study.

A single case study allows for an in-depth study of a single organization in its natural environment, and it is well suited for exploratory studies (ibid). The proposed research is of idiographic nature meaning it mostly attributes to the organization in question. Therefore, the research suits well as a case study since the purpose is to develop a strategy for a specific company, AdaptFuture. To do so, a detailed and in-depth understanding of the company and the market in which it operates is very important, which makes a case study design favorable. Furthermore, according to Goffin, Åhlström, Bianchi and Richtnér (2019), exploratory studies are needed in innovation management and a case study is an appropriate method for exploratory studies. This further suggests that a single case study is suitable for the proposed research as it is of exploratory nature and AdaptFuture is an innovative company. There is however a problem with the quality of case studies in innovation management and their reliability which is why it is important to be thorough and properly address quality issues (ibid).

A case study most commonly involves a qualitative research strategy, but quantitative methods could also be used (Bell et al., 2018). For the proposed research a qualitative method strategy is suggested. Hence, the proposed research design is well suited for the proposed research strategy.

4.4. Data Collection

To answer the proposed research question both primary and secondary data will be needed. Secondary data is already existing data, collected by someone other than the researcher, and primary data refers to data collected directly by the researcher (ibid). The data collection in this research will use multiple sources of data, which provides an opportunity for triangulation. Multiple sources are considered essential to case studies, as it increases the validity of the research and can generate different insights (Goffin et al., 2019).

The data for this research was collected in two different steps. Secondary data, such as previous research was reviewed. To find relevant literature, a set of keywords were identified. Furthermore, relevant literature was distributed by the case company. In addition, primary data was collected through interviews with industry experts.

4.4.1. Secondary data collection

As mentioned, secondary data is collected by someone other than the researcher. This source of data is useful as it can provide an understanding of the field while being inexpensive and not time-consuming. However, as secondary data was collected for other research, the researcher has no control over the quality of the data. To mitigate this problem the researcher should use inclusion and exclusion criteria and gather data from peer-reviewed sources (Bell et al., 2018). The secondary data generated in this research came from a literature review. The literature review has helped the researchers gain a better understanding of the Norwegian electric vehicle market as well as the niche market in which Adaptfuture operates.

The literature review started off with a preliminary literature review which helped the researchers identify existing research and gain a general understanding of the topics. The preliminary results were then iterated in order to find more detailed information. This was accomplished by using systematic keywords on several databases such as Google Scholar, EBSCO, and GUPEA. All search queries used on the databases resulted in peer-reviewed articles. Other data sources were also used in the literature review such as books and suitable videos. The search queries were based on keywords presented in table 2.

Used keywords and combinations	
New market entry	New market entry + Norway
Market penetration	Market penetration + strategies
Strategies	Aftermarket + Norway
Business growth	Electric vehicle + Industry
Aftermarket	
Electric vehicle	
Norway	
Industry	
Mechanic	
Pestel framework	
Porter's Five Forces	

Table 2. *Keywords and combinations that were used when searching for literature.*

4.4.2. Primary data collection

Primary data has several advantages over secondary data. When using primary data, the researcher is in control of the quality of the data, he is more familiar with it, and it is aligned with the purpose of the research (ibid). The primary data collection for this research is based on qualitative data. The qualitative data needed to answer the research question was gathered from interviews. Semi-structured interviews were conducted as there is a low risk of information being missed, they are flexible, and they allow for follow-up questions that can enable further elaboration and details leading to greater insights (ibid). These interviews were held with representatives from AdaptFuture to gain a greater understanding of their operations, as well as with representatives from leading mechanical chains and other established car companies in Norway to understand and evaluate the need for the product/service and potential distribution channels, etc. It is important for the validity and reliability of the research to be transparent in the data collection process (ibid). Therefore, transcripts of interviews and other data will be included in the final document.

4.4.2.1. Interviews

The five conducted interviews were semi-structured and offered a set of questions categorized into different topics. The questions that were asked during the interview were open and close-ended questions. Open-ended questions allow the interviewee to answer as

they perceive the questions, specifically the respondents can answer with their own words. Another advantage of open-ended questions is that they can acknowledge the interviewee's ability to answer a certain set of questions (Bell et al., 2018). This advantage was utilized in one of the interviews where the respondent lacked enough knowledge about the service and repair market, as a result, the researchers adjusted the mechanic-specific questions in the interview guide by removing some of the questions.

Due to the flexibility of semi-structured interviews, the questions asked could vary in order depending on what was said by the respondent. This approach of conducting a qualitative interview suited the purpose of this paper and its research question, to get a deeper understanding of the EV market and its service and repair market (ibid). In addition, semi-structured interviews allowed for follow up questions and additional questions based on the interviewees response.

An interview guide was created on the basis of two main topics (Appendix A), the *EV market* and the *service and repair market*. However, the interview guide and its topics were slightly adjusted depending on the interviewee, for example, additional questions and topics were added for representatives from AdaptFuture. Since AdaptFuture is the case company, *new market entry* specific questions and questions about *the company* were added. All questions were reviewed together with a supervisor to ensure relevancy. The researchers chose not to send out the interview guide in advance to the respondents, this decision was made to reduce the risk of seeking answers beforehand.

In addition to the semi-structured interviews as a data collection method, email correspondence with the Ministry of Transport in Norway was established. The intent was to conduct a semi-structured interview with a representative from there, however, they did not have the time for a formal interview but were able to provide valuable insights through email correspondence.

4.4.2.2. Interview Process

The interviews were initiated by welcoming the interviewees as well as presenting the purpose and the goal of the interview. Before the interview was recorded the respondents were asked for permission, and they were also informed about how the materials from the recordings would be used and stored. Once the respondents were informed, the interviews

started off with background and experience-related questions. A following set of questions within the EV and mechanic market were then asked to the interviewees.

All interviews were conducted online through the video-communication service Google Meet since the respondents were located across different cities and countries. The service offers secure video calls for free and an easy way to invite participants without the need to download a program (Google Meet, 2022). Easy and convenient access to the interview was a criterion when considering different video-communication services. To reduce the risk of technical interruptions such as internet disconnection, the researchers piloted interview tests in advance.

Due to a language barrier between Swedish and Norwegian all interviews except one were conducted in English to prevent misinterpretations. One interview was conducted in Swedish/Norwegian since the respondent felt more comfortable speaking in his/hers native language. In that case, the answers were translated to English after the interview was transcribed.

The transcription process involved Temi, an audio-to-text program which automatically transcribes interviews (Audio to Text Automatic Transcription Service & App | temi.com, n.d.). The generated transcripts from Temi had to be iterated several times manually since the automated computer program sometimes failed to transcribe correct words and phrases. This involved going back and forth between the audio recording and the transcriptions to receive as accurate transcription as possible. Going back and forth has also helped the researchers familiarize themselves with the answers from the interviewees.

4.4.2.3. Interview Selection Process

Before the interviewees were selected a list of potential organizations was created by the researchers together with Adapt Future to ensure relevancy. The selection process for the interviews began with an identification process. This process involved organizational research activities to ensure that the organization could provide value to the interview. Those enterprises that were contacted belonged to either the electric car industry or the mechanics industry. For those companies within Adapt Future's network of contacts, Adapt Future has been able to supply the researchers with the contact details of a relevant representative.

For those organizations outside of Adapt Future’s network, a different selection process was required. At first, customer support centers were contacted through email, this approach turned out to be inefficient as the response rate was low. Instead, a list of managers and directors was created. Two important aspects were considered during the selection process for specific individuals. The operating department where the manager or director was operated and the number of years of experience within the field. Once the list of potential interviewees was established, the candidates were contacted through LinkedIn.

To appeal credible and increase the response rate from prospective interviewees an introductory statement was included in the messages (Bell et al., 2018). The introductory statement covered the purpose with the message, where the researchers are studying, the thesis topic, and additional contact information.

Once the candidates initiated a response and showed interest in participating in the interview, date suggestions were sent to each individual for an interview through Google Meet.

Participants	Position	Date of Interview	Time Duration
Participant 1	CEO	April 7	47 minutes
Participant 2	Head of Sales	April 20	41 minutes
Participant 3	COO	April 12	32 minutes
Participant 4	Head of mechanic training	April 12	40 minutes
Participant 5	Director Consumer Experience	April 22	49 minutes
Participant 6	Commercial Operations Director	April 22	- -
Participant 7	Head of Product, Price and Market	April 22	- -

Table 3, An overview of all interviewees.

4.4.2.4. Sampling

There are two main types of sampling, probability and non-probability sampling, and both can be used in quantitative and qualitative methods (Bell et al., 2018). To find relevant interview objects as well as respondents to questionnaires a non-probability purposive sampling method is suggested. Purposive sampling is based on the subjective judgment of the researcher to strategically choose individuals relevant for answering the research question from a set of criteria (ibid). This sampling method is preferred due to its applicability to both quantitative and qualitative methods, which will be used in this research. Furthermore, strategically selecting objects based on a set of criteria will be beneficial for this research.

4.5. Data Analysis

Analysis of the data collected is of utmost importance for all research, and it is essential to establish a good structure as it influences the validity of the research (ibid).

The qualitative data, from the semi-structured interviews, was analyzed using thematic coding and analysis. More specifically, the Quirkos software program was used for the thematic coding. Quirkos is a computer-assisted qualitative data analysis software (CAQDAS) that allows the researchers to drag and drop quotes to color bubbles on a canvas to make the analysis easier (Quirkos - Qualitative Data Analysis Software made simple, n.d.). Using software to help with the analysis of qualitative data is time-saving as there were large amounts of text that had to be analyzed and structured. The transcribed files were first imported into the program and then an inductive analysis approach was used when coming up with the different codes and themes.

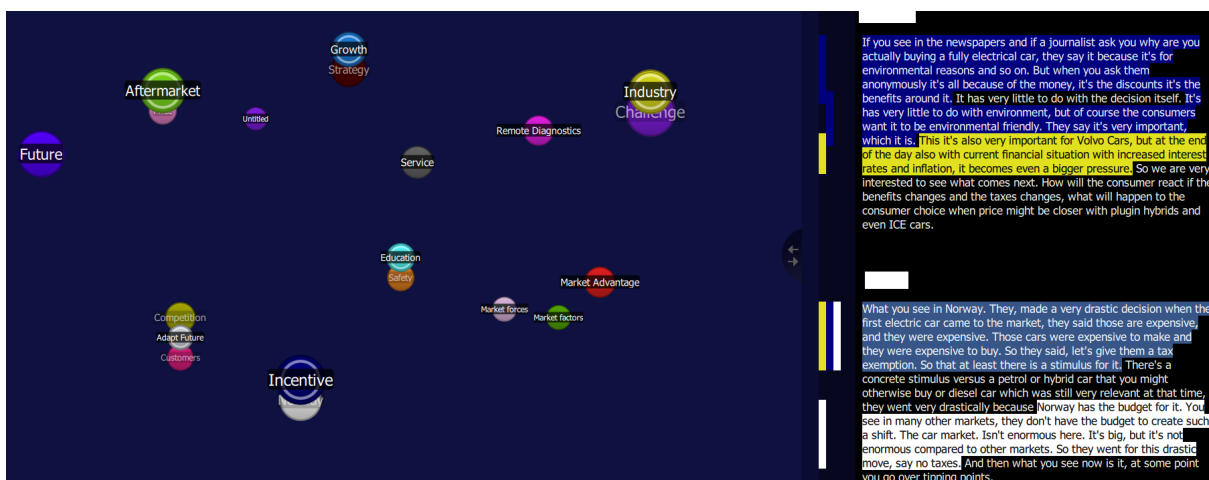


Figure 3. An overview of all codes as well as the associated quotes in Quirkos.

The purpose of thematic analysis is to discover major themes that are relevant to answering the research question. These themes are found through the coding of the transcripts and notes from the interviews and literature review. The main benefits of using thematic analysis are that it is rather flexible and easy to comprehend (ibid). In addition, it is beneficial to have more than one researcher code and analyze the data as an inter-coder agreement can be established which increases reliability. Furthermore, multiple researchers contribute to form triangulation (Goffin et al., 2019). These are things that increase the reliability which is important in case studies in innovation management, as mentioned previously.

4.6. Quality of Research

4.6.1 Validity

Internal validity is often discussed in the context of experiments. LeCompte and Goetz (1982) describe internal validity as an existing or non-existing relationship between the collected data and the theoretical ideas deriving from its data. More specifically, it is a relationship between the collected data and the assumptions that are made from the data, it asks how valid the relationship is (Bell et al., 2018; MeanThat & Authentic Data Science, 2016).

Internal validity in a qualitative study can be hard to measure, the researchers have therefore discussed all findings from the thematic analysis with a supervisor in order to collect feedback. A respondent validation process could have been done in order to ensure further validity and mitigate any misinterpretations, due to time constraints this was not done. Instead, the interviews were analyzed several times during the transcription process to iterate and correct any misunderstandings. The researchers have also used peer-reviewed articles to increase the quality and legitimacy of the study.

External validity asks whether the findings can be generalized to other areas. LeCompte and Goetz (1982) debate that qualitative research lacks external validity due to the sample size and that this type of research is often conducted through case studies. External validity derives from the sample which sets the basis for the data collection (MeanThat & Authentic Data Science, 2016). The researchers have interviewed small, mid, and large scale companies to receive a broad perspective on the EV market in Norway. It is important to note that only 5

interviews with 4 companies were conducted. To increase the external validity and generalize the findings further, more interviews with more companies could have been conducted.

4.6.2. Reliability

Reliability and validity are divided externally and internally (Bell et al., 2018; LeCompte & Goetz, 1982). External reliability refers to the extent to which the study can be replicated. However, the referred authors argue that the social context of a qualitative study is hard to copy. As Bell et al., (2018) describe in their book, one can not freeze time and replicate that time frame. In order to ensure external reliability in this report, the authors have attached an interview guide in the Appendix A. Other researchers conducting future research within the aftermarket industry and the EV market can use the interview guide for inspiration in their own interviews.

Internal reliability, refers to internal processes in the research process, in this case, as this research is conducted by two researchers, internal reliability refers to the consistency of decisions made between the researchers (ibid). During the thematic analysis, both researchers read and coded the transcripts individually. After all the transcripts were coded, the researchers summarized all the codes into themes together, resulting in a unified set of themes.

To mitigate participant error, which refers to factors that could affect the performance of the candidates (MeanThat & Authentic Data Science, 2016), all interviews except one were conducted in the morning between 10:00 and 12:00. Since all candidates are working full-time, the researchers avoided booking late times as this could increase the risk of being tired from work.

Another risk with research reliability in a qualitative study is participant bias which refers to how comfortable the participant is with what is being said (ibid). For example, if the interviewee participated in an interview together with the manager, the interviewee might be reserved for answering transparently. The interview with representatives from Volvo was conducted in a group which made the interview prone to participant bias. There is not much that could have been done to reschedule the interview due to limited time slots in the interviewees' calendars. Instead, the researchers were considering this bias while coding the

themes. All other interviews and the respective candidate participated in the interview from home or alone in their office.

To increase the reliability of the thesis further, the researchers relied on several types of respondents with different areas of expertise such as the ministry of transport in Norway to receive a rich and diversified data set. Relying on different types of respondents contribute to triangulation which increases the quality of the thesis.

4.6.3. Ethical considerations

Ethics in research is an important pillar that lays the foundation for what is considered ethically acceptable and what is not. Diener and Crandall (1978) have divided the most common ethical principles into four parts, those are, *harm to participants*, *lack of informed consent*, *invasion of privacy*, and *deception*. According to the AoM Code of Ethical conduct, the responsibility to protect research participants from harm lies in the hands of the researchers (Bell). The researchers of this report have therefore considered several actions to minimize any harm. One example is that the interview requests were sent out to the participants 1-2 weeks before the scheduled meeting. Further, no dates were suggested to the participants, instead suggested dates were received from the participants. One could therefore argue that this approach creates room for the participants to find an appropriate time slot to minimize stress.

Another aspect of harm is harm to career prospects or future employment (Crandall and Diener, 1978). In that aspect, the researchers kept all research participants anonymous by not including any names in this report.

The definition of harm can be both ambiguous and subjective, it is, therefore, a very hard task to predict all cases where harm can be done which limit actions where harm can be minimized or prevented. One recommendation by Bell and Bryman (2018), is to involve a third party such as a University Human Subjects Committee. Due to the scope of this research, a human subjects committee was not involved in the process of this research, instead, all feedback was gathered from the supervisor of this report.

Another common mistake in business research is a lack of informed consent. To ensure informed consent, some of the guidelines by the *MRS Code of Conduct* were followed. One

guideline followed is for example the recommendation that the participant should be informed at the beginning of the interview about the purpose of the study and asked whether the interviewee agrees with being recorded or not (ibid). Although the researchers did not explicitly mention that the participant could withdraw from the interview at any time, the researchers have been open to receiving all forms of feedback from the participants afterward in order to protect the participant's privacy. To avoid different degrees of deception, the researchers have taken iterative steps based on feedback from supervisors to strengthen the transparency of the study.

In addition to the four ethical principles discussed, the researchers have also taken security precautions to protect data such as the transcribed interviews and all mp3 recordings. The recorded interviews were stored locally on a password-protected computer which later was deleted after the transcription process. The transcripts were stored for a longer period of time and will be deleted 30 days after the report has been submitted.

5. Empirical Findings

This section presents the empirical findings of this research based on the interviews held with industry experts. The findings will be presented in sections relating to the themes derived from the thematic analysis, starting with an introduction to the themes.

5.1. Factors affecting the EV market in Norway

During the coding of the data, several factors of significance became apparent, namely the *political, environmental, social, technological, economic, and legal* factors as well as the *used car segment, competition, and challenges*. What these factors have in common is that they affect the market conditions for the EV market, and thus they formed the theme of *factors affecting the EV market in Norway*.

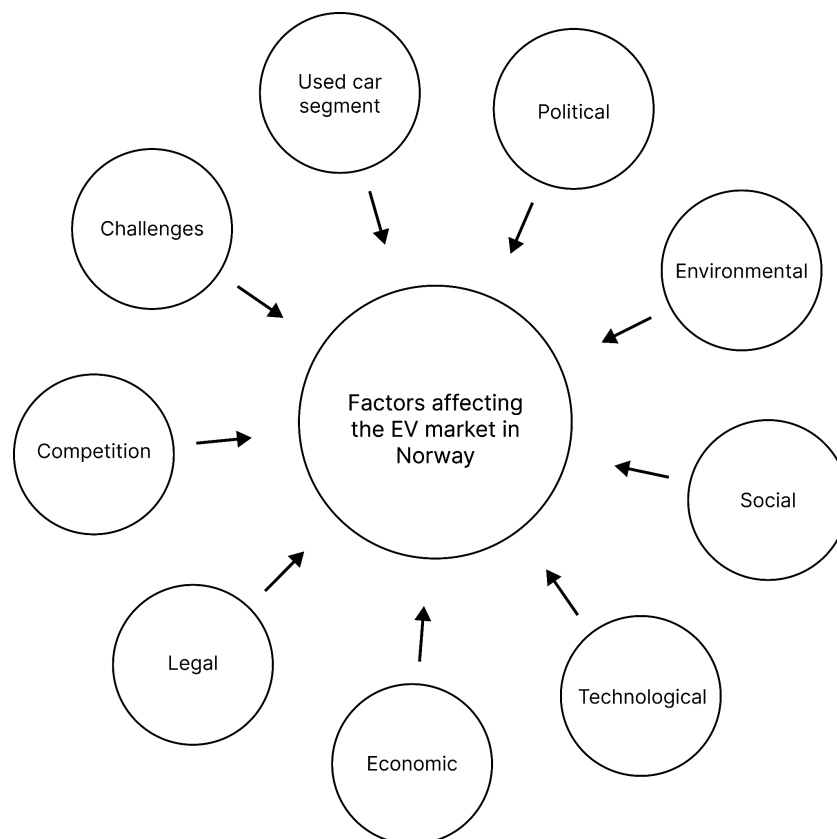


Figure 4. Illustration of factors affecting the EV market

5.1.1 Political Factors

Norway's rapid transformation towards electric mobility was discussed during the interviews, and there was consensus among the industry experts regarding the importance of political incentives. In Norway, there are two types of incentives financial and non-financial. An example of a financial incentive is the exemption from the high taxes put on ICE vehicles, which are significantly higher than comparable countries like Sweden, according to one of the experts. Hence, Norway is not subsidizing electric vehicles, but rather taxes ICE vehicles which is in accordance with previous literature.

“It will be a huge cost in the end for the fed (government), if you subsidize it is a cost for the government. And that over time is not durable. It is not sustainable. You cannot continue with that. So, then the alternative is to punish those that aren't electric. And I think that becomes more and more popular to punish those that are not electric and combine that with industry trends”
-Participant 7

Then there are non-financial incentives, like special lane access. Electric vehicles in Norway are allowed to drive in the bus and taxi lanes, however, as the number of EVs has significantly increased, this access has been reevaluated and somewhat more restricted. The non-financial incentives have contributed to the transformation, but the main driver has been the financial incentives, something all interviewees agreed on.

“I think tax is the main driver. It has been financial. We can talk about environment etc. but at least our findings confirm what everyone is thinking. When you have a discount on the car because it is a BEV, then of course it's going to drive your sales. It has been driven by the environmental aspect, but you don't get those 25% deductions without any political decisions. And I think that other aspects have driven the transformation faster, such as the benefits of free parking, driving in the taxi lane or traveling with car on the ferry for free”
-Participant 6

In addition, Norway has established incentives to further encourage businesses to transition to EVs by decreasing the tax of electric company cars to 80% of the taxation of ICE vehicles.

“Another way our government have stimulated the use of EVs is a reduction of the taxation on company cars. Up until the 1/1 2021 we had 60% lower taxation on EVs, now it is 80% lower” -Participant 4

Hence, political factors have been majorly important in stimulating the use of electric vehicles in Norway. This is further highlighted by a quote from the Ministry of Transport.

“Incentives work. We introduced a broad package of incentives for EVs, both tax and user incentives. At the early stages of market maturity, it has been quite particularly important that these have been quite predictable and long-medium term” -Ministry of transport

There is also a political factor that could be viewed as negative for the EV market, such as political parties wanting to decrease the number of vehicles in the cities due to environmental concerns. Fewer cars in the market is of course beneficial from an environmental standpoint, but can also affect the revenue of companies operating within the industry.

“But again the green parties are supporting all these companies now offering cars for where you can subscribe, or you can rent a car for an hour or for a day or a week” -Participant 6

The findings do however show that the transition towards electric vehicles has been so successful, that incentives might not even be necessary anymore. Although, the government will continue to make sure EVs are an attractive choice, according to the Ministry of Transport.

“The overall goal for Norway has been- and still is- to make sure that choosing an EV is an attractive and economically viable choice for the consumer. As battery costs continue to fall and the number of available models increase, this is now the case- maybe even without incentives” -Ministry of transport

5.1.2 Environmental factors

Environmental factors are very important in the car industry, especially from the consumer aspect. It can among other things affect how the vehicles can be used and how expensive they are to use. Since Norway is located quite far north the winters get rather cold, which affects the performance of EVs. During the wintertime in Norway, the range of EVs can decrease by 30-40% which can be considered a problem since the range is one of the opposing arguments against EVs. However, according to one of the interviewees, the reduction in range during the winter will not be a problem for long as major improvements in that area are to come.

*“I’m concerned about the range of cars but now that is also improving. So, when you have like 800-900 kilometers range, then the range will not be a problem in wintertime, because 30-40% capacity will be removed which is 500 kilometers, and that range is like driving a petrol car before you have to refill”
-Participant 6*

Another environmental aspect mentioned in close to all interviews was Norway’s supply of electricity. Electric vehicles do of course need electricity to run, which is why the supply of electricity is important. Electricity in Norway can be considered cheap, although prices are currently higher due to the global situation, as one interviewee pointed out. More importantly, the electricity in Norway is very sustainable since close to all electricity is generated through hydropower.

5.1.3 Social factors

The social factors present in the Norwegian EV market can be related to the rapid transition according to some of the interviewees. They argue that the norms and values of the Norwegian population certainly have contributed to the increase, some even argue it to be the main reason for the rapid transition. The norms and values that affect the EV market are mainly related to the environmental effects of the industry.

“Most People that buy an electric car do that due to environmental concerns. They do this as a means to support a better climate” -Participant 1

This is to suggest that norms and values relating to environmental concerns might be more important to the transition towards EVs than the political incentives. However, this might not be true as one interviewee pointed out that environmental concerns are not nearly as important when asked anonymously.

“If you see in the newspaper and if a journalist asks you why you are actually buying a fully electric car, they say it is because of environmental reasons and so on. But when you ask them anonymously it’s all because of the money, it’s the discounts and benefits around it” -Participant 5

Hence, the Norwegians seem to care about the environment, and at the very least want to seem like they do. Although, it appears as if the financial benefits trump the social values in terms of importance.

5.1.4 Technological factors

During the interviews, technological factors were discussed, and it became evident that there are areas in need of improvement. The range of electric vehicles is still somewhat limited compared to ICE vehicles, and charging takes quite a lot of time, which means improvements in charging and battery technology are necessary, as well as developing the charging infrastructure. This is especially true for the Norwegian market considering people are often required to drive long distances.

*“Norway is a very typical country where electric vehicles is very beneficial, but at the same time in Norway they have long distances and long distances is the Achilles heel for electric vehicles. You need to have better infrastructure. Norway is in need of better charging infrastructure along the roads, and also technology needs to be more developed for speed and rapid charge. And what should you do if you need to stop for 48 minutes to fill up your car, what should you do in the meantime? So, there is a lot of things they are currently working on. But that is not only for Norway, that is everywhere, but Norway has the best, one of the best possibilities in Europe to actually do something about this”
-Participant 1*

This confirms that there are technological aspects to the EV market that needs to be improved, but also that it is being worked on and that Norway has one of the best possibilities to achieve these improvements. Another interviewee elaborated on the measures taken to improve these technological aspects.

“In Norway, there is very high interest in battery development. There is a factory being produced in Arendal and I think it’s roughly like 2,500 employees that’s going to work there. So, it’s a huge factory and not far away. They also have office and laboratory where they experiment with batteries. It’s very interesting and it’s an area where we see people investing in” -Participant 5

Hence, there are unfavorable technological aspects to the EV market that are especially unfavorable in a country with long distances. However, there seems to be heavy investment in this area which likely will decrease these negative aspects in time.

5.1.5 Economic factors

It is well known that Norway is a rich country, being one of the biggest oil exporters in the world. The wealth combined with political incentives has allowed for large spending in the EV market, resulting in high amounts of luxury vehicles.

“Maybe it’s not said in the media in this way, but I think if you put it straight, it’s not normal to have this amount of premium and luxury fully electric vehicles at this volume in the market. So, for example with the Porsche Taycan, they’re sold in massive amounts, same with BMW, Audi and Mercedes with EQS and EQ” -Participant 5

An additional economic factor brought up in the interviews was Norwegian’s competence and willingness to work on electric vehicles. The educational system in Norway is good, and there are a lot of competent people who can be trained to work with diagnostics and repairs on EVs. However, there seems to be a decline in the willingness to do so, according to one of the interviewees.

“In Norway, the schooling system is great. So, you’ll find people who have the natural competence who can learn this (working on EVs), but at the same time, I mean, that’s a general trend, manual jobs, manual labor, which to some extent being a mechanic is today, isn’t that attractive” -Participant 7

The notion that the service and repair market is not as attractive today can also be interpreted as a social factor, likely stemming from societal norms and values.

5.1.6 Legal factors

Legal factors are also contributing to the number of luxury vehicles in the market and thus also EVs. The luxury car brands mentioned in the previous section are all from Germany, and that is no coincidence. Germany has a different political approach to increasing the number of EVs compared to Norway. In Germany, EVs are subsidized through a one-time financial incentive, being a substantial environmental bonus.

“And then you go over to Germany for instance, where they give environmental bonuses, quite substantial amounts in a policy where you can also put many question marks, if that is smart by giving just a one-time incentive and then cars will be exported afterwards, which you’ve seen happening now” -Participant 7

The cars can then be exported to Norway where there is less tax, making it even cheaper for the consumers.

“We have to make it clear that when we talk about subsidies, Norway have a high car tax on top of the regular VAT. So, when you take away both the tax and you take away the VAT of course, these expensive BMW and German premium brands, they become much cheaper overnight” -Participant 6

Hence, consumers can purchase a vehicle in Germany, making use of the one-time incentive, then import it to Norway without having to pay the regular car tax nor VAT.

During the interviews, it became apparent that one of the reasons the transition to EVs has been so rapid is because a lot of new car brands are coming to Norway. Several new players

in the market increase competition, which is good for the consumers, as they will have a wider range of offers. Most of the new brands are from Asia, and the reason they start their expansion in Norway is not only because of the consumers' willingness to purchase EVs.

“You have a lot of new brands coming to Europe and coming to Europe, Norway is a good place for them to start. So, you have more new brands in Norway than you have in any other European country. The main reason for that is what we, that we touched upon here, the incentives that they have in tax, but also, they are outside the European Union. So, they can be approved for just Norway. They don't need to be approved for all European union, but then, then they get the footprint all in, in Europe as well. So, it's easier for them to land in Norway, get traction, get the journalists to come and write about the car”
-Participant 1

Norway is not part of the European Union, so new brands can get approved for just Norway, which is easier. Therefore, Norway is an attractive market for new brands.

5.1.7 Used car segment

Another factor that is interesting for the EV market and will be even more interesting in a few years is the used car segment. The reason this segment will be more interesting in a few years is simply that a larger amount of the used cars sold will be EVs. In Norway, efforts have been made to make it easier and more convenient to purchase a used car.

“I think in Norway, we have a concept to make it more convenient to buy a used car. So, you can see that more and more services are getting more and more convenient. Let's see what happens to the used car market as well when you have a lot of BEVs available. That will create possibilities for others to create some kind of services. So more and more will come for sure” -Participant 5

Hence, there will likely be more used EVs in circulation in a few years which will affect the aftermarket. In addition, that creates a window of opportunity to create new services, possibly relating to the sales of used cars, services, or repairs.

5.1.8. Competition

As mentioned, the competition among car manufacturers is rather fierce, especially considering the pace of new entrants. However, this is rather beneficial for the rest of the market, especially consumers.

“Now we have 10-15 new brands established in Norway. They are coming from China and all over the place. The competition from our point, businesswise will be much harder in the future because we have much more players in the market. Xiao Peng and NIO are building up a brand house in the high end street of Oslo which cost a fortune. Chinese brands have already 5-6% of the market, and we expect them to be between 10-15% within a short time. So for the customers, it's good because they have a wider range of offers, but for us doing the business, it's more competition, but toward the end we have to be much more clever”

-Participant 6

In contrast, the competition of the case company does not seem fierce at all. When it comes to their training equipment there is competition but none that can match the attributes offered by the case company. The service offered by the case company, the remote diagnostics network accessible through the RSD, is one of a kind and does not have any competitors.

“The thing that makes us unique is that we have a product that does not exist out there. If you look at training, trainings out there that are similar to our trainings, either they have full electricity or they have no electricity. You even have training facilities in schools that are paper and wood, dummies to just learn how to handle it, but you don't learn how to measure the power that is in it. So, the thing that we are unique with is that we have products that are simulating the real thing. And one thing that we are also very unique with in our training TVS is that we can simulate not only a battery, that is functioning well, we can also simulate the battery after for instance a car crash...And also, that we can simulate one day a car or a truck, another day we can simulate a boat. We can simulate any conditions with our product and that is not possible with anything else. And also, the network we are building up with our remote diagnostics is also unique. There is nothing similar to that” -Participant 1

In fact, those companies in the Norwegian market that could be viewed as competitors to the case company, are partners to them.

“Those we could see as competitors are looking at us as partners, they are actually asking for us to work with them. And one of the biggest in Norway, they say themselves that they have 76% of the Norwegian market in workshops, want to work with us” -Participant 1

5.1.9 Challenges

There are several challenges involved in the EV market, some challenges are faced by the entire EV industry, and some are more related to the Norwegian market. As mentioned, one of the main problems in Norway is the charging infrastructure that is underdeveloped considering the country's long ranges. If the transition from ICE to EV is to be fully completed, this hurdle needs to be overcome.

“In the case of Norway, we have some problems with range. So, development of the charging infrastructure is needed, the possibilities for charging are currently limited” -Participant 4

There are however other possibilities to overcome this challenge than developing charging infrastructure. According to one of the interviewees, the technological improvements to come in charging and batteries will reduce the need for the development of charging infrastructure.

“The technology is improving all the time. So, within not so many years, you will have chargers and a technology in the cars where you can charge 80% in five minutes. Then the need for charger will also change because what a lot of politicians and a lot of people are doing wrong is thinking, oh we have to have a huge network of chargers in Norway... So, chargers has been a problem, but will be less and less a problem in the future with new battery technology and battery charging” -Participant 6

Another challenge faced by the EV market is the lack of qualified mechanics, due to the new competencies required to repair an EV compared to an ICE. Training and education of mechanics have not kept up with the rapid transition which is why there now is a lack of mechanics capable of working with EVs.

“The moving parts are much less than in an ICE but the challenge is that you need new competences such as reading the software which will be the main job of the mechanic. It would be more like a software engineer instead of a mechanic replacing brake pads and stuff like that” -Participant 6

This quote also mentions a related challenge, namely that EVs have fewer moving parts compared to ICE vehicles. Less moving parts is of course beneficial for the consumer as there is less that can break, however, that also translates to a huge loss in aftermarket sales for manufacturers and dealers. Aftermarket sales are a large source of revenue for manufacturers and dealers, and as the demand will decrease by about 30-40% they will need to find an alternative way to recoup that lost revenue or accept a decrease in profits. This also creates an opportunity for established companies as well as new entrants to develop channels for alternative aftermarket sales. The aftermarket will be further elaborated on in a section to follow.

“And you could say that compared to an ICE car the workshop hours will be reduced by 30-40 percent, and labor of course. So, it has a drastic effect... So, it's a challenge for the whole industry, but there are also always opportunities to improve and take a bigger part of the value chain. How to take care of your car, how to clean, tire business is important etc. All the surrounding areas compared to the traditional workshop is getting more and more important for the dealers” -Participant 6

In addition to the challenges inherent to the EV market, the global situation has caused problems for the vehicle industry as a whole, and thus also the EV market. The war in Ukraine and the covid pandemic have caused production to decrease resulting in long waiting lists for cars. This means that the inflow of EVs to the Norwegian market has decreased, at least temporarily.

“Actually today, the biggest challenge is due to the Ukraine crisis. The fabrics have been closed for a period, in Norway as well and I think it’s quite similar in Sweden and the rest of Europe, you have one year waiting lists for cars that are actually bought. So that’s kind of the main issue now, I think. And that’s kind of an issue for all these European producers, which can be kind of a benefit or an opportunity for producers from Asia and the us. It’s interesting to see if they use these next two years to establish themselves stronger in the European markets. Before that it was covid and we already had a waiting list” -Participant 3

5.2. The effect of increases in EVs on the service and repair market

Three factors affecting the service and repair market emerged from the increase of EVs during the coding which formed the theme *The effect of increases in EVs on the service and repair market*. The service and repair market had a direct result from the increase of EVs due to fewer mechanical parts. Another effect which became significant on the service and repair market is the need to supply the future demand of EV mechanics through education. Lastly, the empirical findings show that the service and repair market is exposed to the risk of long-term losses in revenue due to several effects to prices and quality in the service and repair market.

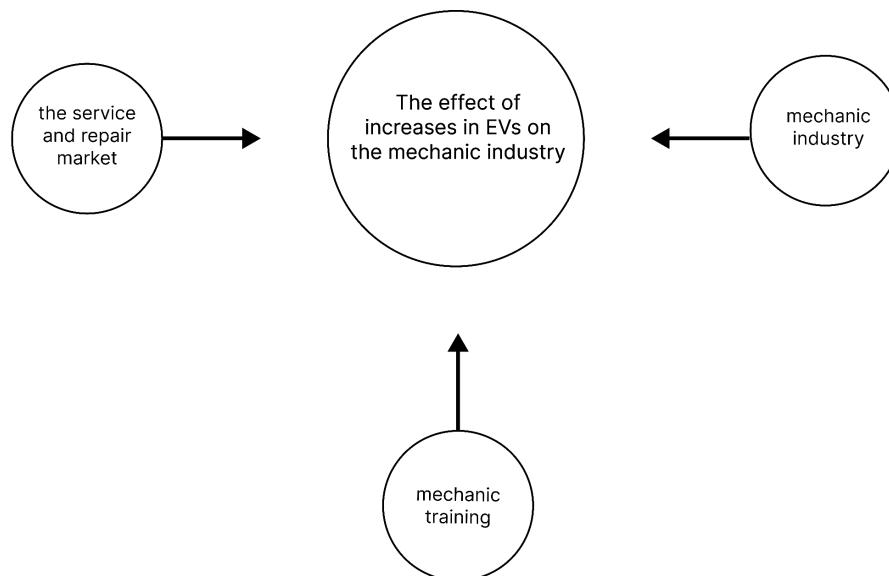


Figure 5. Effects of increases in EVs on the service and repair market.

5.2.1. Service and repair market

Since an EV has fewer moving parts compared to an ICE vehicle, a direct result according to participant 4 is that service activity has reduced over time. Not only has the EV fewer moving parts, but the overall quality of EVs has also improved, making manufacturers of EVs offer longer guarantees, reducing service activity even further.

“Now comes Toyota with a battery warranty of one million miles, it's amazing. So those are pretty big guarantees. But cars get damaged and need repairs, but as I said, it is less needed.” - Participant 4

Remote diagnostics is the process in which a mechanic connects to a vehicle in order to troubleshoot errors remotely. A three-step process was identified from all the interviews. First one has to monitor the vehicle in order to identify the errors, second, the errors have to be analyzed, and third the solution of the error has to be implemented. In the interview with Volvo, a pilot project was initiated to monitor anomalies in the battery to prevent damage. The interviews with Adapt Future *remote diagnostics* were mostly associated with the RSD product, specifically the analysis and the implementation part of the three-step process.

5.2.2 Aftermarket sales

The empirical findings from the interviewees suggest that the aftermarket could be at risk. Loss of revenue, loss of jobs, and increased complexity could be the result of fewer mechanical parts in EVs.

“Aftermarket sales goes down because the EV market doesn't need as much service as an ICE car” - Participant 1

However, one interesting aspect arose from the interview with participant 4 making the stated risks questionable. As the volume of mechanic work decreases over time due to the increased software presence in the industry, the interviewee therefore believes that the complexity of these tasks increases, resulting in increased prices. This would imply that the aftermarket industry could stay on the same level without loss of revenue.

“What we see is that the mechanic industry needs more skilled mechanics with different kinds of training with more data analytical skills. EVs have dramatically less moving parts so we don't need to do service and maintenance as frequently as with fossil cars which is good for

the customers. It's bad for the traditional industry as they lose money and need to look for other sources of revenue.” - Participant 3

Participant 3 shared some insights how these effects could influence the aftermarket industry. It was stated that the current market has not been affected yet and that it can take several years until the aftermarket is affected by EVs.

“I think it's fair to say that it hasn't really affected it yet. It will, in the next couple of years, it will see a dramatic kind of loss of revenue for the service part.” - Participant 3

In the short-term early versions of software and hardware are more prone to problems, creating more job opportunities for the mechanics. In the long run manufacturers, entrepreneurs and workshops have the responsibility to keep the industry alive. According to participant 5,6 and 7, the manufacturers can satisfy service workshops by increasing the production volume of EVs creating more jobs for workshops.

“That's why we say we need to increase volume, to make sure that we can keep the dealer network that we have. We can keep the workshops at the same level we have on today, to also give them a viable business. We don't own many of the dealers, they are independent businesses and then they expect from us also a strategy that keeps them alive. And the biggest argument for us there is increased volume and to make sure that they still get a share of the new car sales as well, even if it is more indirect” - Participant 5,6 and 7

Another strategy from a manufacturer's point of view which was mentioned by participant 1, is by placing mechanical parts of the car in a strategic order to increase service time and protect the aftermarket to certain certified workshops.

“And at the same time, they place the air filter, not so service friendly. So it takes an hour to change it. You do not just open, pull out, put in, cause that doesn't generate revenue for the service stations” - Participant 1

Workshops need to adapt and find new revenue streams by expanding to new markets. Entrepreneurs solve this problem by offering innovation to workshops, one example is

through the RSD product which allows workshops to connect themselves to a pool of SME experts.

“In general, new initiatives will be taken towards new markets such as trains and marine. New initiatives for new brands such as leasing and subscription might also be needed in the future.” - Participant 4

The answers to the pricing question, whether service prices will increase or decrease are ambiguous. There are two keywords that separate the answers, *competition*, and *complexity*; the former suggests that service prices will go down as competition increases, while the latter suggests that service prices will increase due to increased complexity.

Participant 1 and 2 both believe that service prices will decrease in the long run as a result of the competition and increased efficiency. However, participant 1 stated that prices will most likely stay the same in the short term since customers are paying for what it is worth and not for what it costs.

“I would say they are still the same, the aftermarket service price. They try to keep it not for what it costs but for what you used to pay for a normal car. So you try to keep the customer at a price where they feel comfortable.” - Participant 1

Participant 3 and 4 shared a common vision on pricing. It is the complexity of the tasks which determines the price. Increased complexity can lead workshops to demand technological excellence which increases the costs.

“The players in this part of the industry need to get access to more skilled workers, pay them more, they get less revenue, perhaps they will increase the prices depending on the competition” - Participant 3

5.2.3 Mechanic training

Mechanic training in the context of the EV market relates to two aspects. The educational need for mechanics to repair and maintain electrical vehicles in a safe manner. This includes reading and writing from diagnosis systems as EVs evolve with OTA capabilities.

The keyword safety occurred in connection with educational purposes when participant 1 and 2 elaborated on the importance of educating mechanics through high voltage systems. The safety precautions were always associated with the battery of the EV as batteries above 48 volts pose a safety risk to the mechanics.

“Anywhere where you have a battery storing high voltage, you need to be trained how to do a decommission of that and how to plug it in and do it in a safe way. Because if you look at a battery, it doesn't matter if it is in a car or if it is in the end of a solar array, or on a propelling a helicopter. It's the same thing, it's a battery. And the battery needs to be managed by people and people can get burned, so anywhere where you actually see a battery that is more and 48 volts, then you have high voltage and you need to be trained for that.” - Participant 1

The second aspect of education relates to the need of educating mechanics to supply future demand. The transmission to EVs is faster than anticipated, creating an imbalance between the number of produced EVs and the number of accessible mechanics in the market.

“I know that's been a debate recently in Norway, in the automotive sector that they might have been a bit too slow to start to educate mechanics. There have been quite a few initiatives with the industry to collaborate on training mechanics, but I don't think the volumes have been sufficient. So as far as I know, it's hard to find good mechanics.” - Participant 3

According to participant 4, head of mechanic training for a market leading service station in Norway, mechanics receive training based on needs which creates an opportunity for AdaptFuture to establish contacts and supply the company with further training and training equipment. Furthermore participant 7 expresses the problem with being a mechanic today and that is that the newer generation does not prefer any manual labor jobs. The participant continues expanding on the topic that it is also necessary to show how the next generation of service and repair looks like, which according to all participants is more software related.

“Being a mechanic today, isn't that attractive. So maybe there's whole story around saying that the cars are more digital and software related. Hopefully that makes it more of an interesting job, not the greasy oily job that it was before, which is for many kids choosing their education right now is not that interesting. People growing up with

computers are not interested in switching oil filters and that kind of stuff.”

In the stated quote above, the unappealing dilemma of the current service and repair market for the new generation could be an entry point for a marketing strategy promoting the next generation of mechanic training for AdaptFuture since they are missing one.

“A marketing strategy is one of the things that we need to develop more. So this is one of the things that we need some help with from a good market and branding professional to help us on the way there” - Participant 2

Furthermore in order to expand the business and its mechanic training facility locally and globally, the researchers asked how growth was measured internally and whether it was possible to specify the current market share. Since the case company is in a very early stage, market share and the measurement of growth could not be specified in a clear matter except that a potential measurement of growth would be to consider number of customers or number of sold certifications.

“We don't measure our market share today because our market share is zero to none.” -

Participant 1

&

“The market share is a little drop in the sea” - Participant 2

More specifically, measurement of growth within the case company was ambiguous, since participant 1 and 2 shared different thoughts on this topic.

“I wouldn't say that the number of the employees depends on that. I mean, this is more about like the companies that start using our services. That would be one of the things that, what we offer to the market and how this is perceived contra let's say the traditional ways of dealing with the things. So I mean this is as I said, for us it's really hard to measure right now” -

Participant 2

&

“No, we will never have many employees in our company, that is not the way we measure. We will measure how many customers we support and how many certifications we deliver in the trainings.” - Participant 1

6. Analysis

The following chapter contains the analysis of the empirical findings in relation to the literature reviewed in a previous chapter. The analysis begins with an analysis of the market using a PESTEL and five forces analysis, followed by an analysis of potential strategies for market penetration and growth.

6.1. Pestel

6.1.1. Political

According to Perera (2017), the political factors translate to the degree of influence the government has over the market. Overall, the political factors are beneficial for the EV market, and could arguably be the most important reason for the rapid transition. The political incentives, especially those exempting EVs from taxes have directly enabled the growth of EVs in the Norwegian market. Other incentives, such as special lane access and exemption from various fees, have for years incentivized the purchase of EVs. However, due to the number of EVs in the market, these incentives have been reevaluated and cannot be considered as important anymore. There is a possibility that the reevaluation of such political incentives will slow down the transition somewhat, however, it is not deemed likely as the empirical findings show that the main incentive is the exemption from taxes. In addition, the Norwegian government has made efforts to offer additional incentives to continue the transition in spite of the need to limit other incentives, such as the decrease in tax for company vehicles that are electric. Hence, the actions of the Norwegian government signal that they are in favor of EVs and supportive of the market. According to the framework outlined by Perera (2017), these political incentives and their effect can be interpreted as a sign of an attractive industry with great market potential.

The political climate in Norway can be considered stable, and even though different parties have been in power, the stance on EVs has remained the same. However, the empirical findings regarding the political factors show signs of a future trend, which is one of the benefits of the PESTEL framework according to Perera (2017). Political parties referred to as “green parties” strive to decrease the number of cars in cities by supporting car subscription/car-sharing services. This type of service can be interpreted as a future trend in

the entire vehicle industry and will likely result in fewer vehicles per capita. Fewer vehicles are of course a problem for the supply side, as there will be less to supply. However, it could prove to be an opportunity for Adaptfuture. The products and services they offer are targeted more toward other businesses, and additional companies in the market, such as car-sharing services, can be viewed as additional customers for Adaptfuture.

As mentioned by Perera (2017), factors to consider can vary from industry to industry and can have varying importance. In regard to the market analyzed in this research, political factors are to be considered highly important for the growth potential of the industry, as well as for identifying future trends of the market.

6.1.2. Economic

The economic environment could be seen as the most important since it largely determines profitability. In addition to purely economic factors, things such as education are to consider (Perera, 2017). As Norway is one of the largest oil exporters in the world, it is a rich country with a population with high disposable income. In that regard, the Norwegian EV market is attractive and supportive of growth. Combined with the exemption from various taxes this constitutes very favorable conditions for significant spending in the market, something that was confirmed during the interviews.

Other aspects to consider regarding economic factors is for example education, according to Perera (2017). The empirical findings show that this aspect also is favorable, as the educational system in Norway is very good and people have a “natural competence”. In addition, heavy investments have been made in the market, as mentioned in the findings of technological factors. Heavy investments in the industry could certainly be interpreted as a positive sign. Hence, the economic factor of the Norwegian EV market is attractive, suitable for investments, and likely to experience growth.

6.1.3. Social

Social factors are based on society’s norms and values and can affect consumers’ purchase behavior (Perera, 2017). The actual effect social factors have on purchase behavior in the Norwegian EV market is somewhat disputed. Some findings suggest that social factors have contributed to the transition as consumers purchase an EV due to environmental concerns.

However, other findings disregard this notion claiming that social factors do not influence to such a large extent and that when asked anonymously the reason for purchasing an EV is financial. Social factors might still affect purchase behavior to some extent, but financial incentives seem to be more important to consumers. Hence, evidence supporting that social factors are important to the EV market is inconclusive and no definitive conclusion can be drawn in this aspect. However, if there is a correlation between social factors and purchase behavior in the Norwegian EV market, it is deemed positive, as there is nothing to support the contrary. Thus, societal factors are not considered to be of high importance to the attractiveness or growth potential of the Norwegian EV market.

6.1.4. Technological

The findings show that there are technical aspects that could be considered negative, such as the arguably underdeveloped charging infrastructure and range of EVs. However, the findings also showed that these aspects are likely to improve significantly within years. In addition, Norway was considered to have great possibilities in overcoming these problems. Therefore, the negative technological aspects of the Norwegian EV market are not considered to have any significant impact on the market's potential. The importance of the negative aspects is further decreased by the finding that the Norwegian market attracts investment in for example battery technology. Such investments are likely to improve the technological environment and contribute to increased growth in the industry.

According to Perera (2017), technical competence is one aspect to consider when determining market attractiveness and the technical competence in Norway seems to be high. The findings show that there is a high interest in technology and that there is a schooling system to support that interest. Hence, the technological aspects of the Norwegian market seem favorable.

6.1.5. Environmental

The findings show that there are environmental aspects in the Norwegian market that are not positive. Long distances and cold winters are not beneficial for EVs, as the range is somewhat limited, and it gets further limited during the winter when it is cold. Hence, Norway might not be the ideal market for EVs in terms of climate. However, the findings also show that this is a problem that will soon be overcome, as investments to improve things

such as range have been made. Therefore, it is not likely that these environmental aspects limit the market and growth potential significantly.

An environmental aspect vital for the EV market is Norway's access to sustainable energy. This is important to consider as the main driver behind the transition to EVs is to reduce the environmental impact, but if the energy used to power EVs comes from for example coal there is barely any environmental gain. Hence, access to sustainable energy such as hydroelectricity is vital for EVs to be sustainable. In addition, being self-sufficient in electricity is beneficial for the price of electricity as well.

6.1.6. Legal

According to Perera (2017), the legal environment can lead to strategic advantage, which arguable is true in the case of Norway. The findings show that there are positive legal aspects to the Norwegian market, both for producers and consumers. Norway is not part of the EU, which makes it attractive for new brands as they are not required to be approved for the whole EU. Hence, Norway is an attractive market for companies wanting to gain a foothold in Europe. In addition, the legal aspects are beneficial for consumers, as is shown in the findings. The possibility the purchase luxury vehicles for a much cheaper price is highly incentivizing for the continued growth of EVs. The findings did not indicate any negative legal aspects to the Norwegian market and therefore the legal environment is deemed positive and especially beneficial for new entrants.

6.2. Five Forces

6.2.1 Threat of new entry

There are several barriers for new market entrants which already established incumbents can take advantage of (Porter, 2008). However, since AdaptFuture operates in a new market with few to no competitors, there are several actions that AdaptFuture can take to establish early advantages for upcoming entrants. In the context of "*threat of new entry*", one could therefore regard AdaptFuture as an already established company compared to market competitors. The seven sources of incumbent advantages presented in the literature review could be utilized by

AdaptFuture as a source of inspiration for future strategies. For example, the data generated from the interviews with the case company indicate that AdaptFuture is missing a marketing strategy in order to establish a successful market penetration strategy as stated in section *Strategy & Growth*. Porter (2008) also mentions that an advantage established companies have over new companies entering new markets is a strong brand name, more specifically Porter refers to this as *demand-side benefits of scale*. The analysis identifies the establishment of a marketing strategy and branding as key factors for first-mover advantage.

Another advantage incumbents could have over start-up companies is an established network of distributors (ibid). Data shows that the case company is aware of the importance of building a network of contacts, one example is through the already established contact with a market leading spare parts distributor and service station in Norway. If AdaptFuture can extend the network of contacts and approach these contacts to create distribution channels for their products, the easier it will become for AdaptFuture to sell the products in the existing market. Porter (2008) refers to this as *unequal access to distribution channels*, the sooner AdaptFuture can establish distribution channels the better.

In general the lucrative political incentives offered in Norway has also opened the doors for new brands to establish. As the number of competitors increases, pressure on price and costs become evident (Porter, 2008). Further, low barriers to the market implies that already established companies pose a higher risk to competitors making profits more limited (ibid). Since Norway is excluded from EU, chinese brands has flooded the Norwegian EV market, utilizing the low entry barrier to set a foot in the European market. One could therefore argue that this growth strategy could create better conditions for entering other European countries.

6.2.2. The power of suppliers

The data suggest that AdaptFuture fulfills a part of the criteria required to be considered a powerful supplier. The first criterion is that there must be few suppliers, this is consistent with the few or no existing competitors in the service and repair market. Secondly, AdaptFuture offers unique products that differ from what is on the market today. Lastly, the products are adapted to work in different industries such as the electric boat industry. Based on the fulfilled criteria, AdaptFuture has an opening to be able to establish itself in an

advantageous position in the market with long-term benefits. For example, based on Porter's theory (2008), powerful suppliers can control variables such as price, quality, and service which in turn results in higher profits.

6.2.3. The power of buyers

In the context of this research, there are two types of buyers considered. The first one is the end consumer, the person purchasing the car, and the other buyer considered are potential customers of Adaptfuture. The end consumer as a buyer is not to be considered powerful, as they do not fulfill any of the requisites. Potential customers of Adaptfuture could however be considered slightly more powerful, as some requisites are fulfilled to some extent.

The findings show that potential buyers of the TVS products include schools and other training facilities, but not exactly how many there are. However, it is not likely that there is a vast number of schools and training facilities for EVs in Norway, but there are likely enough not to be considered few. In addition, the products can be applied to the maritime industry as well, which likely broadens the customer base somewhat. For the RSD product and the service that goes with it, the buyers are many. One potential buyer is various car brands established in Norway, and the findings show that there are 10-15 newly established brands, indicating that there are several buyers in that segment. In addition to car brands, car dealers and workshops are potential buyers of the RSD product and service, which there are many of in Norway.

The buyers of the TVS products likely purchase in larger volumes. The product is used for educational purposes and classes are usually larger than a few people, which means several products are required. However, purchases likely come years apart and are not regularly recurrent. The RSD is subscription-based and will likely not be sold in large volumes to individual buyers, the service is, however, likely to be purchased in larger quantities.

The products offered are not differentiated but there is no alternative supplier either, so the buyers are not considered powerful in this regard. The findings showed that there are suppliers offering alternatives to the TVS-rig, but majorly inferior alternatives which are not suitable for efficient education.

In terms of the buyers' profit margins, the findings were inconclusive. However, findings show that there is a decline in the need for service and repairs, which potentially could decrease the profit margin of buyers of the RSD product and service. Although, a decline in service and repairs ultimately decreases the cost for the end consumer there might be room to maintain a higher profit margin for the RSD product and service, given costs associated with a workshop will likely decrease.

The quality of the product is likely important for buyers of all products offered by Adaptfuture. Hence, buyers are not considered powerful in this regard. Furthermore, the threat of backward integration is not credible in this case, therefore the buyers are not powerful in this regard either.

Some of the requisites established by Porter (2008) could be argued to be fulfilled to some extent when it comes to Adaptfuture's potential customers. However, it is not deemed enough for the buyers to be considered powerful. The end consumers in the EV market are not considered powerful at all, as they do not fulfill any of the requisites.

6.2.4. The threat of substitutes

Based on Porter's (2008) definition of a substitute, there is arguably a threat of substitutes for the end-user of EVs, but for the customers of Adapt the threat is not as high. The findings show that there are several new brands on the Norwegian market, which increases competition for producers and provides additional substitutes for the end-user. Since EVs are provided by several brands in Norway that offers essentially the same functions and perform roughly the same, the threat of substitutes is considered high.

The findings show that there are substitute products for some of Adaptfuture's products, for example the TVS-rig. These substitute products are however significantly inferior according to the findings. Thus, the TVS products are considered distanced from substitutes through superior product performance. The findings also showed that there is no substitute to the network for remote diagnostics developed by Adaptfuture. Therefore, the threat of substitutes relating to EV mechanic education and remote diagnostics is considered low.

6.3.5. Competitive rivalry

The findings suggest that competition among car brands offering EVs is hard, and will become even harder in the future, as more brands are coming to the market. There are a lot of competitors in the market and no clear industry leader, indicating highly competitive rivalry. The findings indicate that car brands need to become cleverer in the basis on which they compete.

The competitive rivalry in the case of Adaptfuture cannot be considered high, based on the findings. For the products relating to EV mechanic education those who could be considered competitors are viewed as partners since they want to work with Adaptfuture. For the remote diagnostics network, there is as mentioned no alternative service, which is why competition is low in this regard as well. There are few if any competitors which is why there cannot be any competitive rivalry. It is possible that car brands, car dealers, etc. will establish their own remote diagnostics network for example. However, it is not deemed likely as it is difficult and would probably not be profitable. Hence, it would be more efficient to use Adaptfuture's network.

6.3. Strategy & Growth

When discussing growth, the first question that should be asked is how growth is being measured. The empirical findings from the case company oppose the theory of measuring growth as return on equity which Sandberg and Hofer (1987) propose.

Further, Audretsch, McDougall and Gilbert (2006) propose the idea of measuring growth by the number of sales, the rate of employment, and current market share. The empirical findings generated from the interviews with the case company show that a small start-up company in an emergent market has trouble defining its current market share. Instead, when measuring growth, the case company AdaptFuture supports the theory that sales could be utilized to measure growth.

Based on the NVP model by Sandberg and Hofer (1987), new venture performance can be established from the entrepreneurial characteristics of the founders, the industry structure, and the venture's strategy.

The data suggest that there is a political and legal framework for incentivizing the acceleration of growth within the EV market. The findings also show that AdaptFuture is in a market where there are no direct competitors. This in combination with an established contact with the market leader of workshops in Norway, makes AdaptFuture in a unique situation. It is however questionable whether a non-competition market creates enough industry structure for growth or not. According to Porter (2008), competitive rivalry can be beneficial for the whole industry, increasing profitability and growth. At the same time, the ideas from Chandola and Fu (2017) utilize competition to penetrate the market, specifically, they suggest it is important to create a pricing strategy based on the competitor's prices to disrupt the already existing competitors.

Further, the data collected from the interviews with AdaptFuture has shown that smaller companies often lack the right criteria for developing a complete penetration strategy. Porter (1996) himself mentions the difficulties in developing a strategy for emerging markets with new technologies. Often it is about major uncertainties that emerging markets bring with them, especially when it comes to customer needs. In the literature study, Koch (2001) also explains that companies should have made several decisions before a penetration strategy can be implemented, one of these decisions is to develop a marketing plan for the new market. As the empirical findings show, the increase of EVs has effects on the mechanic training. It was stated that the new generation might lack the interest to work with a manual job, which in return effects the overall interest of choosing a mechanical education. Here is yet another opportunity for AdaptFuture to effect the next generation of talent through a marketing strategy which emphasizes the new shift in the mechanic industry which is more software related.

Porter (1996) goes on to explain that companies in these markets often imitate competitors to reduce the risks of falling behind. However, it comes with a great risk of imitating competitors, Porter therefore suggests that companies should execute and list actions as early as possible to end up in a favorable competitive position. Since AdaptFuture has little to zero competitors and a lacking marketing plan, it is recommended in conjunction with the theories that AdaptFuture should implement a marketing plan. The goal of the marketing plan should

be aligned with Ansoff's (1957) definition of successful market penetration, that is, to increase business performance by selling current products to new or existing customers.

7. Conclusions

In the last chapter, the conclusions drawn from the analysis relating to the thesis' research questions will be presented. In addition, recommendations for AdaptFuture, the limitations of the research, and suggestions for future research will be presented.

7.1 Addressing research question 1

The first research question stated in this study was: *What are the main characteristics of the EV market in Norway?*

From the empirical findings, it can be derived that several factors and forces affect the EV market in Norway, both positively and negatively. It can however be concluded that the majority of factors and forces affecting the Norwegian market were positive towards the continued growth. Moreover, it can be concluded that some were more influential and characterized the market. Arguably, the most important factor is the political environment because the rapid growth of EVs the Norwegian market has experienced would not have been possible without the favorable political environment. The political environment has affected the whole EV market, not only has it increased sales but also affected the related service and repair market. Thus, it can be concluded as one of the main characteristics of the Norwegian EV market.

Related to the political environment is the legal environment, which also proved to characterize the Norwegian EV market. The EV market in Norway has favorable laws from two perspectives. Firstly, laws and regulations enable Norwegian customers to purchase foreign EVs and import them to Norway without having to pay taxes. Similar to the political environment, this has resulted in an increase in EVs and contributed to the growth of the industry. Secondly, the Norwegian market has become an attractive place to expand for companies outside Europe. Since Norway is not a part of the European Union foreign companies must only comply with the laws and regulations of Norway, while still being in Europe. Therefore, the legal environment has become an important characteristic of the Norwegian market for foreign companies as it enables them to get a foothold in Europe.

Partially because of the legal environment, significant investments have been made in the Norwegian market which can now be characterized as investment intensive. It is confirmed that several new car brands are entering and establishing themselves in the market, while investments in things such as factories and laboratories are being made. These types of investments are signs of an attractive market and they have directly contributed to the growth of the market. Growth, or growth potential, is also a characteristic of the EV market in Norway. Because of things such as the political environment and investments, the EV market has experienced significant growth and the growth is likely to continue, albeit not as rapidly. In addition, it can be concluded that there is a major growth potential for the EV market in Norway, as the technology can be applied to other sectors as well, such as the maritime sector. Thus, growth is something that truly has characterized and will likely continue to characterize the Norwegian EV market.

The significant growth the EV market has experienced has also led to some uncertainty, which in turn has led to opportunities, something that now arguably characterizes the market. It is evident that the market provides an opportunity for investments, as has been mentioned. Furthermore, the findings showed that there are great opportunities to capture competence in Norway. Combined with the investments made to the market, and the Norwegian environment this creates great conditions which provide an opportunity to improve the technology used in EVs. The uncertainty that comes with the increased growth is to a large extent uncertainty about the service and repair market, how it will be affected and how potential loss in revenue can be recouped. This creates an opportunity for business model innovation for established companies in the market, as well as an opportunity to capture market share by new entrants who can solve the problem of decreasing revenue from service and repairs.

There are of course other aspects that arguably could be concluded as characteristics of the EV market in Norway. However, this research found the main characteristics to be the political, legal, and technological environment in Norway, as well as the opportunities and growth potential present in the market.

7.2 Addressing research question 2

The second research question stated in this study was: *How could a tech startup operating in the electric vehicle industry efficiently penetrate the emerging market of EV repairs in Norway?*

To answer the research question, a literature review and five interviews were conducted. All five interviews in combination with the literature review helped the researchers gain insights in start-up creation within the mechanic repair industry of electric vehicles in Norway. When companies continue to grow, previous research indicates that entrepreneurs need to make several important decisions. Based on the analysis five entry points are suggested for start-ups for an efficient entry into the emerging market of EV repairs in Norway. To enter an emerging market as efficient as possible, this research proposes the following model:

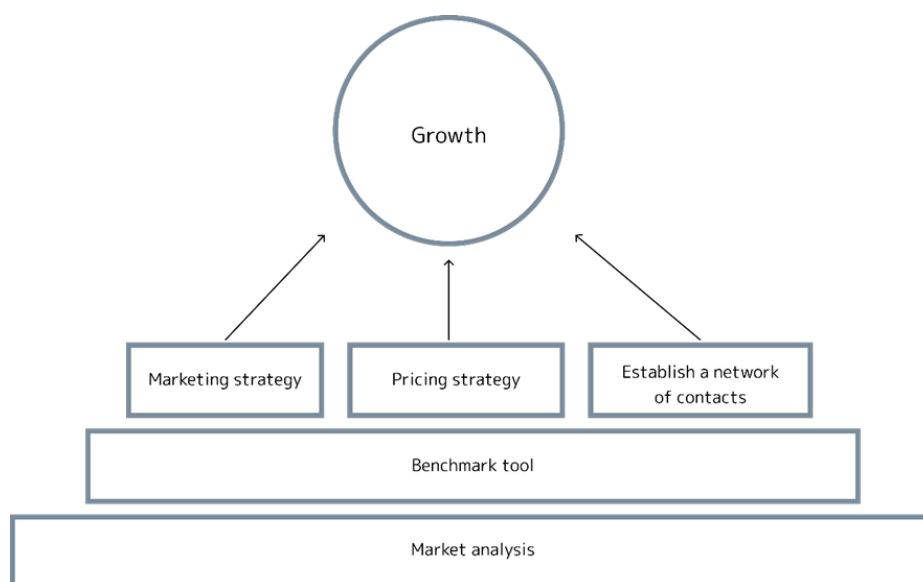


Figure 6. A proposed model of how start-ups should penetrate emerging markets.

First, the start-up should conduct a general market analysis to map existing competitors on the market, their prices, and products. The next step is to establish a benchmark tool for measuring growth. As start-ups can move in fast phased markets and industries, it becomes critical for measuring whether certain actions promote or hinder growth. Since the analysis shows that there is a mismatch between proposed measurements of growth in theory and

actual measurements used within start-ups, this research shows that measurements of growth can be case-specific.

Further, based on the analysis, start-ups should consider developing a marketing strategy that strengthens the brand of the start-up in the emerging market. In connection with the marketing strategy, new companies should also develop a pricing strategy and establish contacts in the new market as soon as possible. Establishing a network of contacts could for example provide the start-up company with new distribution channels which can increase the sales numbers. The main objective of an efficient market penetration strategy is to promote growth, whether that be measured in revenue or any other metrics.

7.3 Recommendations to AdaptFuture

For future market expansion beyond Norway, it is recommended that AdaptFuture performs a PESTEL-analysis and uses Porter's five forces framework in conjunction with a competitor analysis. The framework can help AdaptFuture predict the new market and propose alternative entry strategies in the new or established market. Another recommendation

To be able to measure future growth in the new market, it is important that AdaptFuture has established internal structures on how to measure growth. Since AdaptFuture does not have a sales team today, it is recommended that AdaptFuture measures growth through the number of customers who sign contracts.

Another concrete recommendation to AdaptFuture is to continue to expand the contact network with major suppliers/manufacturers. Larger suppliers usually have a network of sub-mechanics and sub-brands which could be an opportunity for new sale contracts to AdaptFuture, it is therefore recommended that the market analysis for AdaptFuture also consists of a stakeholder analysis to find out which contacts can provide value for AdaptFuture.

Lastly, in conjunction with expanding the contact network it is recommended that AdaptFuture establishes a marketing strategy to attract the next generation of talent to the next generation of the service and repair market. By creating a new image of how the new service and repair market will look like, AdaptFuture could have a big impact on the next generation of mechanics, which eventually will attract more talent to the industry but also

create buzz for Adaptfuture. The marketing strategy could also help AdaptFuture to create an word-of-mouth effect through the established network of contacts connecting additional workshops and valuable contacts.

7.4 Limitations

There are several limitations to this research. A qualitative approach does not provide general insights to the same extent as quantitative research can. A mixed-method approach was considered but deemed to time-consuming and would likely not have provided any additional insights for the AdaptFuture, at the cost of generalizability. Furthermore, the choice of a single case study decrease generalizability additionally, and thus the findings may be case-specific and therefore not applicable to other companies in other markets.

The sampling for this research could also be considered a limitation. A larger sample size would have increased the reliability of the research and could potentially have provided greater insights. Furthermore, the experts interviewed were from slightly different areas of the EV market. Hence, the perception of an expert in one segment might not be representative of all experts in that segment nor the entire market.

7.5 Suggestions for future research

The EV market is highly interesting and undoubtedly the future of transportation. Thus, research about the implementation of policies and incentives in other areas could be interesting, to investigate if similar activities would have the same effect, and result in similar market characteristics. Such research is vital since the environmental problems are rather urgent and a full transition to EVs would ease those problems. Additionally, research regarding the transition to electric alternatives in other industries would further the environmental cause. To confirm the findings of this research, and potentially gain other insights, a quantitative or mixed methods approach is suggested. Such research would be more generalizable and could provide insights from smaller mechanic shops, which to a large extent will be the ones affected. The researchers suggest further research on the market characteristics and penetration strategies of EV markets in other countries, preferably in another continent. For the case company, further research regarding the network of SMEs is suggested. It is important to expand the network to leverage opportunities in other countries.

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Appendix A

Interview Guide

This interview guide was constructed as a template for the interviews to open up for a discussion about the EV and service and repair market in Norway. All questions were not asked to all interviewees but varied slightly depending on their expertise. The *New market entry-specific questions were only asked to the interviewees from the case company.*

Background questions

- Can you tell us a little about yourself and what you do at this company?
- Do you have any previous experience in the industry?

New market entry-specific questions

- - How do you measure Adapt Future's market share?
- - What growth metrics do you use when measuring growth? For example, is the number of employees more important than a growing revenue?
- - Do you have a marketing strategy today? If yes, could you elaborate on it?
- - Do you have a pricing strategy today? If yes, could you elaborate on it?
- - Does Adapt Future have any competitors in Norway?
- - Do you consider that Adapt Future, its board of directors, and investors have a joint decision regarding the purpose and the goal of the target market?
- - Will you use new or existing products for market entry in Norway?

Electrify vehicle market

- Can you describe how you view the electric vehicle market in Norway?
- What do you think has accelerated the transformation towards electric vehicles in Norway? What is different from comparable countries like Sweden, Denmark, or the Netherlands?
- Do you believe political incentives had an effect on the acceleration toward EV adoption?
- Do you believe there is a need for additional incentives? As some are bound to be removed, like special lane access for example.
- What do you think should be done to continue the increase of EVs in Norway?
- Has the degree of ICE retail agents decreased over recent years?
- How often are customers asking for EVs compared to ICE vehicles?/ How is the demand for ICE vehicles compared to the demand for EVs?
- From your understanding, what do you think customers value the most when purchasing an EV?
- How do you think the Norwegian EV market will evolve? (Do you think industrial machines such as Bulldozers will become electrified as well?)
- Are new market entrants taking a bigger responsibility for EV adoption compared to OEMs?

- What are the biggest challenges today with the EV market?

Service and repair market

- Can you describe how the increase in EVs has affected the mechanic industry?
- Can you describe how the increase in EVs has affected aftermarket sales?
- Does an electric vehicle require the same amount of repairs/service as ICE?
- How are maintenance costs compared between ICE and EVs?
- Are EV service prices decreasing or increasing?
- Are EV customers asking DIY questions?
- Roughly how much of your revenue comes from your mechanics? I.e. aftermarket sales, service, etc.
- Have you experienced a change in revenue in your mechanic shops since EVs started to increase?
- If so, was it a decrease or increase? Do you have a plan to recover that lost revenue?
- Do all or most of your mechanics know how to repair EVs?
- Is it difficult to find qualified EV mechanics?
- How do you think the lack of mechanics will affect the future of EVs?
- Do staff lack competence and tools for maintaining EVs?
- Are you familiar with Remote Diagnostics?
- Do you know of anyone using this technology, i.e car dealerships, mechanics, etc?
- What are the main challenges today within the mechanic industry?