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Factors influencing BEV adoption in a mature electric vehicle market vs a developing market – A comparison between Norway and Italy

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Preface

This master's thesis marks the end of my study of Master of Science in Energy Management at Nord University. Writing this thesis has been a learning process, which occasionally had its ups and downs, and has given me deeper insight and knowledge about the factors related to electric car uptake. The thesis was written in the spring of 2022.

I would like to thank my supervisor, Associate Professor Ozlem Simsekoglu Nordfjaern, whose guidance and support has been invaluable in the process of writing this thesis. I would also like to thank my grandfather, Haldor Fykse, who has been very helpful with good advice, proofreading and exciting discussions.

17th of May 2022

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Abstract

The aim of this study is to compare drivers' attitudes and norms to electric cars in Norway and Italy and look for factors that are important to people when it comes to their willingness to replace their ICEV with a BEV. Norway is a country where BEVs are particularly widespread and the development of has gone very fast. While in Italy, the development towards BEVs has been much slower in comparison. Understanding the differences between two countries with significantly different BEV diffusion will help understanding what can or can't be done to increase the rate of BEV diffusion. The results could be useful/utilized in countries with low BEV diffusion, such as Italy.

In this study, psychological factors, such as attitudes, and some other factors (e.g., socio-demographic and infrastructure-related) that influence drivers' intentions and decisions to buy an electric car (BEV) were examined in Norway and Italy, which are two different countries with very different degrees of electric car adoption, market share, and electric car policy. This is a survey study (quantitative method). The respondents in the survey are from Norway (n=501) and Italy (n=643), 1144 in total. They were recruited by two companies (Italian and Norwegian companies) who distributed the questionnaire which was developed by a cooperative Norwegian and Italian research team. The Theory of Planned Behavior was used as the theoretical framework in this study.

Based on the results from the survey attitude dimensions were created using the average values for the respondents' attitudes to BEVs within the various attitude constructs. In order to see whether there are significant differences between the two samples in terms of attitudes, social norms, and intention to buy a BEV, independent samples t-tests were conducted. Results showed that the Italians had significantly more positive Technical and Safety attitudes, Moral norm, and Intention than the Norwegians. Economic and environmental, and Affective attitudes were slightly different, but there wasn't a significant statistical difference between the two samples. The Norwegians had significantly more positive Subjective and Descriptive norm. Also, how the respondents' attitudes and social norms are associated with their intention to buy an electric car were examined by making correlation analyses. Results showed that Affective attitudes are most strongly correlated with the Norwegians' Intention, whereas Subjective norm is most strongly correlated with the Italians' Intention. Economic and environmental attitudes were the second most strongly correlated with both samples' Intention. The results of the study are discussed for their implications for EV policies both in Norway and Italy.

List of acronyms

BEV(s) = Battery electric vehicle(s)

EV(s) = Electric vehicle(s)

HEV(s) = Hybrid electric vehicle(s)

PHEV(s) = Plug-in hybrid electric vehicle(s)

ICEV(s) = Internal combustion engine vehicle(s)

TPB = Theory of Planned Behavior

VAT = Value added tax

EVSE = Electric vehicle supply equipment

FCEV = Fuel cell electric vehicle

TRA = Theory of Reasoned Action

CAWI = Computer assisted web interviewing

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1.0 Introduction

Electric vehicles (EVs) are more and more prevalent in today's society. However, the adaptation to electric vehicles (EV) can be slow, and in some countries, it is even nearly non-existent. There are many factors that could influence consumers' intention to buy an EV, and I would like to explore some of these factors in this study. Such as what influences them, whether it is friends and family/acquaintances and their beliefs and values, the consumers' inherent belief in climate change and their will to combat it by adopting an EV, or are the economic factors most important to consumers in their decision to acquire an EV? Is it because an EV is cheaper than a conventional vehicle (internal combustion engine vehicle (ICEV)), or maybe the EV is generally more expensive to buy, but by way of subsidies and economic goods while driving, it is cheaper in use? Additionally, I want to compare the findings between a well-established EV country with those in a less established one to find additional factors which could be helpful in a country struggling with EV adoption or a country with less EV adoption than their goals. In this case, it will be a comparison between Norway and Italy. Norway is a well-established EV country with a mature EV market and an EV market share that seems to be ever-increasing, whereas Italy is a country with a much younger EV market, with way less EV adoption per capita than Norway. One goal of this study is that the findings can give pointers on which factors are important to consumers and which are not. Thus, by focusing on aspects meaningful to consumers, one can increase a country's EV adoption rate.

There is a big focus in the green shift in transport in many countries by increasing the transition from fossil-powered vehicles to electric vehicles, also known as electrification. Norway has set the very ambitious goal of every new car sold within 2025 to be an electric or non-emission vehicle (Norsk elbilforening, 2022b). This green shift isn't a matter just in Norway but in the whole world, though many countries have more long-term goals than Norway. This shift in climate policy is especially prevalent in western and more developed countries. Because of the global focus on sustainability and electrification, the demand for the technology allowing for non-emissions vehicles has risen rapidly. The technology behind sustainable solutions is continually improving, even though the raw materials and resources needed have largely remained the same.

When it comes to electric cars, many claim that the production of electric vehicles isn't as environmentally friendly as we would like to believe, a view that is true to some extent, the production of batteries for EVs does indeed create greenhouse gas emissions itself, but this is

in large part because the batteries are produced in Asia using power from non-renewable sources (Eide, 2019). Then add on top of that the emissions from shipping the batteries from the battery plant to the car manufacturer. However, the article of Eide (2019) also states that producing batteries with electricity from renewable energy sources will lower emissions, thus making the production of EVs even more environmentally friendly. While recycling dead batteries from EVs isn't quite as easy yet, many governments (including China) have committed to recycling batteries from EVs as much as possible (Morse, 2021).

Thus, while electric cars are zero-emission vehicles locally after production, they still produce greenhouse emissions indirectly via production. However, the emissions from the production and lifespan of EVs are typically less than the emissions from a conventional fossil vehicle's lifespan and production (EPA, n.d).

Therefore, an effective tool to combat climate change and greenhouse gas emissions is the replacement of conventional cars with EVs and other non-emission vehicles. As mentioned before, the government of Norway has a quite ambitious goal, which is that all new cars sold within 2025 shall be EV or non-emission vehicles.

Greaker et al. (2019) investigated how small countries could affect global climate politics. While Sweden and Finland are going for vehicles powered by biofuel, Norway is proactively going for an EV approach in their politics, specifically battery electric vehicles (BEVs). So, while the Nordic countries' impact on the environment is almost negligible, we can motivate other countries to set ambitious climate goals by focusing on developing cleaner technologies (such as EVs). Greaker et al. (2019) think the Nordic countries can build knowledge of new, clean technologies which can lead to reductions in costs associated with the green shift.

In 2020 the three European countries ranked highest in the percentage of registered BEVs were Norway, Iceland, and the Netherlands, with 54%, 25%, and 23%, respectively (EEA, 2021). In the middle were European countries such as Switzerland, Sweden, and Germany with percentages of 18%, 10%, and 7% (three more countries had BEVs registered at 7% (France, Great Britain, and Denmark)). Among lower-registered countries were Italy and Spain, both at 2%, and Portugal at 5% (EEA, 2021). It seems that Southern European countries lag behind in EV adoption (which will be explored to some extent in this study when comparing Norway and Italy). Low registrations are also noticed in eastern European countries, with Poland at 1% and Latvia at 2%. Note that all numbers mentioned in this paragraph are from 2020 (EEA, 2021). Several reasons can probably explain the differences

in EV adoption in the European countries mentioned. However, I believe EV policy, as well as the critical infrastructure needed to sustain an EV fleet are among the important factors to explain the disparity in EV adoption. Gasoline prices vs. electricity prices in the different countries will also be a deciding factor for consumers. In essence, usage costs of conventional vehicles vs. those of electric vehicles.

According to Figenbaum (2018), the main consumer group (as of 2018) were households with more than one car that used the EV for local short-range transport. For Norway to reach the ambitious goal that every new car sold within 2025 is a non-emission vehicle, households with only one vehicle will need to replace their current car with a non-emission vehicle. Simsekoglu (2018) also found that many Norwegians bought an electric car as a second vehicle in addition to their ICEV. Of course, newer EV models with longer range and shorter charging times will contribute heavily to reaching that goal, by making EVs more attractive and productive to consumers. Though, driving farther distances could still pose an issue when it comes to charging station locations, the stations' capacity and speed, as well as weather conditions (cold winters) in Norway and northern Italy, etc.

The demand for EVs has risen concurrently with the green shift and the political "tools"/policy measures to encourage the adoption of EVs. In Norway especially the EV market has taken off in the last decade and EVs are very common in Norway. A comparison between a country with a mature EV market, such as Norway, with a much "younger" EV country such as Italy, is interesting and might be useful for showing how "younger" countries can adapt their policies and learn from a mature EV market. In essence, Italy can learn from the Norwegian EV policy to increase its EV fleet, EV market share, and EV adoption. This is not to say that Italy doesn't have its own EV policy with incentive programs, but the main Italian EV incentive also encompasses hybrid-electric vehicles (HEVs), plug-in hybrids (PHEVs) and even new fossil-fueled vehicles (with low enough emissions), whereas the Norwegian EV policy mainly focuses on BEVs. Though many of the EV policies in Norway are being reduced and some even being removed, the policies have surely increased the number of consumers and their intention to acquire an EV. Most households with an EV in Norway today have it as their second car, for shorter-range transport, and a conventional car for longer trips.

1.1 Problem statement

Electric vehicles seem to be the way forward to meet the ambitious climate goals, not only for Norway but also for the rest of the world. Still, the demand for EVs is relatively low compared to conventional vehicles, even though interest and demand for EVs has increased rapidly. Especially in Norway where 64,5% of all new vehicles purchased in 2021 were EVs, more specifically BEVs (OFV, 2022). Whereas in Italy, which is a much "younger" country when it comes to EV adoption, EVs had a market share of 4,6%, which includes HEVs, PHEVs, and BEVs (BEVs had around 0,1% market share) in 2020 (ACEA, 2022).

Several different factors influence people's choice to buy an EV instead of a conventional vehicle, such as economic situation, personal preferences, availability, etc. Also among them are psychological variables such as attitudes, norms, and intentions (Liu et al., 2020; Ye et al., 2021). This study will examine the role of these psychological factors in EV choice and see what kind of similarities or differences there are between two countries with different profiles and if the difference can be explained to some extent by these variables. This research will only focus on passenger cars, not other types of vehicles such as lorries, busses etc. Of course, there are several different types of electric vehicles. For this study the main focus is on battery electric vehicles (BEVs).

With the basis that EVs are the cornerstone of the green shift towards more sustainable vehicle technology, I have formulated the following problem statement:

How do Norway and Italy differ in terms of attitudes, social norms, and intentions related to the use and acquisition of BEVs?

This thesis aims to examine the important factors influencing consumers' intention towards buying an EV, as well as the implications of the Norwegian EV policy compared to that of Italy. Determining the consumers' intentions and which factors influence their intentions will be instrumental in shedding light on the problem statement and for the study as a whole. The problem statement is more general. Therefore, it has been divided into several more specific research questions. These were formulated to examine the problem statement from different angles.

1.1.1 Research questions

Below is the problem statement split into several questions to make it more manageable and more specific in shedding light on it from different angles. The factors which I will focus on are environmental, economic, and typical EV traits (meaning technical traits such as range, charging times, etc.). In addition, which roles these factors play in influencing the consumers and their intention to acquire an EV.

Research question one:

What are the attitudes (ecological, economic, technical, safety, and affective) towards different aspects of BEVs?

Here the aim is to identify the consumer's attitudes when it comes to ecological, economic, technical, safety, and affective aspects of BEVs. Identifying the attitudes and then examining how they are related to intention.

Research question two:

How are environmental and non-environmental (e.g., technical, safety, affective) attitudes related to driver's intention to buy a BEV?

This will entail the answers from the questionnaire (given on a Likert scale and regarding attitude questions) which detail environmental, technical (such as range, charging times, charging infrastructure, climate-dependent performance, etc.), safety and affective attitudes consumers have towards EVs, and which role these attitudes have on the consumers and how this reflects their intention to acquire a BEV.

Research question three:

How are social norms (subjective norm, descriptive norm, moral norm) related to driver's intention to acquire a BEV?

This research question will entail whether consumers are influenced by social norms or acquaintances such as friends or family towards acquiring a BEV and if so to which degree the consumers are influenced. Also, to which degree personal moral norm contributes to the consumer's intention to purchase a BEV.

Research question four:

What are the differences between Norway and Italy in terms of factors influencing BEV purchase intention?

This research question entails whether there are differences in the influencing factors on BEV purchase intention among the Italian and Norwegian participants, and if so, these differences will be further examined and discussed.

1.2 Thesis structure

Chapter 1 - Introduction

The introductory chapter includes an introduction to the topic, problem statement and subsequent research questions.

Chapter 2 – Literature review

This chapter includes an introduction to research areas which will be used for discussion later in the study, as well as background information for previously studies done on the subject and an overview of Norway and Italy's EV incentive programs.

Chapter 3 – Theoretical framework

This chapter includes relevant theories in the theoretical framework which will be instrumental in the analysis.

Chapter 4 - Methodology

The chapter includes the research approach, methodological choices which have been done for this study, as well as the validity and reliability of the study.

Chapter 5 – Analysis and results

This chapter presents empirical data and results from the survey/questionnaire.

Chapter 6 – Discussion

In order to answer the problem statement and research questions, the theoretical framework is combined and discussed with empirical data and relevant journal publications and previous studies.

Chapter 7 - Conclusion

This chapter presents the conclusion to the thesis and a summary, as well as possible further research angles or studies not covered by this one.

2.0 Literature review & background for the study

This chapter gives a description on the EV policy and incentives in Norway, EV policy and incentives of Italy and compare the two nations' policies. Additionally, this chapter presents findings done in other studies relevant to the subject.

As mentioned, Theory of planned Behavior is the theoretical framework used in this study. In order to establish a knowledge base for EV policy in Norway and Italy as well as relevant information for the Theory of Planned Behavior (Ajzen, 1991), a literature review was conducted to see what kind of research was already done on the subject and to gain knowledge about the present situation and background. To find relevant literature searches were carried out on search engines such as ORIA and Google scholar. Additionally, some regular google searches were done if the information otherwise found was outdated or non-existent in academic articles. Search phrases such as "EV policy Norway", "EV policy Italy", "TPB", "Theory of planned behavior EV", "EV adoption", "electric vehicle intention", "EV adoption comparison" etc., were used. Often references in one article or study led me to another, and so on.

2.1 Previous studies

When doing the searches for the literature review, I found that many others had studied EV adoption/intention and quite of few of them did so utilizing the Theory of Planned Behavior as a framework to explain intentions to use electric vehicles. However, very few of the studies made cross-country comparisons. The articles mostly focused on one country. Even fewer articles compared Norway and Italy, specifically on EV adoption intention. In one previous study by Scorrano et al. (2020) did compare BEV adoption in Norway and Italy, but examined it by using the total cost of ownership (TCO) methodology. In their article they stated that *"(...) the monetary aspect seems not to be the dominant driver of BEVs sales in Norway. In this nation BEVs are much cheaper than internal combustion engine ones*

(ICEVs); marginal changes in their price do not influence sales as much as other non-economic factors such as the customer's environment-protection consciousness." (p. 102) (Scorrano et al., 2020). This is an important finding to keep in mind when analyzing the findings in this study. Additionally, the article contained several good references which were applicable to this investigation. On the other hand, a study done by Junquera et al. (2016) in Spain, with 1245 respondents, found the opposite. Their results indicate that the higher the consumer's perception of EV price is (and long charging times), the less the consumers are willing to adopt an EV. These findings were done with Spanish respondents, and Spain is culturally quite similar to Italy (Hettinger, 2008). One could then argue that these findings could be transferrable to Italy as well. The two countries' BEV and EV market shares are similar too (ACEA, 2021a). Another study that examined several countries was done by Sierzchula et al. (2014), which examined EV adoption and how it was influenced by incentives and other socio-economic factors in 30 different countries in 2012. They found that economic incentives as well as charging infrastructure were statistically significant, though their descriptive analysis suggested that neither of them could ensure high EV adoption.

A study done by Ye et al. (2021) examined why people chose to buy an EV, and which factors were more or less influential. They found from their results of the research done in China, that among the different factors that lead to higher EV purchase intention always included one or more psychological attributes. Even if a government implemented an array of EV incentives and purchase subsidies, the EV purchase intention among the people would still be low if the psychological attributes such as attitude, subjective norms and perceived behavioral control (the attributes of theory of planned behavior) were absent (Ye et al., 2021). Another study done in China, more specifically the Jiangsu province, by Liu et al. (2020) found that EV adoption willingness/intention was significantly influenced by experience, and that BEV adoption willingness/intention was positively influenced by experience, *"(...) which confirms the significant mediating effects of subjective norm, perceived behavioral control, and attitudes (battery life, cruising range, low noise, and low emission)."* (In the abstract)(Liu et al., 2020).

When it comes to EV policy and incentive programs and their efficacy, a study done by Fluchs and Kasperk (2017) examined just that. In basic theories they found that implementing incentive programs e.g., reducing EV taxes might not be enough in itself to increase a country's EV adoption. From their research they found that tailoring an EV policy with incentive programs implemented in the early stages of the process does not always

dramatically increase the EV market share. Though, their findings in the Netherlands show that rebates and tax-reductions did have a measurable effect (Fluchs & Kasperk, 2017). A study from Switzerland done by Brückmann et al. (2021) explored BEV adoption in regions without strong EV policies. They found that BEV adoption is closely and positively tied to personal characteristics (income, multiple cars in the household, BEV purchase price, etc.), environmentally conscientiousness, having an affinity for new technology, and owning and living in one's own house/home.

In this study the connection between consumer attitudes, preferences, and intentions will be examined when it comes to buying an EV. Attitudes will cover users' opinions about the environmental, economic, safety, affective, and technical aspects of EVs, as well as social norms related to the use of EVs. Additionally, EV policy differences such as incentive programs will be discussed in the analysis and discussion chapter.

2.2 EV use & policy in Norway

To combat the changes in our climate, the electrification of vehicles is a very important tool to mitigate the impact on the environment caused by transport. The EV policy in Norway is based on the belief that EVs are more friendly to the environment compared to fossil fuel powered vehicles (Holtsmark & Skonhoft, 2014). Norway is quite ahead of the curve when it comes to electro mobility and the transition away from fossil fuel powered cars towards electrification (Figenbaum et al., 2015), whereas the development within electro mobility has developed more slowly in the rest of the world. In 2021 64,5% of all new vehicles sold in Norway were electric (OFV, 2022). Much of Norway's success in adopting EVs and assisting the transition to EVs can be contributed to the quite substantial incentives to promote EV or non-emission vehicle adoption. In other words, the EV policy measures in Norway are the main reason for the people to acquire and use EVs, thus resulting in the high number of new vehicles sold being EVs (Holtsmark & Skonhoft, 2014).

Norway's incentive package is mostly focused on non-emission vehicles such as BEVs and fuel cell electric vehicles (FCEVs). There are incentives for PHEVs too, though to a lesser extent. PHEVs are taxed based on CO2 and NOx emissions, engine output (effect) and weight (Bjerkan et al., 2016), while battery electric vehicles are exempted from vehicle registration tax and value added tax (VAT). The VAT exemption is still in effect until the end of 2022 (Norsk elbilforening, 2022b). BEVs also benefit from incentives such as maximum 50%

parking fees on public parking (though this varies throughout the country because municipalities independently decide how much they charge for EV parking), maximum 50% toll fees and maximum 50% ferry fees (Norsk elbilforening, 2022a). The 50% rule mentioned above means maximum 50% price compared to that of a conventional fossil vehicle. Additionally, BEVs have access to bus and taxi lanes in Norway with some exemptions based on time of day, number of passengers etc. Ownership tax reduction, BEVs and PHEVs pay the minimum amount which is 455 NOK (EAFO, n.d-b). Below is an example of the Norwegian tax system on BEVs compared to conventional cars.

	Volkswagen Golf	Volkswagen e-golf
Import price:	22 046	33 037
CO2 tax (113 g/km)	4 348	-
NOx tax:	206	-
Weight tax:	1 715	-
Scrapping fee:	249	249
25% VAT:	5 512	-
Retail price:	34 076 €	33 286 €

Figure 2.1: Price difference of a Volkswagen Golf (ICEV) vs E-Golf (BEV); Source: Norsk elbilforening (2022b)

As we can see from the figure above, the Norwegian tax system makes it cheaper to buy the EV compared to the conventional vehicle, even though the EV has a much higher import price. This increases the popularity of EVs in the Norwegian car market and is one of the main reasons why the EV market in Norway is so successful.

The EV incentives in Norway used to be greater, meaning free toll fees, free ferry fees, etc., however, after the Norwegian vehicle fleet got so proliferated with EVs, the government has reduced the incentives somewhat. The incentives are changing and being adjusted in line with EV adoption.

Company cars also used to be incentivized if they were EVs, with a 50% tax reduction (Holtsmark & Skonhoft, 2014); however, the incentive policy regarding these cars will cease

at the end of 2022. Currently, the tax calculations for an EV company car will be based on 80% of the car's purchase price (as new) (Skatteetaten, 2022). Leased EVs are exempted from 25% VAT (Norsk elbilforening, 2022b).

Norwegian EV incentives, a brief history:

The history of the Norwegian EV policy began in the 1990s with the exemption of the import and purchase taxes implemented in 1990. This is still in effect. Then from 1996 until last year (2021), there was no annual road tax, which was then reduced road tax in 2021, and from 2022 (and ongoing), there is full yearly road tax for EVs. In 1997 the Norwegian government implemented the exemption from import toll and ferry fees for EVs, which were in effect until 2017. In 2018 (still ongoing), the ferry fees for EVs were changed from exempted to maximum 50%. Similarly for road toll fees, in 2019, this toll for EVs was set to a maximum of 50%. Then in 1999, free municipal parking for EVs was implemented but ended in 2017. In 2018 public parking fees for EVs were limited to a maximum of 50% of that of conventional vehicles and is still ongoing. From 2000 EV company cars were taxed by only 50% until 2018. Between 2018 and 2022, EV company car taxes were reduced by 40%, and from 2022 onward, EV company car taxes are reduced by 20%. In 2001 EVs were exempted from paying VAT, and this incentive is still ongoing. From 2005 EVs got access to bus lanes. The bus lane incentive is still ongoing, however, with local regulations (for instance, access during specific times, specific streets, etc.). Ten years later, in 2015, leased EVs got exempted from 25% VAT, which is still in effect. In 2016 new regulations were implemented to the bus lane access incentive, which meant that municipalities could limit access to bus lanes to EVs carrying passengers. Much like a carpool lane which can be used if there are two or more occupants in the vehicle. (Norsk elbilforening, 2022b)

As of 24.01.2022, there are 3284 charging stations in total in Norway, with 20801 outlets (19403 of which are public) (Nobil, 2022). Many of the new charging stations are built with the ability of upgrading the charging speeds to 300kwh in the future. The Norwegian government has set a goal for every municipality in Norway to have at least one fast-charging station within 2023. Similarly, the government set the goal that even by 2017, there should be fast-charging stations every 50 km on every main road by 2017, which was successful (Wallbox, n.d-a). Additionally, the Norwegian government has electric vehicle supply equipment (EVSE) charging infrastructure incentives. Building associations can apply for a

grant that will subsidize some of the costs of building charging stations for new buildings and parking lots. A minimum of 6% of the lots in a parking lot and parking connected to new buildings are required to be allocated to electric cars, as of new regulations requiring EVSE introduced in 2016 (EAFO, n.d-b). The EVSE budget in Oslo for 2018 for housing associations for EV chargers was 20 million NOK, doubling the 2017 budget. The size of the grant varies between cities, regions, and municipalities. In Oslo, the EVSE grant for maximum 20% of the purchase and installation costs up to 5000 NOK per charging point and up to 1000000 NOK per housing association. In Asker, the EVSE grant goes up to a maximum of 50% of the costs, 5000 NOK per charging point and 50000 NOK per housing association. Whereas in Bærum, the grant covers up to 50000 NOK of the purchase and installation costs (Wallbox, n.d-a).

Rapid market growth happened due to EV manufacturers launching bigger vehicles with improved range, safety, and comfort. This was around 2010, which is illustrated in Figure 2.2 below. Around that time, most auto manufacturers were developing EVs, and many of them had already launched their first EV models. (Figenbaum et al., 2015). In the last few years EVs have had a predominant market share in Norway, with even more electric vehicles being registered each year. This aligns well with Norway's goal of updating the car fleet so that every new car sold within 2025 is a non-emission vehicle.

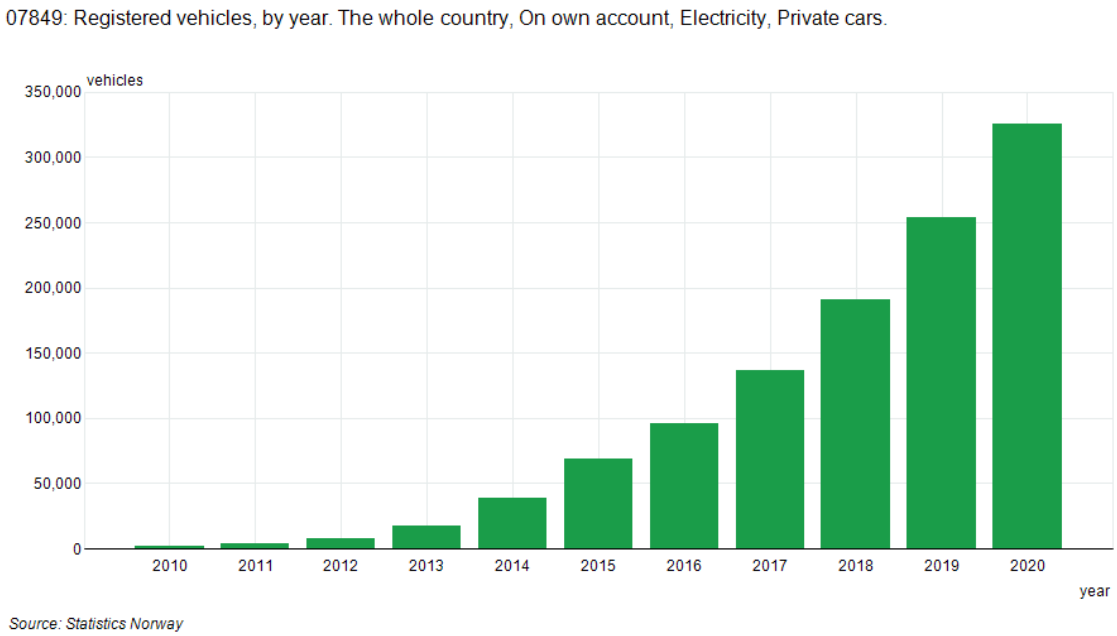

Figure 2.2: Number of BEVs registered by year in Norway; Source: (SSB, n.d-b)

The figure above shows the development of registered BEVs by year in Norway. The BEV diffusion started slow, but around 2013/2014 the BEV population grew significantly faster.

2.3 EV use & policy in Italy

Italy is a relatively young country when it comes to EV adoption, especially when compared to Norway. The Italian subsidy program for EVs, part of the Ecobonus program, was launched in 2019. The goal of this program is for electric vehicles (BEVs, PHEVs, and HEVs) to replace conventional vehicles within 2035 and reduce emissions from vehicles to zero within 2050 (Wallbox, n.d-b).

There are three types of nationwide incentive programs for electric vehicle adoption in Italy; Tax deduction on EV chargers, purchase grant/incentive of the electric vehicle and ownership tax exemption (which turns into reduction). Most of the following incentives expired at the end of 2021, and it is difficult to find if they are still active or not. However, for the purpose of this study, it is assumed that they are.

1 EV chargers

The first incentive is a tax deduction on the purchase and installation of EV chargers. This incentive encompasses individuals, companies, condominiums, and housing associations. The tax deduction is 50% and covers up to a maximum of €3000, which is divided into ten yearly installments (EAFO, n.d-a).

2 EV purchase grant/incentive

The second incentive is the purchase grant which subsidizes up to €6000 when buying or leasing a new vehicle with less than 20g/km CO2 emissions (ACEA, 2021b) (this basically only covers BEVs). Up to €3500 when buying or leasing a new vehicle with CO2 emissions between 21-60 g/km (most plug-in hybrids) (EAFO, n.d-a). The purchase incentive can increase to €10000 for BEVs and €6500 for PHEVs if you scrap an older conventional vehicle when purchasing a new EV (EAFO, n.d-a). On the official website for the Ecobonus program, the following table explains the base contributions available before new regulations were/are added on top. The table also summarizes the incentive described in the paragraph:

M1 category vehicles - Ecobonus contribution		
	With the scrapping of a vehicle of the same category approved for the Euro 0, 1, 2, 3 and 4 classes	Without scrapping
Emissions <= 20 g / km	€ 6,000.00	€ 4,000.00
Emissions> 20 g / km and <= 60 g / km	€ 2,500.00	€ 1,500.00

Figure 2.3: Ecobonus contribution; Source: (Ecobonus, n.d)

The Ecobonus program encompasses privately purchased vehicles, leased vehicles, and company cars. This purchase incentive even covers conventional vehicles such as newer diesel cars if their emissions are within the set parameters for the incentive program. As evident from the table above, the Ecobonus contribution is increased quite substantially if you scrap your old car when buying a new one.

3 Ownership tax

The ownership tax makes people who buy BEVs or PHEVs entirely exempted from the annual registration tax for the first five years after their new vehicle purchase. After this period, the annual registration tax is changed from total exemption to a 75% reduction for most conventional vehicles (ACEA, 2021c).

Additionally, there is a penalty fee for purchasing or leasing a new, polluting model (conventional internal combustion engine vehicle), which follows the polluter pays principle. This eco-tax was in effect between 2019 to the end of 2021 (Wallbox, n.d-b).

Many cities in Italy have additional local incentives for EVs. Some cities have free parking in urban areas and access to limited traffic zones (also called low emission zones (LEZ)). These zones are found in several larger cities, though mostly in northern Italy. Some of the cities offering EVs access to LEZ have a further goal of only having non-emission vehicles in the city within set time periods. Other local incentive programs entail road toll fee reduction combined with access to low emission zones for EVs, for instance, in Milan (northern region)

and Palermo (southern region). Also, some insurance companies offer discounted insurance rates on EVs (Cavasola & Ciminelli, 2018).

In the figure below, we can see the increase in market share of BEVs, PHEVs, and HEVs from the third quarter of 2020 to the third quarter of 2021. The registration of new passenger cars of both BEVs and PHEVs is more than doubled between the third quarter in 2020 to the third quarter in 2021, where BEVs registered in q3 2021 were just shy of 20000. HEVs saw an increase of almost 23000 cars. (ACEA, 2021a)

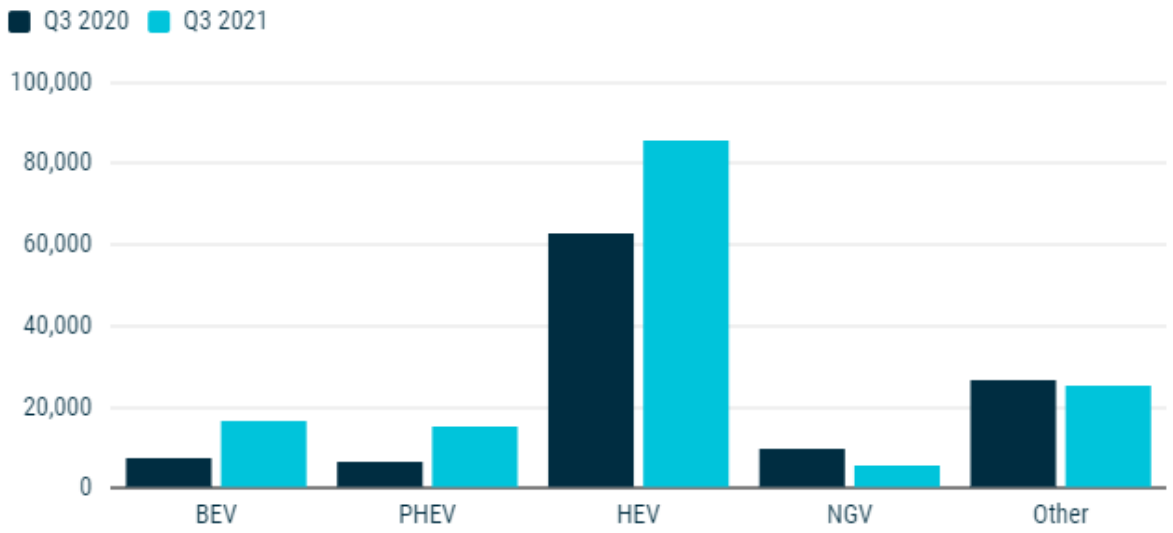

Figure 2.4: New passenger car registrations in Italy; Source: (ACEA, 2021a)

The Italian EV charging infrastructure is in fifth place in the European ranking of the amount of charging stations. However, they are quite far. In 2018 there were 9000 electric charging points in Italy, 80% of which were privately owned (Cavasola & Ciminelli, 2018). A vast majority of the charging points are located in the northern regions (Noussan, 2020).

2.4 Differences in EV policy – Norway & Italy

A notable difference between Norway and Italy is that the Norwegian incentive program prioritizes BEVs while other EVs are taxed according to their emissions and weight. Italy's incentive program encompasses all EVs and even some conventional cars. BEVs receive greater incentives than PHEVs/HEVs, but they too benefit from the incentive program in Italy, where the state subsidizes some of the purchase costs.

As shown in Figure 2.4 in the previous chapter, HEVs are clearly the most popular in Italy, though BEVs and PHEVs doubled in new car registration during the same period. In Norway,

BEVs far outweigh the other types of new EV registrations, see Figure 2.5. Norway had a significant growth in the EV car fleet in the same period, approximately a 60% increase from q3 2020 to q3 2021.

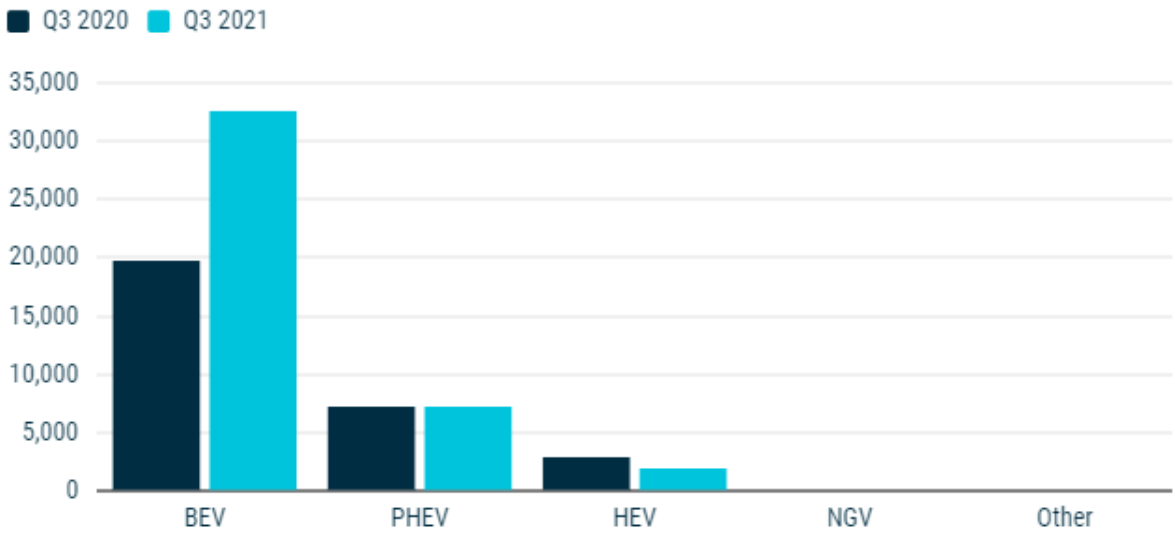

Figure 2.5: New passenger car registrations in Norway; Source: (ACEA, 2021a)

It is evident from the two previous chapters that the EV policy in Norway and Italy is considerably different. IEA (2019) separates EV policy measures into three categories: purchase incentives, EV usage incentives, and waivers on access restrictions. In the following tables, Tables 2.1, 2.2, and 2,3 summarize the differences in EV policy between Norway and Italy. "Targeted" means a policy that is in effect in certain areas, for instance, cities/municipalities/regions, etc.

Table 2.1: Purchase incentives for EVs

Policy measures	**Norway**	**Italy**
Subsidies/grants on new car purchases	-	Nationwide
Sales tax exemptions (excluding vat)	Nationwide	-
VAT exemption	Nationwide	-
Annual ownership tax exemption, then reduction	- (reduced ownership tax)	Nationwide
Lower company car tax	Nationwide	-

Italy's subsidy for the initial car purchase of EVs is a money grant paid to the consumer when buying an EV (or a conventional vehicle with low enough emissions), or the retailer discounts

the consumer, then gets reimbursed by the government when selling an EV. Norway's subsidy for the initial car purchase is through VAT exemption for registration tax. Both incentives are nationwide for the respective countries. Italy has a 5-year annual ownership tax exemption which then turns into a tax reduction. Norway does not have a similar ownership tax scheme but a lower company car tax for EVs, which Italy does not have.

Table 2.2: Usage incentives for EVs

Policy measures	**Norway**	**Italy**
Reduction in fees (toll, parking, ferries)	Nationwide	Targeted
Charging subsidies	Targeted	Nationwide

Norway's policy of reduction of ferry, toll, and parking fees is nationwide (though with varying prices up to a maximum of 50%), whereas Italy's comparable policy is targeted, meaning it is in selected cities and regions, and even in selected streets/roads. The charging subsidies are quite different in Norway and Italy. In Norway, the charging infrastructure subsidies available are targeted and located in specific municipalities, as well as intended for developers and housing associations. Italy's charging subsidy scheme is nationwide and encompasses individuals (for consumers installing chargers at their homes), companies, and condominiums/housing associations.

Table 2.3: Waivers on access restrictions

Policy measures	**Norway**	**Italy**
Access to bus lanes	Targeted	-
Access to limited traffic zones	-	Targeted

The Norwegian policy for allowing EVs access to bus lanes is targeted to specific areas and even specific times. Not all bus lanes can be utilized by EVs, but lanes that are open to EVs are often marked with signs. Italy does not allow EVs access to bus lanes. However, they allow EVs access to limited traffic zones and low emission zones in specific areas. These zones are also marked by signs, most often in cities. These usage incentives also combat road congestion and incentivize consumers to acquire EVs.

3.0 Theoretical framework

This chapter will present the theoretical framework and literature suitable for this thesis.

3.1 Theory of Planned Behavior

The Theory of Planned Behavior (TPB) is an extensively used model for explaining different consumer behavior (Ajzen, 1991). The theory encompasses the social and the psychological aspects of behavior and was developed by Ajzen and Fishbein in the 1980s. It tries to explain why people act as they do and how behavior and actions are formed. TPB is an extension of the theory of reasoned action (TRA) (Ajzen, 1991).

People are likely to engage in a specific behavior if they believe that the behavior leads to a particular outcome that they view as valuable, if they feel that surrounding people (whose opinions matters to them) think they should do it, and that they have the necessary tools, resources, and opportunity to engage in the behavior (Ajzen, 1985).

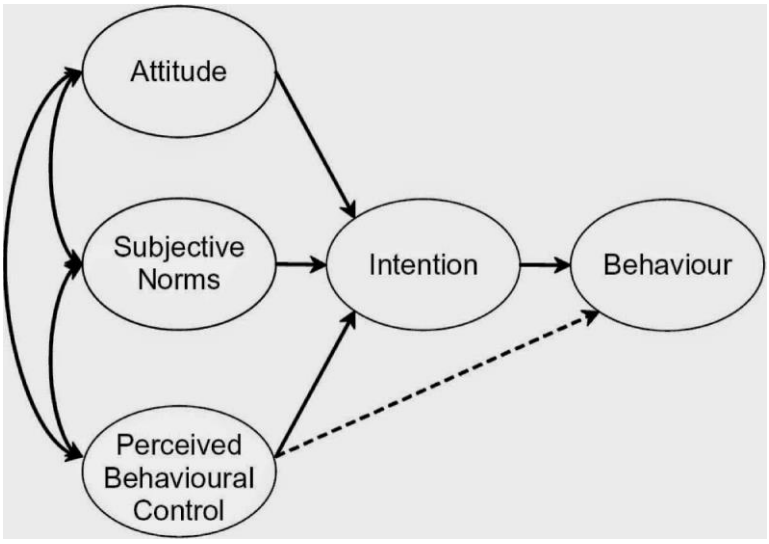

Figure 3.1: Theory of planned behavior; Source: (Ajzen, 1991)

Ajzen (1985, 1991) also posits that a series of mental processes such as beliefs and attitudes of consumers are what form behavioral intentions. Furthermore, the consumers' beliefs influence their behavioral intention by forming certain attitudes. Therefore, intentions become a crucial predictive tool of behavior according to TPB. Even though there can be loss of consumers' behavioral control because of inconsistencies between behavior and intention (Ajzen, 1991). Behavioral intention is the product of three factors: [1)] belief in product, [2)] social

factors, and [3)] situational factors. It is a set of expected behavior which is presumed to be done in a particular setting, meaning that this is the likelihood to perform an action (Fishbein & Ajzen, 1975).

As shown in the figure above, TPB has three main components: attitude, subjective norms, and perceived behavioral control. These three components all influence consumer intention and then consumer behavior.

3.1.1 Attitude

Attitude is the individual's predisposition towards something based on experience and/or knowledge. Whether the attitude is positive or negative determines how the individual behaves and responds. This response is often consistent and, in a particular way, determined by positive or negative predisposition. Attitude has three sub factors: the cognitive factor, affective factor, and conative factor. The cognitive factor (belief or knowledge) is based on an individual's evidence or factual knowledge of something, the affective factor is based on the individuals feelings concerning something, and the conative factor is the individuals action concerning positive or negative outcomes (Hoyer & Macinnis, 2007). As Ajzen defined attitude: "*a disposition to respond favorably or unfavorably to an object, person, institution, or event*" (p. 4) (Ajzen, 1988).

Battery electric vehicles (BEVs) are often linked with negative functional attitudes, for example, practicalities such as range, long charge times, etc. (Haustein & Jensen, 2018). However, EVs are often linked with positive affective attitudes, meaning people who tried them enjoyed the driving experience compared to conventional vehicles (Skippon et al., 2016). Heyvaert et al. (2015) found, through a survey study, that the respondents agree that EVs are cheaper to drive, more environmentally friendly and that charging at home was a good advantage. They also found that respondents with a positive attitude weighed purchase price more heavily than those with less positive attitudes, surprisingly. Additionally, that the intention to buy an EV is related to attitude. If the attitude is more positive, then it is more likely that the driver will buy an EV (Heyvaert et al., 2015). A study done in China concerning consumer attitudes and their effect on EV sale, done by Wang et al. (2022), posits that the relationship between consumer attitudes and the adoption of EVs are closely linked. They found that there was a growing concern among consumers about charging infrastructure, and the negative attitude towards that also encompassed sales of EVs. Generally, negative

attitudes have a stronger impact than positive attitudes (Wang et al., 2022). BEVs and BEV acquisition have been found to be more connected to attitudes, norms, and beliefs than conventional vehicles and conventional vehicle acquisition (Simsekoglu, 2018), which means that psychological factors are more prevalent when it comes to BEVs than ICEVs.

Thus, positive attitudes towards EVs are likely to lead to positive intention towards EVs, which in turn leads to higher adoption of EVs.

3.1.2 Subjective norms

Subjective norms entail what behavior an individual feels responsible for performing (morally) based on the individual's principles (Ajzen, 1991). However, that is leaning more towards personal moral norms. The difference between subjective norms and personal moral norms is that subjective norms are often external in forms of social pressure, and personal moral norms are internal moral values (Wang et al., 2016). People often seek approval/advice from friends or family (i.e., people important to them) and are influenced by their values and attitudes (Moutinho, 1987). While Moutinho's (1987) article was written about consumer behavior in tourism, the sentiment on subjective norms is quite transferable to this subject. And according to Peter & Olson (1994), reference groups such as friends, family, colleagues, etc. have quite significant influence over an individual's decision-making. Furthermore, when the subjective norms of an individual is quite influenced by friends, family, etc., the decision-making is based on the opinions of whether the friends and family approve or disapprove of their behavior (Ajzen, 1991). Therefore, it is important to a consumer whether their loved ones are in favor or against the adoption of EVs in their behavior in the acquisition of said EV. However, Peters and Dütschke (2014) found that the subjective norm (with influence from loved ones) had more effect on individuals with little to no interest in EVs, while it had less effect on people already quite interested in EV adoption. Furthermore, there was no subjective norm effect on people who already had adopted to EV usage and those very interested in EVs (Peters & Dütschke, 2014).

It has also been found that the subjective norm effect was minor when it came from loved ones, but more substantial when it came through media channels such as news and articles (Moons & De Pelsmacker, 2015). Shalender and Sharma (2021) found through their literature review that many researchers and previously done studies concluded that if a person feels they must do something, they are more likely to perform said action/behavior if social pressure is

present. Moreover, it has been observed that as soon as the social pressures to perform certain behavior recedes, people are likely to revert to their original behavior (Wang et al., 2016). A study conducted in the UK concerning clean vehicle adoption and related attitudes by Lane and Potter (2007), found that subjective norm (in the form of perceived social expectations) was influential on respondents' EV acquisition.

3.1.3 Perceived behavioral control

Perceived behavioral control deals with to what extent an individual thinks it is easy or difficult to perform a behavior - if the individuals believe that the behavior is within their control, or they are in control of other externalities (Ajzen, 1991). The perceived behavioral control factor entail a person's belief of having the right information, resources and/or opportunity needed for a particular behavior (Chiou, 1998). In other words, the persons perceived ability to conduct a behavior (Haustein & Jensen, 2018). In this case perceived behavioral control entails what drivers think about BEV technology, purchase price, ease of use, and how easy/hard it is to adapt to a BEV. As we can see from Figure 3.1, perceived behavioral control influences both intention and behavior, meaning that it is a predictor for both (Haustein & Jensen, 2018). Several studies found that people who have prior positive experience with EVs greatly increased their sense of control, thus their intention to adopt a BEV (Burgess et al., 2013; Carley et al., 2013). Furthermore, people's higher sense of control when it comes to EVs leads to positive behavioral intention, which in turn leads to a higher degree of BEV adoption (Egbue & Long, 2012; Shalender & Yadav, 2018).

3.1.4 Personal moral norm

Personal moral norm is an extension of the normal theory of planned behavior model. It entails that a person feels responsible (that it is the moral thing to do) for conducting a particular behavior. This feeling of responsibility is rooted in the persons morals, values and principles (Beck & Ajzen, 1991). As mentioned earlier the difference between subjective norm and personal moral norm is that subjective norm focusses on pressure from external sources (friends, family etc.), while personal moral norm focusses on internal/personal rules, values and principles. Thus, the main focus of personal moral norm is the internalization (Wang et al., 2016).

For this study, the personal moral norm context could be whether a consumer wants to adopt an EV or not, based on their rules, values and principles (feeling of responsibility to the environment, for instance). Achtnicht (2012) found that the likelihood of a consumer to adopt an EV or their intention to adopt an EV increase concurrently with their personal moral norm, meaning that people who have a higher level of personal moral norm are more likely to adopt an EV. Similarly, Lane and Potter (2007) found that people with a strong sense of right and wrong (personal morals) were more likely to acquire an EV. Thus, people with a high degree of personal moral norm have more positive intentions to buying EVs (Nordlund et al., 2016). Personal moral norm has been found to be of significant influence on behavioral intentions when it comes to EV adoption (Jansson et al., 2017).

4.0 Methodology

This chapter describes the methods used in the study, explaining the research design and how the data was collected. In this study a quantitative approach was used for data collection. A survey was used to collect data from the respondents about socio-demographic (e.g., age, gender, household size), psychological (e.g., attitudes and norms) and infrastructure-related variables (e.g., charging possibility) related to BEV use. All data sources will be explained in this chapter.

4.1 Research design

Research design details what data to collect, where to collect data the from, when and how the data should be collected, which tools to use for data collection and so forth. It is the sum of all the activities that are necessary and need to be done by the researcher in order to answer the problem statement and subsequent research questions (or hypothesis) in a study (Johannessen et al., 2011). The categories of research design are the quantitative approach, the qualitative approach and a mixed approach (some quantitative, some qualitative), as well as case study, comparative case study, survey study etc.

Several decisions were made at the early stages of the study regarding what to do and how to do it. I was given the opportunity to take a small part in a larger project, thus given access to a portion of the data. The data collection had already been conducted (will be elaborated later), when I began this research/study. A literature review was performed, searching for relevant articles and previously done studies, to evaluate what type of research would be beneficial and not previously done. For this study the research design chosen was survey study of the quantitative approach, which will be explained in more detail later. Then a problem statement and research questions were formulated. Survey study was the best approach to this study.

4.2 Quantitative research method

The quantitative research method entails many samples, and usually something measured in large quantities which can be measured in numbers. The samples can be individuals, states, organizations etc. (Easterby-Smith et al., 2012). In this case, the samples are individuals. A quantitative study is based on a limited amount of data per sample. Methods of data collection for quantitative studies are often in the form of structured questionnaires or surveys where the respondents' answers range from 1 to 5 (strongly disagree-strongly agree for instance) on a

Likert scale and the same questionnaire is used for all the samples. Quantitative data can also be collected from sources such as public statistics, databases, surveys etc. (Johannessen et al., 2011). Quantitative studies are used to develop a representative overview of general conditions, and to test hypotheses. The goal of the quantitative research method is to show the evidence found by the use of numbers, and the volume of the collected data. Easterby-Smith et al. (2012) explain the quantitative method in the following way: you identify which features best tell the story for the data (summarizing data) and then searching for patterns in the data in order to draw conclusions for the research questions in the study by making inferences based on the sample data. In this study the data collected was in the form of online surveys, therefore the quantitative method will be used.

4.3 Survey study

The data was collected via a survey, which will be explained more in the data collection chapter. Survey studies are the most used methods for data collection in social sciences (Hellevik, 2015). It is a quantitative method, in which the survey asks the same questions to a larger populous (respondents), who (mostly) give answers which are set. The respondents have a few options and pick the answer which is most fitting to them. A survey study can be done face to face, over the phone, by mail or in an online survey. In this case the survey was conducted online, where the respondents read the questions themselves and answered accordingly. The survey itself was distributed by two companies, an Italian company for the Italian participants and a Norwegian company for the Norwegians. Details will be elaborated later.

The data collection method of surveys can be split into three categories; factual, exploratory and inferential (Easterby-Smith et al., 2012). Factual surveys are used to collect data often concerning knowledge, meaning there is a correct answer among the options. This method is often used to collect data about demography and such. Exploratory surveys are used to collect data about a field in which there is little to no knowledge already, meaning it is exploring and collecting data about something new, when established theories aren't applicable to the thing being studied. Inferential surveys (also known as cross-sectional surveys) are used to collect data about the relationship between variables. This method is often used to establish cause and reaction between independent and dependent variables and is often deployed at a particular location or time. Thus, it captures what the samples mean about the subject at the

time (Easterby-Smith et al., 2012). This study's data collection can be categorized as an inferential/cross-sectional survey where the samples answer questions about EV related topics, which explores the relationship between the samples and EVs.

All the attitude questions in the survey were answered on a Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

4.4 Data Collection

The classification of collected data is dependent on who collected it. There are primary and secondary data. Primary data is normally collected by the researcher or a team of researchers for a specific purpose and/or analysis (Johannessen et al., 2011). Secondary data is normally collected by someone else for another purpose, such as a company or a government (Johannessen et al., 2011). Secondary data sources range from government or company reports, archive data, data banks, newspaper articles etc. Easterby-Smith et al. (2012) posits that there are several advantages to using secondary data. Firstly, secondary data is time and effort saving, as the data is already collected. Secondly, the secondary data will be considered of high quality if these are published by governments and/or companies. Thirdly, one can get somewhat of a historical perspective when looking at secondary sources/data.

For this study the data was collected using questionnaires, developed by a team of researchers, and deployed by two professional data collection companies. This qualifies the data as primary, and the data set as a primary data set. Though, some would argue that because it was collected by two companies, it is secondary data, however, the survey was both made and ordered by a team of researchers for their research purposes. The companies merely facilitated the data collection for them by being hired to do so. Additionally, data regarding theories and descriptive data for EV policy in Norway and Italy were gathered through various sources such as journal publications, books, organizations, newspaper articles, websites and government reports.

The data collection was done through a web-based survey. The survey was deployed using CAWI (Computer assisted web interviewing). The survey was administered between November and December of 2021. The questionnaire was the same for both countries. There were 643 Italian participants in the Italian survey and 501 Norwegian participants in the Norwegian survey. The data collection was administered by two companies who specializes in market surveys: For the Italian sample SWG was used. SWG was founded in 1981 and

have since specialized in precision market surveys, opinion polls, institutional polls, studies in sectors and monitoring centers, as well as trend and dynamic analysis of markets, society and politics (SWG, 2022). For the Norwegian sample Norstat was used. Norstat was founded in 1997 and specializes in data collection for market surveys. They have more than 5 million participants in their community who participate in surveys etc., which enables Norstat to collect data on a wide range of subjects and target groups (Norstat, 2022).

The samples/respondents for the survey were chosen at random from the two companies' communities. This was to get a wide array of participants with different backgrounds and to ensure that only people with a driving license were eligible to answer the questionnaire in the survey, which was an important criterion. Participation in the survey was voluntary and the survey itself was distributed via email. Of course, the companies cannot guarantee a 100% random data pool, however it is close enough for this research's purpose. The survey is representative, as surveying whole countries would be impossible. And as mentioned, the two companies have gathered participants from all walks of life and spread across the countries, which makes the samples and the survey highly representative.

Several of the questions asked in the questionnaire were not relevant to this study. For instance, questions regarding type of home preference (house, apartment etc.), if they have solar panels on the roof, etc. Therefore, several of these types of question were excluded and the focus was on the results which were relevant to this study.

4.5 Validity and reliability

Validity is described as a measure of the accuracy of a test and how accurately it measures what it intends to measure (Yin & Campbell, 2018). Easterby-Smith et al. (2012) posit that research's validity can be divided into two categories: internal and external validity. Internal validity (also known as credibility) entails whether the research is structured enough and contains all the steps of the scientific research method to make the findings more accurate. External validity (also known as transferability) entails whether the results obtained as a result of the research can be generalized and used in other settings (Yin & Campbell, 2018). These two points are very important for a case study because the goal is to study a phenomenon in order to generalize the results of the study. By conducting correlation analysis one can test the validity. Pearson correlation was done in SPSS, using the attitude constructs which were

composed of several items from the survey. All correlations with Intention are positive for both countries, which are shown in Table 5.6 and Table 5.7. Thus, the constructs are valid.

Reliability is described as the repeatability of the research findings. That another researcher following the same procedures in the study will end up with the same results, findings and conclusions (Yin & Campbell, 2018). Thus, checking for reliability is necessary and requires that the researcher who is doing this, also follows the same assumptions, methodology etc., as used in the original procedures. In this study the reliability of the constructs was measured by doing reliability analysis using the Cronbach's coefficient. All the constructs were found to be above the threshold of reliability, which will be detailed later.

4.6 Statistical analysis

In this study several statistical analysis methods were used. Most prominently were descriptive statistics, independent samples t-test, and correlation analysis. Moreover, reliability tests were conducted to test the reliability of the constructs used. Additionally, crosstabs and frequency tests were done for the sample demography. Independent samples t-tests were conducted to test whether the mean scores for attitudes, norms and intention differ significantly between Italy and Norway. The correlation analyses were conducted to test associations or correlations between intention and the other constructs. These were done for each country's respondents separately and were done to check for differences in which constructs correlated more or less with BEV adoption intention, and for comparison. Two computer programs were mostly used for the data set management and data analysis in this study. These were IBM SPSS statistics, which was used for most of the analysis, and Microsoft Excel. For instance, when calculating mean scores, creating crosstabs, doing the correlation analysis, doing independent samples t-tests, reliability tests etc., SPSS was used.

Before the analysis of the dataset began the variables on negatively loaded statements had to be recoded so the answers given by the participants were comparable to that of positively loaded statements. This was done in SPSS, using the 'recode into same variable function', so that the answers given in the Likert scale questions would be comparable. For instance, so that a completely disagree answer on a negatively loaded statement was comparable to a completely agree answer to a positively loaded statement. In short, the items that were stated negatively in the questionnaire were recoded so that higher scores consistently meant more positive attitudes.

5.0 Analysis & results

This chapter introduces sample characteristics for both Norway and Italy, then several methods of analysis and sheds light on differences and similarities.

5.1 Sample characteristics

Table 5.1 shows some information both for Italy and Norway (age, gender, education and household size etc.). Also, to see if there is a significant difference between the two countries, Pearson chi-square and p-values were added to the table.

Table 5.1: Tables showing sample demography for Norway and Italy

	Norway (n=501) 43,8%	**Italy** (n=643) 56,2%	Pearson chi-square	P-value
Gender			3,99	0,046
Male	283 (56,5%)	325 (50,5%)		
Female	218 (43,5%)	318 (49,5%)		
Age (mean)	46,05	47,15		
Occupation			52,75	0,000
Student	49 (9,8%)	133 (20,7%)		
Employed	302 (60,3%)	304 (47,3%)		
Unemployed	11 (2,2%)	49 (7,6%)		
Retired	99 (19,8)	130 (20,2%)		
Other	40 (8,0%)	27 (4,2%)		
Household income (yearly)			133,69	0,000
Less than 400 000 NOK	57 (11,4%)	208 (32,3%)		
400 001 – 800 000 NOK	156 (31,1%)	252 (39,2%)		
800 001 – 1 200 000 NOK	137 (27,3%)	69 (10,7%)		
More than 1 200 001 NOK	73 (14,6%)	30 (4,7%)		
Prefer not to answer	78 (15,6%)	84 (13,1%)		
Education			231,16	0,000
Primary school and middle school	11 (2,2%)	39 (6,1%)		
High school	92 (18,4%)	309 (48,1%)		
Occupational education	85 (17,0%)	108 (16,8%)		
University/college up to 3 years (bachelor's degree)	161 (32,2%)	171 (26,6%)		
University/college 4 years or more /master's degree or higher)	147 (29,4%)	16 (2,5%)		

Other	5 (0,8%)	0 (0%)		
Parking facilities at home			373,27	0,000
Private/reserved parking, garage without charger	258 (51,5%)	404 (63,1%)		
Private/reserved parking, garage with charger	162 (32,3%)	58 (9,1%)		
Unreserved parking without charger	65 (13,0%)	14 (2,2%)		
Unreserved parking with charger	16 (3,2%)	164 (25,6%)		
Charging facilities at work/school (university)			10,83	0,004
Yes	181 (36,1%)	188 (29,2%)		
No	220 (43,9%	278 (43,2%)		
Don't know	100 (20%)	177 (27,5%)		
Household size			98,19	0,000
1	111 (22,2%)	61 (9,5%)		
2	213 (42,5%)	186 (28,9%)		
3	67 (13,4%)	173 (26,9%)		
4	72 (14,4%)	184 (28,6%)		
5 or more	36 (7,2%)	39 (6,1%)		
Prefer not to answer	2 (0,4%)	0 (0%)		
Household size (mean)	2,77	2,93		

Pearson Chi-square values have been rounded to two decimals. In the Italian survey an equivalent scaling for income was used (Euro).

The total sample size was 1144 in total for the survey. 501 of which were Norwegian and 643 were Italian. As can be seen in Table 5.1, there are significant differences in all variables between the Italian and the Norwegian samples. Compared to the Italian respondents, the Norwegians had a higher percentage of males, whereas the Italian respondents' genders were quite even. There was a higher percentage of students among the Italians than the Norwegians. On the other hand, there was a higher percentage of employed Norwegians than Italians. When looking at the samples yearly household income there was a significantly higher percentage Italians at the lowest earnings bracket, and a significantly higher percentage of Norwegians at the higher end of the earnings bracket. Comparing the education level between the two countries' participants reveal that the Italian respondents had a significantly higher percentage who ended their education at high school, than the Norwegian respondents. Craftsmen education was quite even between the two countries. There was a significantly higher percentage Norwegian respondents who had a university education of 4 years or more

than the Italian respondents. Though university education up to 3 years was more even between the two countries.

Compared to the Italian respondents, Norwegian respondents had a significantly higher percentage of participants with access to private parking with charging opportunities. On the other hand, Italian respondents had a significantly higher percentage of participants with access to unreserved parking with charging opportunities. When examining the respondents access to charging facilities at work/school, a higher percentage of Norwegian respondents had access to that, compared to the Italians. As for household size differences between the two countries' respondents, Norwegians had a significantly higher percentage household containing one and two people. On the other hand, compared to the Norwegians, the Italian respondents had a significantly higher percentage of households containing three and four people. Though, the household size means were not far apart.

5.2 Reliability of the constructs

To measure the reliability for the constructs Cronbach's Alpha is used as the reliability coefficient. Cronbach's Alpha is a measure to find how closely a set of items are related in a group, the internal consistency (also known as reliability) (UCLA, n.d). It tests whether or not several questions in Likert scale surveys are reliable. Generally, a score closer to 1 is indicative of greater reliability (internal consistency). Lower than 0,7 is generally considered questionable or poor, however with a low amount of items being tested, a low score can appear simply because too few items have been tested. Adding more items will increase the score (Glen, 2022). On the other hand, a high score on the Cronbach's Alpha could indicate redundant questions (several questions asking the same thing), and thereby indicate a high level of correlation (Glen, 2022). This is important to keep in mind when examining this data. There are differing reports as to the Cronbach's alpha values which are acceptable. Generally, an alpha between 0,70 and 0,95 is considered acceptable (Tavakol & Dennick, 2011). Another article suggests the following interpretations of Cronbach's Alpha: Lower than 0,5 is unacceptable, 0,5 is considered poor, 0,6 is considered questionable, 0,7 acceptable, and between 0,7 and 1 is considered good/excellent (George & Mallery, 2003).

Economic and environmental attitudes towards EV-use included six items which are the following: *«By driving an electric car one saves money in the long term», «There is no financial benefit by driving an electric car instead of a traditional car», «Electric cars have*

lower maintenance costs compared with traditional vehicles», «Use of electric cars is a more environmentally friendly method of transport than conventional vehicles», «Using electric cars reduces air pollution caused by traffic» and «Use of electric cars reduces the toll on natural resources caused by traffic». They had a Cronbach's Alpha of 0,79, which is quite above the level of 0,70, which means that it is very acceptable and measures a satisfactory level of reliability.

Technical attitudes towards EV-use included five items which are as follows: *«Limited range is a con/negative to driving an electric car», «There are too few charging stations for electric cars», «Long charge times make electric cars unpractical», «Electric cars have generally worse performance than traditional cars» and «Limited capacity to transport luggage and goods is a con/negative to using electric cars».* They had a Cronbach's Alpha of 0,70, which is acceptable.

Safety attitudes towards EV-use included these two items: *«Electric cars are safer to drive than traditional cars»* and *«The probability of a fire accident is lower in an electric car compared to a traditional car»*. They had a Cronbach's Alpha of 0,63. This is below 0,70, however considering the fact that it has only two items, a Cronbach's Alpha of 0,63 can be considered as acceptable and reliable.

Affective attitudes (attitudes connected to emotions, feelings regarding EVs) towards EV-use included four items which are the following: *«I prefer to drive an electric car, rather than a conventional car», «Driving an electric car feels weird», «Limited range makes driving an electric car uncomfortable» and «When driving an electric car, I am concerned about the possibility of running out of electricity».* They had a Cronbach's Alpha of 0,66. Again, this is below 0,70, however with few items in the construct, one could argue that this result is acceptable and reliable even with a Cronbach's Alpha lower than 0,70. The same argument which was made for safety attitudes applies here too. It has four items, whereas Safety attitudes have two. The Cronbach's Alpha is 0,66, i.e., quite close to 0,70, and considering that four items aren't a lot of items to be included in this attitude, one could argue that Affective attitudes category is reliable as well.

Moral norm (how you feel about doing something: whether you feel good or bad) attitudes towards EV-use included these two items: *«Owning a car which isn't environmentally friendly makes me feel guilty» and «I feel morally obligated to use environmentally friendly*

cars». They had a Cronbach's Alpha of 0,81. This number is well above the 0,70 threshold and thus an acceptable and reliable measure.

The Subjective norm, Descriptive norm and Intention constructs were measured with just one item. Therefore, it was not necessary nor possible to do a reliability test for those constructs.

5.3 Comparisons between Italy and Norway on BEV intention, attitudes and norms

Based on the categorization used for attitudes in some previous studies (e.g., (Simsekoglu, 2018) mean scores for attitudinal dimensions (i.e. Environmental & economic, Moral, Safety, and Technical attitudes towards EVs) were calculated in SPSS.

These questions were answered on a Likert scale 1-5, and the full table is included in the appendix. Independent samples t-test was conducted to test whether the mean scores for attitudes differ significantly between Italy and Norway. Table 5.2 shows the mean scores for different attitude dimensions, norms and intentions together with the t-values.

Table 5.2: Comparison between Norway and Italy – Attitudes, norms, and intention

	Norway (n=501)		Italy (n=643)			
Constructs	**Mean**	**SD**	**Mean**	**SD**	**t-value**	**P-value**
Economic and environmental attitudes	3,66	0,84	3,70	0,75	-0,90	0,184
Technical attitudes	2,41	0,70	2,52	0,82	-2,33	0,010
Safety attitudes	2,64	0,82	3,00	0,83	-7,41	0,000
Affective attitudes	2,86	0,95	2,80	0,77	1,29	0,098
Moral norm	2,67	1,23	3,38	1,04	-10,55	0,000
Subjective norm	3,82	1,11	3,37	1,07	6,88	0,000
Descriptive norm	3,89	1,15	2,46	1,28	19,65	0,000
Intention	2,67	1,34	3,21	1,20	-7,29	0,000

SD=Standard deviation, P-value= one-tailed. Numbers for mean, standard deviation and t-value in this table are rounded to only two decimals.

The mean scores in the table above are the respondents mean score for their answers in the different categories, given on a Likert scale. Except for Affective attitudes and Economic and environmental attitudes the other categories differ significantly for the respondents from the two countries. Results show that compared to the Italian respondents, Norwegian respondents reported less positive Technical attitudes, and significantly less positive Safety attitudes and Moral norm. On the other hand, the Norwegian respondents reported significantly higher subjective norm and descriptive norm. The results show an interesting finding for the BEV adoption intention. The Italian respondents reported a significantly higher intention to acquire a BEV, than the Norwegian respondents. Even though evidence such as BEV market share clearly shows that Norwegians buy far more BEVs than Italians.

In addition to that intention item, the respondents were alse asked, if they were to purchase a town car/small/compact family car, or a large sedan/station wagon/SUV, which type of car would it be. The results were as follows:

Table 5.3: Car preference if the samples were to purchase a new car

Vehicle preference	**Norway (n=501)**	**Italy (n=643)**	**Pearson Chi-Square**	**P-value**
Smaller car			250,20	0,000
Petrol car	30 (6,0%)	91 (14,2%)		
Diesel car	41(8,2%)	78 (12,1%)		
BEV	317 (63,3%)	137 (21,3%)		
HEV	52 (10,4%)	273 (42,5%)		
PHEV	61 (12,2%)	64 (10,0%)		
Larger car			160,25	0,000
Petrol car	36 (7,2%)	74 (11,5%)		
Diesel car	130 (25,9%)	183 (28,5%)		
BEV	155 (30,9%)	66 (10,3%)		
HEV	64 (12,8%)	247 (38,4%)		
PHEV	116 (23,2%)	73 (11,4%)		

Pearson chi-square values have been rounded to two decimals.

As seen from both the p-values and the actual numbers in the table, the results differ significantly between the Norwegian and Italian respondents. The dominant choice for both small and large cars in the Norwegian sample was BEV, especially for small car (with 63,3%, relatively close to the BEV market share in Norway in 2021). The Norwegians respondent's preference when it came to a larger car was more varied, with BEV being the most popular,

closely followed by diesel ICEV and PHEV. For the Italian respondents on the other hand, HEV was the dominant choice of both smaller car and larger car. While HEV was the preferred smaller car among the Italians, 1/5 of them would buy a small BEV.

In order to make a clearer table, the questions "if you were to purchase a town car/small/compact family car" and "if you were to purchase a large sedan/station wagon/SUV" were recoded in SPSS. This also enabled us to get another BEV adoption intention in addition to the Intention construct in Table 5.2. The answers given to the questions were changed so that BEV is 1 (yes) and all the other options are 0 (no). Yes indicates participants wanting to buy a BEV, no indicates all other categories (HEV, PHEV, diesel and petrol). Below is a table showing the results:

Table 5.4: Type of car preference between the samples

	Norway (n=501)	**Italy (n=643)**	**P-value**
Small BEV			0,000
Yes	317 (63,3%)	137 (21,3%)	
No	184 (36,7%)	506 (78,7%)	
Large BEV			0,000
Yes	155 (30,9%)	66 (10,3%)	
No	346 (69,1%)	577 (89,7%)	

Here we find a substantial difference between the samples' intention to buy a BEV in the near future, which is the "Intention" construct in the Table 5.2 where the Italian respondents answered way more positively to the BEV adoption intention question, when comparing to their intention to buy both smaller and larger cars. The overwhelming majority of the Italian respondents would not like to buy either a small or large BEV as their next car. Many BEVs are for city use and/or used by people commuting to or from work (often in a city), which greatly benefits smaller cars, thus maybe therefore smaller cars are more interesting to Italians. Italy famously has narrower streets in their cities etc., than Norway. Also, many BEVs are acquired as a second vehicle for shorter range transport and daily commutes (Figenbaum, 2018). Therefore, a larger BEV which functions more as a primary car, but with shorter range (when compared to a convention vehicle) is understandably less interesting to all parties, than a smaller BEV which serves as a secondary car.

The following table shows the results for number of cars in the respondents' households.

Table 5.5: Number of cars in the household

	Norway (n=501)	Italy (n=643)	Pearson Chi-square	P-value
Number of cars			47,30	0,000
0	58 (11,6%)	18 (2,8%)		
1	246 (49,1%)	293 (45,6%)		
2	146 (29,1%)	249 (38,7%)		
3	34 (6,8%)	69 (10,7%)		
4 or more	17 (3,4%)	14 (2,2%)		

Pearson Chi-square values have been rounded to two decimals.

As shown in the table above, a significantly higher percentage of the Norwegian participants don't have a car in their household, compared to the Italians. Moreover, a significantly higher percentage of Italians have two cars in their household, compared to the Norwegians. Overall, the majority of the respondents from both countries have just one car in their household, though having two or three cars in a household seem more prominent among the Italian respondents, compared to the Norwegians. Moreover, there were a higher percentage of Italian households who had more occupants, compared to the Norwegians, which could be why there were more cars in Italian households in general.

5.4 Correlations

In order to see how these constructs are correlated with each other both in the Norwegian and the Italian samples, two separate correlation tests were done. When interpreting and commenting on the results, "Intention" is the most important construct for this study. Therefore, focus will be on that construct and on how the other constructs correlate with it.

Correlation can be explained in a simplified way like this; It is a statistical measure that shows to which extent two variables are related linearly (Chen & Popovich, 2002). A positive correlation means that as one item increases, the other one also increases and vice versa, whereas negative correlation means that as one item increases the other one decreases. Both positive and negative correlations move at a constant rate. The correlation coefficient signifies the strength of the correlation, and p-value shows the statistical significance of the correlation. Correlation analysis is a tool used for describing the relationship between the two variables without giving any information about cause and effect (Chen & Popovich, 2002). This method of statistical analysis was chosen in this study because it produces exactly the information needed to answer the research questions.

All the constructs have positive correlation with Intention for both countries, though to varying degrees.

5.4.1 Correlations Norway

Table 5.6: Correlations between the psychological constructs in the Norwegian sample

		1	2	3	4	5	6	7	8
	Constructs	**Economic and environmental attitudes**	**Technical attitudes**	**Safety attitudes**	**Affective attitudes**	**Moral norm**	**Subjective norm**	**Descriptive norm**	**Intention**
1	**Economic and environmental attitudes**	1,00							
2	**Technical attitudes**	0,41**	1,00						
3	**Safety attitudes**	0,53**	0,44**	1,00					
4	**Affective attitudes**	0,61**	0,66**	0,55**	1,00				
5	**Moral norm**	0,47**	0,28**	0,39**	0,38*	1,00			
6	**Subjective norm**	0,55**	0,31**	0,39**	0,47**	0,37**	1,00		
7	**Descriptive norm**	0,35**	0,24**	0,21**	0,35**	0,24**	0,39**	1,00	
8	**Intention**	0,42**	0,39**	0,36**	0,43**	0,33**	0,40**	0,27**	1,00

Stars indicate p-value: *=p<0,05, **=p<0,01, ***=p<0,001. All numbers in this table are rounded to only have two decimals. Numbers show the Pearson correlation values for the different attitude categories.

The 8th row with "Intention" and its correlation with the other constructs are focused. In the Norwegian sample Intention has the highest degree of correlation with Affective attitudes, followed by Economic & environmental attitudes, follwed by Subjective norm, followed by Technical attitudes, followed by Safety attitudes, followed by Moral norm, then followed by Descriptive norm. The fact that the intention to acquire a BEV is most highly correlated with Affective attitudes means that the Norwegian participants mostly weigh their feelings towards BEVs when asked the question whether they would like to acquire a BEV or not. However, the Intention item's correlation with Economic & environmental attitudes is just 0,01 lower than Affective attitudes. Therefore, it would be fair to say that Affective attitudes and Economic & environmental attitudes are basically tied as being the most important factors to the Norwegian respondents when it comes to BEV acquisition. This means that the monetary

aspects as well as environmental conscientiousness are important to them, and just slightly (barely measurable) lower than Affective attitudes and their feelings toward BEVs. The fact that Economic & environmental attitudes are so important to Norwegians, contradicts the findings of Scorrano et al. (2020), more specifically, the economic aspects.

In addition the Subjective norm is quite important to the Norwegian samples, as its correlation with Intention is right behind Economic & environmental attitudes. This means that the Norwegian participants put some weight on whether friends/family support their decision to acquire a BEV, or not, i.e how their intention will be received by friends/family. Next on the Norwegian respondents list of prioritizations we find the correlation between Intention and Technical attitudes. This too is not far behind the previous item, but still behind. Which means that the technical aspects of BEVs (range, charging times, acceleration etc.) are of less importance to them than the previous items, when it comes to BEV adoption intention. Then we get to Safety attitudes and its correlation with Intention which yet again is slightly behind the previous item. This means that the Norwegian participants put less weight on the safety aspects of BEVs (compared to conventional vehicles) when it comes to BEV adoption intention. Next is Moral norm and its correlation with Intention, again slighly behind the previous one. This means that the respondents rank the morality of owning a BEV lower than the previous attitudes items when it comes to BEV adoption intention. Finally, we get to Descriptive norm and its correlation with Intention, which is the lowest. This means that peer pressure or “because people I know use BEVs therefore I will do it too” is least important to the Norwegian respondents and their intention to get a BEV.

5.4.2 Correlations Italy

Table 5.7: Correlations between the psychological constructs in the Italian sample

		1	2	3	4	5	6	7	8
	Constructs	**Economic and environmental attitudes**	**Technical attitudes**	**Safety attitudes**	**Affective attitudes**	**Moral norm**	**Subjective norm**	**Descriptive norm**	**Intention**
1	**Economic and environmental attitudes**	1,00							
2	**Technical attitudes**	-0,27	1,00						
3	**Safety attitudes**	0,26**	-0,006	1,00					
4	**Affective attitudes**	0,19**	0,56**	0,11**	1,00				
5	**Moral norm**	0,30**	0,38	0,35**	0,11**	1,00			
6	**Subjective norm**	0,36**	0,17**	0,27**	0,20**	0,33**	1,00		
7	**Descriptive norm**	0,77	0,11**	0,321**	0,160**	0,229**	0,33**	1,00	
8	**Intention**	0,46**	0,19**	0,37**	0,33**	0,42**	0,50**	0,33**	1,00

Stars indicate p-value: *=p<0,05, **=p<0,01, ***=p<0,001. All numbers in this table are rounded to only have two decimals. Numbers show the Pearson correlation value for the different attitude categories.

The correlations between Intention and the other attitudes differ quite a bit between the Norwegian and the Italian samples. In the Italian sample Intention has the strongest degree of correlation with Subjective norm, followed by Economic & environmental attitudes, followed by Safety attitudes, followed by Affective attitudes and Descriptive norm (which are tied), followed by Technical attitudes. While attitudes with the strongest degree of correlation with Intention for the Norwegians were Affective attitudes, it was Subjective norm for the Italians. The correlation between Intention and Economic & environmental attitudes, isn't much lower than the Subjective norm. Economic and environmental attitudes are the second highest correlation with Intention for both countries' participants. Next, we get to the correlation between Intention and Moral norm, which again isn't much lower than the previous one. It is more highly correlated with Intention for the Italians than the Norwegians. The Safety attitudes have a higher degree of correlation with Intention for the Italian respondents than the Norwegians, though barely (0,01 higher compared to the Norwegian table). Next, we see that the Italian respondent's correlation between Intention and Affective attitudes and Descriptive

norm are tied. In the Norwegian sample, Affective attitudes were most important, whereas the Italians have a lower degree of correlation between Intention and Affective attitudes. Additionally, there is a higher degree of correlation between Intention and Descriptive norm for the Italian respondents than the Norwegians. Lastly, we find that for the Italians the Technical attitudes and Intentions correlate significantly less than for the Norwegians. This means that the technical aspects of BEVs are much less important to Italians when it comes to intention to adopt a BEV than to Norwegians, to which it matters quite a bit.

5.4.3 Simplified correlation results

Below is a table showing/summarizing the differences in degrees of correlation between intention and the other attitudes. They are here listed in order within each country to more clearly show which attitudes are more important on BEV adoption intention in the two countries (/among the two countries' respondents).

Table 5.8: Correlations between intention and psychological constructs ranked strongest to weakest

Norway	**Italy**
1. Affective attitudes	1.Subjective norm
2. Economic and environmental attitudes	2. Economic and environmental attitudes
3. Subjective norm	3. Moral norm
4. Technical attitudes	4. Safety attitudes
5. Safety attitudes	5. Affective attitudes & Descriptive norm
6. Moral norm	6. Technical attitudes
7. Descriptive norm	

The table above shows the order of which attitudes more heavily influences the respondent's intention to adopt a BEV, according to the correlation analysis results. Compared to the Norwegian respondents' intention, which is most influenced by Affective attitudes (their own feelings towards BEVs), Italian respondents' intention is most influenced by Subjective norm (influence from others). Both of which are very different. However, the Norwegian and Italian respondents' intentions are equally influenced by Economic and environmental attitudes. Results from the correlation analysis shows that all the attitudes apart from Economic and environmental, are correlated with the respective respondents' intentions in a different degree.

6.0 Discussion

Today, the topic of climate change and its causes is very controversial. Some people deny climate change, while others argue for resorting to various measures to reduce the effects of climate change on the planet. A particularly important element in the discussion about climate change and tools that can be used to reduce it are electric cars. In increasing number of countries, goals are being set to reduce/phase out the proportion of fossil cars and switch to cars powered by other and cleaner technologies. It is especially the pollution in traffic that plays a major role why fossil cars should be phased out and replaced by newer technologies.

This study aims to compare drivers' attitudes to electric cars in Norway and Italy and look for factors that are important to people when it comes to their willingness to replace the fossil car with a BEV. Norway is a country where electric cars are particularly widespread and the development of has gone very fast. In Italy, the development towards BEVs has been much slower in comparison.

The study focused on drivers' intention to adopt an EV (BEV) and then comparing the findings between Norway and Italy, which are two very different countries when it comes to BEV diffusion. On the one hand Norway is among the world leading countries in BEV diffusion and has been so for quite some time, while Italy is just getting started with electric vehicles and has a significantly lower market share of BEVs. Because the BEV is a new technology which will help in combating climate change and pollution brought on by conventional fossil-fueled vehicles, a comparison of driver's intention to adopt a BEV in Norway and Italy is an important subject to study. Understanding the differences between two countries with significantly different BEV diffusion will help understanding what can or can't be done to increase the rate of BEV diffusion. The results could be useful/utilized especially in the Italian context, or even other countries with low BEV adoption rates, where there is a greater potential to increase the BEV adoption. Identifying aspects which are important to driver's intention to acquire a BEV will allow for targeted policies or changes to address the driver's concerns regarding BEVs to increase their intention to acquire one.

This chapter will address discussion of findings made in the study and discuss the implications of the findings on electric car policy in Norway and Italy, as well as practical implications. The discussion will be structured according to the research questions and will be discussed as part of answering the overall problem statement. A brief summary of the results will be given before the research questions are discussed in the order in which they appear in

Chapter 1.1.1. Research question four: "*What are the differences between Norway and Italy in terms of factors influencing BEV purchase intention?"* will be discussed in connection with the three others. Then the answers/findings of these will be discussed against the electric car policy, practical conditions and their implications.

6.1 Short summary of the results

Based on the results, several significant differences emerge between the Norwegian and Italian participants. First of all, there are several significant differences in their respective demographics. A higher proportion of the Norwegian participants have permanent jobs and generally more of them are in higher paid jobs, than the Italians. This can be an important factor that separates the two countries' attitudes and adoption of electric cars. It emerged from the literature study that electric cars are generally more expensive than ordinary fossil-fueled cars, and that it is only because of the subsidies and the incentive scheme in Norway that electric cars are cheaper than fossil cars in Norway. With these large differences in EV policy in the two countries, it is cheaper to buy an electric car instead of an ICEV in Norway, but not in Italy. Furthermore, there are large differences in education and occupation among the participants. Almost half of the Italians are high school graduates. This could be because the proportion of students was higher in the Italian sample than in the Norwegian sample, which may explain why a larger proportion of Norwegians are employed and more are in higher paid jobs than the Italians.

In the comparison, the participants' attitudes towards electric cars were identified and compared between the Italian and the Norwegian samples. The results showed that there were significant differences in all but two attitude constructs, which were Economic and environmental attitudes and Affective attitudes. The Italian participants had more positive attitudes to Technical and Safety aspects of BEVs, and also reported stronger Moral norm than the Norwegians. In addition, the Italians reported a stronger Intention to buy an electric car than Norwegians. However, when comparing the participants' intention answers with their answers to questions about their intention to buy a small or large electric car, the Norwegians had a much stronger intention to buy both small and large electric cars, than the Italians. In line with TPB (Ajzen, 1991), both countries' samples attitudes constructs are strongly correlated with Intention. Thus, results in this study are supporting TPB, which argues that attitudes are important predictors of behavioral intention.

When the Intention was measured with “I plan to buy an electric car in the near future”, Italian respondents reported stronger Intention than their Norwegian counterparts. But, when the respondents were asked what type of car they would buy, more Norwegians than Italians answered that they would buy a BEV. A possible cause of this might be because “I plan to buy an electric car in the near future” is a too general statement. Whereas the other question which asked directly what type of car they would buy (small and large) is more specific. In essence, as the first question is relatively abstract, the respondents answered what they would like to do “in an ideal world” (more hypothetically). When the respondents were asked what type of car they would buy now, it ‘forced’ them to think more clearly, and therefore they answered more realistically. It is interesting that when Intention is measured by the direct question from the questionnaire, the Italian respondents answer more positively than their Norwegian counterparts. However, when measuring the respondent’s Intention by using the type of small/large car they would buy the Norwegians answered more positively towards BEV adoption than the Italian respondents, as shown in Table 5.3.

It should be mentioned that the samples could interpret “electric car” differently, for instance, Norwegians could interpret “electric car” as BEV while Italians could interpret it as EVs in general, including BEVs, HEVs, and PHEVs. For the purpose of this study, it is clarified that “electric car” means BEV. To avoid confusion the respondents were asked to think about BEVs in this context. Though, such varying results for Intention could be due to differing interpretations of the questions. The samples could also see themselves buying a BEV at some point in the future (more hypothetical), but not right now.

In the correlation analysis, the results showed that all measured constructs had different levels of correlation with Intention to get/use BEVs for both the Norwegian and the Italian participants, apart from Economic and environmental attitudes. In the t-test analysis, the results showed that Italians had more positive attitudes towards technical aspects than Norwegians, while the correlation analysis showed that Technical attitudes was the construct with the lowest level of correlation with the Italians' Intention to buy an electric car. By comparison, Norwegians had a higher level of correlation with the Intention to buy an electric car and with Technical attitudes. Since Norwegian respondents are much more familiar with BEVs, they could be more aware of the limitations of the technical aspects of BEVs, such as range, charging times etc.

6.2 Discussion and differences

As stated earlier, the discussion chapter is structured according to the research questions. In this subchapter, the various questions are explained, and the findings are discussed: Why the findings are as they are, comparison with findings from previous studies and implications of the findings. Question four: *"What are the differences between Norway and Italy in terms of factors influencing BEV purchase intention?"*, will be used for comparison throughout the discussion of the other research questions.

6.2.1 Attitude constructs

The first research question is *" What are the attitudes (ecological, economic, technical, safety, and affective) towards different aspects of BEVs?"*. Using this question, the participants' attitudes were mapped based on their answers in the survey. In the survey itself, there were several categories of questions. These constructs contained questions regarding economic, environment, technical aspects, etc. By combining the response results in the different categories, one got the attitudes. The averages of the participants' responses within the different categories were calculated so that one could clearly see how much they emphasized the different attitudes. According to TPB, the more positive the attitude to something is, the more likely it is to lead to positive behavior towards it. This means that, the more positive the attitudes are towards BEVs, the more likely the BEV adoption is to happen. The differences in Italian and Norwegian attitudes towards BEVs will lead to different behaviors, according to TPB.

The different attitudes that emerged from the survey were: economic, environmental, technical, security and emotional. These tell about their general attitude towards electric cars, as well as their attitudes towards electric cars within each attitude construct. These attitudes are in line with previous studies who are showing attitudes as an important predictor of BEV purchase intention (Haustein & Jensen, 2018; Heyvaert et al., 2015; Simsekoglu, 2018). Moreover, in TPB attitudes are established to be a predictor for behavior, depending on whether the attitudes are positive or negative.

Table 5.2 shows the mean attitude scores for both countries. There were significant differences between the two groups of participants, except for Economic and environmental and Affective attitudes. However, the Italians had somewhat more positive attitudes towards economic and environmental factors in electric cars, and the Norwegians had somewhat

higher affective attitudes towards electric cars. A probable reason for why the Norwegian respondents have more positive Affective attitudes could be that they have more experience with BEVs and have found BEVs to be ok. They don't have to worry so much about charging stations, and therefore can still drive longer distances. After a while they probably felt more comfortable with BEVs as they grew more accustomed to them and got more experience with BEVs. Thus, they report more positive Affective attitudes than the Italians, which is in line with previous studies (Heyvaert et al., 2015; Skippon et al., 2016; Wang et al., 2016) Similarly, lack of experience could be the reason why Italians have less positive Affective attitudes towards BEVs.

Economic and environmental attitudes were very similar between the Norwegian and Italian respondents, though the Italians had a somewhat more positive result. Considering that the attitudes towards both Economic and environmental aspects of BEVs have been combined, this is indicative of similar opinions on both aspects of BEVs. Since both countries' respondents have similar attitudes in this regard, the difference in wealth of the countries does not seem to be factor. Additionally, environmental conscientiousness seems to be similar in the two countries too. This could be because of the general knowledge concerning global warming and climate change, and the respondents' attitude towards BEVs in that context is largely the same. This seems to be in line with the previously done study by Heyvaert et al. (2015), who found that their respondents agree that BEVs are more environmentally friendly.

Technical attitudes were more positive among the Italian participants. This means that Italians are less critical to shorter range, charging time, etc., and other typical features of electric cars. A possible reason why Italians are more positive than Norwegians concerning technical aspects of electric cars may be that Italians have less experience with BEVs, and thus do not know in practice how it is with much more limited range, that charging the car must be planned, routes must be set up according to where there are charging options for longer journeys, etc. In short, this could indicate that the Italians have more positive attitudes towards technical aspects, because of their lack of experience. On the other hand, in Norway the proportion of BEVs is much higher, and people have positive and negative experience with electric cars, could be a reason for why their attitudes to the technical aspects of electric cars are lower. It may be that people have experienced range anxiety, experienced not being

able to drive longer distances due to shorter range, etc. As mentioned previously, in line with TPB which proposes that attitudes and subjective norm are strong predictors of intention.

Even though perceived behavioral control wasn't measured directly, it could be related to Technical attitudes. Because the infrastructure for BEVs is more developed, it is more common with BEVs, charging station frequency and availability etc., in Norway, people know that they relatively easily can manage to use BEVs. Since they reported a higher intention to buy a BEV (intention measured in Table 5.4), this could indicate that the Norwegians have a higher degree of perceived behavioral control. This possible find is corroborative of the studies done by Egbue and Long (2012) and Shalender and Yadav (2018) which found that higher levels of perceived behavioral control led to higher degrees of EV adoption (Burgess et al., 2013; Carley et al., 2013).

Another important element in this context is that electric car performance is closely linked to climate and temperature (Yuksel & Michalek, 2015). In Norway, where the winters are cold, BEVs perform far worse. It can also be a problem for Italians living in northern districts of the country, but for those living in central and southern Italy it will not be a particular problem. On the other hand, even though the Italians are more positive about the technical aspects of BEVs than Norwegians, there is still a higher percentage Norwegians who choose to buy a BEV.

A study by Scorrano et al. (2020) says financial aspects are not the most important factor for Norwegians when they buy an electric car, and that their results point to non-monetary factors as more influential. These non-monetary factors could be attitudes and norms, such as in this study.

6.2.2 Attitudes related to BEV purchase intention

Research question two addresses how participants' attitudes are related to their intention to buy an electric car: *"How are environmental and non-environmental (e.g., technical, safety, affective) attitudes related to the driver's intention to buy a BEV?"*.

When looking at how the different attitudes are related to drivers' intention to buy a BEV, the results of the correlation analysis are of particular interest. Even though the mean scores for the attitude constructs are high or low, the various constructs can be differently connected to Intention. Table 5.8 shows a summary of the correlations between Intention and the other

constructs. For Norwegians it seems that Affective attitudes are most strongly correlated with their intention to buy a BEV, while Subjective norm is most strongly correlated with the Italians' intention to buy a BEV. Possible reasons for this finding might be related with the cultural differences, and the level of BEV adoption in these two countries. The more collectivistic culture of Italy and the individualistic culture of Norway could be a reason for why Subjective norm is more strongly correlated with Intention among the Italian respondents, as they are more concerned with what others say and think (Hofstede, 2011). It seems that personal values, what others think, the environment and financial attitudes are more correlated with intention to buy a BEV among the Italians, which could indicate that the social aspects and symbolism, as well as financial situation is important to them. For Norwegians, what others do, personal values and how safe they consider BEVs, seems to be less correlated with Intention, while personal feelings towards BEVs, financial situation and what others think are more correlated with Intention. These differences in how the attitudes are related with drivers' intention to buy a BEV are likely a product of both different EV policies and cultural differences. It is also possible that the two countries participants have different understandings of what the point of BEVs are. For instance, it's more financially sound for Norwegians to buy a BEV, regardless of its emissions, and therefore 'the point' of BEVs are financially a good decision while also good for the environment. Whereas the Italians will have to pay more for a BEV than an ICEV, their interpretation of 'the point' of BEVs could lean more towards environmental conscientiousness and how they are perceived in society.

The correlation analysis in this study revealed that Economic and environmental attitudes were not the attitude construct with the strongest correlation with Intention in either country. This result is in line with the findings of Scorrano et al. (2020). As shown in the literature review chapter, the financial benefits of buying an electric car are higher in Norway than in Italy. This may be a factor which explains why Norwegians buy more BEVs yet have a lower attitude towards technical factors than Italians. The results found in the study done by Scorrano et al. (2020) imply that fossil-fueled cars are much more expensive in Norway than Italy, while the prices for BEVs are more comparable (with the current EV policies).

Moreover, the fuel price differences could play a large role in the differences in BEV diffusion. In the period from 31.01.2022 to 09.05.2022, the average price per liter gasoline was €2,11 in Norway and €1,87 in Italy (GlobalPetrolPrices, n.d). The fuel prices have increased all over Europe during the recent months. Additionally, electricity prices have risen

dramatically the last few months also (SSB, n.d-a). This could be a factor which slows BEV adoption, as the usage/practical savings one would normally see between BEVs and ICEVs, get smaller. However, with increased petrol and diesel prices which we have seen the last few months, the usage cost disparity between electric vehicles and conventional cars might go back to 'normal' as both types of cars get more expensive to use.

The correlation between Economic and environmental attitudes and Intention is very similar between the two countries, though slightly stronger for the Italians. This could be indicative of the Italians' intention of either being slightly more influenced by economic aspects of BEVs or the environmental aspects. As it is currently cheaper to buy a BEV in Norway than in Italy, this suggests that the Italians' intention is slightly more influenced by environmental factors of BEVs. This could be environmental conscientiousness in general, reducing air pollution from traffic etc.

6.2.3 Social norms related to the intention to buy a BEV

The third research question in the study tries to explain to what extent drivers ' intention to buy an electric car is influenced by friends or family and by their own moral principles and / or values: *"How are social norms (subjective norm, descriptive norm, moral norm) related to driver's intention to acquire a BEV?"*.

In the analysis, two different results emerged. The results from the scales (attitude constructs) and the results from the correlation analysis. The scales show the average value of the respondents' attitudes towards BEVs in the different categories, while the correlation analysis shows how the different attitudes correlate with the participants' intention to buy a BEV.

The attitude constructs concerning social norms for the Norwegian respondents were Descriptive norm, Subjective norm, then Moral norm (listed most to least positive). For the Italian they were Moral norm, Subjective norm, then Descriptive norm (most to least positive). A possible reason for Descriptive norm being less positive among the Italian respondents could be that there are way less BEVs in Italy, and therefore don't see many people buying and using BEVs. Thus, the Descriptive norm is less positive. The Norwegians have the most positive Descriptive norm, which is probably related to the larger number of BEVs being used in Norway, and that the respondents see BEVs being bought and used quite frequently.

To answer how the attitudes are related to Intention we look at the correlation analysis. Table 5.8 lists the degree of correlation between Intention and the other attitudes. As mentioned, the Subjective norm construct is most correlated with Intention for the Italians. Moral norm is the third most correlated construct with Intention, while Descriptive norm has the second to least correlation with Intention. These results suggest that the Italians' Intention is most influenced by what others think. This could indicate that symbolism and the status of being a BEV owner is important in Italy. However, Descriptive norm being the social norm with the lowest degree of correlation with intention indicates that the Italians don't 'put as much stock in' what others do when it comes to BEV Intention. Yet, the correlation is positive, which means that what others think about BEVs is important to their BEV intention. The find concerning the correlation between Subjective norm and Intention among the Italian participants means that as the social pressure to get a BEV increase, so do their intention. This is in line with the findings and conclusions of previous studies (Shalender & Sharma, 2021). Moreover, a possible reason for why the correlation between Intention and Subjective norm is lower among the Norwegian respondents might be that, as they already have experience or a strong interest in BEVs, the effect of subjective norm is diminished/non-existent. This was found by Peters and Dütschke (2014) in their study.

The fact that Moral norm is third most correlated construct with Intention for the Italian respondents suggests that Italians' personal values are influential factors to BEV adoption. Other studies found this too; people with high levels of personal moral norm are more likely to buy a BEV (Achtnicht, 2012; Jansson et al., 2017; Lane & Potter, 2007; Nordlund et al., 2016).

For the Norwegians Subjective norm is the third most correlated construct with Intention, while Moral norm and Descriptive norm are respectively second to least and least correlated with intention. As Subjective norm is among the constructs with a higher degree of correlation with Intention the results suggest the same as for the Italian respondents, though to a lesser degree. However, Moral norm is much less correlated with Intention for the Norwegian respondents. This result suggests that their personal values are not as influential on the Norwegians Intention, as they are for the Italians. As the correlation is positive, the findings of other studies which find that people with high personal moral norm are more likely to buy a BEV, still holds true for the Norwegian respondents in this study, though to a lesser extent.

Descriptive norm has the lowest degree of correlation with Intention for the Norwegians. The correlation is positive, so it is an influential factor on their intention, however since it's the lowest one, it is of less consequence than Affective attitudes' correlation (which is the highest). This suggests that what others do in regard to BEVs is a measurable influencer on Intention, though the least influential of the attitude constructs. The probable reason for Descriptive norm having the lowest degree of correlation with Intention is that the Norwegians see BEVs quite frequently. For the Italians Descriptive norm is also among the lowest correlations with Intention. Though, same as for the Norwegian's' intention, the correlation is positive, so it is of consequence, just less than Subjective norm. This suggests that what others do is of interest for the Italians and their intention, but less so than social pressure, economic situation and the environment. The fact that Descriptive norm's correlation with Intention is stronger among the Italians than the Norwegians suggests/indicates that the Descriptive norm's effect on Intention diminishes as BEV diffusion increases. That Descriptive norm is more influential on Intention to buy a BEV in the earlier stages of BEV diffusion, but as BEVs become more common, the Descriptive norm effect is reduced.

6.3 Implications of the study

The respondents in this study were not asked about EV policy directly, but the results will be discussed against EV policy. The fact that participants of both countries had similar mean scores for their Economic and environmental attitudes construct indicates that their views on financial aspects of BEVs and environmental conscientiousness are very similar. Additionally, the second highest correlation with Intention for both countries were Economic and environmental attitudes, suggesting that the monetary aspects of BEVs are among the most important factors when it comes to intention to adopt a BEV. This could indicate that both countries respondents are equally susceptible to EV policies, especially EV policies that ties into economical aspects (i.e., purchase grants, tax exemptions etc.). The implications of this attitude are that policy is an important factor to consider when it comes to BEV adoption intention. Additionally, it implies that Norway, with its broad range of incentive programs, does have an effective EV policy. This in turn implies that countries wishing to increase their BEV diffusion rates should adopt the Norwegian EV policy, or parts of it.

Previous studies have found that EV policy do have a measurable effect on BEV adoption (Fluchs & Kasperk, 2017; Sierzchula et al., 2014). Although, the efficacy of EV policy and its

effect on BEV diffusion can be inferred just by comparing two countries with a strong and a weak EV policy and their BEV market shares. Though, cultural and social aspects must also be considered.

As the attitudes of Italians and Norwegians are quite different, this may indicate that the attitudes towards electric cars that are found among the participants in Norway are more favorable for increasing BEV adoption. Particularly Technical attitudes were less positive among the Italian respondents, as well as their correlation between Technical attitudes and Intention. This could again be a result of their lack of experience and knowledge regarding BEVs, that they are insecure regarding BEVs. This might suggest that by informing people more about BEVs and increasing people's knowledge and familiarity regarding electric cars, one can improve their evaluations towards technical aspects, which in turn could increase BEV adoption. Additionally, by introducing more economic incentives one would increase the Economic attitude toward BEVs, and subsequently possibly BEV adoption. This would be in line with findings in previously done studies concerning EV policy and EV adoption (Brückmann et al., 2021; Fluchs & Kasperk, 2017; Sierzchula et al., 2014). Thus, by making policy to duplicate the attitudes found in Norway could lead to higher degrees of BEV adoption. The policy implications of this could be to try to make policy which would change people's attitudes toward BEVs. Whether this is practical, feasible, or at all possible, is hard to say, but still an interesting proposition. It could be an interesting topic for further research.

Figenbaum (2018) found that the largest consumer group of BEVs in Norway were households who acquired it as their second car. In this study, the majority of both Norwegian and Italian participants were in households with just one car. This suggests that most of the participants are in the largest consumer group for BEVs. An effective EV policy would be to somehow make it easier or more lucrative for this group to buy a BEV, as well as making policy which affects the other groups (households with 1,3,4 etc. cars). As mentioned in the literature review, the Norwegian government is phasing out and reducing several elements of the Norwegian EV policy. Whether this is because the goals of BEV sales have been reached (not likely as BEVs do not account for 100% of the new cars registered in Norway), or other reasons is hard to say. However, as most BEV consumers acquire an electric car as their second vehicle (for short range commutes etc.) (Figenbaum, 2018), new EV policies should attempt to incentivize replacing fossil-fueled cars even if it is the only car in the household.

The differences between the EV policies in Norway and Italy were summarized in the literature review, as well as the respective countries' BEV market shares. The policies were quite different in both financial and usage aspects. The EV policies and market shares elaborated there suggest that the Norwegian EV policy is more effective in increasing BEV diffusion. Several previous studies have found that EV policy is effective in increasing EV adoption, and especially in the early stages (Brückmann et al., 2021; Fluchs & Kasperk, 2017; Sierzchula et al., 2014). As such, countries in the early stages of BEV adoption and EV policy, such as Italy, should look to the Norwegian policy as a benchmark. Though, recently the Norwegian government has suggested significant reductions in the EV incentive program in the suggested state budget for next year.

There are a plethora of practical factors and conditions that can affect drivers' intention to both get and use an electric vehicle. Indirectly, availability and frequency of charging station, and prices (both for the BEV and charging them at home, as well as at charging stations) are factors that make it easier or more difficult for people to adapt a BEV. Generally, infrastructure to support BEVs as well as parking and charging conditions at the drivers' home. This ties in to perceived behavioral control from TPB, because if BEV adoption is perceived too difficult, people will tend to avoid it. BEVs range is limited, and households with just one car who needs longer range, might be less interested in BEVs. Geography plays a part here, as people who live remotely need longer range on their cars compared to people in living in urban areas, thus BEVs might not be feasible for them unless the necessary infrastructure is in place, and charging times are manageable. Moreover, the charging speeds for BEVs are a lot longer when compared to filling a tank of gas on an ICEV and could be an influencing factor for people considering getting a BEV.

As briefly mentioned earlier, people's financial situations directly tie into their decision making and intention to buy an electric car. In essence, the feasibility and practicality of getting an electric vehicle (TPB). In the recent months there have been increased fuel prices as a result of the conflict in Ukraine, which could be a practical condition that increases drivers' interest in BEVs. Similarly, the increased electricity prices of late could be a factor that reduces drivers' interest in BEVs. An interesting caveat regarding electricity prices is the wildly varying prices between northern and southern Norway. The increased electricity prices in the south can reduce people's interest in BEVs, while the still low prices in the north can increase people's interest. The usage costs of BEVs are normally lower than ICEVs. Not only

when thinking of fuel prices, but also maintenance. There are fewer moving parts in a BEV, thus less parts wear down over time.

As mentioned earlier, the cold climate in Norway and northern Italy also brings with it factors which could influence drivers' intention to buy a BEV, as BEVs have shorter range during winter.

6.4 Limitations

There aren't many studies making cross-country comparisons about BEV adoption. Such studies might be useful for finding out what factors are important for BEV adoption in different countries and contexts, what policies work successfully, and how they can be used in other contexts. Since Norway and Italy differ quite a bit in profiles and EV adoption, the findings are expected to be useful, i.e., can be utilized in the Italian context to increase EV adoption, as well as other countries. Despite this strong aspect, there are also some potential limitations of the study to mention.

Survey studies are based on asking people who are self-reporting (their behavior cannot be observed), they are asked what they think etc. In surveys it is not uncommon that people can give distorted or biased responses, or they can give what they believe are desired or expected answers. Thus, socially desirable answers could be one limitation of this study. Additionally, in this survey not all variables which could influence intention were focused. There might have been too few questions in the questionnaire regarding different subjects such as economic aspects, environmental aspects etc. Another possible weakness to the study is sampling bias in the survey. As it was voluntary, people who were already interested in BEVs might have been more inclined to answer the survey, thereby the survey results could be skewed in favor of BEVs, because the participants might have a positive predisposition to BEVs.

7.0 Conclusion

The goal of the study was to find out how Norway and Italy differ in terms of attitudes, social norms, and intentions related to BEV use and acquisition. The problem statement was "*How do Norway and Italy differ in terms of attitudes, social norms, and intentions related to the use and acquisition of BEVs?*". Economic and environmental attitudes, Technical attitudes, Safety attitudes, and Affective attitudes were identified as the main attitudinal aspects towards BEV use. In addition to attitudes, Moral norm, Subjective norm, Descriptive norm, and Intention related to BEVs were also measured

Results show that most of the attitude dimensions are significantly different between Norway and Italy. The Italians had significantly more positive Technical and Safety attitudes, Moral norm, and Intention than the Norwegians. Economic and environmental, and Affective attitudes were slightly different, but there wasn't a significant statistical difference between the two samples. The social norms are also significantly different between the two countries. The Norwegians had significantly more positive Subjective and Descriptive norm. When it comes to the respondents Intention to buy a BEV, correlation analysis show that the attitudes and norms relate differently to Intention among the respective samples, except for Economic and environmental attitudes. Results show that Affective attitudes are most strongly correlated with the Norwegians' Intention, whereas Subjective norm is most strongly correlated with the Italians' Intention. Economic and environmental attitudes were the second most strongly correlated with both samples' Intention.

Social pressures seem more prevalent to the Italians and their intention to buy a BEV, than to the Norwegians. Personal feelings and emotions seem to be a more important factor on the Norwegians intention. Possible reasons for the differences in attitudes, social norms, and their relation to Intention, were mentioned in the discussion chapter. The main reasons for the disparities are most likely cultural differences between Norway and Italy, knowledge and experience with BEVs, and EV policy. This is supported by previous studies which found that EV policy does have a measurable effect on BEV adoption: battery electric vehicle diffusion is higher when there are positive attitudes present, and positive experiences regarding BEVs result in more positive attitudes. To increase the BEV adoption rates in a country struggling with BEV diffusion, or in a country just having started, these highlighted differences between Norway and Italy should be addressed. By educating and increasing the knowledge of BEVs in a population the attitudes towards different aspects of BEVs are likely to be positively increased. Moreover, by introducing incentives designed to promote BEV adoption the

financial barrier is reduced (because the initial cost of BEVs tend to be higher than ICEVs). As postulated in the discussion, the effect descriptive norm has on the intention might be stronger initially because people see and experience more BEVs. After this period, the effect of descriptive norm is likely to be reduced (as seen in the results from Norway).

7.1 Further research

As mentioned earlier, the attitudes of Italians and Norwegians are quite different. This may indicate that the attitudes towards BEVs that are found among the Norwegian participants are more favorable for increasing BEV diffusion. A possible research angle for further studies could be to investigate how one would go about changing the attitudes in a population towards the BEV attitudes found in Norway, to increase BEV adoption rates. Whether this is practical, feasible, or at all possible, is hard to say, but still an interesting proposition and an interesting topic for further research.

Appendix

Attitude items for both countries with mean scores for the answers given on a Likert scale, as well as standard deviation, t-values and p-values.

	Norway (n=501)		Italy (n=643)			
Variables	**MEAN**	**SD**	**MEAN**	**SD**	**t-value**	**P-value**
"Ved å kjøre elbil sparer man penger på lang sikt."	3,76	1,064	3,72	1,032	0,592	0,277
«Det er ikke noen økonomisk gevinst ved å kjøre elbil fremfor tradisjonell bil.»	3,72	1,115	3,42	1,223	4,229	<0,001
«Elbiler har lavere vedlikeholdskostnader enn tradisjonelle biler.»	3,27	1,153	3,13	1,086	2,088	0,019
«Bruk av elbil er en mer miljøvennlig transportmåte enn bruk av tradisjonelle biler.»	3,75	1,226	4,01	1,162	-3,599	<0,001
«Bruk av elbiler reduserer luftforurensning fra biltrafikk.»	4,21	1,047	4,11	1,072	1,512	0,065
«Bruk av elbiler reduserer belastningen på naturressurser av biltrafikk.»	3,26	1,218	3,82	1,131	-8,160	<0,001

«Begrenset rekkevidde er en ulempe ved å kjøre en elektrisk bil.»	1,74	0,966	2,02	1,126	-4,538	<0,001
«Det finnes for få ladepunkter for elbiler.»	2,10	1,045	2,29	1,194	-2,794	0,003
«Lang ladetid gjør elbiler upraktiske.»	2,22	1,075	2,32	1,117	-1,546	0,061
«Elektriske biler har generelt dårligere ytelser enn tradisjonelle biler.»	3,36	1,160	3,17	1,262	2,522	0,006
«Jeg foretrekker å bruke en elbil med ny teknologi fremfor en tradisjonell bil»	3,28	1,366	3,31	1,174	-0,358	0,360
«Begrenset kapasitet til å transportere bagasje og varer er en ulempe med elbiler.»	2,65	1,195	2,79	1,182	-2,013	0,22
«Man sparer tid i trafikken ved å bruke elbil.»	2,96	1,127	2,66	1,151	4,424	<0,001
«Elbiler er tryggere å kjøre enn tradisjonelle biler.»	2,64	0,956	2,90	1,023	-4,318	<0,001
«Sannsynligheten for en brannulykke er lavere i en elbil sammenlignet med en tradisjonell bil.»	2,63	0,953	3,11	0,949	-8,377	<0,001

«Dersom en ulykke skulle inntreffe så er jeg tryggere i en tradisjonell bil enn i en elbil.»	2,99	1,017	3,22	1,073	-3,619	<0,001
«Jeg liker bedre å kjøre en elbil enn en tradisjonell bil.»	2,95	1,282	2,95	1,135	-0,067	0,473
«Det føles rart å kjøre i en elbil.»	3,62	1,217	3,51	1,250	1,385	0,083
«Begrenset rekkevidde gjør det ukomfortabelt å kjøre elbil.»	2,34	1,176	2,44	1,218	-1,394	0,082
«Jeg er bekymret når jeg kjører elbil på grunn av muligheten for å gå tom for strøm.»	2,55	1,231	2,28	1,183	3,704	<0,001
«Familie og venner vil støtte meg dersom jeg velger å kjøpe en elbil.»	3,82	1,111	3,37	1,076	6,882	<0,001
«Å eie en bil som ikke er miljøvennlig gir meg dårlig samvittighet.»	2,52	1,328	3,30	1,134	-10,353	<0,001
«Jeg føler meg moralsk forpliktet til å bruke miljøvennlige biler.»	2,80	1,332	3,46	1,189	-8,847	<0,001
«Jeg kjenner mange som bruker elbiler.»	3,89	1,145	2,46	1,284	19,645	<0,001

«Jeg planlegger å kjøpe en elbil i nær framtid.»	2,67	1,340	3,21	1,190	-7,289	<0,001

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