"Electric Vehicles Adoption Among Swedish Millennials: A Qualitative Analysis of Preferences, Innovation, Technology, Pricing, Performance, and Environmental Aspects"

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Abstract

This research endeavors to provide a comprehensive examination of the preferences exhibited by the millennial demographic with regard to electric vehicles (EVs) within the context of Sweden. The study encompasses a thorough analysis of various dimensions, including attitudes, innovation, technology, pricing, performance, and environmental considerations, all of which shape the decision-making process of millennials in adopting EVs. As electric vehicles emerge as a prominent solution for sustainable mobility, comprehending the preferences of millennials becomes pivotal for steering the trajectory of the automotive industry. Employing qualitative methods such as in-depth interviews and meticulous analysis, this study delves into the intricate web of factors that influence millennial consumers in their choice to embrace EVs.

The outcomes of this research divulge the intricate interplay between the attitudes of consumers and the evolving perception of electric vehicles. This exploration offers insight into factors such as perceived convenience, technological assimilation, and conscientiousness towards societal impact. Furthermore, the study unravels the layers of pricing perceptions, elucidating the role of economic considerations and long-term cost-effectiveness in the discernment of millennials' decision-making processes. Aligned with the environmentally cognizant ethos often attributed to millennials, this research undertakes a comprehensive investigation into the salience of environmental considerations in shaping their preferences for EVs. This not only encompasses the reduction of carbon emissions but also extends to encompass the broader sustainability ramifications associated with the adoption of electric vehicles. The insights garnered from this study contribute to a nuanced and thorough comprehension of the pivotal role millennials play in steering the transition towards EVs.

The findings of this research hold substantial implications for policymakers, manufacturers, and stakeholders in the automotive industry who are vested in aligning their offerings with the preferences of millennials. Acknowledging the profound impact of consumer attitudes, pricing dynamics, and environmental conscientiousness, this research underscores the indispensable requirement for a comprehensive approach in fostering the adoption of electric vehicles within the millennial demographic in Sweden.

Keywords
Electric vehicles, Innovation, Technology, Price, Performance, Environmental, Consumption intention.
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1. Introduction

The authors will provide a brief background on the subject in this chapter. This will be followed by a discussion of the problem, then the purpose of the study and the research question, followed by the delimitation and the framework of the study.

1.1 Background

In recent years, the market for electric vehicles has increased (Westin, Jansson and Nordlund, 2018). The Sweden’s government offers environmental bonuses to motivate the purchase of electric cars and advertising where the negative effects of carbon dioxide is portrayed in the media (IEA, 2019). This commitment has resulted in the young adult millennials feeling that fossil fuels are an outdated technology that does not belong in today's modern society (Sovacool et al., 2018). Today's society is more digitized than before and with the pandemic and an increased focus on the climate has longer journeys started to be questioned (Scanautomatic, 2021). Environmental awareness has made more people realize that you may not need a petrol car to cope with your everyday life and are looking for other smaller and more flexible means of transport that run on climate-friendly fuel (Sovacool et al., 2018). The increasing sales of electric cars and the fact that more companies are exhibiting rental electric cars on the streets are proof of the change we are facing (Egnér and Trosvik, 2018).

The passenger’s car, which is the most common means of transport, is characterized by diesel and petrol cars, which is not a sustainable alternative, neither for the environment nor the automotive industry (Engström, Algers and Beser Hugosson, 2019). Recently, our society has become more climate conscious and the environmental issue has become a major driving factor (Sovacool et al., 2018). The automotive industry is pressured by this and forced to develop and adapt (Egnér and Trosvik, 2018). With this, the introduction of electric cars and hybrid cars has become increasingly important in recent years (Egnér and Trosvik, 2018). The number of cars has increased over the years and today several households around Sweden have more than one car per household (Jakobsson et al., 2016). Despite the increase in cars in traffic, there is also a greater awareness of the climate today than before (Sovacool et al., 2018). There is knowledge that vehicles have a large environmental impact in the form of increased levels of carbon dioxide in the atmosphere when burning fossil fuels (Engström, Algers and Beser Hugosson, 2019).

The global automotive industry has undergone a remarkable transformation, veering towards sustainable transportation solutions. Among these solutions, electric vehicles (EVs) have emerged as a prominent and promising contender (Borén et al., 2017). This profound shift is in direct alignment with the growing recognition of pressing environmental concerns and the urgent need to curtail greenhouse gas emissions that contribute to climate change (Egnér and
Trosvik, 2018). As a response to these imperatives, researchers and manufacturers alike have shifted their focus towards understanding consumer preferences, particularly among the millennial generation – a cohort renowned for its profound environmental awareness and digital (Ordun, 2015). The millennial generation, spanning from early 1977 to 1994 constitutes a substantial segment of the population across numerous countries, including Sweden (Bilgihan, 2016). As these individuals come of age and enter the car-buying arena, their inclinations and choices carry profound implications for the trajectory of the entire automotive industry (Sovacool et al., 2018). Sweden, often lauded for its steadfast commitment to sustainability and renewable energy, provides an intriguing and compelling backdrop for scrutinizing millennial preferences when it comes to electric vehicles (IEA, 2019).

Existing research underscores the fact that consumer preferences for electric vehicles are intricately woven into a tapestry of attributes (Ordun, 2015). These attributes span a gamut ranging from performance qualities to technological innovations, and safety features (Sovacool et al., 2018). Notably, these facets intermingle with the millennial generation's aspirations for transportation options that are cutting-edge, technologically advanced, and imbued with an unmistakable eco-friendly ethos (Ordun, 2015). The works of Ordun, (2015) accentuate the criticality of comprehending how young adult millennials perceive the innovative features intrinsic to electric vehicles, and how these perceptions in turn shape their ultimate purchase decisions.

While young adult millennials really care about the environment, they also think a lot about money (Finneman et al., 2017). Electric cars have often been more expensive upfront compared to regular gasoline cars (Engström, Algers and Beser Hugosson, 2019). So, it's important to understand how young adults in Sweden balance the long-term savings from lower fuel and maintenance costs with a higher initial price. This is highlighted by Finneman et al., (2017), who explains that looking closely at how prices work alongside what millennials want can show us the decisions they make. Another big reason millennials like electric cars is because they're better for the environment. This idea of using cars that don't harm the planet is really important to them, according to Engström, Algers and Beser Hugosson, (2019). These studies help us see that millennials don't just care about themselves, they care about the Earth too. They want transportation that matches their eco-friendly beliefs and values, and this has been a growing trend over time.

1.2 Problem

The millennial generation's attitude towards green products has evolved in response to the deteriorating environment over the past few decades, prompting a heightened desire to adopt more environmentally friendly practices in their daily lives (Lu, Bock and Joseph, 2013). As noted by Lu, Bock and Joseph (2013), societal shifts have led millennials to become increasingly environmentally conscious, which is evident in their choices, including car purchases, as observed by Mobility Sweden (n,d). Electric vehicles (EVs) have gained
prominence as a perceived eco-friendly alternative to traditional cars, aligning with this generational shift. However, the extent of this alignment and its implications on millennials' perceptions and intentions remains multifaceted and relatively unexplored (Jaiswal et al., 2021).

While the market expansion of EVs suggests a growing acceptance, studies such as the national benchmark report on consumer views (Singer, 2016) and (Ju and Kim, 2022) emphasize the ongoing diversity in millennials' attitudes towards these vehicles. Moreover, this study uncovers a prevailing perception that EVs lack utility and usability, significantly affecting millennials' preferences. The recurring theme of poor user-friendliness stems from confusion surrounding charging infrastructure and travel range, overshadowing the acknowledged environmental benefits of EVs (Ju and Kim, 2022). While previous research, as demonstrated by Singh, Singh and Vaibhav, (2020), identifies car ownership costs, driving range, and charging times as pivotal factors influencing perceptions of EVs, a comprehensive exploration of millennials' experiences and attitudes in Sweden is notably absent.

With a background in the previously mentioned events, it turns out that people living in the world are facing a technical change in how to transport themselves with a passenger car in a sustainable way (Hoogma, 2005). Although it will not be forbidden to drive petrol and diesel cars, it will eventually become the case that most people drive electric cars (Westin, Jansson and Nordlund, 2018). There have been electric cars for a few years now, but as noted earlier, the trend has recently grown stronger among different age groups and above all in environmentally friendly cities where Sweden ends up on a successful reform course among other states in Europe (Isaksson and Pongolini, 2023). But electric cars are still a relatively new technology compared to diesel and petrol cars. For example, it takes considerably longer for an electric car to fully charge its battery than it takes to fill up the tank in a diesel car or a petrol car. The electric car's range is also usually shorter compared to diesel cars or petrol cars (Lowry and Larminie, 2012). Through its rule on new car sales, the government mainly supported the companies to develop and sell electric cars, and at the same time trying to convince consumers who are looking to buy a factory new car to choose an electric car (van Bree, Verbong and Kramer, 2010). Electric cars themselves already have a long buying process as they are considered high involvement products. When purchasing an electric car, there could be additional influential factors within the consumer's decision-making process (van Bree, Verbong and Kramer, 2010). This situation raises the question of whether the consumer should transition to a new technology with its associated implications or adhere to what they are already familiar with.

Previous research has found factors that have an impact on the consumer's decision. For example, Sobiech-Grabka, Stankowska, and Jerzak, (2022) found that the most important factor in purchasing an electric car was the purchase price. It also turned out that scope was an important factor that played a role in the decision. Tu and Yang, (2019) concluded that the opinions of other consumers have a large impact on the individual. They also found that if an
individual judges that the use of an electric car would be more favorable on either an individual, environmental, or national level, it also affects the consumer's attitude towards a possible purchase of an electric car in a positive way. One more thing that Tu and Yang, (2019) came up with was that if the consumer thinks it would be easier or smoother with an electric car, they also become more positively disposed to buying one. Something that turned out to have a negative impact on the consumer's attitude towards purchase was whether they felt that other people knew as much about electric cars as they did. Considering the time it would take to save money on an electric car in terms of fuel costs and sustainability, influenced the decision to choose an electric car. It turned out that the longer it takes to save the money, the smaller the percentage choosing the electric car and sustainability in the family's finances and in society (Egbue and Long, 2012).

Also in this study, range and performance was a factor of concern to respondents. The study also investigated what kind of signals are sent out by driving an electric car. According to the study, driving an electric car shows that you are better off than others and that you have an interest in new technology. Furthermore, various surveys have been carried out in Sweden's large cities, e.g. in Stockholm, Gothenburg, etc., where the authors looked at how people with different attitudes towards new technology thought about self-driving cars, car sharing, and electric cars.

Gasoline and diesel are one of the means of transport that contribute to the most negative effects on the environment, and although today's research works with innovative technical solutions that make electric cars more efficient and environmentally friendly, these measures are not sufficient (Jansson, Nordlund, and Westin, 2017). Eliasson, (n.d) mentioned that political measures that promote a reduction in gasoline and diesel car use are established in planning according to sustainability requirements. For example, the city of Stockholm introduced toll fees during different periods, and there are even certain areas where you are not allowed to enter the area if you drive a car with diesel fuel. Recently, more focus has been placed on using soft and sustainable political measures that try to influence motorists' (car buyers') individual values regarding sustainability and motivate them to use sustainable means of transport (Hiselius and Rosqvist, 2016). The Swedish innovation is visible that it also on internationally and globally within the EU and outside the EU level is working towards using measures that belong to different steps to promote sustainable car use and sustainable electric car consumption to reduce carbon dioxide, in an effort towards a more sustainable future by using sustainable reforms around consumption (Eliasson, n.d).
1.2.3 Research gap

The current understanding of how people perceive green products, especially electric vehicles (EVs), within the context of environmental concerns and changing societal values is incomplete. While there is a growing awareness of environmental issues and a trend towards "greener" lifestyles, the specific factors influencing individuals' attitudes towards EVs among the millennial generation in Sweden remain inadequately explored.

Existing research acknowledges that EVs are seen as environmentally friendly alternatives to traditional cars, yet there is a lack of consensus regarding their overall appeal and utility. This research gap highlights the need for a comprehensive exploration of millennials' perceptions of EVs in Sweden. Specifically, there is a scarcity of qualitative studies that systematically investigate how certain attributes of EVs, such as cost, convenience, and perceived innovation, influence millennials' intentions to purchase.

This deficiency serves as the foundation for the present study, which aims to fill this void by examining how millennials view EVs as innovative products, their willingness to buy such vehicles, and the specific attributes that shape their attitudes and intentions. By addressing this research gap, this study seeks to provide a more holistic understanding of the multifaceted dynamics underlying millennial preferences for electric vehicles in Sweden.

1.3 Research question

Following a review of the existing literature and the identification of a research gap, the following research question was developed:

- How do the young adult millennials' perceptions of price, performance, Innovation and technology and environmental factors influence their desire to adopt electric vehicles in Sweden?

1.4 Purpose

The purpose of this study is to investigate how the perceptions of young adult millennials in Sweden regarding price, performance, Innovation and technology, and environmental factors influence their desire to adopt electric vehicles. By examining these key factors, this research aims to provide insights into the motivations and barriers that shape millennials' intentions to transition to electric vehicles. Through this exploration, the study intends to contribute to a deeper understanding of the factors driving the adoption of electric vehicles among this specific demographic in Sweden.
1.5 Delimitations

This study is delimited by several factors: Firstly, the research will primarily focus on the young adult millennials generation in Sweden. It will explore how young adult millennials in Sweden perceive and intend to adopt electric vehicles. The study will specifically target young adult millennials, between 29 - 37 residing in Sweden. The research will not extend its focus to other generations or countries.

Secondly: The research will examine the attitudes, perceptions, and intentions of young adult millennials toward electric vehicles. It will delve into factors such as Innovation, Technology, price, performance, and environmental considerations. However, it may not extensively explore other potential factors that could influence EV adoption, such as government policies.

2. Literature review

The literature review section of this thesis will present and further illustrate the relevant theories of the various aspects examined within the topic domain. This will include concepts and theories related to the main areas which are the focus of the study. These are namely: Generation Y, Innovation and technology acceptances, Price attributes, Environmental aspects, Performance attributes, and consumption intentions. all of which will be presented to give the reader a full and clear understanding of the information necessary to better understand the topic of this study.

2.1 Generation Y

Generation Y, also known as Millennials, comprises individuals referred to as the Why Generation and Next Generation. They were born from 1977 to 1994 and grew up in a world dominated by technology, the Internet, Google, and cell phones. Technology notably influenced their development, resulting in their adeptness with digital tools (Bilgihan, 2016). Millennials are characterized by independence, emotional expressiveness, a present-oriented outlook, and a carefree approach to spending money (Eisner, 2005; Novak et al., 2006, as cited in Williams et al., 2010). They tend to allocate more of their budget towards clothing and frequently make purchase decisions influenced by their peer groups. Regarding consumption behavior, they display materialistic tendencies and typically don't prioritize eco-friendliness or waste reduction when selecting brands (Loroz, 2006).

2.2 Innovation and technology acceptance

Despite the evident advantages of innovation and ongoing development, there is no assurance that society will readily adjust to or embrace them. The process of acclimating to novel innovations is often intricate and time-consuming. This progression, referred to as innovation maturation, can extend over years before gaining acceptance within society. This is precisely where the question of expediting adaptation to innovation comes into focus. The theory of the
The diffusion of innovation delineates the manner in which information regarding new inventions is disseminated to society through diverse communication channels (Rogers, 2003). According to Jansson, Nordlund, and Westin, (2017), the Diffusion of Innovation theory stands as one of the most widely embraced frameworks that has endeavored to explore the myriad factors influencing individuals' willingness to embrace new innovations or technologies in their lives. It can serve as a comprehensive tool for scrutinizing the success of eco-innovation from the consumer's perspective. Gaining insight into the reasons behind diverse marketing strategies yielding distinct eco-innovation outcomes would be advantageous. Díaz-Garcia, González-Moreno and Sáez-Martínez, (2015) defines eco-innovation as a form of innovation that boasts a diminished environmental impact compared to conventional or established technologies. This implies that across all business domains, a product or technology could be classified as eco-innovation if its environmental impact is lower than that of the prevailing design. Eco-innovation, like any other product, is subject to market competition in the same way that all other commodities are. Nonetheless, many governments implement various policies to enable eco-innovation businesses to compete in the traditional market sphere (Díaz-Garcia, González-Moreno and Sáez-Martínez, 2015). This notion implies that electric vehicles can be classified as environmental innovations owing to the advantages they bestow in terms of a more environmentally friendly impact (Jansson, Nordlund, and Westin, 2017). Rogers (2003) discerns four pivotal components: innovations, communication channels, time, and the social system. These four segments revolve around the progression of the diffusion of new technology. Because perception remains subjective, innovation is defined as the emergence of a concept that appears novel in the eyes of an individual. As outlined by Rogers (2003), technological innovation can instill uncertainty within the minds of prospective millennials regarding its potential impact while simultaneously signaling the prospect of mitigating uncertainty concerning the technological information base.

According to Frederiks, Stenner, and Hobman (2015), numerous factors exert influence over the acceptance of diverse innovations. Factors such as cost, yield, efficiency, time savings, savings in discomfort, perceived benefit, and technical infrastructure all warrant consideration. Additionally, MacVaugh and Schiavone (2010) contend that external factors hold sway over the adoption of novel technology due to their intimate correlation with the attributes of the existing technology slated for replacement by the new invention. Time savings are directly linked to economic effects, whereas discomfort savings share a conceptual similarity with time savings but do not impact economic aspects. Rogers (2003) elucidated the communication channel as the conduit through which information about new innovations is exchanged among individuals, facilitating a shared understanding. Consequently, the communication channel serves as the medium for disseminating information between those who have experienced the new innovation and those who have not. Over the years, diverse communication methods have been employed to reach new and potential users. Some of these methods encompass media channels, newsletters, television, and the Internet. These platforms enable the swift transmission of information about novel
innovations to a substantial number of potential followers (Mašloch, 2022). Within the Diffusion of Innovation process, time stands out as a notably crucial facet, and its significance in the Diffusion of Innovation process has been underscored by the author. According to Rogers (2003), there are three pivotal stages where time assumes an important dimension. These three stages are the innovation-decision process, innovation capability and implementation, and categories and acceptance rate.

As expounded by Li et al., (2021), innovators are the first participants in the adoption process. The course of the adoption process concludes with the laggards, who embrace innovations belatedly after the majority have already done so. Li et al., (2021) emphasize that, similar to innovators, early adopters also possess a significant degree of opinion leadership, a factor crucial for disseminating an idea to wider market segments. The subsequent cohort of adopters comprises the early majority. Rogers (2003) underscores the significance of the early majority in the diffusion process in his work and underscores their distinctive role among the followers, acting as a bridge between the earliest and relatively later adopters. This concurs with the Diffusion of Innovation model, where the diffusion of innovations commences. Subsequently, the early majority, constituting the next segment of the distribution process, adapts to a new innovation ahead of the majority. Rogers (2003) cogently explains this behavior, noting that "most people require some time before they fully accept a new idea. Embracing novel concepts also entails the early majority investing time in decision-making. This decision-making process surpasses that of innovators and early adopters in terms of duration. After the early majority's acceptance of the new idea, the late majority and laggards followed suit. These two groups of followers are the last to adopt the new innovation, and unlike their predecessors, the late majority and laggards necessitate considerable time to adapt to the innovation. As expounded by Rogers (2003), the late majority group often holds a skeptical stance toward innovation. This group lags so far behind in adopting innovations that, by the time they do so, innovators have already embraced subsequent innovations.

Throughout history, technological advancements have consistently encountered resistance from consumers (Ram and Sheth, 1989). Researchers have sought to comprehend the factors influencing consumers factors like adoption, acceptance, and continued usage of technology. Among the most widely utilized theories to examine these diverse factors is the Technology Acceptance Model, originally formulated by Fred Davis (Marangunić and Granić, 2014). Marangunić and Granić, (2014) elucidates that TAM was designed to provide a comprehensive framework for the notion of computer acceptance, offering a general explanation for user behavior across a broad spectrum of computer technologies. According to (Wang et al., 2022), TAM was formulated to explore how a consumer's perception of a new innovation or technology influences their intention to use it, despite the temporal and cognitive efforts required to adopt new technology. Davis, (1989) introduces two variables that prior research has identified as pivotal in elucidating technology usage. The first variable is perceived usefulness, which suggests that individuals determine their usage of an application based on its potential to enhance their outcomes. The second variable is perceived
ease of use, indicating that a consumer might eschew adopting a product if it lacks utility or appears difficult to use; such impressions could lead to negative reactions. Additionally, contends that these variables are interconnected and exert mutual influence on each other. Also, the external variables unknown to researchers can also influence these variables' dynamics.

2.3 Price attributes

The significance of price-related factors in the decision-making process of consumers contemplating the purchase of electric vehicles (EVs) is well-established in the literature. Hidrue et al., (2011) and Higueras-Castillo et al., (2020) emphasize this point. Within the realm of these price attributes, encompassing the car's price, electricity costs, fuel expenses, service charges, potential installation expenses for home charging stations, and vehicle taxes, lies a critical dimension Higueras-Castillo et al., (2020). According to Hidrue et al., (2011) demonstrate that individuals who anticipate a future escalation in fuel prices are more inclined to opt for electric cars. Additionally, establishes a connection between escalating fuel prices and the burgeoning sales of EVs. This correlation underscores consumers' recognition of the cost efficiency associated with electric driving, as it offers substantial savings by substituting petrol or diesel expenses with electricity charges.

Delving deeper into price attributes, the cost of fuel stands as another pivotal aspect influencing consumer attitudes toward EVs. Higueras-Castillo et al., (2020) assert that one of the primary motivations for adopting EVs is the cost savings in fuel compared to conventional gasoline vehicles. This aligns with (Egnér and Trosvik, 2018) findings, where they ascertain that EVs could present a lower total ownership cost compared to traditional combustion engine vehicles in Sweden. Similarly, the price of electricity, akin to fuel costs, constitutes a paramount consideration in the EV purchasing decision. (Xue et al., 2021) highlight the combined influence of electricity and fuel prices on a substantial portion of EV operating expenditures, subsequently impacting adoption rates. Contrarily, (Zhuge et al., 2020) suggest that while the present-day impact of electricity and fuel prices on EV adoption might be marginal, their sway could amplify in the future. In this dynamic landscape, the interplay of these price-related components assumes a noteworthy role in shaping consumer preferences towards electric vehicles.

2.4 Performance attributes

The escalating global environmental concerns have prompted numerous automobile manufacturers to introduce alternative options to the conventional internal combustion engine vehicle (ICEV) (Jeong et al., 2016). Electric motors and battery-powered electric vehicles (EVs) constitute crucial elements that contribute to reducing environmental impact, as they operate solely on electric power instead of relying on fossil fuels. These batteries exhibit varying sizes, which significantly impact how closely an EV's performance aligns with that of traditional vehicles (Haddadian, Khodayar and Shahidehpour, 2015).
A study conducted by (Haustein, Jensen and Cherchi, 2021) underscores the pivotal role of driving range in influencing consumers' decisions regarding the adoption of EVs. Additionally, (Chen et al., 2020) asserts that charging time is also a significant determinant. The concern regarding EV driving range is intricately tied to the global distribution of charging infrastructure. This apprehension is particularly notable due to the stark disparity between the abundance of fuel stations for ICEVs and the deficiency of charging stations for EVs. Furthermore, it's noted that potential EV adopters might not yet fully grasp the ease and convenience of the recharging process. Despite the feasibility of recharging at home or work, a lack of trust in charging infrastructure remains, particularly among those lacking access to personal charging points (Haustein, Jensen and Cherchi, 2021).

According to Vassileva and Campillo, (2017), highlights the lack of charging stations in Swedish parking lots compared with fossil fuel stations. Similarly, M Sverige (2021) presents analogous findings, with only seven of Sweden's counties meeting the recommended number of charging stations, while the rest fall significantly short according to EU guidelines. According to data from the Swedish electric power industry interest group PowerCurl, the number of charging stations in Sweden is progressively increasing. As of the end of 2021, there are reportedly 13000 charging stations (M Sverige, 2021). A more detailed breakdown of charging station numbers by county in Sweden is provided by M Sverige, illustrating the necessity for charging infrastructure development to accommodate the growing number of EVs requiring charging (M Sverige, 2021). However, this situation poses a challenge, as charging an EV takes considerably more time compared to fueling a traditional car. Statistics reveal that the average time Norwegian individuals spend at charging stations is approximately 21.9 minutes (Gnann et al., 2018).

(Chen et al., 2020) explains that presently, the driving range of a fully charged EV falls short of that of a fully fueled ICEV and entails lengthier charging times. Nevertheless, there is an ongoing improvement in battery technology, with the development of larger and more efficient batteries. Further contends that even though EVs might not match the range of traditional vehicles, consumers and prospective adopters could overlook this limitation if the charging infrastructure advances.

2.5 Environmental Aspects

Millennials have different ways of living and thinking compared to older generations (Colli, 2020). This affects industries catering to them. Unlike before, millennials own fewer cars and drive less. There are reasons for this change: they delay major life events like getting a job, getting married, or having kids (Munim and Noor, 2020). Many young adults live in cities where they don't need cars (Ju and Kim, 2022). Also, economic factors play a role, like high unemployment rates, low pay, and higher fuel costs (Ekins, 1999). Millennials care about the environment and like eco-friendly stuff. They have a positive view of products that are good for the environment, including cars that run on different energy. This makes experts think
millennials could be a big market for electric cars Engström, Algers and Beser Hugosson, (2019).

Electric vehicles fall within the realm of advanced automotive technology aimed at reducing global petroleum consumption (Singer, 2016). By eliminating combustion engines, electric vehicles circumvent the need for petroleum, resulting in emissions-free operation. Nonetheless, while EVs are deemed eco-friendly transportation alternatives, their reliance on electricity introduces a range of sourcing possibilities. As of 2021, the Swedish Energy Agency reported a total electricity production of roughly 166 TWh, with consumption reaching around 140 TWh, signifying a 4% increase in both aspects from 2020. Notably, renewable energy accounted for nearly 68% of the total power output, as highlighted by (energi myndigheten, 2021).

An often-cited concern regarding EV sustainability pertains to the production of the vehicles and their batteries, which involve materials distinct from those required for conventional cars. In a report by Delucchi et al., (2014) from the Union of Concerned Scientists, it's emphasized that electric cars utilize batteries, rather than traditional fuel tanks, with larger batteries offering extended range. However, these batteries carry a considerable environmental footprint due to the materials essential for their production. The report points to Rare Earth Elements (REE) such as lithium, nickel, cobalt, and graphite, all obtained through mining activities with inherent pollution implications (Delucchi et al., 2014).

Critics of electric vehicle sustainability also argue that their environmental impact isn't entirely favorable, given that the electricity used to charge them might originate from unsustainable sources like coal and oil. Notably, Sweden's renewable energy share stands at approximately 68%, indicating a substantial proportion of sustainable energy for electric vehicle use (energi myndigheten, 2021). Comparing renewable energy percentages in Sweden and Poland, it becomes evident that driving and charging electric cars is significantly more sustainable in Sweden, predominantly due to the larger share of energy from renewable sources. However, even in Poland, where the difference is more pronounced, driving an electric car remains more environmentally viable compared to gasoline or diesel alternatives. This underscores the enhanced sustainability of electric vehicles when used, as well as Sweden's favorable position for EV adoption (Energy Sector, 2022).

2.6 Consumption Intention
Consumption intention is a broad topic with numerous research points, but the theory of planned behavior is the most well-known. Ajzen, (1991) describes the theory as an extension of the earlier theory of reasoned action in his article on it. Ajzen, (1991) Theory of Planned Behavior is a useful theory for studying consumer behavior. It is a theory composed of various aspects that all contribute to the understanding of a specific behavior. The traditional meaning of purchasing something is used in the context of this essay. The theory's overarching goal is to comprehend what influences a consumer's purchase decision and,
ultimately, why the consumer made the purchase. This knowledge can then be used to analyze patterns among many consumers and draw conclusions that can later be used in business. Ajzen, (1991) explains that an individual's positive or negative assessment of completing an activity is represented by their attitude, which is presented as the first variable in the theory. It is further explained that any given behavior or activity is immediately considered, to a certain extent, either negative or positive. However, the variable subjective norm reflects any potential social pressure towards a certain behavior that an individual may experience and becomes apparent when doing something because others think you should do it (Ajzen, 1991). Perceived behavioral control presents the control beliefs: it is the apparent availability or lack of necessary resources and opportunities and means that an individual is looking for various resources and opportunities, which allows them to influence the decision about behavior.

Environmental knowledge has been shown in studies to have a direct effect on attitudes toward green products, which in turn has been shown to have a direct effect on green purchase intentions. This means that the more a consumer knows about environmental problems and potential solutions, the more aware they become of the products they buy and their potential environmental impact. Furthermore, this will increase the desire to buy green products (Barbarossa, C. et al. 2015). In line with this, the authors state that the findings show that environmental knowledge has a significant impact on attitude. These findings are consistent with previous research (Smith 2010). When individuals require knowledge, skills, opportunities, or other resources to complete an activity, they perceive barriers and obstacles based on the availability of these resources. In these cases, the theory of planned behavior, which factors in the ease or difficulty of engaging in the activity, becomes pertinent (Smith 2010). When predicting the adoption of electric vehicles (EVs), it is imperative to consider planned behavior control. This consideration encompasses not only intrinsic resources like individual capabilities and self-efficacy but also extrinsic resources such as opportunities and information. Moreover, it encapsulates the impact of social influence, a factor commonly associated with the diffusion of innovation theory (Barbarossa, C. et al. 2015).

2.7 Conceptual Framework
A meticulously detailed literature review provided a comprehensive analysis of the complex relationships between various factors influencing consumers' perceptions and intentions regarding the adoption of electric vehicles (EVs). These factors include views on Innovation, technology, pricing, performance, environmental concerns and consumption intention. Furthermore, the study makes use of the Innovation and Technology Acceptance Model, which analyzes factors that influence consumers' adoption and use of technology. TAM
evaluates perceived usefulness and perceived usability as key factors influencing consumers' propensity to embrace new innovations, including electric vehicles (Silva, 2020).

Environmental considerations also play a crucial role in the adoption of electric vehicles. The environmental impacts of electric vehicles are complex, including their operational benefits and the sustainability of their production processes. The study explores how electric cars can be classified as environmental innovations because of their potential to reduce environmental impact compared to conventional cars. However, concerns about battery production and electricity sources raise questions about the overall environmental impact of electric vehicles (Munim and Noor, 2020).

Price and performance attributes are critical in influencing consumer decisions. The study highlights the role of factors such as vehicle price, electricity costs, service fees, and charging structure in shaping consumer opinions on electric vehicle adoption. The travel range and charging time of electric vehicles are being explored as critical performance attributes that influence consumer perceptions (Hidrue et al., 2011). In the context of intention to depend, the theory of consumer intention is explored. This theory discusses consumers' opinions, personal norms, and perceived behavioral control as factors that shape their intentions and actions. Environmental knowledge emerges as an important factor, as it directly influences attitudes towards ecological products and thus influences ecological purchasing intentions (Xue et al., 2021).

Overall, this chapter bridges theory and empirical findings, providing a robust foundation for understanding the young adult millennials' perceptions and intentions in EV adoption. The interwoven factors offer a navigational guide for comprehending the intricate decision-making dynamics behind sustainable transportation choices.

To make it easier to understand how these factors are connected to each other, the authors made a conceptual framework that explains the factors of its functionality in Figure 1.
3. Method

The methodological aspects of this research paper will be presented in this chapter. The research approach and strategies used for this study, as well as the research design, type of data, sampling, data analysis method, and research quality will be thoroughly explained. Ethical considerations will also be presented.

3.1 Research approach

(Bell, Bryman and Harley, 2022) highlight three primary research approaches that researchers can choose from: inductive, deductive, and abductive research, each of which elucidates the interplay between theory and research.

Inductive research involves the collection and analysis of data and observations from previous empirical studies to formulate novel outcomes and hypotheses, grounded in previously tested suppositions (Saunders, Lewis, and Thornhill, 2019).

Deductive research, the most commonly employed approach, commences with an established theory and subsequently employs data or empirical findings to examine and validate or refute said theory or hypotheses (Bell, Bryman and Harley, 2022). This method is prevalent in quantitative research, differing from the inductive approach (ibid).

The abductive approach amalgamates deductive and inductive techniques, leveraging logical reasoning to draw conclusions and construct fresh hypotheses. This method enables the creation of new findings for subsequent scrutiny (Bell, Bryman and Harley, 2022). According to Saunders, Lewis, and Thornhill, (2019), abductive reasoning commences with the identification of a "surprising fact," aiding in the generation of new insights and the discovery of emerging research phenomena or the reinforcement of existing theories (ibid).

This thesis aims to enhance our understanding of the factors influencing the adoption of electric vehicles among a specific demographic in Sweden. Previous studies have extensively explored areas like Gen Y, innovation, electric vehicles, environmental concerns, performance, and pricing. These studies offer valuable data and relevant theories that can be employed by the authors to formulate and assess the interviews. The theories and concepts reviewed in the literature provide a framework for testing these interviews. Given the availability of substantial theory and data, a deductive approach is chosen for this research. Since the focus is more on testing existing theories rather than constructing new ones, a deductive approach is considered appropriate for this study (Saunders, Lewis, and Thornhill, 2019).
3.1.1 Research strategy

According to Aspers and Corte (2019), (Bell, Bryman and Harley, 2022), and Saunders, Lewis, and Thornhill, (2019), there are two main types of research methods: quantitative and qualitative research. Qualitative research involves different ways of collecting information like case studies, personal experiences, interviews, observations, discussions, documentaries, and visual materials. Qualitative methods help us understand personal experiences and behaviors better, and they're good for studying complex questions. On the other hand, quantitative research, as mentioned by (Bell, Bryman and Harley, 2022) and (Saunders, Lewis, and Thornhill, 2019), deals with numbers and calculations in research. It includes things like surveys, measurements, and other numerical data. The researchers also tell us that sometimes we can use both qualitative and quantitative methods together in what's called mixed methods.

Since the chosen approach is abductive and the research purpose is to explore the factors that influences young adults' intentions to adopt electric vehicles. A qualitative method was chosen because of the limited knowledge and theories about the young adult millennials' perceptions of price, performance, and environmental factors and how it influences their intentions to adopt electric vehicles. Qualitative research will assist in gaining several possible understandings and answers regarding the research question. (Bell, Bryman and Harley, 2022), confirm that using a qualitative method provides flexible results and gains several understanding.

3.1.2 Research design

To comprehensively understand the factors underlying the transition from conventional combustion engine cars to electric cars in Sweden, a qualitative research approach is adopted. The study aims to delve deeply into these factors, building on insights gathered from existing literature to establish a comprehensive foundation. To achieve this, a qualitative exploration will be conducted with young adult millennials from the Swedish population, seeking to uncover the nuanced influences stemming from this shift.

Qualitative research seeks to capture the richness of human experiences and narratives. As Bell, Bryman and Harley, (2022) highlights, this aligns with the study's objective of gaining an in-depth understanding of young adult millennials' perspectives regarding electric vehicles. In line with the qualitative approach, the study employed focus group interviews with young adult millennials individuals in Sweden who either own cars or have the potential to become car owners. The optimal research design chosen for this study is a focus group investigation, specifically involving three separate focus groups. Each group will comprise 6-10 participants within the age range of 29 to 37 years.

The requirements for the participation are to be both car owners and people who have potential to have a car. The researchers will let people know about their study using social
media apps. Those who are interested will answer around 11 questions about different aspects of the research. The discussions will happen in a group video call on Zoom, and the information from these discussions will be shown in the research findings. Before the interviews start, the researchers will explain to the participants what their rights are. At the end of the study, participants can choose if they want a copy of the final study.

The researchers will also talk about the ethical and sustainability considerations of the focus group participants. This type of study is part of qualitative research. It involves talking to a group of people at the same time. Everyone in the group gets asked the same questions, and they all have a chance to give their answers. The researchers will interview at least 4 people together. This helps the researchers learn more about a specific topic (Flick, 2015; Saunders, Lewis, and Thornhill, 2019; Bell, Bryman and Harley, 2022).

3.1.3 Data sources

To investigate the research question, the researchers can opt to gather both primary data and secondary sources, as outlined by Saunders, Lewis, and Thornhill, (2019). Primary data refers to information collected directly by the researchers themselves through methods such as surveys, interviews, and focus groups. Conversely, secondary sources encompass data that has previously been collected and analyzed by other individuals (Bell, Bryman and Harley, 2022).

In this study, a combination of primary and secondary sources will be employed. Regarding primary data, a focus group will be convened to directly gather new insights from participants who possess relevant experience or knowledge pertaining to the research topic. The focus group will yield specific and valuable perspectives, contributing to the analysis and outcomes of the research.

Additionally, peer-reviewed articles will serve as secondary sources, offering pre-existing information that has been curated by other researchers. As Saunders, Lewis, and Thornhill, (2019) underscore, secondary sources constitute a valuable reservoir of knowledge for addressing research inquiries and accomplishing study objectives.

3.1.4 Sampling and population

In this qualitative study, the researchers have chosen to employ a non-probability sampling approach. The rationale behind this decision is to deliberately select participants from young adult millennials groups in Sweden who either own cars or have the potential to become car owners. Unlike random selection from the broader population, the researchers exercised their own judgment to handpick participants. This deliberate approach was favored to circumvent randomness in the participant selection process.
Hence, this study will employ purposive sampling. Purposive sampling involves selecting participants based on particular characteristics or criteria that are pertinent to the research question (Bell, Bryman and Harley, 2022).

The population is the young adults millennial group in the age between 29-37 years old. It should be noted that the results obtained from purposive sampling may not be generalizable to the larger population of EV users or those who have the option to buy one. However, the selected participants can provide insights into buying behavior that is relevant to the research question.

3.2 Data analysis method

In this section, the authors will discuss thematic analysis, the research's quality, “reliability, and validity”.

3.2.1 Thematic analysis

Thematic analysis is a way to carefully look at information we collect, like from talking to people in interviews or groups. It helps us find repeated patterns, main ideas, and important points in the information the authors have (Bell, Bryman and Harley, 2022). For the research, the authors used thematic analysis to carefully study what people in the focus group said. The researchers wanted to find out the main ideas and patterns in their thoughts about what affects their decision to buy electric cars, even though there are many things to consider.

The process had different steps. We started by getting really familiar with what people said by listening to their recordings and reading what they said in our group discussions. Then, the authors made short codes that captured the main points from the information and the research questions. These codes were made even better by adding more details to show different important themes.

After this, The authors grouped the codes together to make bigger themes. These themes had common things that kept showing up in what people said. The themes have been checked and improved to make sure they really showed what the information was all about.

In the end, The authors looked closely at these themes to get better ideas about factors such as the price, performance, how eco-friendly it is, and what attracts the young adult millennials when they consider buying an electric car. These themes come together to influence whether the young adult millennials want to get an electric car. The authors observed that young adult millennials appreciate genuine and sincere interactions, which increases their likelihood of participation. These themes helped answer the research questions and achieve the main goals of this study.
Finally, the identified themes were analyzed to draw conclusions about the factors that influence them to buy an e-car. The themes that emerged from the analysis included a great turnout and agreement from the perspective of environment and technology, but certainly, there was some contradiction regarding the high prices. Furthermore, the significance of authenticity and sincere interaction in driving engagement were also emphasized. These underlying concepts were leveraged to address the research inquiries and fulfill the study's goals.

3.2.2 Quality of research
According to (Bell, Bryman and Harley, 2022) the assessment of validity and reliability constitutes pivotal criteria for appraising the quality of business-oriented research endeavors. Hence, it is incumbent upon the authors to expound upon the forthcoming section's discourse pertaining to the reliability and veracity of the conducted research.

3.2.3 Reliability
In qualitative research, making sure the findings are dependable is important because it helps show that the research is trustworthy (Saunders, Lewis, and Thornhill, 2019). Since this study aims to understand what factors influence young adult millennials when they buy electric cars, it's really important that the people in the focus group give information that stays the same and can be trusted.

To make sure the findings are dependable, the authors will use a list of planned interview questions that are the same for everyone. They will also have different focus groups with different people to make sure the results are similar no matter who's in the group. To make the focus group study more dependable, the authors will connect the focus group questions with a theory and make sure the questions match the main idea of the study.

3.2.4 Validity
Flick, (2015) emphasizes that validity stands as a paramount research criterion in multiple dimensions. The integrity of conclusions derived from a research endeavor is encapsulated by the term validity (Flick, 2015). (Bell, Bryman and Harley, 2022) elaborate that validity is a multifaceted concept, taking on distinct interpretations depending on contextual nuances. Nonetheless, it remains a focal consideration during the research process. Validity encompasses various facets, including measurement validity, face validity, concurrent validity, predictive validity, construct validity, and convergent validity (Bell, Bryman and Harley, 2022).

In the research, The authors made sure to interview suitable people who use E-cars or are thinking about buying one. To be sure the findings were accurate, The authors chose quotes from interviews that many or most participants agreed with. This helps to have trustworthy answers and prevents the authors from getting the wrong information. The authors also asked
different questions to keep the conversation going and to learn more about what people think and have experienced.

3.3 Ethical Considerations

In any research, being ethical is super important. Saunders, Lewis, and Thornhill, (2019) really highlight how ethics should be a big part of everything from getting data to understanding it. First off, when the focus group meetings were made, The authors were really careful about doing the right thing. The authors got oral permission from everyone before getting started, explaining what the research purpose and how their answers will be used. The authors also made sure the people in the Zoom meeting were safe and their privacy was protected. only recordings of what they said were kept, not videos.

The participants have been told to not share their names if they didn't want to. This made sure nobody felt pressured or uncomfortable during the talk. The authors also made sure to pick a time that worked for everyone. The authors have also taken care to address any potential issues with issues of plagiarism and the correct interpretation of secondary sources. The authors have strictly followed the convention of accurate citation and acknowledgment of all sourced materials in order to reduce the risk of plagiarism. They have also taken a vigilant stance against any appearance of misattribution or appropriation of intellectual contributions. The authors diligently avoided any appearance of data distortion or misrepresentation in order to prevent instances of misinterpretation and completely and precisely depict the extracted information and research findings.

3.4 Sustainability Considerations

The authors considered three important aspects mentioned by Unido (2023), Economic, environmental, and social aspects.

To manage costs effectively, the authors used online meetings like Zoom to save money on travel and printing. This choice also had an environmental benefit by reducing paper usage. They also preferred using laptops and the internet for research, which helped decrease car use and air pollution. For people's safety and comfort, The authors got permission from participants before starting. They made sure to keep their identities and responses confidential. They also made sure the meetings were welcoming and participants could share their thoughts openly.

From a social perspective, The authors will make sure that no subjects are harmed during the research. Before the authors can guarantee that the research does not hurt any participants, they will obtain informed consent from each participant. All participants will be asked for their informed consent prior to the start of the study, and their anonymity and confidentiality will be upheld all throughout. To further ensure that the participants felt comfortable and secure, the authors created a warm and nonjudgmental environment throughout the focus
Respecting the opinions and experiences of each participant meant fostering open and honest communication. The study also aims to advance society by shedding light on young adults driving habits and intentions.

### 3.5 Operationalization

The purpose of this operationalization guide is to provide a clear and detailed framework for conducting focus group interviews on the topic of Electric Vehicle Features. To avoid any confusion and ensure that relevant topics in the conceptual framework were adequately addressed, a guide was developed.

The focus group questions were designed to elicit responses on various aspects of consumer preferences for e-cars, such as Environmental concerns, Technological aspects, and price. Each question in the guide has been carefully crafted to ensure that the data collected will be relevant to the research question and provide valuable insights into consumer behavior. The following table outlines the focus group questions, the in-depth explanation of each question, and the relevance of each question to the research question.

<table>
<thead>
<tr>
<th>Questions</th>
<th>In-Depth</th>
<th>Relevance</th>
<th>Conceptual Framework</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. How does your perception of electric vehicles as innovative solutions impact your preferences and adoption willingness?</td>
<td>Interplay between perceptions of innovation and young adult millennials' preferences</td>
<td>Understanding how young adult millennials' positive association of EVs with innovation affects their likelihood of choosing and adopting these vehicles</td>
<td>Innovation and technology acceptance</td>
</tr>
<tr>
<td>2. How do you view the usefulness and user-friendliness of electric vehicle technological features like advanced infotainment systems and autonomous driving?</td>
<td>This focuses on how advanced technology in electric vehicles (EVs), like advanced infotainment systems and autonomous driving features, impacts the thoughts and choices of Swedish young adults and millennials.</td>
<td>Explore the perceptions and attitudes of the young adult millennials generation in Sweden towards the practicality and ease of use of advanced technological features in electric vehicles</td>
<td>Innovation and Technology Acceptance</td>
</tr>
<tr>
<td></td>
<td>Familiarity with EV</td>
<td>Price attribute</td>
<td></td>
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<tr>
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<td>-----------------</td>
<td></td>
</tr>
<tr>
<td>3. How familiar are you with the concept of electric vehicles and their characteristics, particularly in terms of price-related factors?</td>
<td>understand participants familiarity of EVs price in comparison to conventional vehicles</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Consumer decision-making regarding electric vehicle adoption.</th>
<th>Price attribute</th>
</tr>
</thead>
<tbody>
<tr>
<td>4. Can you share your perceptions about the pricing of electric vehicles compared to traditional internal combustion engine vehicles?</td>
<td>understand how individuals view the pricing of electric cars in comparison to conventional gasoline or diesel-powered vehicles</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Areas that could benefit from better communication, education, or policy adjustments</th>
<th>Price attribute</th>
</tr>
</thead>
<tbody>
<tr>
<td>5. Considering your personal experiences or interactions with others, what are some common concerns related to the pricing of electric vehicles that you have encountered?</td>
<td>uncover the interviewee's observations or perceptions regarding any misunderstandings or apprehensions that people might hold regarding the pricing of EVs.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>How the cost of electric vehicles profoundly shapes individuals' decisions</th>
<th>Price attribute</th>
</tr>
</thead>
<tbody>
<tr>
<td>6. In your opinion, how important is the pricing factor in influencing consumers' intentions to purchase an electric vehicle? Are there specific price ranges that seem more appealing to potential buyers?</td>
<td>Capture the interviewee's insights into the weight that the cost of EVs carries in influencing people's decisions.</td>
<td></td>
</tr>
<tr>
<td>Question</td>
<td>Performance characteristics of EVs</td>
<td>Perceiving and evaluating the performance attributes of electric vehicles (EVs)</td>
</tr>
<tr>
<td>----------</td>
<td>-----------------------------------</td>
<td>-----------------------------------------------------------------</td>
</tr>
<tr>
<td>7. How do you in Sweden assess the performance of electric vehicles in terms of factors such as acceleration, speed, and handling?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. In what ways do performance attributes like driving range, charging time, and battery life impact your decisions to choose electric vehicles over traditional gasoline-powered cars?</td>
<td>Performance characteristics of EVs</td>
<td>Perceived advantages and challenges associated with EVs' performance attributes</td>
</tr>
<tr>
<td>9. How do you view the potential for electric vehicles to contribute to reduced carbon emissions and air pollution, and how does this perception impact their overall evaluation of EVs?</td>
<td>The environmental benefits</td>
<td>Perceptions and beliefs about the positive environmental impacts of EVs</td>
</tr>
<tr>
<td>10. What role does your sense of responsibility towards future generations and the environment play in their evaluation of electric vehicles and their willingness to pay a premium for</td>
<td>Environmental consciousness in shaping perceptions and preferences</td>
<td>The environmental benefits of electric vehicles</td>
</tr>
</tbody>
</table>
11. How do subjective norms and the opinions of family and friends affect your consumption intention of electric vehicles among the young adult millennials demographic in Sweden?

Social influences and the opinions

The impact of subjective norms and the perspectives of family and friends on the willingness of young adult millennials in Sweden to adopt and use electric vehicles

Consumption intention

Table 1: Operationalization Guide

4. Empirical Findings

*In this chapter, empirical data from the focus groups will be presented and analyzed based on the theoretical framework.*

Three focus groups were held as part of this study. FG1, FG2, and FG3 are the names of the first, second, and third focus groups. Furthermore, a few intriguing participant quotes were also included in the findings.

The focus groups were conducted using Zoom, and the authors prepared open-ended questions to help steer the conversation. The focus group interview guide's questions will be answered one at a time as the information is presented (see Appendix 1). Table 2 provides the names of the attendees, dates, length of the meeting, and location.

<table>
<thead>
<tr>
<th>Name</th>
<th>Date</th>
<th>Duration</th>
<th>Participantes (First name)</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>FG1</td>
<td>10/07/2023</td>
<td>90</td>
<td>Sara, Maya, Olof, Umidion, Hasse, Lara, Gustav and Natali</td>
<td>Zoom</td>
</tr>
</tbody>
</table>
4.1 Innovation and technology acceptance

To understand how young adult millennials perceive electric vehicles in the context of innovation and technological advancements, and in order to gain insights into Swedish millennials' perceptions and attitudes towards advanced electric vehicle features, such as infotainment systems and autonomous driving, to assess their potential appeal and adoption among the younger generation. Several topic-related questions were asked to the focus group participants. The questions were:

1. How does your perception of electric vehicles as innovative solutions impact your preferences and adoption willingness?

2. How do you view the usefulness and user-friendliness of electric vehicle technological features like advanced infotainment systems and autonomous driving?

As a response to the 1st question, the participants are perceiving the electric cars as innovative solutions that align with Sweden's sustainability goals and carbon emissions reduction efforts. Participants agree that, because Sweden is committed to long-term sustainability, they see electric vehicles as innovative solutions that fit well. This makes them more willing to adopt electric vehicles, believing that these vehicles can bring about positive changes over time. Omer from FG 3 mentioned: “A lot of people might agree that Sweden is known for embracing the latest technology. When they see electric vehicles as innovative, it really fits with Sweden's love for all things tech and their modern thinking. This makes electric vehicles even more appealing and makes them want to choose these advanced transportation options.” Mia from FG3 said: “I concur that perceiving electric vehicles as innovative adds to their overall appeal. This perception could make EVs more attractive options for conscious consumers and positively influence their preferences. Today I drive an electric car.”

One topic-related question was asked to the focus group participants. The 2nd question, most of the participants appreciate the high-tech features of electric vehicles. Linda from FG2 mentioned “The advanced infotainment systems make the driving experience more enjoyable.

Table 2: List of participants

<table>
<thead>
<tr>
<th>FG2</th>
<th>18/07/2023</th>
<th>110</th>
<th>Hassan, Malak, Olivia, Oscar, Imad, Linda, Hecham, Adel and Valeria</th>
<th>Zoom</th>
</tr>
</thead>
<tbody>
<tr>
<td>FG3</td>
<td>24/07/2023</td>
<td>70</td>
<td>Bahaa, Mais, Atef, Omer, Tomy, Alfred, Mia and Elin</td>
<td>Zoom</td>
</tr>
</tbody>
</table>
It allows us to stay connected and entertained”. As for autonomous driving, The participants had different opinions. Some of them were excited about the idea of letting the car handle certain tasks, especially during long commutes. However, there's also a cautious approach, wanting to ensure safety and proper functioning. Omer from FG3 mentioned: "Autonomous driving is an interesting concept, but there's a mix of curiosity and concern. We value being in control, so the idea of the car driving itself is fascinating, but we want to know how reliable and safe it truly is". The participants of the Swedish millennials generally see advanced infotainment systems as a practical feature in electric vehicles. The participants believe that It's convenient to have everything accessible on a touchscreen while driving. When it comes to autonomous driving, opinions are divided. Some of them are open to the idea, especially if it reduces the stress of traffic congestion. Others might be more hesitant, concerned about technical glitches and potential risks.

4.2 The price attributes. Insights from focus group participants

In order to better understand the perception of the cost-effectiveness and economic viability of EVs in comparison to conventional vehicles. The participants were asked questions to explore their understanding and perceptions of E-cars prices. The questions included:

3. How familiar are you with the concept of electric vehicles and their characteristics, particularly in terms of price-related factors?

4. Can you share your perceptions about the pricing of electric vehicles compared to traditional internal combustion engine vehicles?

5. Considering your personal experiences or interactions with others, what are some common concerns related to the pricing of electric vehicles that you have encountered?

6. In your opinion, how important is the pricing factor in influencing consumers' intentions to purchase an electric vehicle? Are there specific price ranges that seem more appealing to you?

In response to the 3rd question, the participants shared various insights. Most of the participants were very familiar with electric vehicles and their characteristics, including the various price-related factors. They have been researching and following the development of electric cars for several years. Most of them believe that despite the high prices of electric cars, They are a worthwhile investment because of the long-term savings. Gustav from FG1 mentioned how the high price of E-cars has influenced how he sees electric cars: "I am somewhat familiar with the concept of electric vehicles and their characteristics. From what I've heard and read, I understand that electric vehicles tend to be on the higher end of the price spectrum compared to traditional gasoline-powered cars. This perception of higher pricing has shaped my understanding of electric vehicles, although I may not be well-versed in all the specific price-related factors at play." Hasse from FG 1 mentioned: “I've done a lot of research because I genuinely want to adopt one. I'm aware of their environmental benefits,
how they operate, and even the various types of EVs available. I understand there is a price range, and some can be costly upfront, but I believe the long-term savings make them a worthwhile investment."

When considering the 4th question, the participants had a general sense that electric vehicles might be more expensive than traditional cars. Elin from FG3 expected that E-cars prices will be comparable with traditional cars: "I believe that electric vehicle prices are gradually approaching those of traditional cars. While there might still be a difference, I think it won't be long before they become more comparable."

Mais, A participant from FG3 noted: "Many people may still perceive electric vehicles as having a higher upfront cost compared to traditional cars. This perception could be influenced by the historical pricing of early electric vehicle models".

Regarding the 5th question, the participants agreed that there are long-term savings, but they still find it challenging to afford the initial purchase. Mais from FG3 mentioned: "Many individuals I've spoken to express concern about the higher upfront cost of electric vehicles. Even though there are long-term savings, some people find it challenging to afford the initial purchase."

In relation to the 6th question, the participants had a similar opinion. They agreed that pricing is a critical factor in influencing consumers' intentions to buy an electric vehicle. While environmental considerations and technology play a role, many potential buyers are still very price-sensitive and need competitive options. Hassan from FG2 mentioned: "Pricing is incredibly important, especially if we want to see mass adoption of electric vehicles. For many consumers, the price needs to be competitive with traditional cars to make the switch."

Hassan also added "The pisces of EV should always be competitive with the traditional vehicles." The participants were assured about the importance of competitive prices that could affect the buyer's intention at first sight.

4.3 Performance attributes

In order to gain a comprehensive understanding of how various performance-related factors impact consumer preferences and adoption rates. Several topic-related questions were asked to the focus group participants. The questions were:

7. How do you in Sweden assess the performance of electric vehicles in terms of factors such as acceleration, speed, and handling?

8. In what ways do performance attributes like driving range, charging time, and battery life impact your decisions to choose electric vehicles over traditional gasoline-powered cars?
Regarding the 7th question, most of the participants agreed that In Sweden, there's a strong emphasis on the efficiency and sustainability aspects of electric vehicles. While factors like acceleration and speed are considered important, there's also a focus on how these attributes contribute to reducing emissions and promoting eco-friendly transportation. Hassan from FG2 mentioned: "Performance attributes like handling and safety are significant factors in assessing electric vehicles. Swedish roads can be challenging due to weather conditions, so consumers look for EVs that offer stability and reliable handling."

Regarding the 8th question, the battery life was a significant factor in participants' decisions. Lara from FG1 mentioned: “Battery life is a significant factor in my decision. I want assurance that the battery will remain reliable over time and won't deteriorate quickly. A longer-lasting battery gives me confidence in the longevity of the vehicle.” while Hassan from FG 2 mentioned: "Charging time is crucial. I want to be able to charge my EV conveniently at home or at charging stations. Faster charging times mean I can get back on the road sooner, which is a big selling point for me.”

4.4 The environmental concerns. Insights from focus group participants

To understand Participants' level of awareness, expectation, beliefs, of the environmental benefits of electric vehicles. Several topic-related questions were asked to the focus group participants. The questions were:

9. How do you view the potential for electric vehicles to contribute to reduced carbon emissions and air pollution, and how does this perception impact your overall evaluation of EVs?

10. What role does your sense of responsibility towards future generations and the environment play in your evaluation of electric vehicles and your willingness to pay a premium for eco-friendly transportation options?

Regarding the 9th question, all participants have viewed electric vehicles as a promising solution to address environmental challenges. They all agreed that electric vehicles have a significant potential to reduce carbon emissions and air pollution. Lara from FG 1 mentioned: “EVs can play a crucial role in improving urban air quality and combating climate change.” This positive impact is a major factor in my favorable evaluation of EVs. While Oscar from FG 2 said: “Knowing that my choice can have a positive impact on the environment makes me more likely to prioritize an electric vehicle for my next purchase.”

As a response to the 10th question, all participants had a similar belief that it's essential to make choices that minimize their impact on the planet, and electric vehicles align with this value." Olivia from FG 2 noted the following: “I see electric vehicles as a step towards a cleaner and more sustainable future.” Natali from FG 1 mentioned the following: “I want to
leave a positive legacy for my children and grandchildren. Evaluating electric vehicles through the lens of environmental responsibility ensures that my choices align with the values I want to pass down."

4.5 Consumption intention

In order to understand the factors that influence the consumption intention of electric vehicles (EVs) among the millennial demographic in Sweden. Several questions were asked to the focus group. The questions are:

11. How do subjective norms and the opinions of family and friends affect your intention of electric vehicles?

Regarding the 11th question, the question investigates the impact of social factors, including subjective norms and family and friends' opinions, on Swedish millennials' decision-making on electric vehicle adoption. It seeks to understand how societal expectations, pressures, and personal relationships influence their willingness to consider and potentially purchase EVs.

All participants agreed that they might listen and discuss purchase choices with their friends and family but, They are independent and make their own choices based on their own experiences. The participants mention that while they value the opinions of family and friends, their choices are driven by their personal beliefs, preferences, and priorities. Oscar from FG2 said: "Well, my family and friends definitely have an impact on my decisions, but it's not the only factor. If they're knowledgeable about electric vehicles and share their positive experiences, it could pique my interest. However, I also do my own research and consider other factors like practicality, environmental benefits and charging infrastructure."

All the participants emphasize that when considering EV adoption, they consider practical factors such as cost savings, environmental impact, and convenience. While family and friends' opinions are important, their decisions are ultimately based on their evaluation of these factors. Gustav from FG1 mentioned: "Our generation is driven by individuality, and while family and friends may express interest in electric vehicles, their opinions don't determine my choice. I want to make a decision that aligns with my values and preferences."

5. Analysis

In order to answer the research question, the empirical findings obtained through primary data collection will be compared with the literature review in this chapter. The structure of the analysis will be similar to that of the empirical findings.

Moreover, the analysis of the conceptual framework presented in Chapter 2 will be further explored in this chapter by dividing the analysis into five topics: innovation and technology acceptance, price attributes, performance attributes, environmental aspects, and consumption intention. (See Figure 1).
5.1 Innovation and Technology acceptance

Moving to the analysis of the empirical findings and theory regarding millennials perception of electric vehicles in the context of innovation and technological advancements.

In order to gain insights into Swedish millennials' perceptions and attitudes towards advanced electric vehicle features, such as infotainment systems and autonomous driving, The authors aimed to address the first question regarding millennials' perception of electric vehicles as innovative solutions and how it impacts their preferences and adoption willingness.

The participants' perspectives are consistent with Rogers' (2003) Diffusion of Innovation theory, which emphasizes the various stages of technology adoption and the factors that influence consumers' acceptance and use of new innovations. The participant's acceptance of electric vehicles as innovative solutions is consistent with the central tenet of the Diffusion of Innovation theory, which defines innovation as an idea perceived as a novel by individuals (Rogers, 2003). The observation by Omer from FG3 that electric vehicles resonate with Sweden's progressive and tech-savvy image highlights the importance of communication channels in disseminating information about new innovations. This is consistent with Li et al., (2021) discussion of opinion leadership, in which early adopters play an important role in spreading new ideas within the market.

Furthermore, the participants' emphasis on environmental benefits is consistent with the theory of eco-innovation, which classifies electric vehicles as environmental innovations because of their positive environmental impact (Jansson, Nordlund and Westin, 2017). The participants' beliefs are consistent with the Diffusion of Innovation model, which states that attributes such as perceived usefulness and ease of use influence technology adoption. The participants believe that viewing electric vehicles as innovative aligns with Sweden's modern thinking and values, which increases their appeal, echoing Davis's concept of perceived ease of use (Davis, 1989).

Moving to the second question where the empirical findings present how the participants view the usefulness and user-friendliness of electric vehicle technological features, like advanced infotainment systems and autonomous driving.

The empirical findings reveal participants' attitudes towards high-tech features in electric vehicles (EVs) and their opinions on autonomous driving. The authors observed that the participants' opinions on autonomous driving mirror the interplay between perceived ease of use and perceived usefulness as discussed in the Technology Acceptance Model (TAM). While some participants are intrigued by the benefits of autonomous driving in reducing stress and enhancing convenience (perceived usefulness), others express concerns about safety and control (perceived ease of use). The participants believe that the advanced infotainment systems make the driving experience more enjoyable, and "It allows them to stay..."
connected and entertained," which aligns with the Technology Acceptance Model (TAM) concept of "perceived usefulness," as discussed by Silva, (2020). The participants point of view reflects the belief that users are more likely to adopt technologies that provide tangible benefits in their daily lives. The participants' conflicted feelings about autonomous driving reflect a nuanced reaction that echoes the complexities of technology adoption. One insightful observation from the participants was that Autonomous driving is an interesting concept, but there's a mix of curiosity and concern, the car driving itself is fascinating, and car factories should inform consumers about the reliability and safety. This observation touches on the TAM's interplay between "perceived ease of use" and "perceived usefulness." The participants' conservative approach is consistent with the literature review's discussion of how consumers weigh the benefits of innovation against potential risks (Silva, 2020).

5.2 Price attributes

The empirical findings presented in this study explore the millennials' perceptions and understanding of the cost-effectiveness and economic viability of electric vehicles (EVs) compared to conventional internal combustion engine vehicles. The participants' responses provide valuable insights into various aspects of EV pricing and its influence on consumer behavior. These findings can be analyzed in conjunction with the theoretical framework to enhance our understanding of the role of price-related factors in shaping consumers' intentions to purchase EVs.

As mentioned before, four related questions were asked to the participants to understand the participants' perspectives of the cost-effectiveness and economic viability of EVs in comparison to conventional vehicles. The third question that was asked is “How familiar are you with the concept of electric vehicles and their characteristics, particularly in terms of price-related factors?” The authors were eager to explore the perspectives of the participants in the focus group discussions and establish connections with the existing literature on E-vehicles price attributes. The participants demonstrate a wide range of knowledge about electric vehicles and their pricing. The majority of participants are well-versed in electric vehicles and their characteristics, including price considerations. They acknowledge that electric cars are generally more expensive than traditional gasoline-powered vehicles. Their perspectives on the cost-effectiveness of electric vehicles, however, differ. One participant's response reflects his perception that electric vehicles are more expensive, which influences his understanding of them. Another participant, on the other hand, demonstrates a thorough understanding of electric vehicles, specifically their environmental advantages and long-term cost savings. Her response emphasizes the importance of considering financial implications beyond the initial purchase price.

Moving to the fourth question where the empirical finding presents participants' perceptions about the pricing of electric vehicles (EVs) compared to traditional internal combustion engine vehicles. Participants generally believe that electric vehicles might be more expensive
than traditional cars, although there are varying degrees of optimism regarding the convergence of prices. A participant anticipates that EV prices will gradually become comparable to those of traditional cars, while another one acknowledges that many people still perceive electric vehicles as having a higher upfront cost, possibly due to historical pricing trends of early EV models. The participants' expectation that EV prices will become more comparable to traditional cars aligns with Egnér and Trosvik, (2018) emphasis on price convergence as a driver of EV adoption. Similarly, another acknowledgment of historical pricing influencing perceptions resonates with Hidrue et al., (2011) recognition of the historical context shaping consumer attitudes. The participants think that historical pricing of early electric vehicle models can contribute to the perception of higher costs. A suggestion from the participants is to address such perceptions through accurate information and education.

The authors analyzed the empirical findings in relation to the fifth question which explored the participants' experiences and insights regarding concerns about the pricing of electric vehicles (EVs) can be analyzed in relation to the theories presented in the theoretical chapter. The participants' comments align with and provide practical examples of the theories discussed.

Firstly, the participants' observation that many individuals express concern about the higher upfront cost of EVs resonates with the emphasis on price-related factors in the theories. The theoretical framework highlights the significance of various price attributes, including the vehicle's cost, fuel expenses, service charges, and potential installation expenses for charging stations. The participants' concern reflects the complexity of consumer decision-making, where the perceived initial affordability challenge may outweigh the long-term savings potential, even though the theories suggest that cost efficiency should factor into the decision-making process.

Secondly, the participants' recognition of long-term savings despite the challenge of affording the initial purchase mirrors the theory's consideration of the interplay between present concerns and future trends. (Zhuge et al., 2020) suggest that while the immediate impact of electricity and fuel prices on EV adoption might be marginal, their influence could amplify in the future. This aligns with the participants' understanding that the long-term benefits of EVs may become more pronounced over time, underscoring the importance of considering both short-term affordability concerns and long-term savings potential.

The authors analyzed the empirical findings in relation to the sixth question, which explored the importance of pricing factors in influencing consumers' intentions to purchase and if there are specific price ranges that seem more appealing to potential buyers. The participants' consensus that pricing is a critical factor resonates with the authors' emphasis on the significance of price-related attributes in the decision-making process. The authors, as exemplified by Hidrue et al., (2011) and Higueras-Castillo et al., (2020), underscore the pivotal role of pricing considerations in shaping consumer preferences towards electric vehicles.
vehicles. The participants' assertion that competitive pricing is essential for mass adoption of EVs corresponds with the authors' emphasis on the need for cost efficiency to drive the shift from traditional vehicles. The participants' observation that potential buyers are price-sensitive and seek competitive options aligns with the authors' discussions on the importance of cost savings and economic benefits associated with EV adoption. This convergence of viewpoints highlights the intricate interplay between pricing, consumer behavior, and the overall success of eco-innovations like electric vehicles.

5.3 Performance attributes

Moving forward to the analysis of empirical findings and theories regarding the participants perception on E-cars in the context of performance. The author aimed to understand the interaction and motivation of the participants with the performance in the E-cars.

The seventh and eighth question wonders about how the participants in Sweden assess the performance of electric vehicles in terms of factors such as acceleration, speed, handling, charging time, battery life and driving range.

The participants emphasize that the evaluation of EV performance in Sweden extends beyond conventional attributes such as acceleration and speed. While acknowledging the importance of these factors, participants stress that the Swedish context places a strong emphasis on efficiency, sustainability, and environmental impact. The participants' concerns over charging infrastructure and driving range closely parallel the theories discussed by authors (Haustein, Jensen and Cherchi, 2021) and (Chen et al., 2020). Just as the participants express apprehensions about the availability of charging stations and longer charging times, Haustein, Jensen and Cherchi, (2021)'s study highlights the pivotal role of driving range and the distribution of charging infrastructure in influencing EV adoption decisions. (Chen et al., 2020) insights into the ongoing advancements in battery technology and charging infrastructure align with the participants' anticipation of potential improvements. The participants highlight the importance of attributes like handling and safety, particularly considering Sweden's challenging road conditions. These practical considerations align with the theoretical acknowledgment of driving range limitations and the potential for consumers to overlook such limitations with improvements in charging infrastructure, as emphasized by authors (Chen et al., 2020) and (Haustein, Jensen and Cherchi, 2021)

The participants' perspectives on the impact of performance attributes are consistent with the theoretical perspectives provided by authors (Haustein, Jensen and Cherchi, 2021) and (Chen et al., 2020), shedding light on the practical implications of driving range, charging time, and battery life on their decisions to choose electric vehicles (EVs) over traditional gasoline-powered cars. The emphasis on battery life by Lara from FG1 mirrors the theoretical emphasis on the importance of battery-powered electric vehicles (EVs) in reducing environmental impact. A participant is concerned about the battery's longevity and reliability, her point of view is consistent with (Haddadian, Khodayar and Shahidehpour, 2015)
discussion of how battery technology affects the performance and environmental profile of EVs. Similarly, Haustein, Jensen and Cherchi, (2021)'s study emphasizes the critical role of driving range in influencing consumer decisions, supporting the participant's consideration of the impact of battery life on the practicality of EV adoption.

participants' emphasis on charging time resonates with (Chen et al., 2020) assertion that charging time is a significant determinant in EV adoption decisions. The participants preference for convenient and quick charging experiences underscores the real-world challenges highlighted by (Chen et al., 2020), particularly in the context of charging infrastructure. This practical concern echoes Haustein, Jensen and Cherchi, (2021) observation that potential EV adopters might be apprehensive due to the lack of trust and accessibility in charging infrastructure.

The concerns expressed by the participants are also consistent with those expressed by Vassileva and Campillo, (2017) and M Sverige (2021) regarding the scarcity of charging stations in Swedish parking lots and the lack of charging facilities in certain regions. These empirical findings back up the participants' concerns about charging infrastructure availability, reinforcing the alignment between their perspectives and the identified charging ecosystem challenges. (Chen et al., 2020) explanation of ongoing advances in battery technology and potential improvements in charging infrastructure resonates with participants' expectations of future improvements. The participants emphasis on faster charging times aligns with (Chen et al., 2020) contention that as charging infrastructure improves, EV driving range and charging duration may become less of an impediment.

5.4 Environmental aspects

Moving to the analysis of the empirical findings and theory regarding the environmental attributes towards electric vehicles. The authors sought to understand Participants' level of awareness, expectation, beliefs, of the environmental benefits of electric vehicles. topic-related questions were asked to the focus group participants. The ninth question was inquired about, How do millennials view the potential for electric vehicles to contribute to reduced carbon emissions and air pollution, and how does this perception impact their overall evaluation of EVs?

All participants agree that electric vehicles (EVs) are a promising solution to environmental challenges. This agreement between participants' perspectives and Singer's (2016) theoretical framework highlights the recognition of EVs' potential to reduce carbon emissions and air pollution. The participants' positive assessments of EVs' environmental impact reflect the core principle of emissions-free operation achieved by eliminating combustion engines. The participants believes that EVs play a critical role in improving urban air quality and combating climate change, which is consistent with Singer's argument that EVs help to reduce global petroleum consumption. The participants' emphasis on the positive impact is consistent with the theoretical claim that EVs aim to reduce the environmental impact of
traditional gasoline-powered vehicles. The participant's consideration of the positive environmental impact of EVs influencing their preference echoes the theoretical understanding that EVs offer an environmentally conscious alternative. The participants choice to prioritize an EV purchase based on its positive environmental implications is congruent with the theory that EVs represent an avenue to address environmental concerns Singer's (2016).

Delucchi et al., (2014) present a nuanced perspective on the theoretical exploration of EV sustainability. The report's emphasis on the environmental footprint of EVs as a result of battery manufacturing materials provides a critical lens through which to evaluate participants' perceptions. While participants emphasize the positive environmental impact of EVs during use, Delucchi et al., (2014) observations prompt consideration of the broader ecological implications of EV production. In conclusion, the perspectives of the participants support the theoretical underpinning that EVs hold promise as eco-friendly transportation alternatives. While participants concentrate on the positive impact of EVs during operation, the theoretical framework emphasizes a comprehensive assessment of EV sustainability, which includes production and energy sourcing. This alignment between participants' perspectives and theoretical insights enriches the understanding of how EVs are perceived as environmentally conscious choices while also acknowledging the multifaceted considerations that contribute to their overall sustainability.

The authors analyzed the empirical findings in relation to the tenth question, which explored the participants' sense of responsibility towards future generations and the environment in their evaluation of electric vehicles, and their willingness to pay a premium for eco-friendly transportation options. The responses of the participants show a consistent alignment with the concept of environmental responsibility. Their perspectives reflect a strong sense of responsibility to future generations and the environment, echoing the theoretical underpinning that individuals consider the environmental impact of their choices. The participants' responses to the tenth question, which concerns their sense of environmental responsibility and its impact on their evaluation of electric vehicles (EVs), are consistent with the theoretical framework presented. The participants' viewpoint exemplifies the convergence of participants' perspectives and theoretical underpinnings. The participants' perception of EVs as a step toward a cleaner and more sustainable future aligns with Singer's (2016) emphasis on EVs' fundamental goal of reducing global petroleum consumption.

By assessing EVs through the prism of environmental responsibility, the participants hopes to leave a lasting legacy for future generations, which is consistent with the larger context covered in the theoretical framework. Delucchi et al., (2014) emphasizes the significance of EVs as environmentally friendly transportation options that do away with the need for petroleum, helping to ensure emissions-free operation. The participants' shared belief in making choices that minimize their impact on the planet resonates with the theoretical proposition that EVs offer a means to reduce environmental harm. This alignment reflects the participants' recognition of EVs as a tangible means of aligning their choices with their
values and passing these values down to future generations. The theory also delves into the complexities of EV sustainability, specifically their reliance on electricity and the materials needed for battery production. The participants' emphasis on the importance of considering the entire lifecycle of EVs is echoed in Delucchi et al., (2014) report on the environmental footprint of electric car battery production. This intersection highlights the participants' conscious evaluation of EVs through the lens of environmental responsibility.

The perspectives of the participants on environmental responsibility and their evaluation of EVs are in sync with the theoretical framework, particularly in terms of the goals and challenges associated with electric vehicle adoption. The alignment of practical perspectives and theoretical insights emphasizes the complex relationship between people's values, choices and the larger ecological context.

### 5.5 Consumption Intention

Moving to the analysis of the empirical findings and theory regarding the consumption intention towards electric vehicles. The authors sought to understand how societal expectations, pressures, and personal relationships influence their willingness to consider and potentially purchase EVs. The eleventh question inquired about how subjective norms and the opinions of family and friends influence the participants' intention of electric vehicles.

The study's empirical findings section focuses on the question of how subjective norms and opinions of family and friends affect millennials' intentions to purchase electric vehicles (EVs) in Sweden. The participants' responses provide insights into their decision-making processes concerning EV adoption. Notably, the participants indicated that while they do consider the opinions of family and friends, their decisions are primarily driven by individual factors such as their own experiences, practicality, environmental benefits, and charging infrastructure. This suggests that although social influences play a role, they are not the sole determinants of their choices. A participant emphasized that while family and friends can influence his decisions by sharing positive experiences with electric vehicles, he conducts his own research and considers various practical and environmental factors. The participants mentioned that their generation values individuality and that personal values and preferences play a significant role in shaping their choices. The authors discuss Ajzen, (1991) theory of planned behavior, which explains how attitudes, subjective norms, and perceived behavioral control influence an individual's intention to engage in a particular behavior. The theory of planned behavior can be used to better understand consumer behavior, particularly in the context of purchasing decisions. It has three major components: attitude, subjective norm, and perceived behavioral control. The authors of this research emphasize that attitude represents an individual's positive or negative evaluation of engaging in a behavior. Subjective norms reflect the social pressure or influence that an individual perceives from others in relation to a specific behavior. Perceived behavioral control refers to an individual's perception of the ease or difficulty of carrying out a behavior based on available resources and opportunities.
The authors reveal that the participants' statements are consistent with the theory of planned behavior, as their consideration of the opinions of family and friends can be classified as subjective norms Ajzen, (1991). Their strong emphasis on individuality and personal values, on the other hand, suggests that perceived behavioral control and attitudes also play essential roles in their decision-making process. This implies that, while the theory of planned behavior provides a practical framework, it should be supplemented by taking into account factors that recognize the individualistic nature of the millennial demographic's decision-making.

To summarize, the analysis of the empirical data revealed the four topics identified in the conceptual framework: Innovation and technology, Price, Performance, Environmental aspects, and consumer intention. This analysis delves into the perceptions of Swedish millennials regarding electric vehicles (EVs) across various dimensions. It examines their views through innovation, price, performance, environmental aspects, and consumption intention, aligning empirical findings with relevant theoretical frameworks. This analysis offers a comprehensive understanding of how Swedish millennials perceive EVs across various dimensions, showing how their perspectives align with and enrich theoretical frameworks and providing insights into the factors influencing their attitudes and intentions toward EV adoption. When considering pricing, participants acknowledge historical influences and anticipate future cost competitiveness. This aligns with the economic discourse and underscores the significance of pricing in EV adoption. In terms of performance, participants' practical concerns about driving range and charging time align with theoretical discussions, connecting their real-world experiences with broader conceptual insights. Environmental awareness is evident as participants recognize EVs' potential to combat environmental challenges. Their willingness to invest more in sustainability echoes the theoretical emphasis on responsible consumer behavior. Navigating consumption intentions, participants' incorporation of subjective norms resonates with Ajzen, (1991) theory, while their individualistic choices underscore the intricate interplay between external influences and personal values.

6. Conclusion

_The research question will be thoroughly discussed in this chapter, with a clear connection to the research purpose. In addition, this chapter will suggest areas for future research and examine the study's limitations and implications._

6.1 Answering the research question

The purpose of the conclusion is closely tied with the purpose of the research in exploring the specific attributes of electric vehicles (EVs) that influence young adult millennials' perceptions, while also exploring young adult millennials' attitudes towards EVs and their inclination to buy them.
To achieve this objective, addressing the following research question is necessary:

*How do the young adult millennials' perceptions of price, performance, Innovation and technology and environmental factors influence their desire to adopt electric vehicles?*

Findings indicate that, in line with the conceptual framework of the study, there are several key factors influencing the millennials' perception of electric vehicles. While the importance of these factors is different from each other. (See figure 1).

Firstly, It was found that Electric vehicles are viewed as innovative, technological, and environmentally friendly options by Swedish millennials. Early adopters and efficient communication channels both contribute to their favorable perception. The Swedish millennials value the environmental friendliness of electric vehicles and understand their potential to support contemporary ideals. Although they value amenities like infotainment systems, attitudes toward autonomous driving are nuanced and complicated, shaped by both fascination and safety concerns. This circumspect attitude reflects how consumers weigh the potential risks and benefits of innovation. To address these issues, manufacturers must communicate clearly. Swedish millennials' attitudes toward electric vehicles show that they value innovation, care about the environment, and understand how difficult it is to adopt cutting-edge automotive technologies.

Secondly, pricing has a critical importance in influencing purchase intentions. A range of knowledge has been demonstrated about electric vehicles and their pricing. While acknowledging that EVs are generally more expensive than traditional cars, the perspectives on cost-effectiveness varied. The Swedish Millennials viewed EVs as costly, but at the same time understood the long-term benefits, emphasizing the importance of considering financial implications beyond the initial purchase price.

Thirdly, The millennial's feedback highlights a holistic perspective on electric vehicle (EV) performance that goes beyond conventional metrics such as speed and acceleration. The evaluation encompasses factors like efficiency, sustainability, and environmental impact. Notably, charging infrastructure availability and driving range emerge as pivotal considerations, underscoring their practical significance in shaping decisions related to adopting EVs.

Fourthly, The millennials' perspectives provide a convincing justification for their decision to buy electric vehicles. Their awareness of environmental issues, dedication to sustainability, and agreement with the broad objectives of the EV adoption movement show that they have a strong desire to put their beliefs into practice by embracing green transportation options.

Fifthly, consideration of the opinions of family and friends in their decision-making process is evident. However, what stands out is that the ultimate decisions are driven more strongly by individual factors. These factors include personal experiences, practical concerns, the
environmental advantages of EVs, and the state of charging infrastructure. This suggests that while social influences have a role, they are not the sole determinants of their choices.

In conclusion, Electric vehicles (EVs) are viewed favorably due to their perceived innovation, technology, and environmental friendliness. Early adopters and effective communication contribute to this perception. Prioritize environmental concerns, while attitudes towards autonomous driving are complex, reflecting a risk-benefit assessment. Pricing significantly impacts purchase intentions; Millennials recognize EVs' long-term benefits despite higher upfront costs. Their evaluation of EV performance encompasses efficiency, sustainability, and practical aspects like charging infrastructure and driving range. Environmental awareness and commitment drive their intention to adopt EVs as a manifestation of their values. While social influences matter, individual factors like personal experience and practicality strongly shape their decisions.

6.2 Theoretical Implications

Regarding theoretical implications, the findings of this study provide several contributions to the existing literature on Swedish millennials' perceptions on electric vehicles (EVs).

Firstly: The study's findings illuminate Swedish millennials' favorable perception of electric vehicles (EVs), identifying them as innovative, technologically advanced, and environmentally friendly choices. The study also reveals millennials' intricate attitudes towards autonomous driving, reflecting the delicate balance between perceived usefulness and ease of use. This perspective aligns seamlessly with the Diffusion of Innovation theory, which postulates that novel concepts, such as EVs, initially trigger uncertainty due to their newness.

Secondly: the study reveals that concerns about the higher upfront cost of EVs persist among participants. This complexity underscores the intricate interplay between initial affordability perceptions and long-term savings potential. It aligns with previous research by stressing the impact of price factors, like fuel costs and service charges (Hidrue et al., 2011).

Thirdly, the study reveals participants' perceptions of electric vehicle (EV) performance and compares them to existing theories. The considerations of the participants are consistent with previous research in that they emphasize the importance of EV attributes such as, handling, charging time, and battery life. Their concerns about charging infrastructure and driving range are consistent with Haustein, Jensen and Cherchi, (2021) and (Chen et al., 2020) theories, which acknowledge the concern surrounding EV driving range, which is closely tied to the availability and distribution of charging infrastructure.

Moreover: the study reveals that Swedish millennials value the opinions of family and friends, but their decision-making process is driven by their personal beliefs, preferences, and priorities. This aligns with prior research which suggests that an individual's attitude,
subjective norms, and perceived behavioral control contribute to their intention to engage in a certain behavior.

6.3 Managerial Implications

From a managerial perspective, the study provides valuable insights for businesses and organizations in the automotive industry to attract and engage Swedish millennials in the electric vehicle (EV) market. Swedish millennials perceive EVs as innovative, technologically advanced, and environmentally friendly options. Manufacturers and marketers should capitalize on these positive perceptions by highlighting their EV models' advanced features and eco-friendliness. Clear communication about the innovative aspects of EV technology and its positive impact on the environment can enhance the appeal of EVs to this target demographic.

The study's identification of persistent concerns about the higher upfront cost of EVs indicates an opportunity for manufacturers and policymakers to implement strategies to emphasize the long-term cost savings of EV ownership, such as reduced fuel and maintenance expenses. Offering transparent information on the overall cost of ownership and potential financial benefits over time can mitigate price-related barriers and encourage adoption.

The study highlights the significance of performance attributes like handling, charging time, and battery life in influencing Swedish millennials' EV preferences. Manufacturers should invest in improving these aspects of EVs to match or surpass conventional vehicles. Addressing concerns about charging infrastructure and driving range can be a crucial competitive advantage.

The study reveals that Swedish millennials value the opinions of family and friends, but their decisions to adopt EVs are primarily driven by their own beliefs, preferences, and priorities. Companies should recognize this individualistic approach to decision-making and tailor their marketing strategies accordingly. Emphasizing the alignment of EV features with personal values and lifestyle preferences can resonate more effectively with this demographic.

The study's emphasis on information-seeking and research among participants suggests businesses should focus on providing accurate and comprehensive information about EVs. Offering accessible and reliable resources that address common concerns, such as charging infrastructure availability and driving range, can help alleviate potential barriers to adoption.

Ultimately, the study's insights into Swedish millennials' perceptions of EVs provide actionable recommendations for businesses and stakeholders in the EV market. By aligning their marketing strategies with the findings, organizations can effectively address concerns, enhance positive perceptions, and encourage greater EV adoption among this important demographic.
6.4 Project significance and implications

The findings of the study hold considerable significance as they shed light on Swedish millennials' perceptions of electric vehicles (EVs), contributing to theoretical understanding and practical applications.

By answering the research questions stated earlier, this study reveals positive views toward EVs, addressing cost concerns, emphasizing performance attributes, and tailoring marketing strategies. The study provides actionable insights for businesses and stakeholders in the EV market to effectively engage this demographic, fostering greater EV adoption.

6.5 Limitations and suggestions for future research

Some limitations were present during the thesis, which should be taken into consideration when interpreting the findings. Firstly: The study's findings are based on a specific sample of Swedish millennials, which might limit the generalizability of the results to broader populations. Future researchers should include a more diverse demographic and a larger sample size could offer a more comprehensive understanding of EV perceptions. Secondly: This study did not conduct an in-depth comparison between EVs and all other eco-friendly transportation options. Future researchers should compare the perceived sustainability of EVs with other eco-friendly transportation alternatives, such as public transportation or cycling. This comparison could unveil how millennials prioritize different modes of sustainable mobility. Future research could also involve comparing millennials' perceptions and intentions regarding EVs with those of other generations, such as Generation Z or Generation X. This comparison could highlight how attitudes toward sustainable transportation are evolving across different age cohorts. Companies should analyze the effectiveness of various marketing strategies (e.g., educational campaigns, influencer endorsements) in influencing millennials' perceptions and adoption intentions. This analysis could guide businesses in formulating impactful communication approaches.
7. List of References

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Scientific articles:


8. Appendices

Open-ended questions

1. How does your perception of electric vehicles as innovative solutions impact your preferences and adoption willingness?

2. How do you view the usefulness and user-friendliness of electric vehicle technological features like advanced infotainment systems and autonomous driving?

3. How familiar are you with the concept of electric vehicles and their characteristics, particularly in terms of price-related factors?

4. Can you share your perceptions about the pricing of electric vehicles compared to traditional internal combustion engine vehicles?

5. Considering your personal experiences or interactions with others, what are some common concerns related to the pricing of electric vehicles that you have encountered?

6. In your opinion, how important is the pricing factor in influencing consumers' intentions to purchase an electric vehicle? Are there specific price ranges that seem more appealing to potential buyers?

7. How do you in Sweden assess the performance of electric vehicles in terms of factors such as acceleration, speed, and handling?

8. In what ways do performance attributes like driving range, charging time, and battery life impact your decisions to choose electric vehicles over traditional gasoline-powered cars?

9. How do you view the potential for electric vehicles to contribute to reduced carbon emissions and air pollution, and how does this perception impact their overall evaluation of EVs?

10. What role does your sense of responsibility towards future generations and the environment play in their evaluation of electric vehicles and their willingness to pay a premium for eco-friendly transportation options?

11. How do subjective norms and the opinions of family and friends affect your consumption intention of electric vehicles among the millennial demographic in Sweden?