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Master in Management Program

The Prospects of Electric Vehicles on the Russian Market

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АННОТАЦИЯ

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Название ВКР	Перспективы электромобилей на российском рынке
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Научный руководитель	Смирнова Мария Михайловна, доцент, Кафедра маркетинга
Описание цели, задач и основных результатов	Цель исследования Выявить факторы, определяющие интерес покупателей к electronic arts на российском рынке, и разработать концептуальную модель, основанную на существующих исследованиях и результатах эмпирического тестирования. Для достижения цели исследования был сформулирован список вопросов. Вопрос 1: Кто является целевой аудиторией для электромобилей? Вопрос 2: Какие факторы влияют на намерение покупателей приобретать электромобили в России? Вопрос 3: Какие методы продвижения могут существенно стимулировать развитие рынка электромобилей в России? По результатам исследования были выявлены факторы, оказывающие статистически значимое влияние на формирование интереса потребителей к приобретению электромобилей. Был составлен портрет потенциальных покупателей электромобилей на российском рынке. Также был выявлен ряд статистически значимых стимулирующих бонусов, которые оказывают статистически значимое влияние на интерес к покупке электромобилей.
Ключевые слова	Российский рынок, электромобили, факторы, влияющие на формирование спроса на электромобили, стимулирующая политика

ABSTRACT

Master Student's Name	Lipin Egor
Master Thesis Title	The Prospects of Electric Vehicles on the Russian Market
Educational Program	Master in Management
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Academic Advisor's Name	Smirnova Maria Mikhailovna, Associate Professor, Department of Marketing
Description of the goal, tasks and main results	**Research goal** To identify the factors, shaping customer interest to electronic cars in Russian market, and develop a conceptual model, based on the existing studies and results of the empirical test. To achieve the purpose of the study, a list of questions was formulated. **RQ1**: Who is the target audience for electric cars ? **RQ2**: What factors impact on the intention of customers to buy toward electric vehicles in Russia? **RQ3**: What methods of promotion can significantly stimulate the development of the electric vehicle market in Russia? According to the results of the study, factors that have a statistically important effect on the formation of interest among consumers in purchasing electric cars were identified. A portrait of potential buyers of electric cars on the Russian market was identified. A number of statistically important incentive bonuses have also been identified, which have a statistically important impact on the interest in buying electric cars.

Keywords	The Russian market, electric vehicles, factors influencing the formation of demand for electric vehicles, incentive policy

ЗАЯВЛЕНИЕ О САМОСТОЯТЕЛЬНОМ ХАРАКТЕРЕ ВЫПУСКНОЙ КВАЛИФИКАЦИОННОЙ РАБОТЫ

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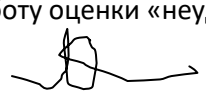

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Table of content

Introduction 8

History background……9

The current situation in the global electric vehicle market…..……..10

The current situation in the Russian electric vehicle market…….……12

The stage of development of the electric vehicle market in Russia……...14

Chapter 1. The theoretical aspect of formation intention to Electric vehicles...……18

1.1. TAM and UTAUT models as a conceptual framework ….……..……...18

1.2. Factors influencing consumer interest in purchasing electric vehicles……...23

1.3. Portrait of potential customer for electric vehicles……..……25

1.4. Mechanisms for stimulating sales of electric vehicles…….……...28

1.5. Conclusion chapter 1…….……..32

Chapter 2. Empirical study of customer intention to Electric vehicles on the Russian market..…...34

2.1. Research methods…….……...34

2.2. Requirements for the data collection…….……..34

2.3. Questionnaire structure ……..……..35

2.4. Data Collection process……..……..35

2.5. Statistical analysis……..……...35

2.6. Description of data sample ……35

2.7. Factor analysis…….…….……...38

2.8. Reliability analysis……...41

2.9. Regression model……..…...41

2.10. Cluster analysis……...……...48

Chapter 3 Chapter 3. Conclusions and discussions……53

3.1. Answers to research questions…….……53

3.2.Discussion ……..…….……..56

3.3. Recommendations…….……...57

3.4. Limitations…….…..58

Theoretical and practical contribution…….……...59

4.1. Theoretical contribution…….……..…….……...59

4.2. Practical contribution…….……..…….….60

4.3. Future research directions……...…….61

List of references 63

Appendix……69

Introduction

There are enough problems in the modern world, which require active actions on the part of humanity to improve the quality of life. So in order to significantly improve the quality of life around the world, in 2015 the UN formulated 17 Sustainable Development Goals (Sustainable Development Goals 2015). Achieving these goals should serve as the basis for a significant improvement in the quality of life. One of the goals is to take active action to combat climate change. One of the components of the process to combat climate change is the reduction of greenhouse gas (GHG's) and CO2 emissions into the atmosphere. To achieve this goal, taking active action to combat climate change, we can see a trend towards eco-friendly consumption and environmental protection in many countries. According to the trend, humanity tries to decrease the harm that they give to nature. Society and the government are putting forward many new requirements for companies that will help reduce the harm caused to the environment. For example, in many states, laws and environmental regulations are being created that regulate CO2 emissions. One of the central topics related to reducing CO2 and greenhouse gas emissions into the atmosphere is the transport sector. In 2018, the transportation sector was responsible for approximately 14 percent of all Greenhouse Gas Emissions (GhGs) and a quarter of the emissions derived from burning fossil fuels (Wang Ge at al. 2019). To reduce pollution and reduce the amount of greenhouse gas emitted from the automotive sector, the European Commission has approved an ambitious plan. As a result of the implementation of this plan, Europe should become the first climate-neutral part of the world by 2050 (European EV Charging Infrastructure Masterplan. 2022). In order to make a significant transition to a sustainable path, the automotive sector needs to significantly reduce the greenhouse gases it produces and emits. The deployment of zero-emission vehicle (ZEV) technology (battery electric vehicles—BEVs) and fuel cell electric vehicles (FCEVs)) and low-emission vehicles (plug-in hybrid electric vehicle—PHEVs)) is a step towards achieving this goal (Electric Vehicles Initiative (EVI). EV Global Outlook 2019). Nowadays, exist some versions of alternative fuel vehicles, which may be substitution for conventional cars. All options of alternative fuel cars and short description presented in table 1.

Table 1. Options of alternative fuel vehicle

Vehicle type	Description	Average range
Hybrid electric vehicle (HEV)	This type of vehicle powered by common internal combustion engine. Therefore models of this type have not plug in.	The range limit is similar as regular cars with internal combustion vehicles.
Plug-in Hybrid vehicle (PHEV)	Models of this type powered by internal combustion energy and also use energy from battery. The battery is charged by plugging into	The range limit is similar as regular cars with internal combustion engine.

	electricity sources.	
Battery electric vehicle (BEV)	These vehicles powered only from electricity energy. It has not tank for fuel. The battery recharged by plugging in.	The range limit for these types is significantly lower, than vehicles with internal combustion engine.
Fuel cell vehicle (FCV)	These vehicles are ones where hydrogen is converted in electricity from fuel cell.	Range approximately 650 KM.

Source: Pedro Gerber Machado at al. 2023

As part of this work, the process of adaptation to Battery electric vehicles will be considered. Currently, electric vehicles are gaining more and more popularity. New versions of electric cars from an increasing number of companies are presented every year. However, the mass adoption of electric vehicles around the world is encountering a large number of obstacles that need to be overcome in order to make this market truly massive. At the same time, both problems with charging infrastructure and network overvoltage (Moez Tahir. 2017), as well as consumer perception, act as barriers.

History background

The technology of vehicles powered by electricity is not new, the first car manufactory, which specialize only on EV's emerged in the 1896 in USA. The target audience for this type of vehicle was representatives of the middle and upper classes. In general, manufacturers focused on a high-income audience, since the cost of such a vehicle was several times higher than a car with an internal combustion engine. The undeniable advantages of electric carriages were complete noiselessness, instant engine start, an elementary control algorithm that eliminates switching the tight poker of the gearbox, and minimal periodic maintenance with a sufficient power reserve of 40-60 km (Vladimir Sanni 2020).

There are several reasons why electric vehicles have lost the competition and automobiles with internal combustion engines have become the dominant mode of transport. The first of these reasons is the beginning of production of the Ford «Model T» car. Thanks to the innovative conveyor assembly method of the Ford «Model T», the company was able to significantly reduce the cost of the final product, which contributed to its distribution. Another important factor that predetermined the victory of cars with an internal combustion engine was the technical aspects. Cars of this type were refueled using cheap oil obtained from Texas, which also significantly reduced the cost of their operation. Another important aspect is the ability of cars with an internal combustion engine to travel much longer distances without refueling, which also added comfort in

operation. Thus, it can be concluded that the key factors that predetermined the victory of cars with an internal combustion engine are cost and ease of operation.

The technology of cars powered by electricity got a second chance at the beginning of the 21st century. When there was a massive request to reduce environmental pollution from the automotive sector. The first electric car in the 21st century was introduced by Tesla in 2008 (Daniil Trubi 2022). The Roadster model has seriously changed the perception of consumers and experts about electric vehicles and the possibility of their operation. Then other companies also began to introduce their own versions of electric cars. Today, we can observe the most serious growth in the electric car market. At the same time, this growth is taking place not only in the markets of developed countries, but also in countries with developing economies. The electric car is becoming an increasingly widespread phenomenon. As a result, we can argue that electric powered cars can be considered as a possible substitute for traditional cars.

The current situation in the global electric vehicle market

In recent years, the electric car market has become more and more massive. A lot of manufacturers are presenting their versions of electric vehicles and announcing ambitious plans for the electrification of the automotive industry.

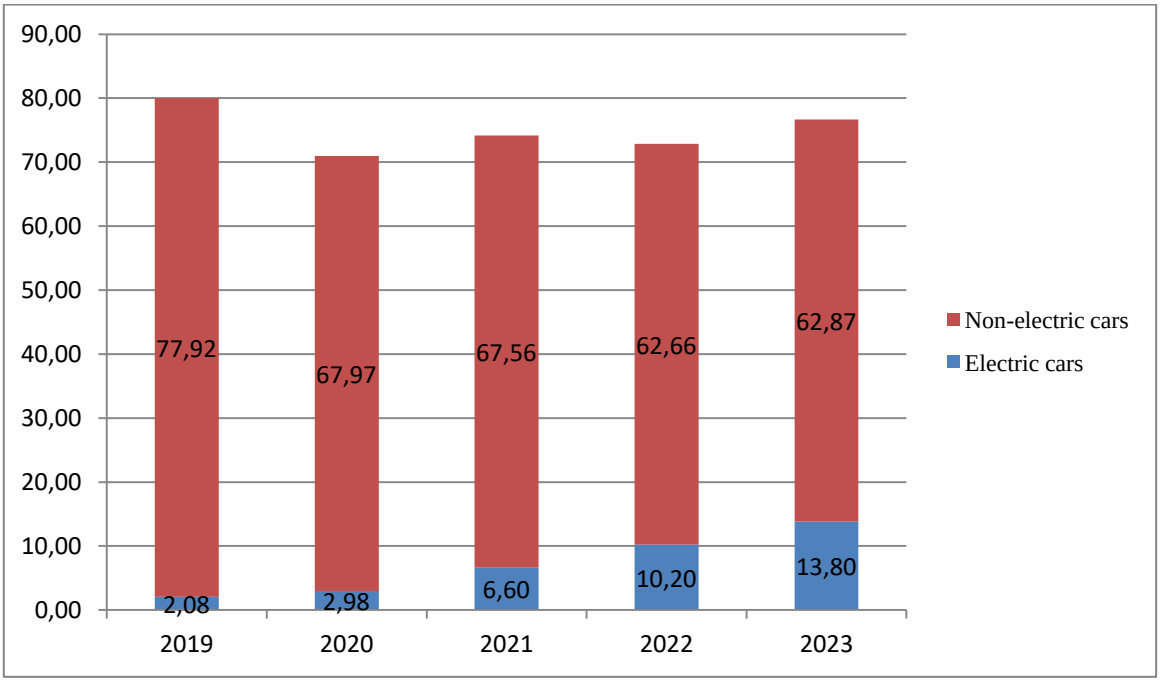

Figure 1. Global car sales by year. In millions.

Source: Hannah Ritchie 2024

Based on the data shown in Figure 1, we can draw several conclusions. First of all, it should be noted that the market of sold electric vehicles is growing every year. Thus, the growth of the electric vehicle market amounted to 2020 (+43%), 2021 (121%), 2022 (54%), 2023 (35%). The electric car market is growing at a very high pace, although it can be seen that the growth rate has been slowing down in the last two years. Also, it is worth noting that, in general, the automotive market declined significantly in 2020 due to the Covid-19 pandemic and has not yet recovered. At the same time, the positive dynamics in the market as a whole indicates a favorable trend and provides growth prospects for both the automotive market as a whole and the electric car market in particular.

When considering the countries with the highest percentage of electric vehicles sold, it can be noted that the Scandinavian countries Norway and Sweden occupy the absolute leadership in percentage terms. Separately, I would like to note the percentage of electric vehicles sold in countries such as China (38%) and the United States (10%). Such attention to these two countries is due to the fact that these are the two largest automotive markets in the world. Thus, based on the data from Figure 2, it can be concluded that at the moment the electric vehicle market has strong development in three regions. These are China, where the volume of new electric vehicles sold is 38%, the European Union (27%) and the United States (10%).

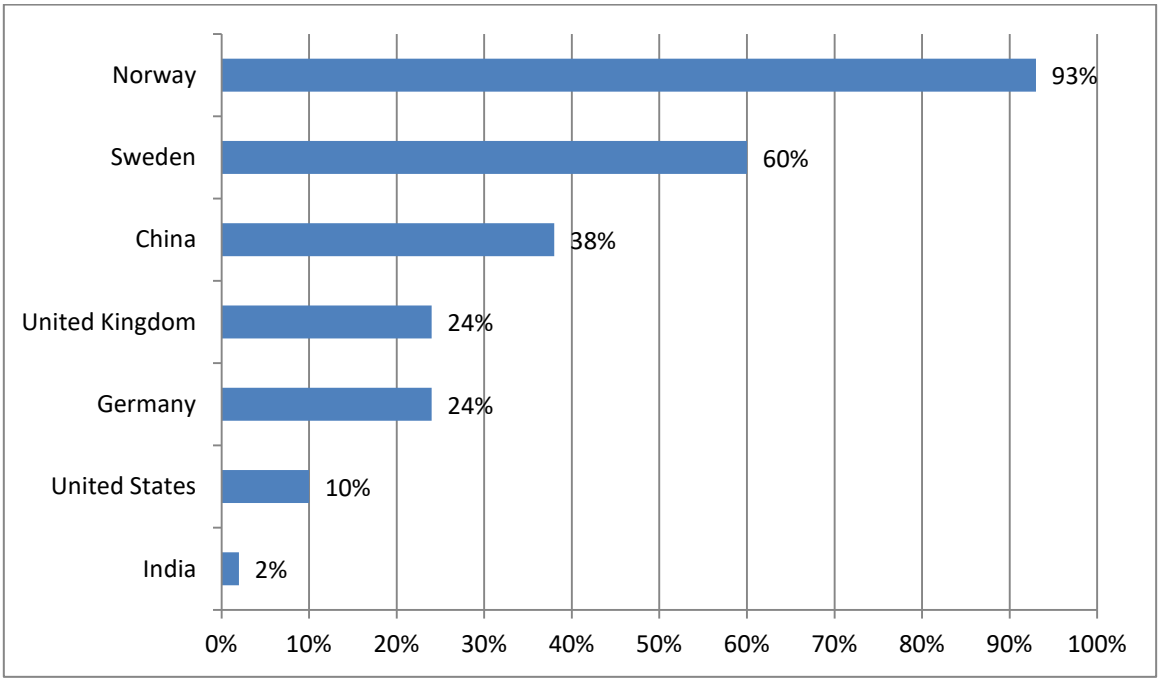

Figure 2. The countries with the largest share of electric vehicle sales

Source: Hannah Ritchie 2024

To assess the global level of electric vehicle distribution, it is necessary to estimate what percentage of cars in the world are electric.

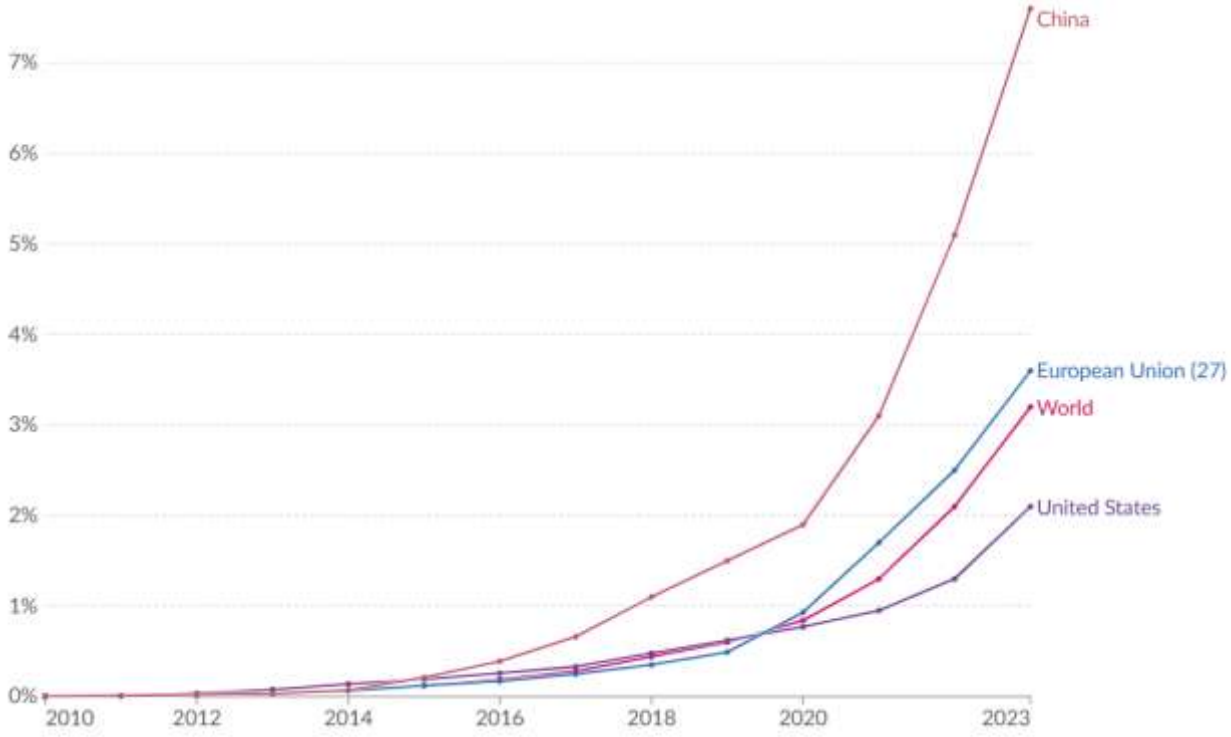

Figure 3. The level of penetration of electric vehicles worldwide and by country

Source: Hannah Ritchie 2024

According to the data shown in figure 3, currently about 3% of cars in the world are electric. This indicator is relatively small, but it is worth understanding that over the past 3 years, the percentage of electric cars from the total number of cars in the world has tripled. Since back in 2019, the percentage of electric vehicles from the total number of cars was less than 1%. Also, highlight the speed of development of the three main markets. The progress in China, where electric vehicles account for 7% of the fleet, is impressive. At the same time, the level of penetration of electric vehicles into the US market lags behind the global average and is about two percent.

The current situation in the Russian electric vehicle market

To assess the prospects for the development of the electric vehicle market in Russia, it is necessary to determine the current level of market development. Data on sales of new cars in Russia are shown in Figure 4.

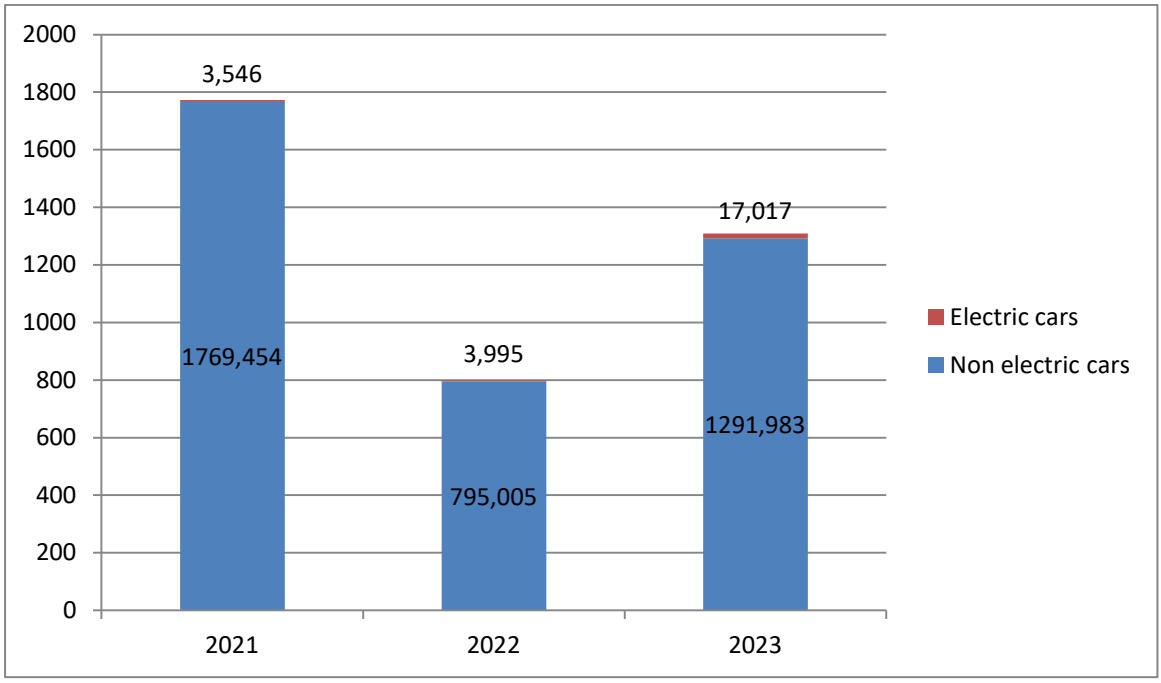

Figure 4. The structure of sales in the market of new electric cars in thousands of pieces

Source: Dmitry Raspopov at al. 2024, Igor Vladimirsky 2023

According to the data in the figure, we can observe that the Russian market largely repeats the trends of the global market. Despite a significant reduction in the number of cars sold in 2022, the number of electric vehicles sold continues to increase. The Electric vehicle market has been growing rapidly over the past few years. So in 2022, the market grew by 12%, despite the fact that the rest of the market showed a decline and in 2023, the increase was 325%. Thus, we can assume that there is a coinciding trend with the global one and expect a further increase in the volume of new electric cars in Russia. This assumption is confirmed by the data from Figure 5.

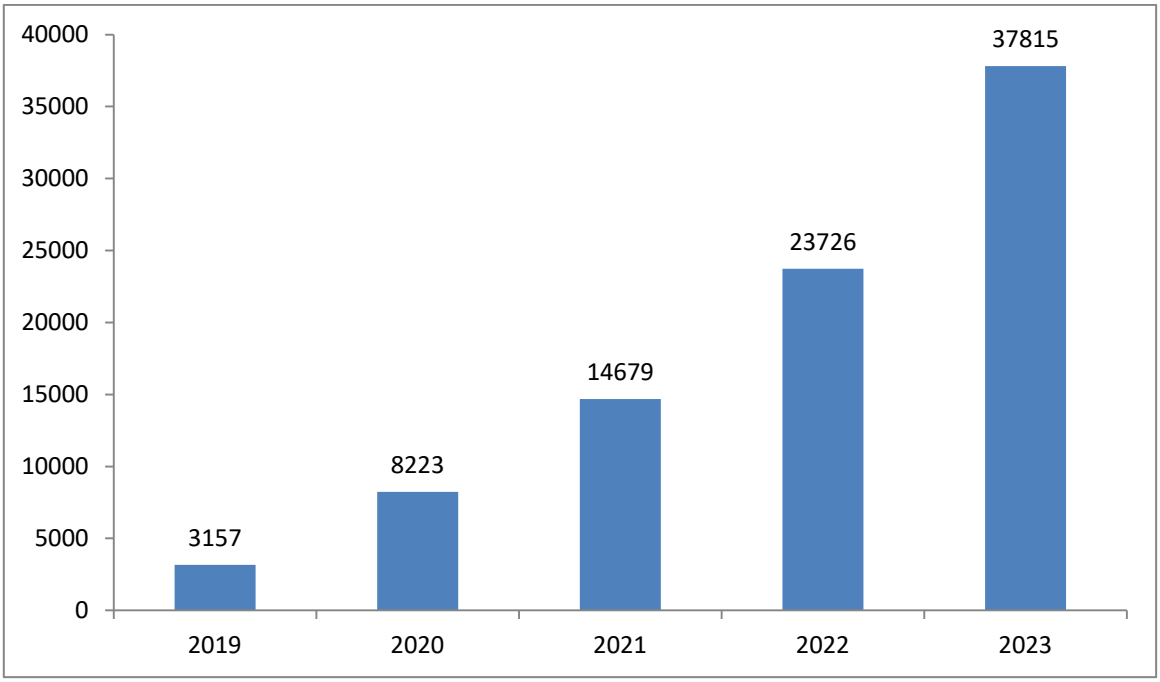

Figure 5. The number of electric vehicles in Russia in 2019-2023, pcs

Source: Dmitry Raspopov at al. 2024

The general trend, which is visible in Figure 5, confirms the conclusion that was made above. The number of electric cars in Russia is growing, so for the period from 2019 to 2023, the number of electric cars in Russia increased almost 12 times or 1097%. However, despite such positive dynamics and a serious increase in the volume of the electric car market in Russia, at the moment the share of electric cars from the total number of cars in Russia is 0.08%, which is significantly different from the global average.

When considering the share of electric vehicles in the Russian market, it can be concluded that the market is at its initial stage of formation and has not yet become widespread.

Summing up the assessment of the current state of the electric vehicle market in Russia, we can conclude, that the degree of development of the electric vehicle market in Russia lags significantly behind the world level, while having the same trends towards significant growth in the last few years. While maintaining existing trends and using additional promotion mechanisms, the electric car market in Russia may soon catch up with the global.

The stage of development of the electric vehicle market in Russia

To determine the degree of development of the electric vehicle market in Russia, we use technology adoption curve. According to this curve several consumer groups were identified, according to the degree of susceptibility to new technologies and the stage of the beginning of their use. So consumers were divided into 5 main groups - innovators, who begin to use the technology

the earliest (2.5%), early adopters are people who have already heard about the technology and also decide to use it (13.5%), previously the majority - at this stage it can be said that the market has been formed and the product has become mass (34%), later the majority - at this stage, the technology is already accepted by everyone and widely distributed, people trust the technology and are confident in its safety (34%), laggards - these are the people who adapt to new technologies the worst and start using it very late (16%).

Figure 6. Innovation lifecycle curve

Source: Ismail Sahin 2006

According to this curve, the global average indicator shows that the global electric vehicle market is moving into the stage of early adopters. At that time, the Russian electric vehicle market is at an innovators stage. At the same time, we should be mention that most electric vehicles are located in three regions: Europe, the USA and North America and China. In these regions, the EV's market has formed sufficiently and is already becoming massive. At the same time, when assessing the Russian market, it can be concluded that the market is in the initial stage of its formation and the main customers are innovators. Since the market has not fully formed, the speed of its development depends primarily on actions, which the government and manufacturers will take to help develop the market.

Conclusion

The process of transition from traditional cars (with an internal combustion engine) to electric-powered cars has already begun. The governments around the world try to promote this emerging market, give some benefits for adopters, create laws, give subsidy for manufactories. The

number of sold cars powered by electric energy increases every year. However, the schedule of this transition is uncertain.

The adaptation of electric vehicles to everyday life is facing many challenges, which significantly slow down this process. The lack of charging infrastructure can be attributed to such developments, which significantly slow down the development of the electric vehicle market. Another important aspect is the high initial cost of buying electric cars. Since on average electric cars are more expensive than their gasoline counterparts. Another important problem that is directly related to the development of transport infrastructure is the limited range of electric vehicles (Fayez Khalaf Alanazi 2023).

The prospects for the development of the electric vehicle market in Russia are extremely relevant. The Russian market is currently far behind the global average and catastrophically lagged behind the markets of countries such as China and the European Union. At the same time, more and more governments of different countries and company management declare the complete abandonment of cars with an internal combustion engine by 2030. As a result, it can be concluded that the main direction of development for all major car manufacturers will be the transition to the production of electric cars only.

In the current reality, when supply chains are seriously disrupted and there are serious problems with the production process in many countries, a complete transition to electric vehicles by 2030 seems unlikely. However, it is worth considering the fact that the general trend has already been set and this transition will take place. As discussed above, a complete transition to a new technology takes time to create user intention in using this technology. As a result, it is important to start shaping the electric vehicle market in Russia right now. There is still time before the complete abandonment of the production of cars with an internal combustion engine. As a result, it is necessary to identify factors that could contribute to the formation of the electric vehicle market in Russia.

The research gap and goal

Research goal

To identify the factors, shaping customer interest to electronic cars in Russian market, and develop a conceptual model, based on the existing studies and results of the empirical test.

To achieve this goal, it is necessary to overcome the lack of practical knowledge in this industry relative to other countries.

Research gap

Insufficient understanding by researchers and practitioners of the customers, which factors could strengthen the growth of interest of Russian consumers to e-vehicles.

Research problem

Lack of understanding what factors to influence in order to strengthen the demand on the electric vehicles for the Russian market. As result of lack of empirical evidence.

Research questions

To achieve the purpose of the study, a list of questions was formulated.

RQ1: Who is the target audience for electric cars ?

RQ2: What factors impact on the intention of customers to buy toward electric vehicles in Russia?

RQ3: What methods of promotion can significantly stimulate the development of the electric vehicle market in Russia?

Chapter 1. The theoretical aspect of formation intention to Electric vehicles

The modern world is characterized by rapid development. Since the 20th century, the world has been constantly accelerating, new technologies are emerging faster and faster. Such a rapid development of technology has prompted researchers and practitioners to look for ways to measure people's willingness and intention in using new technology.

The emergence of a new technology, especially if this technology radically changes the usual aspects of life, always comes with some difficulties. Electric vehicles can be attributed to such a category of technologies that, when used in everyday life, can change the habitual patterns behavior of a person. This is especially true for aspects such as charging and using an electric car.

The objectives of this chapter is the search for conceptual foundations on the basis of which it will be possible to conduct further practical research on determining the factors that form consumer intention in purchasing electric vehicles.

1.1.TAM and UTAUT models as a conceptual framework

The introduction of such technologies always requires time and painstaking work on the part of stakeholders. Ajzen and Fishbein were one of the first to try to unify and create a detailed descriptive model of the process of implementing such technologies, putting forward their theory of reasonable action (TRA). After that, in 1989, Davis put forward his significantly expanded model trying to explain the process of consumer adoption of a new technology (TAM), based on the Ajzen theory (Mirza Upa Orvala at al. 2023).

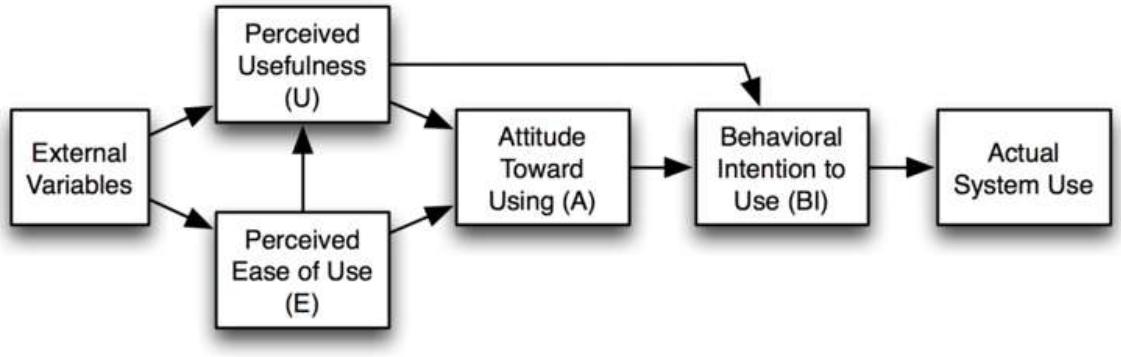

Figure 7. TAM model.

Source: Mirza Upa Orvala at al. 2023

According to this theory, the user's ultimate intention in using a new technology is mainly based on two main factors: perceived ease of use and perceived usefulness. The table shows the definitions of all variables used in the TAM model.

Table 2. The Constructs of the TAM

Constructs	Definition
Behavioral Intention	An individual intends to act in a manner without guarantees to do so.
Attitude Towards Behaviour	The extent to which a person thinks that acting the behavior is negative or positive.
Perceived Usefulness	The extent to which an individual accepts that employing a certain application framework will raise his or her work performance inside an organization environment.
Perceived Ease of Use	Measures the level to which a person assumes that employing a system is effortless

Source: Samar Zaineldeen at al. 2020

Despite the massive popularity of the TAM model and its repeated use in many studies, there are many critics who criticize it contain incomplete descriptive and analytical power and lack of practical value (Chuttur, M. Y. 2009). Also, many critics emphasize the lack of attention to external factors, which can significantly affect the quality of the data obtained (Samar Zaineldeen at al. 2020).

Due to the criticism of the TAM model and the ongoing progress, scientists continued their research, gradually improving this theory. The researchers (Venkatesh and Davis. 2000) have significantly expanded the model TAM. In particular, the factors that have a significant impact on the perceived usefulness of the new technology have been identified. The new more advanced model was named TAM2 contains social influence processing variables (subjective norms, image, as well as voluntariness), cognitive instrumental processing variables (perceived ease of use, result demonstrability, output quality, job relevance).

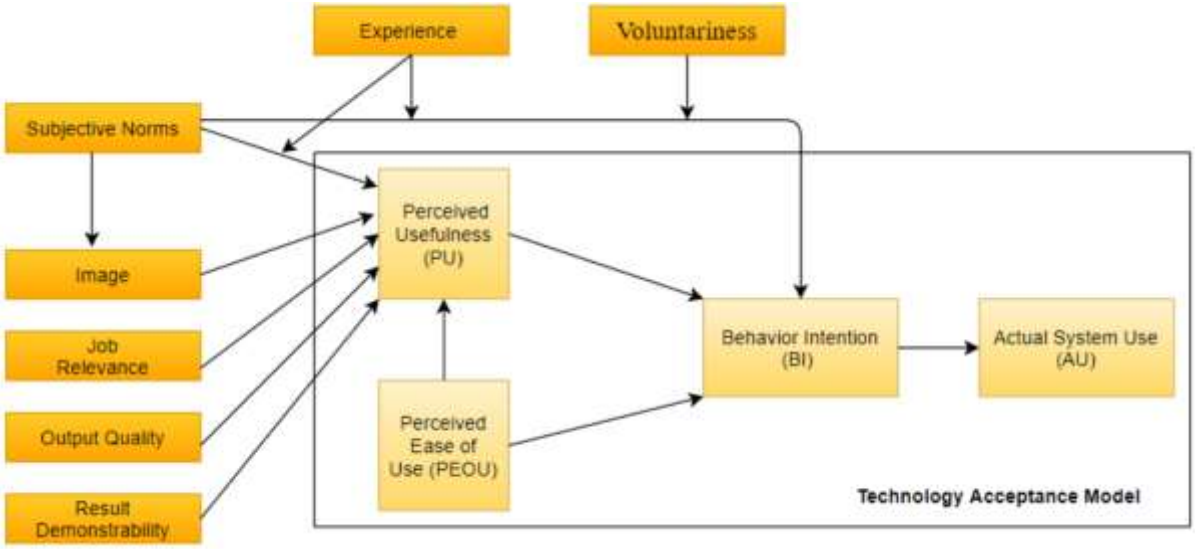

Figure 8. TAM 2 model.

Source: Samar Zaineldeen at al. 2020

A new, more advanced version of this theory has been developed based on the TAM2 model. An improved new version of the model was named TAM 3. The main direction in which TAM 3 assumed its significant development compared to the previous model was the identification of factors that determine the perceived ease of use. Thus, TAM 3 is a combination of the TAM 2 model and new factors that determine the perceived ease of use (Samar Zaineldeen at al. 2020).

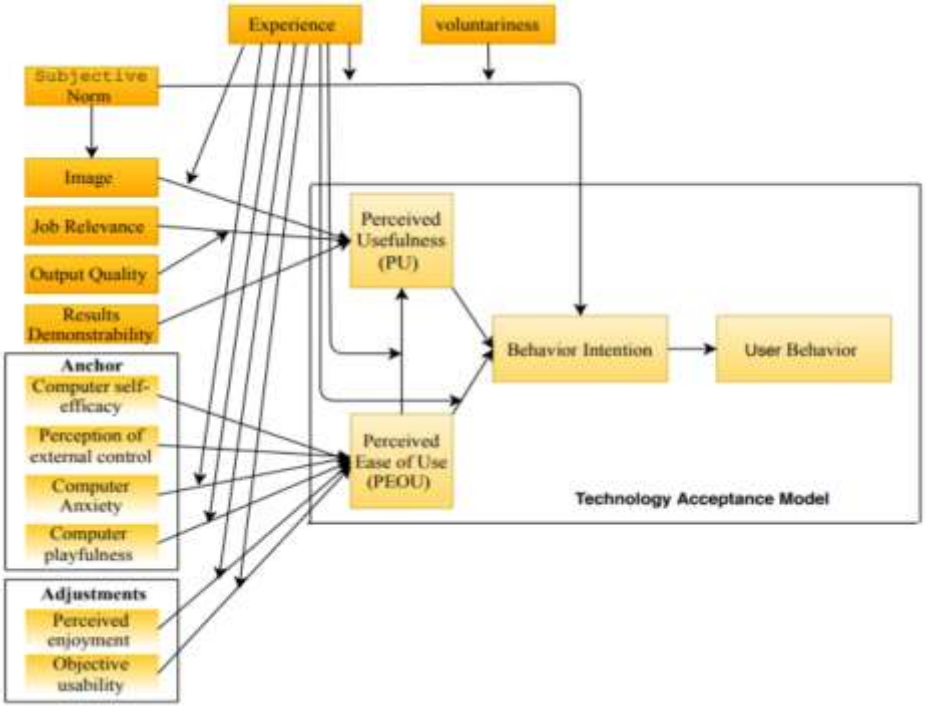

Figure 9. TAM 3 model.

Source: Samar Zaineldeen at al. 2020

Thus, TAM 3 offers a more extended network of factors that can be used to measure perceived usefulness and perceived ease of use, which ultimately makes it possible to more accurately measure consumer intention in using the new system.

In continuation of the development of a theory that studies user approaches to new technologies, the Unified Theory of Technology Adoption and Use (UTAUT), created by Venkatesh, Morris, Davis and Davis Jr., was presented in 2003. This model combined the most well-known theories at that time to create a unified view of the process of adaptation to new technologies. To create a unified model, there were reviewed the acceptance literature and discussed eight prominent models: TRA, TAM, the motivational model, the theory of planned behavior (TPB), a model combining TAM and TPB, the model of PC utilization, the innovation diffusion theory, and the social cognitive theory. Researchers empirically compared the eight models and their extensions. Based on them, they formulated a unified model that integrates elements across the eight models. Finally, they empirically validated the new model to give greater consistency to their contribution. By encompassing the combined exploratory power of the individual models and key moderating influences, UTAUT advances cumulative theory while retaining a parsimonious structure (Francisco Javier Rondan-Cataluña at al 2015).

The UTAUT model includes four independent variables and four moderator variables that affect the behavioral intentions of users and their behavior when using. We have identified expected performance, expected effort, and social impact as independent variables influencing user behavioral intentions (Myeong-Jun at al. 2021).

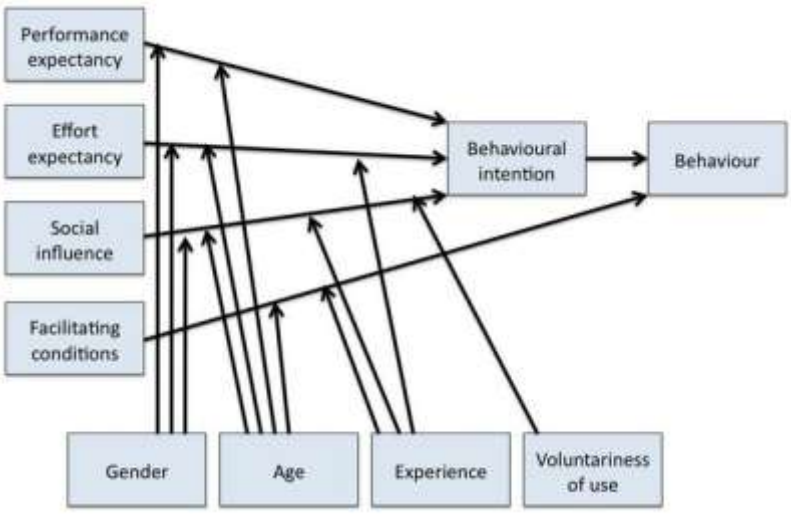

Figure 10. UTAUT model

Source: Fahad Mohammed 2010

According to a study conducted to compare existing theories TRA, TAM, TAM2, TAM3, UTAUT it was determined that the best model for explaining use of the new technology is UTAUT. Also this model has a very good model fit and quality indices.

A comparative analysis of the models is presented in the table 3.

Table 3. Acceptance concepts, contributions

Model	Developed by	Concept	Contribution
TAM	Davis et al.	TAM utilizes the theory of reasoned action as a conceptual basis to link actual system usage behavior, perceived ease of use, users' intentions, attitudes, as well as perceived Usefulness. TAM hypothesized that perceived ease of use plus perceived usefulness act as a mediator for the impact of external factors	Initial theory devoted to IS, due to its great number of quotations, its permanence, or due to it was the earliest technology acceptance model considering wide-ranging of experimental support.
TAM2	Venkatesh and Davis	The social influence processes with the cognitive instrumental procedures are incorporated into this model. The Couple procedures were measured to be critical to examine user adoption	The developer search for the factors of perceived usefulness, initial, to enhance design the institutional involvement made upon acceptance of the user and then to anticipation the utilize of innovations when they are provided in a professional situation". This model comprises more factors and particularly the factors that impact the perceived usefulness
TAM3	Venkatesh et al	The developer proposes that experience as a mediator to the relationships among perceived ease of use with behavioral intention usefulness, computer anxiety with perceived ease of use, as well as perceived ease of use with perceived. TAM3 (Venkatesh and Bala, are derived from a theoretical framework composed of four groups. Each of the four groups: individual difference, system distinctiveness, societal influence, as well as facilitating conditions, made up of their factors based on the two critical elements of perceived usefulness as well as perceived ease of use	TAM3 offered a full nomological network of the factors of users' Information Technology System acceptance TAM3 has made considerable hypothetical, contributed by identifying the factors of perceived usefulness in addition to perceived ease of use. It has included elements of context, content, process, and individual differences.
UTAUT	Venkatesh at al.	This model combined the most well-known theories at that time to create a unified view of the process of adaptation to new technologies. To create a unified model, there were reviewed the acceptance literature and discussed eight prominent models: TRA, TAM, the motivational model, the theory of planned behavior (TPB), a model combining TAM and TPB, the model of PC utilization, the innovation diffusion theory, and the social cognitive theory. Researchers empirically compared the eight models and their extensions.	Empirically validated the new model to give greater consistency to their contribution. By encompassing the combined exploratory power of the individual models and key moderating influences, UTAUT advances cumulative theory while retaining a parsimonious structure

Source: Samar Zaineldeen at al. 2020

1.2.Factors influencing consumer interest in purchasing electric vehicles

For the rapid development of the electric vehicle market, it is necessary to build a stable intention among consumers in purchasing this type of transport. Building sustainable demand for electric vehicles is possible provided that you understand the key factors (drivers) that significantly contribute to building intention among buyers in purchasing electric vehicles. In order to increase the market share of electric vehicles as soon as possible and form the necessary intention among consumers, it is necessary to identify a set of factors that have a serious impact on the final interest of buyers in electric cars. Identifying such factors will allow practitioners and stakeholders to develop marketing strategies more effectively.

Researchers (Dr. Shaifali Garg at al. 2020, Jingwen Wu at al 2019, Lina Ingeborgrud at al. 2019, Moataz Mohamed at al 2016) emphasize that one of the main factors that have a significant impact on building consumer intention buying an electric car is concern about the environment. This phenomenon can be considered from the position that electric vehicles were originally developed as a more environmentally friendly vehicle. Such environmental concerns have been identified as significant factors for the North American, European and Chinese markets. As a result, it is important to determine the level of influence of this factor for the Russian market.

H1. There is a positive significant relationship between environmental concern and buying intention toward EVs.

At the same time, a number of scientists (Dr. Shaifali Garg at al. 2020, Huang, X 2019, Lina Ingeborgrud at al. 2019, Lasse Fridstrøm 2020) emphasize the high cost of electric vehicles and, as a result, the high impact of the stimulating policy pursued by the government. The main objective of the incentive policy is to help create competitive advantages for electric vehicles that would force people to make a choice in favor of this type of vehicle.

H2. There is a positive statistically significant relationship between the incentives and intention in buying an electric car.

Another group of researchers (Chu Wen Yan at al. 2022, Moataz Mohamed at al 2016, Saiful Hasan 2021) note the social nature in the formation of interest in electric vehicles. A person lives in a society and is constantly under pressure from the people around him. This impact can directly affect a person's worldview and shape their purchasing intention.

H3. There is a positive correlation between social impact and intention to purchase electric car.

An electric car is inherently a new technology that changes the usual way of operating a car. Researcher (Zhenya Zhdano 2021) has established a pattern between the level of user readiness to adapt to new technologies and interest in purchasing an electric car. In his research, he analyzed the relationship between the respondents' level of using of new technologies and their interest in purchasing electric vehicles. Thus, users who more often use new technologies like GPS and online shopping are significantly more likely to become the owner of an electric car.

H4. There is a positive significant relationship between adaptability to new technologies and the intention in purchasing an electric car.

Some researcher (Huang, X 2019) has identified the influence of such a factor as status on the formation of interest in buying an electric car. It is assumed that potential buyers of electric vehicles can use it as an attribute, which will distinguish them from others.

H5. There is a positive statistically significant relationship between the status and intention in buying an electric car.

At the same time, such researchers (Madhusudhan Adhikari at al 2020, Christidis at al. 2019) note that the level of development of the charging infrastructure directly affects the willingness of people to buy electric cars. This level of influence is explained by the fact that the availability of an affordable charging infrastructure will directly affect the comfort of operation of an electric vehicle. The problems with the development of the charging infrastructure are directly related to the alleged difficulties in operating an electric vehicle. At the same time, some researcher (Huang, X 2019) was able to identify in their research that the degree of development of the charging infrastructure has a low impact on the final interest.

H6. There is a positive statistically significant relationship between the availability charging infrastructure in use and intention in buying an electric car.

The studies that were reviewed during the literary review explore the factors that influence the interest of buyers in different markets. It is worth noting that different markets have a different set of factors that have the greatest impact. However, we can identify a number of factors that are often found in studies by different authors, since the identified factors are often widespread and have an impact on the markets of different cultures, it is necessary to assess the impact of these factors on the Russian market. Thus, we get the initial version of the research model.

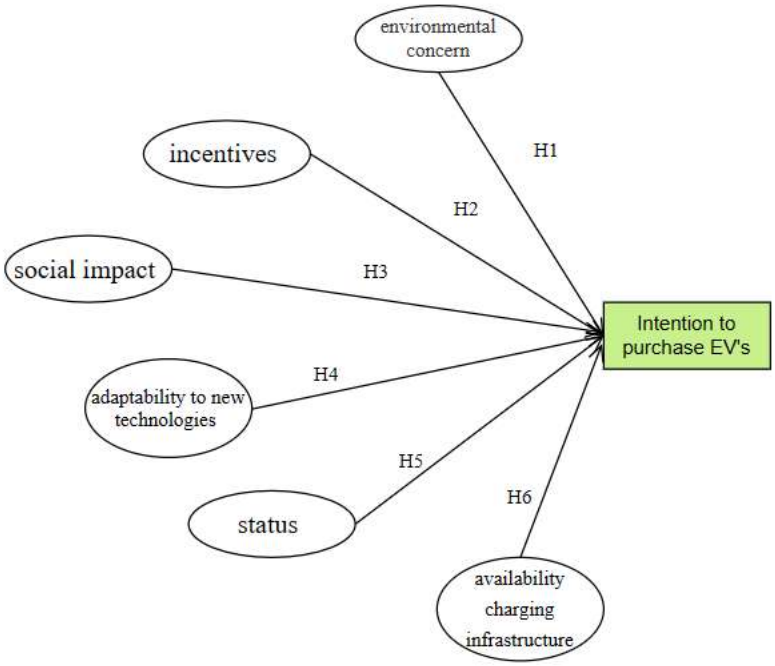

Figure 11. initial version of the research model.

Source: Made by the author

1.3.Portrait of potential customer for electric vehicles

Identifying the target audience in the process of developing a particular market or product is a necessary task. Based directly on this portrait, companies can plan their marketing strategies to promote their product.

Determining the target audience is not an easy task, since the target group for the same product may be different in different countries, depending on socio-cultural factors within the country. Due to these same factors, the product may be perceived differently by initially seemingly identical groups. In the case of determining the portrait of a potential consumer for the Russian market, there are difficulties in determining the group to which it should belong. In the case of Russia, the market is at the initial stage of its formation, and the main audiences, who are interested

in purchasing electric vehicles are innovators. Studies to determine the portability of potential buyers and early adapters for electric cars have been conducted for many markets.

When trying to determine the portrait of the target audience, many researchers (Elena Higueras-Castillo at 2020, Stefan Trommer at al 2015, Axel Ensslen at al 2015, Scott Hardman at al. 2016) primarily highlight such a factor as a high income level. The presence of such a relationship may be related to the high initial purchase price of electric vehicles. Since, on average, an electric car is more expensive than a car with an internal combustion engine. As a consequence, it is necessary to test the level of influence of income levels on intention in purchasing electric vehicles.

H7. There is a positive statistically significant relationship between income level and intention in buying an electric car.

When trying to determine the gender of potential buyers of electric vehicles, some researchers (Elena Higueras-Castillo at 2020) determine that the representatives of the female sex show the greatest interest. On the other hand. according to the results obtained during the analyses conducted by (Zulfiqar Ali Lashari 2021, Stefan Trommer at al 2015, Scott Hardman at al. 2016), representatives of the male gender are singled out as the target audience. However, according to the results conducted in Canada by researchers (Moataz Mohamed at al. 2016), it was found that there is no clear pronounced relationship between gender and interest in buying an electric car. Thus, it is necessary to conduct a study on whether there is an influence of the gender factor on the interest in purchasing an electric car.

H8. There is a positive statistically significant relationship between the gender and interest in buying an electric car.

One of the important signs for determining the target audience is age. So the researcher (Elena Higueras-Castillo at al. 2020) in his work, he determined that young people have a much greater desire to purchase electric vehicles. At the same time, many other researchers (Moataz Mohamed at al 2016, Scott Hardman at al 2016) determined that the representatives of middle age show the greatest predisposition. However, researcher (Stefan Trommer at al 2015) from Germany have found that the average age of electric car buyers is 51 years old, which of course applies more

to representatives of the elderly group of people. Thus, it is important to assess the level of influence of age on the interest in purchasing electric vehicles for the Russian market.

H9. There is a positive statistically significant relationship between the age and interest in buying an electric car.

At the same time, many researchers (Stefan Trommer at al 2015, Moataz Mohamed at al 2016, Scott Hardman at al 2016) in their works note such a factor as the availability of higher education as an important variable in determining the target audience for an electric car. It is assumed that the higher the level of education, the more predisposed the consumer is to purchase an electric car.

H10. There is a positive statistically significant relationship between the level of education and interest in buying an electric car.

According to the results of existing studies, it is difficult to single out one portrait of a potential consumer of an electric car. So for different markets, the result turned out to be different, both by gender and age. Most likely, it can be assumed that gender does not have a serious impact on the interest in purchasing an electric car. However, among similar characteristics, high income and higher education can be identified as likely distinguishing features for potential buyers of electric cars. This assumption is based on the fact that the price of electric vehicles is significantly higher than the price of cars with an internal combustion engine. As a result, representatives of the more affluent classes can afford to buy such a car. A high level of education often correlates with the level of income, because it is assumed that the higher the level of education, the higher the income level of the consumer. Due to these factors, it can be assumed that middle-aged people will give greater preference to electric vehicles, since they have the necessary financial resources to purchase an electric car.

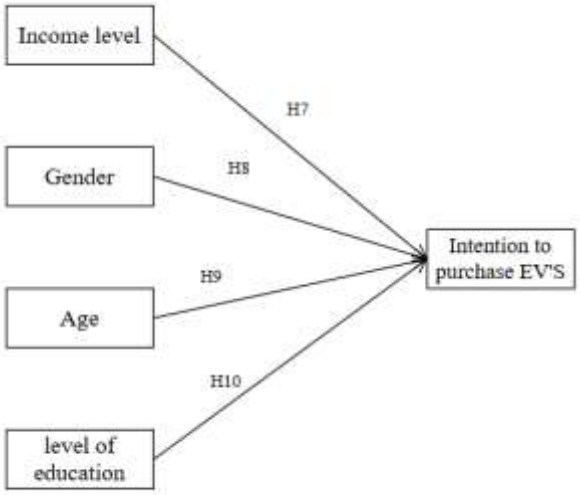

Figure 12. A model for studying the influence of socio-economic factors on the interest in purchasing electric cars

Source: Made by the author

1.4.Mechanisms for stimulating sales of electric vehicles.

The process of developing the electric car market requires certain efforts on the part of all stakeholders. Obviously, in order to accelerate the transition to electric vehicles, support and incentive measures are needed that would make electric cars more attractive to consumers.

The main force that has enough opportunities to significantly influence the market is the government (Jack N. Barkenbus 2020). This conclusion is based on the fact that the government has enough power to regulate and make prohibition for automakers and gives additional benefits for consumers. To help promote EV's diffusion a lot of countries have started to give monetary and non-monetary benefits for consumers (Vilchez et al. 2019).

Researchers (Ruguo Fan, Rongkai Chen 2022) in their work identified several ways to stimulate the development of the electric vehicle market and methods, which can be applied to accelerate such a transition. They identified two main types of government promotion policy.

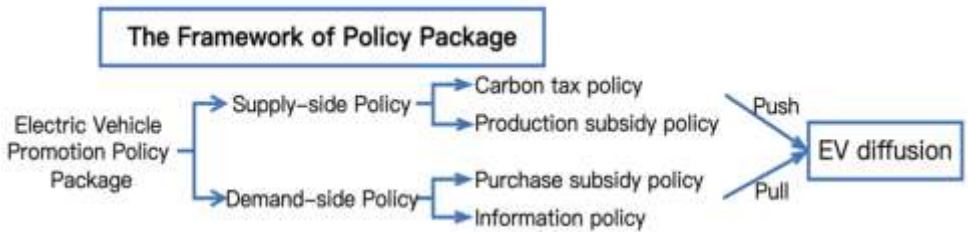

Figure 13. Types of government promotion policy

Source: Ruguo Fan at al. 2022

According to this framework, the policies, which use government, may be divided into supply side policies and demand side policies. The application of supply-side incentive policies should provide additional benefits for producers. Such measures allow automakers to invest additional money in the development of new electric vehicles and the improvement of technology. At the same time, the demand side focuses on the customer and creates favorable conditions for the purchase of electric vehicles. Such favorable conditions may be the reduction of the difference in the purchase price between classic cars and electric ones due to direct subsidies for the purchase (Lingzhi Jin 2017, Zhuge et al. 2019) At the same time, it may be giving users of electric vehicles additional privileges that will make the operation process more convenient. For example, free parking for electric vehicles.

Depending on the instrument of influence, there are two types of privileges that the state uses to stimulate the electric car market. Thus, government support measures can be divided into monetary and non-monetary.

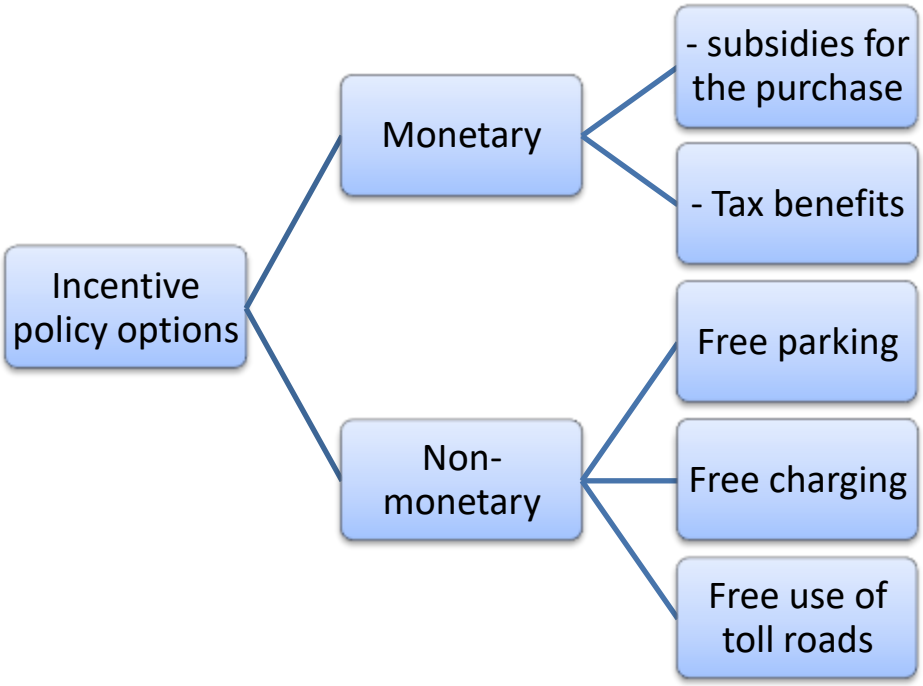

Figure 14. Types of bonuses provided by the state

Source: Made by the author

The use of incentives from the state significantly affects the willingness of users to purchase an electric car (Dr. Shaifali Garg at al. 2020, Huang, X 2019, Lina Ingeborgrud at al. 2019, Lasse Fridstrøm 2020). The main point of all these benefits is to make an electric car a more cost-effective purchase, than purchasing a car with an internal combustion engine. At the same time, it should be understood that despite the fact that financial support methods have a more significant impact

(Huang, X 2019, Barros and Padua 2019), in addition to them, non-financial methods are also needed, which will be an excellent bonus to the car.

One of the countries where electric vehicles have become widespread is Norway. Incentive measures applied by the state played an important role in the development of the electric car market in Norway. These measures were very effective, as Norway is currently the country with the highest level of electric cars in the world. In particular, not only monetary incentives, but also non-monetary ones were used to stimulate market growth and change consumer preferences.

Table 4. List of non-monetary benefits in Norway

Free parking at public parking spaces
Free use of toll roads
Access to public transit lanes
Free charging at publicity charging stations
Free access on road ferries

Source: Jenn et al. 2020

The use of non-monetary support measures is important to create a sustainable demand for electric vehicles. Despite the fact that many of these measures seem unnecessary, they also have a positive impact on the final consumer behavior. (Jenn et al. 2020) pointed out that access to HOV lines also gives a positive impact on the EV's adaptation. Moreover, free parking positively influences too, because it saves not only money, but more important time for searching the parking zone (Danielis et al., 2020). At the same time, it should be understood that despite the positive effect that non-monetary incentives give, financial privileges still have a more serious impact on the consumer's decision (Xu, & Fan, 2019).

The countries of the European Union use different methods of stimulating buyers depending on the country. All such benefits can be divided into financial and non-financial ones. First of all, as financial incentive measures, we can highlight the reduction or abolition of the registration tax, value added tax (VAT) and the tax on car ownership. Also in many European countries, direct subsidies for the purchase of electric vehicles act as a financial support (José M. Cansino at al. 2018). It is worth noting that tax payments or tax advantages at the point of purchase have a stronger influence on consumer choice than annual tax payments.

Table 5. Overview of EU subsidy policy to EV's

	France	Germany	Netherlands	Norway	United Kingdom
Registration tax	Electric cars are exempt from national and regional registration tax	No registration tax at al	EV'S exempt from one-time registration tax	No registration tax for EV's	No registration tax for EV's
Subside for purchase	6000 Euro	The federal government's share of the environmental grant is €2,000 for BEVs and FCEVs emitting 0 g CO2/km and €1,500 for PHEVs emitting less than 50 g CO2/km.	no national one-time subsidies	does not provide national one-time subsidies for the purchase	The grant applies to the recommended retail price and covers 35% of the base purchase price including registration tax, VAT, and license plates and excluding optional equipment and first registration fee.
VAT	No VAT for EV'S	Included in subsidy policy	No preferences for EV's	Zero-emission vehicles are exempt from paying 25% VAT	Included in subsidy policy
Road charges	-	There is no highway usage fee for electric vehicles	Road charges are not collected in the Netherlands	EV's pay half of the regular rate on some toll roads	No exemptions for EV's
Annual vehicle tax	-	Zero-emission vehicles are exempt from motor vehicle tax for 10 years.	Zero-emission vehicles are exempt from motor vehicle tax	no fee for EV's	No tax if price for car up to €45,500. In case if it is above, it will standard tax.

Source: Sandra Wappelhors at al. 2018

The use of subsidies is important for building sustainable demand for electric vehicles and the formation of this market. The state can use different variants of promotional policies that are aimed not only at consumers, but also at producers. Within the framework of this study, it is important to assess the degree of influence of different incentive policy options on intention in purchasing electric vehicles. Incentive policy options are understood to mean the impact of monetary and non-monetary privileges on the formation of intention in the purchase of electric vehicles.

1.5. Conclusion

In conclusion, it is necessary to summarize the UTAUT model and others versions of TAM model provide a theoretical framework for the study of factors affecting adaptability to new technology. At the same time, when comparing TAM and UTAUT models, a UTAUT model was determined that has the best indicators of relative explanatory abilities and which will be used in further research. When studying similar studies on the identification of key factors influencing consumers when buying an electric car, several such factors were identified. It is necessary to test the influence of these factors on the Russian consumer, in order to further identify the main directions of building marketing strategies. These factors include environmental concerns, incentives, social impact, adaptability to new technology, status, availability charging infrastructure. When trying to identify a portrait of a potential buyer for electric vehicles, it was not possible to establish clear relationships.

Furthermore, government policies play a crucial role in promoting the electric vehicle market. Policies such as subsidies, tax incentives, charging infrastructure development, emission regulations, and public awareness campaigns have been implemented by governments worldwide to accelerate the adoption of electric vehicles and reduce greenhouse gas emissions.

Overall, the integration of TAM and UTAUT models, analysis of factors influencing consumer behavior, identification of potential adopters, and examination of government policies collectively underscore the multidimensional approach required to stimulate the growth of the electric vehicle market and pave the way for a sustainable and environmentally friendly transportation future.

Based on the study of the theoretical background, we were able to form several hypotheses that will be tested in the course of this work.

H1. There is a positive significant relationship between environmental concern and buying intention toward EVs.

H2. There is a positive statistically significant relationship between the incentives and intention in buying an electric car.

H3. There is a positive correlation between social impact and intention to purchase electric car.

H4. There is a positive significant relationship between adaptability to new technologies and the intention in purchasing an electric car.

H5. There is a positive statistically significant relationship between the status and intention in buying an electric car.

H6. There is a statistically significant relationship between the availability of charging infrastructure in use and intention in buying an electric car.

H7. There is a positive statistically significant relationship between income level and intention in buying an electric car.

H8. There is a positive statistically significant relationship between the gender and intention in buying an electric car.

H9. There is a positive statistically significant relationship between the age and intention in buying an electric car.

H10. There is a positive statistically significant relationship between the level of education and intention in buying an electric car.

Eventually, based on the theoretical background and the list of hypotheses that were formulated, a conceptual research model was formed.

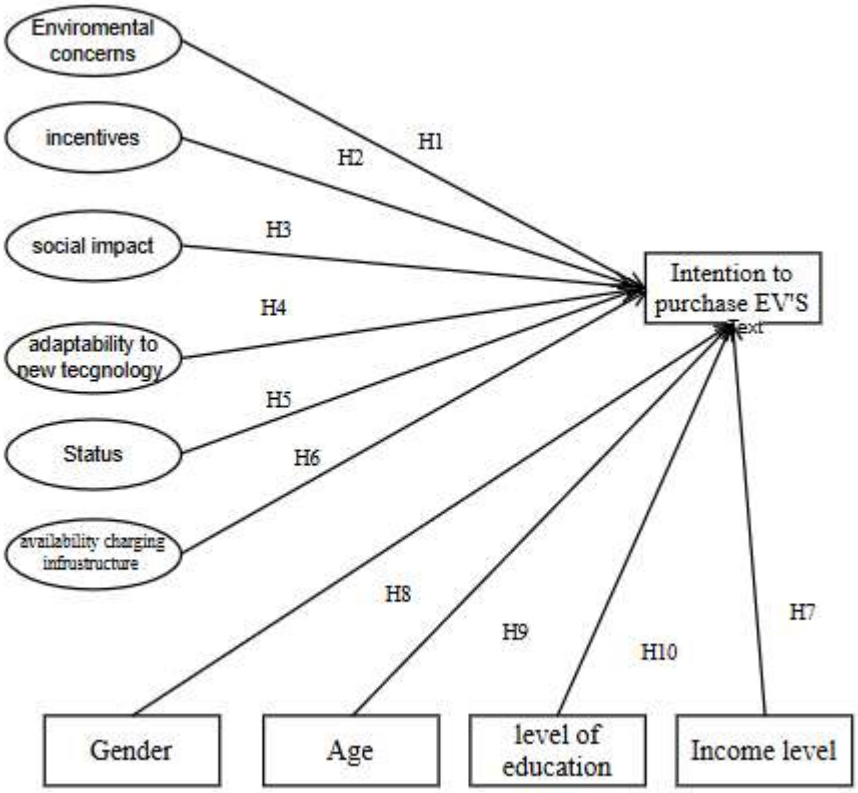

Figure 15. Conceptual research model

Source: Made by the author

Chapter 2. Empirical study of customer intention to Electric vehicles on the Russian market

2.1. Research methods

One of the goals of the study is to determine the factors influencing the intention of buyers in purchasing electric vehicles. Quantitative research methods were used to analyze and identify such factors. The data collection process took place in an online format using a structured questionnaire. Data collection method was snowball sample. The use of this method of data collection is due to several factors: its accessibility, in terms of financial costs and ease of organization. In order to increase predictive ability and obtain a better final result, some requirements were imposed on respondents to participate in the survey.

2.2. Requirements for the data collection

In studies devoted to determining the factors influencing consumer interest in purchasing an electric car, certain requirements are put forward for respondents in order to increase the reliability of the study. The requirements put forward in such studies (Eunil Parkat al. 2018, Saiful Hasan 2021) are most often related to having experience driving electric vehicles. However, such requirements may be possible only when conducting research in countries with a high proportion of electric car owners. In countries where the electric vehicle market has not yet developed sufficiently, the main requirements are the presence of a driver's license and the age of majority (Chu Wen Yan at al. 2022). Due to the current level of development of the electric vehicle market in Russia, it is more appropriate to use the second method of selecting respondents. However, we have added a number of additional requirements for respondents in order to get a reliable result.

Thus, the following requirements were put forward to the participants of this study:

1) The age of the respondent is over 18 years old. This restriction is related to legislation, since only after reaching this age, a person can get the right to drive a motor vehicle and as a result become a potential buyer of a car.

2) Having a driver's license. This restriction is due to the fact that not all adults in Russia have the right to drive a vehicle, as a result, the lack of a driver's license may lead to a lack of interest in purchasing a car.

3) Be an active driver. Having an active driving experience is currently linked to the fact that many. Those who get a driver's license subsequently do not drive a car. The lack of regular driving practice can lead to a lack of desire to buy a car.

2.3. Questionnaire structure

The developed questionnaire includes a certain set of questions characterizing a person's attitude to a certain factor, as well as a set of socio-demographic questions. The final sample includes representatives of different regions, age groups, income level, and education level.

The structure of the questionnaire is divided into two sections. The first section includes questions characterizing socio-demographic variables such as age, gender, level of education, region of residence, availability of a charging infrastructure, number of family members.

In the second part, respondents need to evaluate their attitude to the statements on a five-point Likert scale. The questions used in this section were selected based on previous research, that is, they confirmed their reliability (Zulfiqar Ali Lashari at al 2021, Saiful Hasan 2021, Chu Wen Yan at al 2022).

Using this questionnaire, it was supposed to assess the impact of such factors as adaptability to new technologies, subsidies that encourage the purchase of electric vehicles, social impact, environmental concerns, Status (symbolic perception) were assessed. Each of these attributes comprised various items and was chosen based on studies that examined the relevant attributes for EVs.

2.4. Data Collection process

In this research, primary data was collected using the quantitative method for this study. The data collection process took place in an online format using information platforms such as Telegram, VK, etc. Respondents were given enough time to answer the question in order to obtain more accurate data.

2.5. Statistical analysis

Based on the results of data collection, it is planned to conduct the following group of analyses. First of all, this is a Factor analysis, this analysis involves combining several variables into one factor. In this case, we will be able to obtain a certain set of factors and subsequently measure the impact of each factor on the intention in buying an electric car.

After the extraction factors from the sample. It is necessary to check the reliability of the variables to characterize each factor. It is planned to use the Cronbach's alpha reliability analysis for it.

A regression analysis is planned to assess the impact of each factor on the intention in buying electric vehicles. This analysis will allow us to assess the level of influence each factor has

on the dependent variable (positive/negative). At the same time, based on the results of this analysis, it will be possible to conclude about the level of significance of each factor for the dependent variable.

At the final stage, it is planned to conduct a cluster analysis to identify a group of potential adapters in Russia based on socio-demographic variables. Based on the results of this analysis, we will be able to more accurately formulate the porter of a potential buyer of an electronic car in Russia.

2.6. Description of data sample

In the course of the study, a total of 191 responses were collected. The main descriptive characteristics of the resulting sample are presented in the table.

Table 6. Descriptive characteristics of the statistical population

Variable	Frequency	Percent
Gender		
Male	94	49,2%
Female	97	50,8%
Age		
18-30	94	49,2%
31-45	50	26,2%
46-59	30	15,7%
60+	17	8,9%
Having your own car		
Yes	92	48,2%
No	98	51,8%
Number of family members		
One	30	15,9%
Two	59	31,2%
Three and more	100	52,9%
Region of residence		
- The Central Federal District	56	29,3%
- North-Western Federal District	86	45%
- Southern Federal District	11	5,8%
- North Caucasus Federal District	3	1,6%
- Volga Federal District	17	8,9%
- Ural Federal District	12	6,3%
- Siberian Federal District	3	1,6%
- Far Eastern Federal District	3	1,6%
The number of cars in the family	40	20,9%
Zero	94	49,2%

One Two and more	57	29,8%
The level of education		
- General average and below	27	14,1%
- Secondary professional education	55	28,8%
- Bachelor's degree	75	39,3%
- Master's degree and above	34	17,8%
The experience of using an electric car		
Yes	36	18,8%
No	155	81,2%
Does the respondent own an electric car		
Yes	21	11%
No	169	89%
Do relatives/friends own an electric car		
Yes	41	21,5%
No	150	78,5%
Do you have a parking space near your house/in the house with the possibility of charging electric vehicles		
Yes	47	24,6%
No	144	75,4%
Which of the following population groups by financial status would you rather include yourself in		
- We're barely making ends meet. We don't have enough money	3	1,6%
- There is enough money for groceries, but buying clothes causes financial difficulties	15	7,9%
- There is enough money for groceries and clothes. But buying durable items – a TV, a refrigerator – is a problem for us	44	23%
- We can easily purchase durable items. However, it is difficult for us to purchase really expensive things, such as cars or cottages.	100	52,4%
- We can afford everything, including the purchase of an apartment and a cottage	29	15,2%

Source: Made by the author

According to the results obtained, an almost equal number of men and women participated in the study, with a slight superiority of the female gender. As for the age groups, representatives from each age group took part in the survey procedure. However, the age distribution is not equal in each group, representatives of the 18-30 group (49.2% of the population) occupy a significant dominance. The remaining age groups were distributed in the following order 31-45 (26,2%), 46-59 (15,7%), 60+ (8,9%).

It is also worth noting that representatives of all eight federal districts took part in the survey, while the absolute majority of respondents represent the Central and North-Western federal districts. Representatives of these federal districts occupy 74% of the total sample.

The distribution according to the level of education is approximately identical for each group with the dominance of representatives of the bachelor's degree (39%).

Regarding the experience of driving an electric car, approximately 19% of respondents replied that they had experience driving a car powered by electricity. At the same time, 11% of respondents currently own an electric car, and 21% said that relatives or friends own an electric car. It is also worth noting that approximately 24% of respondents have the opportunity to charge an electric car in their home.

2.7. Factor analysis

Factor analysis was used to analyze the data at the first stage. This step is necessary in order to reduce the number of variables for the subsequent study of the influence of factors on the intention in buying an electric car. The Principal axis factoring method was used for extraction, the Varimax method was used for rotation.

Table 7. Factor extraction result

Initial Eigenvalues				Extraction sums of squared loadings			Rotation sums of squared loadings		
Factor	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %
1	5,639	31,326	31,326	5,366	29,811	29,811	2,681	14,892	14,892
2	2,610	14,498	45,824	2,322	12,898	42,709	2,333	12,959	27,851
3	1,956	10,869	56,693	1,598	8,879	51,589	2,241	12,447	40,298
4	1,556	8,643	65,336	1,238	6,880	58,469	2,108	11,711	52,009
5	1,205	6,694	72,030	,839	4,662	63,131	1,401	7,783	59,792
6	1,013	4,389	77,657	,718	3,987	67,118	1,319	7,326	67,118

7	,790	3,031	82,046						
8	,546	2,431	85,077						
9	,438	2,242	87,508						
10	,404	1,932	89,750						
11	,348	1,669	91,682						
12	,300	1,538	93,350						
13	,277	1,362	94,888						
14	,245	1,135	96,250						
15	,204	1,005	97,386						
16	,181	,925	98,391						
17	,167	,684	99,316						
18	,123		100						

Source: Made by the author

Using the Kaiser criterion, we were able to extract 6 factors. Which explain 67 percent of the variation. This result can be considered acceptable.

Table 8. KMO and Bartlett's test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	,797
Bartlett's Test of Sphericity	,000

Source: Made by the author

When conducting a factor analysis, the adequacy of the sample used is necessary. To do this, we used KMO and Bartlett's Test of Sphericity. The KMO coefficient for the conducted factor analysis is 0.797, which is more than its threshold value of 0.5. At the same time, the Bartlett test shows a significant result, thereby confirming the feasibility of conducting a factor analysis.

A list of factors and a set of variables that relate to each factor are presented in table 9.

Table 9. Rotated factor analysis

	1	2	3	4	5	6
- Reduced taxes on electric cars will affect your desire to buy an electric car	0,872					
- Would the possibility of driving on bus lines affect your desire to buy an electric car?	0,756					

- The amount of subsidies for the purchase of electric vehicles would affect your desire to buy an electric car	0,721					
- Would the availability of free parking for electric cars affect the desire to buy electric cars?	0,682					
- People who are important to me recommend buying an electric car		0,887				
- People who are important to me already own/are thinking of buying an electric car		0,824				
- People who are important to me support my interest in electric cars		0,702				
- An electric car distinguishes me from others			0,831			
- The electric car says something about me			0,826			
- The electric car highlights my statute			0,755			
- I easily adapt to new technologies				0,930		
- I start using new technologies early enough				0,732		
- I like to use new technologies				0,661		
- Electric vehicles have a positive effect on the environment					0,789	
- Electric cars help solve the problem of air pollution					0,774	
- I am concerned about the availability of charging infrastructure						0,762
- I think that the distance that an electric car can travel significantly affects my ability to use the car						0,640
- I think that electric cars have a lower maximum speed than conventional cars.						0,475

Source: Made by the author

Each of the extracted factors, depending on the set of variables included in this factor, was assigned a specific name.

Factor 1 - Incentives,

Factor 2 - Social impact,

Factor 3 - Status,

Factor 4 - Adaptability to new technologies,

Factor 5 - Environmental concerns,

Factor 6 - Perceived difficulty in use.

2.8. Reliability analysis

To confirm the reliability of the obtained factors and the admissibility of further use, a reliability test was conducted. The results of this test are presented in table 10.

Table 10. Result of reliability analysis

Factor	Cronbach's Alpha
Incentives	0,879
The impact of social relationships	0,916
Status	0,892
Adaptability to new technologies	0,835
Environmental concerns	0,831
Perceived difficulty in use	0,655
Intention in buying	0,922

Source: Made by the author

According to the results presented above, the Cronbach's Alpha coefficient is higher than its threshold values of 0.7. Therefore, we can conclude that our factors show a high level of reliability. At the same time, in some cases, a value of the Cronbach's alpha coefficient of more than 0.6 is allowed. As a result of this assumption, it was decided to keep the Perceived difficulty in use factor. The preservation of this factor is important for the subsequent identification of the level of influence of this factor on the intention of buyers in buying an electric car.

2.9. Regression model

Next, a regression analysis is performed to identify the degree of influence of factors on the final variable, the purchase of an electric car. We conducted a linear regression analysis, the factor of intention in buying an electric car acted as a dependent variable, and the predictors were

incentives, social impact, status, adaptability to new technologies, perceived difficulty in use, environmental concerns.

The data describing the general characteristics of the obtained regression model are presented in Table 11.

Table 11. Model summary for linear regression model

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,841	,707	,697	,532	1,936

Source: Made by the author

Based on the obtained regression model, it can be noted that according to the obtained R-square, 70.7% of intentions to purchase electric vehicles are explained by the change in the independent variables included in the regression equation.

Also we must to check coefficient of Durbin-Watson, this coefficient for our regression model is 1.936, which is more than threshold 1.5. Thus, we can conclude that there is no autocorrelation in the model.

Table 12. ANOVA test for the first model

Model		Sum of Square	df	Mean Square	F	Sig
1	Regression	125,866	6	20,978	73,894	,000
	Residual	52,236	184	,284		
	Total	178,102	190			

Source: Made by the author

According to the ANOVA test, our regression model is statistically significant.

Table 13. Coefficients of regression analysis

Model		Unstandardized B	Coefficients Std. Errors	Standardized Coefficients Beta	T	Sig	Tolerance	VIF
1	Constant		,039		,000	1,000		
	Incentives	,326	,041	,350	8,748	0,00	,996	1,004
	The impact of social relationships	,533	,041	,525	13,082	0,00	,991	1,009
	Status	,283	,042	,270	6,731	0,00	,989	1,011

	Adaptability to new technologies	,309	,041	,303	7,567	0,00	,997	1,003
	Environmental concerns	,171	,044	,156	3,893	0,00	,993	1,007
	Perceived difficulty in use	-,267	,045	-,237	-5,920	0,00	,992	1,008

Source: Made by the author

When considering the coefficients of regression analysis, it can be emphasized that all factors are statistically significant. Among all the factors, the factor of the social impact has the highest influence on the final result. From this, it can be concluded that if a person is in a society where owning an electric car is encouraged, then such a social influence has the greatest impact on the final intention in buying. Other factors that have an impact are the incentives factor and adaptability to new technologies, which have coefficients of 0.350 and 0.303, respectively. The factor that has the least positive effect is the environmental concerns factor. The factor of perceived difficulties in use, as expected, has a negative impact on the construction of the final intention in the purchase.

Next, we conducted a regression analysis for socio-demographic variables. The general data on the model and the levels of its statistical significance are presented in Appendix 1. According to the data obtained, our regression model is statistically significant and 30.2% interest in purchasing an electric car will be explained by the changes in the socio-demographic variables.

Table 14. Regression coefficients for socio-demographic variables

Model		Unstandardized B	Coefficients Std. Errors	Standardized Coefficients Beta	T	Sig	Tolerance	VIF
1	Constant	-2,292	,371		-6,178	,000		
	Gender	-,196	,118	-,102	-1,660	,099	,992	1,088
	Age	,107	,062	,110	1,731	,085	,919	1,088
	Level of education	,039	,066	,037	,586	,559	,915	1,093
	Income level	,616	,073	,555	8,411	,000	,853	1,172

Source: Made by the author

Among all socio-demographic variables, only income level has a statistically significant impact. The level of income, according to the standardized Beta coefficient, makes the greatest

impact on the formation of the final intention in purchasing a EV's. The lowest level of importance is the level of education. The variables age and gender have a statistically insignificant effect, but very close to it.

Next, it is necessary to check the regression model, which will combine socio-demographic variables with the factors that we have identified as a result of factor analysis.

Table 15. Combined regression model

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,868	,754	,728	,506	1,954

Source: Made by the author

The resulting regression model explains 75.4% of the intention in purchasing electric vehicles, the importance of permanent factors and socio-demographic variables. The resulting new model has a 4.7 percentage point better explanatory power than the first model, which includes only factors that were extracted as a result of factor analysis. The Durbin-Watson coefficient is greater than 1.5, which indicates the absence of autocorrelation.

Table 16. ANOVA test for the combined model

Model		Sum of Square	df	Mean Square	F	Sig
1	Regression	133,823	18	7,435	28,924	,000
	Residual	43,697	170	,257		
	Total	177,519	188			

Source: Made by the author

The resulting regression model is statistically significant and can be used to make predictions of changes in the dependent variable, depending on the change in the independent variables.

Table 17. Regression coefficients for combined model

Model		Unstandardized B	Coefficients Std. Errors	Standardized Coefficients Beta	T	Sig	Tolerance	VIF
1	Constant	0,276	,532		,519	,605		
	Incentives	,330	,043	,319	7,698	,000	,845	1,184
	The impact of social relationships	,482	,048	,473	10,075	,000	,656	1,525
	Status	,242	0,43	,231	5,641	,000	,867	1,154
	Adaptability to new technologies	,244	,055	,236	4,435	,000	,511	1,955
	Environmental concerns	,144	,044	,131	3,242	,001	,889	1,125
	Perceived difficulty in use	-,227	,052	-,201	-4,405	,000	,693	1,444
	Gender	-,109	,083	-,056	-1,320	,189	,797	1,254
	Age	,026	,054	,026	,470	,639	,479	2,089
	Level of education	-,058	,045	-,056	-1,289	,199	,754	1,326
	Income level	,188	,057	,170	3,332	,001	,556	1,799
	Number of family members	-,008	,053	-,006	-,154	,878	,872	1,147
	Do you have a parking space in your house with the possibility of charging electric vehicles	-,151	,099	-,067	-1,526	,129	,745	1,342
	What federal district do you live in?	,039	,026	,070	1,500	,136	,672	1,489
	Have you had any experience using an electric car ?	-,174	,160	-,071	-1,090	,277	,344	2,904

Source: Made by the author

Based on the resulting combined model, we can draw a number of conclusions regarding the level of importance of individual factors in the formation of consumer intention in purchasing electric vehicles. Thus, according to this model, all the factors that were included in the original model also remain statistically significant and retain their influence. The variables that were included in the socio-demographic model also repeat their statistical significance, as in the case of the original model. Thus, among the socio-demographic variables, the only statistically important

variable is income level. Other socio-demographic variables were also included in this model, which could have a significant impact on the formation of intention among customers.

According to the obtained model, we can make the following conclusions:

H1 There is a positive significant relationship between environmental concern and buying intention toward EVs. The hypothesis is supported.

H2. There is a positive statistically significant relationship between the incentives and intention in buying an electric car. The hypothesis is supported.

H3. There is a positive correlation between social impact and intention to purchase electric car. The hypothesis is supported.

H4. There is a positive significant relationship between adaptability to new technologies and the intention in purchasing an electric car. The hypothesis is supported.

H5. There is a positive statistically significant relationship between the status and intention in buying an electric car. The hypothesis is supported.

H7. There is a positive statistically significant relationship between income level and intention in buying an electric car. The hypothesis is supported.

H8. There is a positive statistically significant relationship between the gender and intention in buying an electric car. The hypothesis is rejected.

H9. There is a positive statistically significant relationship between the age and intention in buying an electric car. The hypothesis is rejected.

H10. There is a positive statistically significant relationship between the level of education and intention in buying an electric car. The hypothesis is rejected.

The results of the regression analysis supported/rejected some of the hypotheses that were put forward at the beginning of the study. In addition, we can make a several of other conclusions:

1. The number of family members does not have a statistically significant effect on the formation of customer intention.

2. The region of residence does not have a statistically significant impact on the formation of customer intention.

3. The experience of driving an electric car does not have a statistically significant impact on the formation of customer intention.

4. The presence of a parking space in the house with the possibility of charging an electric car does not have a statistically significant effect on the formation of customer intention.

In order to identify the most effective way to stimulate the promotion of electric vehicles, it was decided to conduct a regression analysis to determine the level of influence of each variable

included in the Incentives factor on the intention in buying. The factor consists of 4 variables, 2 characterize monetary ways of promotion, and two characterize non- monetary ways of promotion.

Table 18. Correlation coefficients incentives

Model		Unstandardized B	Coefficients Std. Errors	Standardized Coefficients Beta	T	Sig	Tolerance	VIF
1	Constant	-1,536	,167		-9,213	,000		
	Subsidies for the purchase of electric vehicles	,200	,059	,290	3,386	,001	,470	2,127
	Reduced taxes on electric vehicles	-,072	,070	-,104	-1,025	,307	,332	3,008
	The possibility of driving on roads designated for public transport	,131	,060	,210	2,196	,029	,380	2,634
	Availability of free parking for electric vehicles	,193	,059	,297	3,272	,001	,418	2,392

Source: Made by the author

According to the results of the resulting regression model, it can be noted that variables have a statistically significant impact: «Subsidies for the purchase of electric vehicles», «The possibility of driving on roads designated for public transport», «Availability of free parking for electric vehicles». The «Reduced taxes on electric vehicles» variable shows a statistically insignificant result. In this case, the variable of reducing tax payments has a negative effect on the dependent variable. In general, it can be argued that the amount of the subsidy has about the same effect as the availability of free parking spaces. This result is unexpected, since traditionally monetary methods of promotion have had a more significant impact than non-monetary ones (Xu, & Fan, 2019). This result may be due to the fact that taxes on vehicle ownership in Russia are not high compare to the European countries, and therefore are not considered by buyers as a serious incentive to purchase an electric car. At the same time, such a high level of influence of the variable associated with the free parking space may be due to the fact that the majority of respondents represent the North-Western and Central regions, which include cities such as Moscow and St. Petersburg, where there is traditionally a need for free parking spaces, especially in the city center.

Table 19. Correlation coefficients for Perceived difficulty in use

Model		Unstandardized B	Coefficients Std. Errors	Standardized Coefficients Beta	T	Sig	Tolerance	VIF
1	Constant	,936	,193		4,850	,000		
	Range anxiety	,060	,051	,088	1,181	,239	,735	1,360
	Maximum speed limit for electric vehicles	,060	,048	,086	1,248	,213	,850	1,176
	Available charging infrastructure	-,371	,051	-,556	-7,336	,000	,701	1,426

Source: Made by the author

A study of the variables included in the perceived difficulties factor shows that only one of the three variables included in this factor has a statistically significant result. Variable accessible transport infrastructure has a negative statistically significant impact on the interest of consumers in the purchase of electric vehicles. The result obtained supports the hypothesis formulated earlier.

H6. There is a statistically significant relationship between the availability of charging infrastructure in use and intention in buying an electric car. The hypothesis is supported.

Manufacturers interested in promoting electric vehicles should focus their attention on this fear and figure out how to overcome this obstacle. This obstacle may also be related to the fact that consumers are not sure that there will be enough charging infrastructure on the road where they can recharge the car.

2.10. Cluster analysis.

To identify the portrait of the target audience, we will conduct a cluster analysis. At the first stage, we will take 4 variables: gender, age, education level, income level. A two-stage cluster analysis was carried out to determine the optimal set of clusters.

Table 20. Model Summary

Algorithm	TwoStep
Inputs	5
Cluster	3

Source: Made by the author

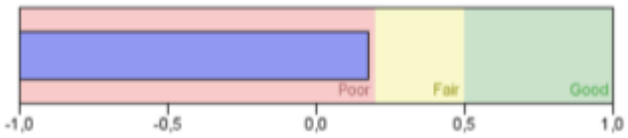

Figure 16. Two-stage cluster analysis

Source: Made by the author

After the first attempt at clustering, we can make the first conclusions. First of all, it is worth noting that the resulting cluster model is of poor quality.

Table 21. Final cluster centers for the attempt 1

	1	2	3
Gender	1,55	1,47	1,47
Age	1,18	3,32	1,93
Level of income	2,47	2,32	3,00
Level of education	3,67	2,82	4,37
Intention to purchase electric vehicles	-,527	-,695	1,257

Source: Made by the author

After the first attempt at clustering, we can draw the first conclusions. First of all, it is worth noting that the resulting cluster model is of poor quality. Also, in the resulting division into 3 clusters, there is a significant difference in the age of representatives of each cluster, the level of education between representatives of cluster 3 and representatives of clusters 1 and 2, as well as in the difference in the income level between representatives of different clusters. At the same time, it is worth noting that there is no difference between genders included in each clusters. Each cluster has approximately the same number of representatives of each gender.

Based on this, it is necessary to conduct a new clustering with the exception of the gender variable. This deletion should improve the quality of the resulting model. For the next cluster model, we will take the age, education level, and income level.

As well as at the first attempt, we conduct a test to determine the optimal number of clusters.

Table 22. Model Summary

Algorithm	TwoStep
Inputs	4
Cluster	3

Source: Made by the author

Based on the results of a two-stage cluster analysis, we have obtained that the optimal number of clusters is 3.

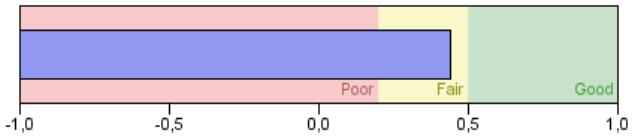

Figure 17. Two-stage cluster analysis

Source: Made by the author

At the same time, it is worth noting that the quality of the resulting cluster model is much higher than when conducting the first attempt at cluster analysis.

Table 23. The final cluster analysis centers.

	1	2	3
Age	2,09	1,38	1,92
Level of income	3,38	3,48	4,37
Level of education	3,01	1,54	3,00
Intention to purchase electric vehicles	-,660	-,449	1,258

Source: Made by the author

According to the results of cluster analysis, we got three clusters formed, the first cluster includes people of a middle age, since the average for this group is 2.09 - which means that people of the age groups 31-45 and 46-59 predominate in this cluster, and it can also be assumed that people from the category 60+ will be included in the this cluster. As for education, the representatives of the first cluster are very educated, since they have an average bachelor's degree, but at the same time this group is the most low-income in terms of income, since the average score here is 3.38. The second cluster includes consumers, mostly young with a low level of education and financially not much different from the first group, that is, they have a very low income level. Representatives of the 3 clusters are mostly middle-aged, that is, they belong to the age groups 18-30 and 31-45, well educated, since on average representatives of this cluster have a bachelor's

degree. The main distinguishing feature of this cluster is the income level, since for representatives of this cluster, the income level is very different compared to the two previous ones.

According to the results of the cluster analysis, we could see that a high level of education is inherent in both group 1, where on average representatives had a grocery degree, but they did not show interest in buying electric cars, and in cluster 3, where representatives also had an average bachelor's degree, but were extremely interested in purchasing electric cars.

Also, from the results of the regression analysis, we remember that the level of education does not have a statistically significant effect on the formation of the final interest in purchasing an electric car. As a result of this fact, it was decided to conduct the cluster analysis again, but with the exception of the education level variable.

Table 24. Model Summary

Algorithm	TwoStep
Inputs	3
Cluster	3

Source: Made by the author

To determine the optimal set of clusters, we also use a two-stage cluster analysis, which also shows that the optimal number of factors for our sample is three.

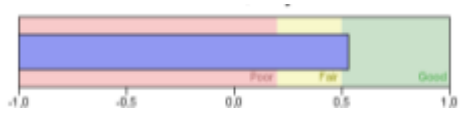

Figure 18. Two-stage cluster analysis for the analysis 2

Source: Made by the author

The quality of the resulting cluster model has also improved.

Table 25. The final cluster analysis centers for the analysis 2.

	1	2	3
Age	3,33	1,90	1,19
Level of income	2,85	4,38	3,67
Intention to purchase electric vehicles	-,651	1,288	-,524

Source: Made by the author

With the new cluster analysis, we obtained a clear separation according to age and material status. So in the first group there are older representatives, with a low income level, representatives of this group do not show interest in buying an electric car. The second group includes middle-aged people, mainly the age groups 18-10, 31-45. The main distinguishing feature for this cluster is a high level of material well-being. Representatives of the third cluster are young people with an average level of income. In this case, out of all three clusters, only representatives of cluster two show interest in purchasing electric vehicles. Thus, it can be concluded that the main distinguishing feature characterizing a potential buyer of an electric car is the level of material well-being. Basically, the target audience for buying electric vehicles can be considered middle-aged people, this may be due to the fact that they are still young enough to easily adapt to new technologies and at the same time have a sufficient income level to afford to buy an electric car. As one of the possible factors confirming this judgment, we can consider cluster 3, where there are young people with an average income level who are not interested in buying an electric car.

Chapter 3. Conclusions and discussions

Summing up, it should be noted that most governments around the world are actively involved in the process of transforming passenger transport from conventional vehicles to electric cars. The efforts of the state are creating a favorable environment for the transition to electric vehicles, which is reflected in the significant growth of the electric vehicle market over the past few years. The growth of the global electric car market forces manufacturers to focus more and more on investments in this area and the improvement of electric cars. As a result, the Russian market needs to prepare for this transition, so as the main automakers plan conduct full transition to this technology. The government, together with manufacturers, needs to come up with an effective incentive policy in order to increase the volume of the electric vehicle market in Russia.

3.1. Answers to research questions

In the course of the research, we found answers to all the questions posed at the beginning of the study

RQ1 Target audience for electric vehicles adaptation

In the course of the study, we tried to segment our sample to identify the potential consumer's portrait for electric vehicles. Socio-demographic variables such as age, gender, income level, and education level were used to describe the portrait of a potential consumer. During the segmentation process, it was found that gender could not be used as a sign for segmentation, which confirms the conclusions Moataz Mohamed at al. 2016. Since in the resulting models, the distribution in each group between men and women was approximately identical. Subsequently, the variable level of education was also rejected as a sign for segmentation, which contradicts the results obtained by the researchers Stefan Trommer at al 2015, Moataz Mohamed at al 2016, Scott Hardman at al 2016. As in the end, two clusters were obtained with the same level of education, but different interests in purchasing an electric car. Ultimately, two variables were identified as the most suitable for the clustering process: age and income level. According to the data received, the audience, which has the greatest interest in purchasing electric vehicles are middle-aged people (Moataz Mohamed at al 2016, Scott Hardman at al 2016) with a high income level (Elena Higueras-Castillo at 2020, Stefan Trommer at al 2015, Axel Ensslen at al 2015, Scott Hardman at al. 2016). This result is explained by the fact that electric cars are on average more expensive than cars with internal combustion engines, as a result, their acquisition is viewed by an audience with higher incomes. The average age, in turn, is explained by the fact that by about this age people already

have a sufficient level of income to afford to purchase an electric car, but they are still quite young to adapt to the new technology.

RQ2 Factors affection on the purchase intention to Electric vehicles

When conducting a set of analyses, we were able to identify 5 factors that have a positive impact on the interest of buyers in purchasing electric cars. Such factors include the incentive factor, which describes the various financial non-financial benefits that the state provides to the owners of electric cars this result confirms the conclusions made by the researchers (Dr. Shaifali Garg at al. 2020, Huang, X 2019, Lina Ingeborgrud at al. 2019, Lasse Fridstrøm 2020).

Another important factor that will greatly stimulate the purchase of electric cars is the factor of social impact, based on this factor, we can assert that people in whose circle there are owners of electric cars or generally support the purchase of electric cars have a much higher chance of acquiring an electric car than in a group where there is no such influence. This result support the conclusions made by the researchers (Chu Wen Yan at al. 2022, Moataz Mohamed at al 2016, Saiful Hasan 2021). Another important factor is concern about the environment (Dr. Shaifali Garg at al. 2020, Jingwen Wu at al 2019, Lina Ingeborgrud at al. 2019, Moataz Mohamed at al 2016), which also increases interest in purchasing electric vehicles.

The factor of adaptability to new technologies (Zhenya Zhdano 2021) also plays an important role in building customer interest. The influence of this factor is due to the fact that an electric car is a new technology, the process of using which is significantly different from the process of using a car powered by electricity. Among the factors that negatively affect the adaptability of buyers to electric vehicles, one can single out the fear factor of discharging the car while driving. Manufacturers and other interested people need to focus on this fear, as it generally significantly affects people's interest.

Among the socio-demographic variables, only the income level has a statistically significant impact on the interest in purchasing electric cars. This effect is explained by the relatively high cost of purchasing an electric car.

Other main variables, such as education level, gender, and age, have a statistically insignificant effect on the formation of interest in electric cars. From this, it can be concluded that an electric car is a gender-neutral product that is suitable for any age and level of education.

RQ3 Methods of promotion, which have positive influence

The study assessed both the overall impact of the subsidy factor on interest in purchasing electric vehicles and the impact of each of the incentive policy methods separately. Among the methods, both financial and non-financial methods were evaluated. According to the results

obtained, both methods of promotion (financial and non-financial) turned out to be statistically significant. Thus, it was found that direct subsidies for the purchase of an electric car have a statistically significant impact and can significantly stimulate interest in buying an electric car from a consumer. Such a high importance of direct subsidies for the purchase of electric vehicles is directly related to the purchase price of electric vehicles. The main purpose of such subsidies is to offset the price difference between a traditional car and an electric car. It can be assumed that in sulchai, if the purchase price of a traditional car coincides with the purchase price of electric vehicles, then buyers will have much more interest in buying an electric car. At the same time, the reduced car tax does not have a statistically significant effect on the interest in purchasing an electric car, this fact may be explained by the fact that in Russia taxes on cars are very low and consumers do not see much advantage in this.

When considering non-financial incentives for promotion, both variants of promotional incentives have a statistically significant impact. Thus, the method of providing free parking spaces for electric vehicle users has a very high value, which, according to the coefficients, is comparable in its level to direct subsidies for the purchase of electric vehicles. Perhaps such a high level of influence of this factor may be due to the fact. that the majority of respondents live in the region of the Northwestern Federal District and the Central Federal District, which includes such large cities as Moscow and St. Petersburg. In such cities, the need for parking spaces in the city center is especially acute. As a result, such an incentive measure can significantly affect the willingness of buyers to purchase electric cars. At the same time, the possibility of electric vehicles moving along roads designated for public transport also has a statistically significant positive impact and can be considered as one of the opportunities to stimulate electric vehicle users. As mentioned above, the majority of respondents presumably live in large cities where there are problems with traffic jams. In this case, the possibility of driving in dedicated lanes can significantly reduce driving time.

Also, during the research process, we were able to find support/ rejection of hypotheses that were formed at the beginning of the work.

H1 There is a positive significant relationship between environmental concern and buying intention toward EVs. The hypothesis is supported.

H2. There is a positive statistically significant relationship between the incentives and intention in buying an electric car. The hypothesis is supported.

H3. There is a positive correlation between social impact and intention to purchase electric car. The hypothesis is supported.

H4. There is a positive significant relationship between adaptability to new technologies and the intention in purchasing an electric car. The hypothesis is supported.

H5. There is a positive statistically significant relationship between the status and intention in buying an electric car. The hypothesis is supported.

H6. There is a statistically significant relationship between the availability of charging infrastructure in use and intention in buying an electric car. The hypothesis is supported.

H7. There is a positive statistically significant relationship between income level and intention in buying an electric car. The hypothesis is supported.

H8. There is a positive statistically significant relationship between the gender and intention in buying an electric car. The hypothesis is rejected.

H9. There is a positive statistically significant relationship between the age and intention in buying an electric car. The hypothesis is rejected.

H10. There is a positive statistically significant relationship between the level of education and intention in buying an electric car. The hypothesis is rejected.

3.2. Discussion

Countries with developed economies, such as Norway, Sweden, etc., have a high level of transition to electric vehicles. According to the level of its development, Russia belongs to the group of countries with developing economies, mainly such countries are also at the initial stage of the formation of the electric vehicle market. The exception is China, which is also classified as a group of developing countries, but at the same time has a developed market for electric vehicles (Investopedia 2024).

The process of adapting to electric cars has its similarities and differences in developed and developing countries. Similarities, when switching to electric vehicles at the initial stages, users always have concerns about the power reserve of an electric car. It was also the case in Norway (the country that now has the highest level of electric vehicles relative to the total number of cars), it became possible to solve this problem thanks to investments in infrastructure and the construction of an extensive network of charging stations (Francis Adjei-Ampomah 2020). Thus, the rapid development of the electric vehicle market is possible provided that the government makes serious investments in infrastructure development.

However, there are differences in the transformation process between Russia and other developed countries. First of all, since electric vehicles are a new and very expensive technology, the level of purchasing power in the country affects the possibility of purchasing them. As a result,

since the level of purchasing power in developed countries is undoubtedly higher, the transition process in such countries is much easier. It is also worth noting that at the moment Russia is under sanctions and as a result there is a barrier to the sale of electric cars to Russia for automakers. The impact of sanctions significantly disrupts supply chains for manufacturers and complicates their operations within the country. The influence of these factors has a significant impact on the speed of development of the electric vehicle market in Russia.

Also according to the study (Zhenya Zhdano 2021) the process of adopting and using a new technology is seriously influenced by the awareness of users about this technology. The technology of electric vehicles in Russia is very new and is only now beginning to gain mass distribution, as a result, most consumers currently do not have a sufficient level of awareness about this technology, which also may lead to a decrease in interest in purchasing electric vehicles.

3.3. Recommendations

1. In order to ensure an early transition and a significant increase in the volume of the electric vehicle market in Russia in the coming years, government support is needed. First of all, these are significant investments in the construction of charging infrastructure, which will ensure comfortable use of electric vehicles in the city. At the same time, measures are needed to directly subsidize the purchase of electric vehicles. Such measures should be aimed at reducing the cost of buying such a car, which will significantly increase demand.

2. Development of electric vehicle production in the country. Currently, Russia has a regime of high customs taxes on imported cars. Basically, all electric vehicles, with the exception of the «Moskvich 3e», are manufactured abroad, which leads to an additional increase in their cost. The development of electric vehicle production within the country can be subsidized by the state. In this case, the cost of the final product will be significantly lower for the end user, which will lead to an increase in demand for such a product. Also, the development of electric vehicle production in the country will have a positive impact on the country's economy. By creating new factories and jobs, or by expanding existing production.

3. An important condition for the further development of electric vehicles is the conduct of scientific research in the field of battery technology development. Modern batteries have a limited capacity, which reduces the maximum charge level and, as a result, creates a limitation of the range of movement of the car. In addition, modern lithium-ion batteries have difficulties with the recycling process, which also reduces the environmental friendliness of electric cars. Such research can be carried out at the expense of electric vehicle manufacturers with direct subsidies

from the state. If favorable results of such studies are obtained, batteries with a large charge reserve could seriously affect the electric car industry as a whole. Such cars could become a distinctive feature of Russian electric vehicles, which would undoubtedly become their competitive advantage. Also, these technologies could be sold under license to foreign car manufacturers, which also had a positive impact on the economic development of the country.

4. Also, one of the most important tasks facing car manufacturers is to reduce the cost of batteries. In modern realities, the high cost of a car is primarily associated with the high cost of a battery. This task can be solved in several ways, firstly through research and the search for new production technologies. Secondly, due to the economy of scale. With a significant increase in the volume of output, the cost of each unit will decrease. The result of these actions should be a significant reduction in the cost of an electric vehicle and, as a result, its cost to the customers. This will also help offset the impact of one of the barriers, the high cost of electric vehicles. The researcher holds the same opinion (Sivakumar Palaniswamy at al 2022), stating that lower prices for batteries for electric cars can «change the game».

3.4. Limitations

There are some limitations associated with the study. Some limitations are related to the information collection process. These limitations are directly related to the method that was used to collect the information. Disadvantages of this method are weak control over the sampling process, sampling bias and the representativeness of the population is not guaranteed.

Also, the results obtained show that there is no significant influence of age on the interest in buying an electric car. This result may be due to the fact that almost half of the respondents belong to the same age group of 18-30 years.

It is also worth noting that 75% of respondents live in two federal districts, which may also lead to some possible biases.

Theoretical and practical contribution

4.1. Theoretical contribution

This study primarily tests the influence of factors on consumer interest in purchasing electric vehicles in the Russian market. This study makes several valuable contributions to existing theory and practice in marketing related specifically to the adoption of EVs. Within the framework of this study, we were able to confirm the existence of a statistically significant relationship between intention in purchasing an electric cars and concerns about the environments. This result supports the results obtained in previous studies (Dr. Shaifali Garg at al. 2020, Jingwen Wu at al 2019, Lina Ingeborgrud at al. 2019, Moataz Mohamed at al 2016). We also managed to determine a statistically significant relationship between social influence and interest in purchasing electric cars, which also confirms the previously obtained results (Dr. Shaifali Garg at al. 2020, Huang, X 2019, Lina Ingeborgrud at al. 2019, Lasse Fridstrøm 2020). At the same time, the bonuses provided by the state are also considered as an important factor in the formation of interest in electric cars, which also confirms the results of previous studies (Dr. Shaifali Garg at al. 2020, Huang, X 2019, Lina Ingeborgrud at al. 2019, Lasse Fridstrøm 2020). Another important factor is the status perception of an electric car, which also has a positive impact and supports the results of previous studies (Huang, X 2019). Also, the results obtained during the study show the presence of a positive influence between adaptability to new technologies and interest in purchasing electric vehicles (Zhenya Zhdano 2021). At the same time, we were able to establish the existence of a positive statistical relationship between income level and interest in purchasing electric vehicles. The presence of this relationship confirms the results obtained in previous studies (Elena Higueras-Castillo at 2020, Stefan Trommer at al 2015, Axel Ensslen at al 2015, Scott Hardman at al. 2016).

Also, according to the results of the study, it was found that there is no statistically significant relationship between gender and interest in buying electric cars. Also, during the cluster analysis, not one of the genders showed a greater predisposition to purchase electric vehicles. This result will justify the results obtained earlier in the work of other researchers, where one of the genders showed a greater willingness to purchase electric vehicles (Elena Higueras-Castillo at 2020, Zulfiqar Ali Lashari 2021, Stefan Trommer at al 2015, Scott Hardman at al. 2016). Also, in the results obtained, the absence of a statistically significant relationship between age and interest in purchasing electric cars is determined. As a result, it can be concluded that the desire to purchase an electric car does not depend on age, but also in the process of cluster analysis it was found that the middle-aged group has a greater predisposition than others. This result also confirms many previous

studies, which also identified middle-aged people as the group with the greatest chance of showing interest in purchasing electric cars (Moataz Mohamed at al 2016, Scott Hardman at al 2016). According to the results of the study, it was also found that there is no statistically significant relationship between the level of education and interest in purchasing an electric car, which directly contradicts the previously obtained results (Stefan Trommer at al 2015, Moataz Mohamed at al 2016, Scott Hardman at al 2016).

4.2. Practical contribution

As part of the practical part, this study makes a significant contribution to understanding the Russian electric vehicle market. According to the results of the study, factors have been identified that have a serious impact on the interest in buying electric cars. Such factors include incentives, social influence, status, adaptability to new technologies, concern for the environment, and income level.

Understanding these factors and assessing the level of influence each of the factors will significantly help practitioners in building and developing the electric car market in Russia. Also, as part of this study, an attempt was made to systematize consumers by groups and establish the profile of a potential buyer of an electric car in Russia. During this attempt, it was found that there was no influence of gender on the creation of a portrait of a potential buyer. There was also no greater predisposition of any of the genders to purchase electric cars. In all groups, the genders were distributed in a very proportional way.

Also, when trying to determine the portrait of the target audience for electric vehicles, the variable «level of education» was used. This variable did not have a serious impact on the systematization of consumer groups, which confirmed the absence of a statistically significant influence of this variable on the level of interest in buying electric vehicles. Thus, it was found that the portrait of a potential buyer of electric cars looks like this: these are middle-aged people with an above-average income level. Additional factors that will contribute to their choice in favor of an electric car will be the presence of support for electric vehicles among the people around them, the desire to take care of the environment, high adaptability to new technologies and the desire to emphasize their status with an electric car and presence of subsidy from the governments.

Another important aspect of the work was to assess the level of influence of various types of incentive policies that could have a big impact on the purchase of electric vehicles. Thus, the paper considered 4 types of incentive benefits that should push buyers to switch to electric cars. Thus, two types of monetary benefits and two types of non-monetary benefits were considered. According to

the results, it was found that direct subsidies have a statistically significant impact on the purchase of electric vehicles, as they help reduce the cost of the initial purchase. At the same time, the presentation of tax benefits for owners of electric vehicles does not have a statistically significant impact. At the same time, non-monetary methods of stimulation have a statistically significant effect on the formation of interest in the purchase of electric vehicles. Thus, it can be concluded that both methods of acceptance, which can represent the state, have a positive impact on the formation of consumer demand.

At the same time, a fear was identified that has a negative impact on the interest in buying an electric car, this is the fear that the car will end charging while driving. This fear is largely due to the lack of a developed network of charging stations. This factor should be taken into account by both the government and manufacturers. The solution to this problem can be a serious investment in the charging infrastructure by manufacturers and the governments.

The results obtained in the work can be used by practitioners to build a sustainable demand for electric vehicles. These results can be used to build both a state policy to stimulate the Russian electric vehicle market and to develop marketing activity on the part of automakers.

Overall, the theoretical and practical implications of the study provide valuable insights for both researchers and practitioners in the fields of consumer perception and factors influencing consumers' interest in buying electric vehicles within the Russian market. Understanding the factors influencing consumer intention can help practitioners in building the most effective strategies for the development of the electric vehicle market in Russia.

4.3. Future research directions

In the future, researchers can confirm the results that were obtained as a result of this study. On the other hand, it is important in future studies to assess the level of influence of other incentive policy options on building demand for electric vehicles in Russia. Such a study will help to assess the sensitivity of consumers to various promotional policy options and determine the most effective set of tools for building demand for electric vehicles.

Also, in subsequent studies, it is possible to assess the influence of the region of residence on the interest in purchasing an electric car. Also, during the development of this study, it was revealed that many of the potential consumers have a low degree of awareness about electric vehicles. So one of the possible options for future research may be to assess the impact of the level of awareness about electric vehicles on the interest in buying an electric car.

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Appendix 1

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	,555[a]	,308	,293	,81395547	,308	20,706	4	186	,000	1,919

Figure 19. Model summary for the Social-demographic regression model

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	54,873	4	13,718	20,706	,000[b]
	Residual	123,229	186	,663		
	Total	178,102	190			

Figure 20. Anova for the Social-demographic regression model