

# Factors Shaping Consumer Purchasing Decisions for Electric Cars

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## Abstract

*The article presents factors motivating consumers to purchase electric cars in Slovenia. In addition to a theoretical overview, the article includes an empirical section based on quantitative research with an online survey questionnaire. The aim of the study is to identify the factors motivating respondents to purchase an electric car. The empirical part was conducted using a quantitative research method, employing the online survey questionnaire technique. The target group consisted of electric car users of various age groups, employment statuses, and educational levels, including both men and women from different Slovenian regions. The survey results indicated that increasing awareness of environmental pollution influences the decision of potential buyers to purchase an electric car. The most significant factors affecting the purchase of an electric car include price, range, and charging time.*

**Keywords:** consumers, electric cars, purchase factors, market, Slovenia

# 1 INTRODUCTION

The automotive industry has historically evolved over a long period, and with technological advancements, there has been noticeable development in the overall industry, including the automotive sector. Modern cars gradually introduce advanced technologies and improvements across all car classes. The introduction of new components into cars has led to the creation of electric cars. Electric cars are cars that use electric energy stored in a battery, which powers the electric motor. Electric cars have several advantages over regular or conventional cars. Some of these include significantly lower air pollution and reduced emissions. In the late 19th century, electric cars were highly popular; however, due to an energy crisis and the increasing number of conventional cars, which were considerably cheaper, the popularity of electric cars declined. Nevertheless, in the early 20th century, changes occurred in the market, and electric cars regained importance. Electric cars are becoming increasingly popular as a growing number of people advocate for environmental protection, leading to a rising interest in purchasing electric cars. Additionally, car charging takes place at specific stations, resulting in cost savings compared to fuel expenses.

Consumer behavior encompasses cognitive, emotional, and psychological activities that individuals undertake during the purchase phase with the goal of satisfying their needs and desires. This concept is particularly crucial in retail to predict future consumer behavior and enable quick, strategic, and proactive responses for profit and long-term business success while ensuring customer satisfaction and loyalty.

Many different factors influence consumer behavior in the process of purchase decision-making. These factors can be categorized into several groups (influences), including psychological (motivation, attitudes, learning, and memory), social (reference groups, family, individual roles and positions, status), personal (age and family life cycle, occupation and financial status, lifestyle, personality and self-image, values and beliefs), cultural (culture, social class), economic (price - monetary and non-monetary aspects, income, quality), individual differences, and environmental influences (Blackwell, Miniard, and Engel, 2006; Kotler and Armstrong, 2018; Vukasović, 2023).

In today's era, almost every car brand has at least one model classified as an electric car. Car purchases reflect both emotional and functional value. Given this, the automotive industry is leaning towards meeting diverse customer requirements. Besides emotional value, which contributes to shaping a consumer's image, functional value is equally essential, as customers consider greater savings by not having to spend money on fuel. However, a challenge arises in the form of the high cost associated with purchasing electric cars. The higher prices of electric cars compared to conventional or fossil fuel-powered cars reduce their attractiveness. Another challenge is the performance of the electric car's battery pack and the battery charging time. Both features are connected to the performance of the electric car's battery pack, influencing both charging time and range. Geographic coverage (or lack thereof) of charging stations is also a drawback of electric cars.

## 1.2 Purchase Decision Factors

Through the analysis of numerous domestic and foreign literature, it has been possible to identify psychological factors influencing purchase decisions, such as motivation, attitudes, perception, learning, and memory. Motivation can be explained as an internal state that guides the consumer to purchase a

product to satisfy their own needs. Motivation for a purchase decision can stem from various needs, such as comfort, style, prestige, and more. Attitude is also a significant psychological factor influencing consumer behavior. The three key components of attitudes are: 1) rational attitude component (knowledge, behavior, experience), 2) emotional attitude component (feelings towards the product/service), and 3) behavioral attitude component (consumer behavior towards the observed product/service) (Vukasović, 2021). Brletić (2019, p. 39) presented a slightly different perspective on psychological factors, emphasising key consumer psychological traits: intelligence, temperament, and character. Intelligence can be explained as an individual's ability to act purposefully, think rationally, and effectively cope with their surrounding environment. On the other hand, temperament is the way of responding, in this case, to shopping, with special attention to the speed of shopping, frequency of shopping, and similar. Finally, character, which best explains consumer behavior, is woven from motivation, opinions, and feelings.

Personal characteristics represent another type of traits that significantly influence consumer behavior during the purchase phase. This relates to age, income, and personality. Four important considerations must be taken into account. Firstly, consumer behavior should be treated as behavior with lasting characteristics. Secondly, each person is a personality on their own, behaving differently in certain situations. Thirdly, researchers cannot predict consumer behavior, except for general behavior categories such as a healthy lifestyle, bargaining power, and the like. Fourthly, a balance must be maintained between the effects of the message and consumer behavior (Nourai et al., 2017, p. 10). Sarah and Viswanadham (2022, p. 75) found a positive correlation between personal factors and purchasing decisions in their study. A similar stance was taken by Purwanto (2020, p. 36), who found that personal factors significantly influence the decision to purchase a product.

Consumer behavior is also influenced by sociological, or as they are called, social factors. These factors primarily represent the influence of the family, friends, and acquaintances' environment. Roy and Datta (2022, p. 212) emphasise that, of all sociological factors, the family has the greatest impact, as each person shapes their personality at home where they grow up. Al-Azza (2014, p. 82) paid special attention to reference groups as a segment of sociological factors, explaining them as the influence of individuals or a group of people on consumer behavior. Reference groups focus on attitudes, values, beliefs, behaviors, and norms that directly or indirectly affect consumer behavior. After conducting their research, the authors demonstrated their hypothesis in the article, which reads "there is a significant positive relationship between the reference group and consumer behavior."

In addition to psychological, personal, and sociological factors, economic factors also influence the decision to purchase. In this sense, the consumer's financial situation or purchasing power is analyzed. As Minyahel (2020, p. 19) states, attention must be focused on personal income, family income, expected income, liquid assets, consumer credit, and other factors (inflation, government policy, etc.). Personal income is the actual income that remains available to the consumer in a month. The higher the income, the greater the likelihood of purchasing a product and vice versa. On the other hand, family income is the income of all family members and significantly influences the purchasing decision. When it comes to liquid assets, we refer to the situation in which the consumer, in the case of fewer liquid assets, will not spend on comfort and luxury, and vice versa. The availability of consumer credit increases the chances of purchasing durable and luxury goods, especially if the goods can be repaid in installments. The study by Rehman et al. (2017, pp. 419–420) deals with the examination of all factors influencing consumer behavior, including economic factors. After analyzing the results obtained, they

found that the consumer's economic situation significantly affects the change in their behavior in the purchase phase and is strongly related to discounts, free samples, "1 + 1 free" promotions, and others.

Non-price factors represent another type of factors that influence purchase decisions. These factors include the quality of the product/service, brand, product service, advertising of the product/service, packaging, and the option of instalment payment for the product (Jelen, 2013, p. 20). To increase consumer satisfaction, companies must provide warranties for products, especially for prestigious/expensive products. Quality is also an indispensable factor that must be aligned with the price. Bakator et al. (2018) focused on brand loyalty and purchasing intent in their work, so it is crucial to establish a strong and meaningful relationship between the brand and the consumer. Individual consumer attitudes and unpredictable circumstances must also be taken into account. Concerning packaging, the attractiveness of the packaging is essential, as it also affects consumer behavior. Therefore, employers should pay more attention to the quality, practicality, and attractiveness of the packaging. It is desirable for the packaging to be recyclable, thus protecting the environment.

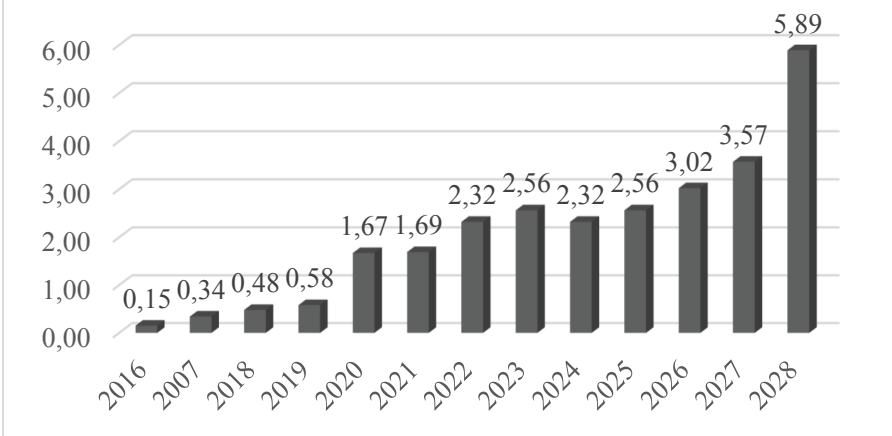
Situational factors are those factors that include the physical environment (store location, layout, music, etc.), social environment (friendliness of staff, sufficient number of employees), time (day, season), purchase purpose (gift or personal use), and the consumer's mood in the purchase phase (good mood, anxiety or anxiety, fatigue, etc.).

### **1.3 The electric car market**

One of the most important markets for the deployment of electric cars is the European market. The International Energy Agency (IEA) is aware of this fact and plans to manufacture 20 million electric car batteries by the end of 2030. The reason is quite apparent - the need for such cars. This is evidenced by the fact that in 2016, 600,000 electric cars were produced (mainly BEVs and plug-in hybrids), which is three times more than in 2014. Leading countries in this regard include Norway, Sweden, Denmark, Benelux countries, the United Kingdom, Germany, France, and Italy (Dano and Rehak, 2016, p. 75). However, China is the leading player in this industry, with an expected revenue of \$292.1 billion by the end of 2023.

When it comes to Slovenia, official statistical reports predict that by the end of 2023, the revenue from the sale of electric cars will amount to \$172.10 million. By 2028, it is projected to reach \$360.50 million, representing a 15.94% growth. The numerical forecast suggests the sale of 6.82 thousand electric cars by 2028, with an average market price of \$53,870 (Statista, 2023). For a better understanding, the number of electric car sales in the Slovenian region from 2016 to 2023 is presented in Figure 1, with predictions extending to 2028.

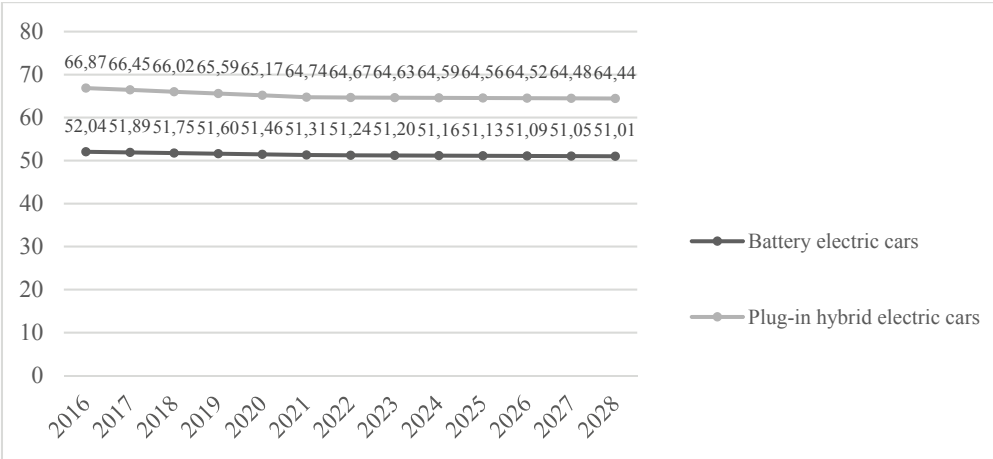
**Figure 1: Electric Car Sales in Slovenia from 2016 to 2023 with Predictions until 2028 (in thousands)**



Source: Statista, (2023).

Although China, Europe, and the USA represent approximately 95% of global electric car sales, Slovenia is successfully adapting to market changes and is showing a growing trend year by year. Looking at Figure 1, it is evident that by the end of 2023, the number of sold electric cars will reach 3.20 thousand (including 5.89 battery electric cars and 0.93 plug-in hybrid electric cars), which is 3.01 thousand more cars compared to 2016. The sales revenue at the end of 2023 will amount to \$172.11 million, with \$131.0 million from battery electric cars and \$41.11 million from plug-in hybrid electric cars, which is \$161.73 million more than in 2016. Since price is one of the key factors influencing the purchase decision, we will present the prices of both categories of electric cars in Slovenia in tabular form for the years to come.

**Figure 2: Prices of electric cars in Slovenia for battery electric and plug-in hybrid electric cars for the period from 2016 to 2023 with projections until 2028**



Vir: Statista, (2023).

Reviewing Figure 2, we can infer that the prices of electric cars have been more or less consistent over the years, with a slight inclination to decrease by the end of 2028. It was also found that the prices of plug-in hybrid electric cars in Slovenia are significantly higher compared to battery electric cars. In

2023, the average price of plug-in electric cars was \$64.63 thousand, while the average price of battery electric cars in the same year was \$51.20 thousand.

An analysis of the Slovenian market in terms of the prevalence of electric cars was conducted by Prah et al. (2022, pp. 287–288), emphasizing that the country currently has 637 charging points for electric cars. Compared to 2016, the number of charging points has increased by 500. Slovenia covers 20,273 square kilometers, averaging 0.015 charging points per square kilometer. Non-uniform distribution was also observed due to the fact that most charging points are located in the areas of Ljubljana, Maribor, Kranj, and Koper, as well as in tourist destinations such as Bled, Podčetrtek, Rogaška Slatina, and the Adriatic coast. Many charging points were also identified on the border with Austria, significantly more than, for example, compared to Croatia.

## **2 MATERIALS AND METHODS**

### **2.1 Methodology and Research Sample**

The research was conducted using a quantitative method, employing online survey techniques. A total of 106 respondents aged 18 and above participated. Six respondents were excluded from the analysis, leaving 100 completed surveys, forming the research sample. The survey questionnaire was designed in the online environment using 1KA. The target group comprised users of electric cars of different age groups, employment statuses, and educational levels, including both males and females from various regions in Slovenia. The collected data were analyzed using the statistical program SPSS. The results were interpreted using descriptive and inferential statistics, and the SPSS program was employed to test hypotheses.

After collecting and analyzing responses from the questionnaire, it was determined that a total of 106 respondents participated in the survey, with 100 providing meaningful responses, while the remaining 6 submitted blank responses, which were not considered. Of the total respondents, 67.0% were females, and 33% were males. Among the respondents, 32% were aged between 41 and 50, 28% were over 51, 27% were between 30 and 40, 11% were between 19 and 29, and only 2% were under 18. The survey results also indicated that the respondents were predominantly highly educated, with 29% having higher professional education, 27% having university education, and 9% holding master's or doctoral degrees, while on the other hand, 31% had vocational education, and 4% had elementary education. Looking at the monthly incomes of the respondents, most fell into the range of 1,500.00 to 2,000.00 euros (44.0%). Other respondents stated that their incomes ranged up to 1,000.00 EUR (33%), from 2,001.00 to 3,000.00 EUR (11%), from 3,001.00 EUR to 4,000.00 EUR (6%), over 4,001.00 EUR (3%), and some respondents had no personal income (3%). Another question related to the personal data of the respondents pertained to their current status. Of the total respondents, 66% stated that they were employed, while the remaining respondents were retirees (19%), unemployed (10%), and students (5%). After collecting and analyzing responses, it was found that 46% were married, 36% were single, 10% were divorced, and the remaining 8% were widowed.

## 2.2 Research Results

Table 1 presents the average values of the characteristics of an electric car that are important in choosing one. Respondents rated, on a scale from 1 to 5, the importance of these characteristics, where 1 was the lowest possible rating, and 5 was the highest possible rating.

Table 1: Characteristics Important in Choosing an Electric Car

Statement	Mean	SD
The price of an electric car is important to me.	3,83	1,29
The quality of an electric car is important to me.	4,38	1,03
The range that the car can cover with one charge is important to me.	4,60	0,77
The charging time is important to me.	4,53	0,77
The model and brand of an electric car are important to me.	3,12	1,17

If we look at the results in Table 1, we find that, for consumers when purchasing electric cars, the most important factor is their range, which the car can cover with one charge, as this segment recorded the highest average value, reaching 4.6, while they are least attentive to the model and brand of the electric car, where the average value was found to be 3.12.

Based on the data in Table 2, we can conclude that 49% of respondents are aware of the environmental significance of using electric cars. However, 29% of those surveyed denied that such cars reduce environmental pollution, indicating a potential lack of information. The remaining 22% of respondents had mixed opinions.

Table 2: Electric Cars – Less Environmental and Air Pollution

Statemet: Electric cars pollute the environment and air less than conventional cars.				
Answers	Frequency	Percentage	Valid	Cumulative
1 (Strongly disagree.)	13	13 %	13 %	13 %
2 (Mostly disagree.)	16	16 %	16 %	29 %
3 (Neither agree nor disagree.)	22	22 %	22 %	51 %
4 (Mostly agree.)	29	29 %	29 %	80 %
5 (Strongly agree.)	20	20 %	20 %	100 %
Total	100	100 %	100 %	
	Mean	3,27	SD	1,31

The next important question addressed by the survey was, "Does stricter environmental protection legislation increase interest in purchasing electric cars?" Looking at the data from Table 3, it is evident

that there were the highest number of undecided responses this time (32%). On the other hand, 38% answered affirmatively to this question, while 30% answered negatively, indicating fairly divided opinions.

Table 3: Stricter Environmental Protection Laws – Increased Interest in Purchasing an Electric Car

Statement: Stricter environmental protection laws are increasing interest in purchasing an electric car.				
Answers	Frequency	Percentage	Valid	Cumulative
1 (Strongly disagree.)	14	14 %	14 %	14 %
2 (Mostly disagree.)	16	16 %	16 %	30 %
3 (Neither agree nor disagree.)	32	32 %	32 %	62 %
4 (Mostly agree.)	29	29 %	29 %	91 %
5 (Strongly agree.)	9	9 %	9 %	100 %
Total	100	100 %	100 %	
	Mean	3,03	SD	1,18

State subsidies can be one of the main motivators for purchasing an electric car, but the question arises as to whether survey respondents share this view. According to the available responses, 37% of respondents consider it a key motivator, while 41% do not. The opinions of the remaining 22% were not expressed. The results are presented in Table 4.

Table 4: State Financial Subsidies – Influence on Decision to Purchase an Electric Car

Statement: State financial subsidies influenced my decision to purchase an electric car.				
Answers	Frequency	Percentage	Valid	Cumulative
1 (Strongly disagree.)	26	26 %	26 %	26 %
2 (Mostly disagree.)	15	15 %	15 %	41 %
3 (Neither agree nor disagree.)	22	22 %	22 %	63 %
4 (Mostly agree.)	26	26 %	26 %	89 %
5 (Strongly agree.)	11	11 %	11 %	100 %
Total	100	100 %	100 %	
	Mean	2,81	SD	1,33

The second question regarding government subsidies was, "What is the likelihood that you would decide to purchase an electric car if the subsidy for the purchase amounted to 50% of the car's value?" (Table 5). 34% of respondents answered that this is a key motivator that would lead them to a purchase decision,



while for 34% of respondents, it would not have an impact. The remaining respondents had mixed opinions.

Table 5: Probability of purchasing an electric car if the subsidy for the purchase is 50% of the car's value

Statement: What is the likelihood that you would decide to purchase an electric car if the subsidy for the purchase is 50% of the car's value?				
Answers	Frequency	Percentage	Valid	Cumulative
1 (Strongly disagree.)	17	17 %	17 %	17 %
2 (Mostly disagree.)	17	17 %	17 %	34 %
3 (Neither agree nor disagree.)	32	32 %	32 %	66 %
4 (Mostly agree.)	15	15 %	15 %	81 %
5 (Strongly agree.)	19	19 %	19 %	100 %
Total	100	100 %	100 %	
	Mean	3,02	SD	1,33

**4 CONCLUSION**

The buying process is extremely complex and goes through various stages—identifying needs, seeking information, evaluating options, making a purchase decision, and post-purchase outcomes. At the same time, the purchasing process can be influenced by various factors that can be grouped into psychological (motivation, perception, learning), personal (age, education, income, and lifestyle), sociological (family, friends, reference groups), economic (personal income, family income, expected income, liquidity, consumer loans, and other factors such as inflation, government policies, etc.), non-price-related (product/service quality, brand, service and product warranty, advertising methods, packaging, and the possibility of instalment payments), and situational factors (physical environment, social environment, time, purchase purpose, consumer mood during the purchasing phase).

The obtained research results have shown that the increasing awareness of environmental pollution influences the decision of potential buyers to purchase electric cars. Conversely, the introduction of financial support and subsidies for the purchase of electric cars does not lead to a decision by buyers to purchase electric cars. The most important factors influencing the purchase of electric cars are price, range, and charging time.

Regarding further research possibilities in this field, it is possible to conduct the same type of research in other countries and on a larger sample and then compare them. Additionally, it is possible to examine why consumers have not yet switched to electric cars, providing clearer insights into their attitudes and thought processes. At the same time, based on the received responses, additional suggestions for improvements can be made.

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