ATTITUDES TOWARDS CLIMATE CHANGE AND ELECTRIC CAR PURCHASE – THE CASE OF EUROPEAN CONSUMERS

STAVOVI PREMA KLIMATSKIM PROMJENAMA I KUPOVINA ELEKTRIČNIH AUTOMOBILA – PRIMJER EUROPSKIH POTROŠAČA

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Abstract

Purpose – Climate change and other environmental issues require adequate solutions by all actors, including consumers. The purpose of this paper is to explore the determinants of consumers' willingness to fight climate change and the probability of their purchase of an electric car, as an action that potentially helps mitigate climate change.

Design/Methodology/Approach – The analysis relies on Eurobarometer survey responses of 25,009 individuals from 28 European countries. The determinants of probability of taking action to fight climate change and the determinants of probability of buying an electric car are identified using the Heckman selection model.

Findings and implications – The results show that people who are aware of the gravity of climate change and believe that it requires action at all levels of government, business sectors and citizens are more likely to engage in pro-environmental actions. As for electric car purchase, consumers belonging to the middle class and higher classes as well as consumers satisfied with their lives are more likely to buy electric cars than others. However, their attitudes to climate change and actors responsible for it have no impact on their actual purchase.

Sažetak

Svrha - Klimatske promjene i druga ekološka pitanja zahtijevaju odgovarajuća rješenja svih aktera uključujući i potrošače. Svrha rada jest istražiti odrednice spremnosti potrošača u borbi s klimatskim promjenama kao i vjerojatnost kupovine električnih automobila kao jedne od aktivnosti koja potencijalno može pomoći u borbi s klimatskim promjenama.

Metodološki pristup - Analiza se temelji na odgovorima iz anketnoga istraživanja Eurobarometra na uzorku od 25 009 ispitanika iz 28 europskih zemalja. Odrednice vjerojatnosti poduzimanja akcija u borbi protiv klimatskih promjena, kao i kupovine električnoga automobila, identificirane su pomoću Heckmanova modela odabira.

Rezultati i implikacije - Rezultati pokazuju da pojedinci koji su svjesni ozbiljnosti klimatskih promjena i koji smatraju da su prijeko potrebne aktivnosti na svim razinama vlade, poslovnoga sektora i građana, skloniji su i sami uključiti se u aktivnosti usmjerene zaštiti okoliša. Što se tiče kupovine električnoga automobila, potrošači koji pripadaju srednjoj i višoj klasi kao i oni zadovoljni svojim životima vjerojatnije će kupiti električne automobile. Ipak, njihovi stavovi o klimatskim promjenama i odgovornim akterima nemaju utjecaja na stvarnu kupovinu.

Limitations – The main limitation of this research study is associated with the choice of variables, which was limited to those available in the Eurobarometer survey.

Originality – This paper contributes to a better understanding of factors behind environmentally friendly behavior and purchase of electric cars on a large sample of European consumers. Unlike most of the research in this field, the analysis is based on actual purchase data instead of purchase intention.

Keywords - climate change, green consumers, electric cars

Ograničenja - Glavno ograničenje istraživanja povezano je s izborom varijabli koji je bio ograničen na one dostupne u istraživanju Eurobarometra.

Doprinos - Rad doprinosi razumijevanju čimbenika koji određuju ekološki prihvatljivo ponašanje i kupovinu električnih automobila na velikom uzorku europskih potrošača. Za razliku od većine istraživanja u ovom području, analiza se temelji na podacima o stvarnoj kupovini, a ne na namjeri kupovine.

Ključne riječi - klimatske promjene, zeleni potrošači, električni automobili

1. INTRODUCTION

Nowadays we are witnessing growing concerns about the environment and climate change among consumers. These growing concerns about environment are often related to natural disasters (Berger, 2010; Goebel, Krekel, Tiefenbach & Ziebarth, 2015). Environmentally conscious customers and environmental movements have raised managers' awareness in terms of developing and offering products and solutions that are less harmful to nature (Vandermerwe & Oliff, 1990; Khandelwal, Kulshreshtha & Tripathi, 2019; White, Habib & Hardisty, 2019). The concerns that consumers have about the environment, however, are not always reflected in their buying habits and product choices. According to Moser (2016), there is a difference between customers' intended and actual behavior in respect of green purchasing. Although they show willingness or intention to buy green products, they do not choose them for purchase. This is evident even in product categories such as electric cars (He, Wang, Wang, Ma, Sun & Zhao, 2021). The majority of consumers choose conventional products over more environmentally friendly alternatives mostly due to price but also due to perceptions of quality, lack of green product availability, and brand loyalty to conventional products (Gleim & Lawson, 2014).

However, green products are rather heterogeneous. Liobikienė and Bernatonienė (2017) recommend focusing on a particular product category rather than on green products in general because their purchase is often determined by different factors. The focus of this research is thus on a particular product – an electric car. Electric cars are interesting from a research perspective as they introduce changes to traditional concepts and require the development of a new, more suitable business model (Kley, Lerch & Dallinger, 2011). Furthermore, electric car purchase intention is strongly determined by the environmental performance of electric cars, even more so than by price value (Degirmenci & Breitner, 2017).

When it comes to the purchase of electric cars, forecasts show that only 5 percent of potential car buyers are likely to choose electric cars (Lieven, Mühlmeier, Henkel & Waller, 2011). In his research on electric car purchase in Nordic countries, de Rubens (2019) reports that 68 percent of analyzed customers in these countries are prepared to adopt electric cars. Electric car sales in Europe demonstrate an upward trend, albeit one that remains rather slow and at a low level. According to the European Environment Agency (2019), in 2018 the share of electric and hybrid cars in total car sales in the European Union (EU) stood at 2 percent. Eurobarometer data show that only 1.74 percent of customers in Europe who report taking any action to fight climate change have purchased an electric car.

The purpose of this paper is twofold: (1) to identify factors that influence customers to take action aimed at fighting climate change and (2) to identify factors that affect the probability of buying an electric car as one of the actions contributing to environmental protection and tackling climate change. Unlike the majority of research in this field, the analysis is based on actual purchasing data, not just on purchase intention. The results of this study contribute to a better understanding of the green behavior of European customers, with a particular focus on the purchase of electric cars. Since the analysis is based on a large sample of customers from European countries, it provides insights that are relevant to the entire European market rather than to a specific country.

The paper is organized as follows: after the introduction in Section 1, Section 2 provides a brief overview of the literature. This is followed by an explanation of the methodology in Section 3. The results and a discussion of the results are presented in Section 4, after which a conclusion is provided in Section 5.

2. LITERATURE REVIEW

Green purchasing (and green behavior in general) have attracted significant scholarly atten-

tion and continues to be one of the most relevant topics nowadays. Joshi and Rahman (2015) as well as Liobikienė and Bernatonienė (2017) in their in-depth literature reviews point to the main factors that determine green purchasing identified by numerous researchers in the field. These include, among others, personal values and norms, attitudes, environmental concerns, social pressure, as well as product attributes and lifestyle. Rezvani, Jansson, and Bodin (2015) and Biresselioglu, Kaplan, and Yilmaz (2018) provide an in-depth overview of factors related to the adoption of electric cars among customers. The following factors were recognized for their impact on electric car purchases: technical factors (including technical and safety restrictions), contextual factors (such as charging infrastructure), cost and economic factors, individual and social factors, including environmental concerns. This points to the similarities between electric cars and other green products when it comes to their adoption while also highlighting some product-specific factors, such as availability of appropriate infrastructure, which are highly relevant for electric cars. While some of the general findings do apply to electric car purchase, it is important to note that this is an expensive product whose use depends on the availability of adequate infrastructure, technical performance, and price of the product itself as well as fuel.

Attitudes, one of the factors with great potential to influence people's behavior and actions (Ajzen, 2011), affect the consumer decision to buy environmentally friendly products. A study by Ritter, Borchardt, Vaccaro, Pereira, and Almeida (2015) has shown that green consumption is strongly motivated by environmental attitudes and environmental consciousness. Surprisingly, environmental concerns do not have any impact on one's choice to buy electric over fossil fuel cars (Orlov & Kallbekken, 2019). It is also worth noting that, according to Moser (2015), the choice of green products over conventional ones does not depend on attitudes, but on personal norms and willingness to pay. The analysis in this paper includes customer attitudes with regard to climate change, relevant actors who should be taking appropriate measures, as well as the reduction of CO2 emissions and government support programs as explanatory variables in the model. It is assumed that attitudes will motivate customers to engage in pro-environmental behavior (i.e., report actions for fighting climate change), while they are less relevant for electric car purchases. Since consumers do not necessarily see electric cars as eco-friendly solutions that contribute to tackling climate change and environmental issues (Caperello & Kurani, 2012), these attitudes are not significantly related to the decision concerning their purchase either.

Welsch and Kühling (2010) provided empirical evidence of a positive relationship between life satisfaction and environmentally friendly behavior. Consumers who buy or intend to buy green products tend to be more satisfied with their lives in comparison to other customers (Xiao & Li, 2011). People behaving in an environmentally friendly manner are happier with their present life, while those who expect their well-being to improve in the future tend to be less pro-environmental (Kaida & Kaida, 2016). In addition to the literature that suggests a positive impact of pro-environmental behavior on life satisfaction, extant findings suggest certain concerns related to the adoption of green products and lifestyle. In general, consumers tend to underestimate life satisfaction related to green products and overestimate the costs associated with those products (Welsch & Kühling, 2010). One of the reasons why customers hesitate to adopt electric cars is the need for a lifestyle change, especially in terms of journey planning (Biresselioglu et al., 2018). To improve their future well-being (or maintain the current situation), they choose less environmentally friendly solutions, which is in line with the above-mentioned findings of Kaida & Kaida (2016). However, contrary to the perception of some customers, environmentally friendly behavior and a pro-environmental lifestyle do not threaten the individual's well-being and life satisfaction (Schmitt, Aknin, Axsen & Shwom, 2018).

In addition to research exploring how environmentally friendly behavior affects life satisfaction, the impact of life satisfaction on green behavior has been the subject of growing scholarly interest. Wang and Kang (2019) provided empirical evidence on the positive effect of life satisfaction on the environmental behavior of consumers. Based on an extensive overview of the literature on life satisfaction and environmental behavior, Kasser (2017) explains that pro-environmental behavior leads to well-being through the satisfaction of psychological needs. According to his findings, a person's happiness consequently leads to environmentally friendly behavior and other forms of pro-social behavior. Taking into account more recent research trends relating to life satisfaction and environmental behavior, this paper will explore the manner in which life satisfaction contributes to engagement in environmental activities. Considering previous findings on lifestyle, green behavior, and green purchasing, it can be hypothesized that customers who are less satisfied with their current lives are less likely to engage in any activities aimed at mitigating climate change or to purchase an electric car.

Green behavior and green purchasing are also determined by socio-demographic characteristics. However, they cannot fully explain green purchase behaviors (Schlegelmilch, Bohlen & Diamantopoulos, 1996). It seems that consumers with different socio-demographic characteristics do not differ when it comes to green product purchasing due to growing concerns about environmental issues (Khare, 2015). Furthermore, the impact of socio-demographic characteristics on the adoption of electric cars differs by country and social group (Liao, Molin & van Wee, 2017). Socio-demographic characteristics alone cannot provide sufficient explanation for green behavior or green product purchasing but, together with other variables, they can help shed more light on the subject. Therefore, they are included in the model in order to explore whether certain groups of customers are more likely to engage in pro-environmental behavior.

It is important to control for these variables because of the uniqueness of electric cars, which differ from other green product categories in terms of their characteristics, performance, and price.

Although people perceive the great risks posed by climate change, actions to fight global warming remain rather low on their priority list (Leiserowitz, 2007). Economic insecurity is one of the main reasons why environmental concerns of customers fade at a certain point (Panarello, 2021). Pro-environmental behavior is strongly determined by perceived risk (Bradley, Babutsidze, Chai & Reser, 2020). The absence of actions to tackle environmental issues is especially evident in purchasing habits. Consumers show a strong preference for environmentally friendly products in isolation but, on account of attribute trade-offs such as price and reduced performance, they in fact opt for the alternatives that are less green (Olson, 2013).

Social groups and social pressure also reflect on consumer behavior in respect of green behavior and green purchasing. Cosmopolitan consumers, for instance, are deeply concerned about environmental issues and indeed behave in accordance with sustainability principles even though their consumption in some areas is not environmentally friendly (Grinstein & Riefler, 2015). When it comes to the adoption of electric cars, there are two ways in which social pressure exerts its influence: directly by influencing the new customer decision and indirectly through political support for new regulations (Dijk & Yarime, 2010). Social norms are found to be highly relevant for the adoption of electric cars (Rezvani, Jansson & Bengtsson, 2018). Whitmarsh and Köhler (2010) argue that policy measures have an important role to play in supporting both supply and demand when it comes to changes toward more sustainable transport.

The brief overview of the literature given in this section emphasizes some of the most relevant factors that explain green purchasing. Furthermore, extant findings suggest that green be-

havior and green purchase are to be analyzed by taking into account the complexity of their nature. Green purchasing, as one of many aspects of green behavior, is not always determined by the same set of factors, at least not for all product categories. Liobikienė, Grincevičienė, and Bernatonienė (2017) have found that, while being mutually related, environmentally friendly behavior and green purchase are also influenced by different factors, such as price, that determines only green purchasing and not green behavior. It is expected that customers who are not concerned about climate change and do nothing to protect nature will be less likely to choose green alternatives when purchasing. On the other hand, customers concerned about the environment and climate change may not always buy green products (at least not in all product categories) despite their general effort to protect nature. Consequently, this paper analyzes the purchase of electric cars in the context of overall action aimed at contributing to the fight against climate change. The electric car purchase is modelled for the customers who demonstrate certain actions aimed at environmental protection.

3. METHODOLOGY

The empirical part of the analysis relies on Eurobarometer 91.3: Rule of Law, and Climate Change, a survey conducted in 28 European member states in April 2019 at the request of the European Commission, Directorate-General for Communication's Media Monitoring and Eurobarometer unit. The data have been made available by GESIS – Leibniz Institute for Social Sciences[1]. The total sample includes responses of 27,655 European citizens aged 15 and older. After excluding missing data as well as responses of those who expressed no opinion or did not know the respective answer, the analysis in this paper relies on the responses of 25,009 individuals.

In order to identify determinants of actions to fight climate change and determinants of electric car purchase, the Heckman selection model was applied. Data on electric car purchase in a dataset were taken into consideration only for respondents reporting any action to fight climate change. The Heckman selection model employed in this research thus helped to correct for sample selection bias.

The dependent variable in the first equation was a binary variable taking the value 1 if customers reported an action directed at environmental protection and tackling climate change in the last six months. Independent variables in the first equation were: attitudes on climate change (climate change as the single most important problem and the degree of its seriousness), actors responsible for fighting climate change (government at national, local, regional level, EU, business sector, environmental groups, consumers personally, everyone together, nobody), life satisfaction, socio-demographic factors (age, sex, social class, ability to pay all bills by the end of the month and area where they live). The model controlled for country as well.

The second part of the model captured the modelling of electric car purchase. Customers who reported action to fight climate change in the last six months were asked if those actions included the purchase of an electric car. A total of 15,676 or 62.7 percent of those who reported involvement in actions to fight climate change were selected in the second equation. The set of independent variables in the second equation was similar to that used in the first equation. In this part of the model, variables referring to the actors responsible for tackling climate change were limited to the business sector, the consumers individually, and the joint effort of all actors. Additional variables employed to explain electric car purchases included the attitude to greenhouse gas emissions and the importance of government support for energy efficiency, including electric car purchases. Definitions of the variables in the model are provided in Table 1.

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[1] Further details on the Eurobarometer survey data are available at: https://zacat.gesis.org/webview/index.jsp?object=http://zacat.gesis.org/obj/fStudy/ZA7572

TABLE 1: Definition of variables

Dependent variables	
Env-protect action	1 in case of any action taken to contribute to environmental protection in the last six months, 0 otherwise
Electric car purchase	1 in case of an electric car bought in the last six months, 0 otherwise
Independent variables	
Climate change_serious	How serious a problem is climate change: 1 (not at all) – 10 (extremely serious)
Climate change_biggest problem	1 if climate change is the single most important problem, 0 otherwise
Measures – national government	1 if the national government should fight climate change, 0 otherwise
Measures – EU	1 if the EU should fight climate change, 0 otherwise
Measures – regional and local government	1 if the regional and local government should fight climate change, 0 otherwise
Measures – business sector	1 if the business sector should fight climate change, 0 otherwise
Measures – personal level	1 if they personally should fight climate change, 0 otherwise
Measures – environmental groups	1 if environmental groups should fight climate change, 0 otherwise
Measures – everyone together	1 if everyone together should fight climate change, 0 otherwise
Measures – nobody	1 if nobody should fight climate change, 0 otherwise
Reduction of CO2 emissions	We should reduce greenhouse gas emissions to a minimum: 1 (fully agree) – 4 (fully disagree)
Government support program	How important is government support for energy efficiency: 1 (very important) – 4 (not at all important)
Sex	1 if sex = male
Age	Continuous variable
Life satisfaction	Satisfaction with the life they lead: 1 (very satisfied) – 4 (not at all satisfied)
Financial problems	1 if they have difficulty paying the bills most of the time or from time to time, 0 otherwise
Lower middle class	1 if belonging to the lower middle class, 0 otherwise
Middle class	1 if belonging to the middle class, 0 otherwise
Upper middle class	1 if belonging to the upper middle class, 0 otherwise
Higher class	1 if belonging to a higher class, 0 otherwise
Small or middle-sized town	1 if living in a small or middle-sized town, 0 otherwise
Large town	1 if living in a large town, 0 otherwise

4. RESULTS

The results presented in Table 2 show the factors that determine the consumers' decision to take action for environmental protection, as well as their decision to buy an electric car to contribute to reducing pollution. Customers who indicate climate change as the single most important problem of today's society are more likely to act to fight climate change. Furthermore, an increase in the perception of the severity of this problem increases their chances of engaging in pro-environmental behavior. The results also indicate that the respondents' attitudes concerning the actors responsible for fighting climate change affect the probability of active participation in environmental protection. As expected, those who see themselves as responsible for providing an active response to climate change are significantly more likely to do so. The same applies to persons who rely on the national, regional, and local government, as well as the business sector, to take the measures necessary. Customers who believe that solving environmental issues requires the joint effort of all actors are more likely to serve as an example and take action. When it comes to the respondents who think nobody should take any measures, the probability of them being an exception and taking action is significantly lower. Counting on EU institutions and environmental groups is not significantly related to consumer action for protection of the environment.

Results of the Heckman selection show how life satisfaction affects customers' decision to act in order to fight climate change. It seems that customers who are less satisfied with their lives demonstrate less willingness to contribute to environmental protection. They are apparently more focused on solving their personal issues than on contributing to solving global problems. Similarly, those struggling with financial problems, who often or from time to time do not have enough money to pay their bills at the end of the month, are significantly less likely to be involved in actions for climate change mitigation.

Moreover, environmentally friendly behavior depends on social status. Consumers belonging to the lower middle class, middle class, upper middle class, and higher classes are all significantly more likely to take action that contributes to fighting climate change in comparison to working-class consumers. The results also show that male customers and those living in small or middle-sized towns are significantly less likely to actively engage in environmental protection by taking adequate action.

The next step of the analysis focused on the factors that affect the probability of electric car purchase. Among the customers who reported having taken some action to protect the environment, the probability of electric car purchase is not determined by their attitudes on climate change issues. Neither those who think that climate change is the single most important issue nor those who perceive it as very serious are more likely to buy electric cars. This finding confirms that environmentally friendly behavior, rather than the purchase of environmentally friendly products, depends on customer attitudes. Those concerned about climate change and its severity will adopt environmentally friendly behavior (such as recycling, consuming less plastic, etc.). However, their attitudes are not relevant for the probability of buying electric cars. Interestingly, the probability of electric car purchase is not affected by their attitude to CO_2 reduction either. One possible explanation for this is that their attitudes to the severity of climate change foster their decision to adopt other environmentally friendly solutions, such as hybrid cars, public transport, or cycling. Green customers who are deeply concerned about climate change may also prefer not to own any car at all. This, however, remains beyond the scope of this analysis.

Not even the respondents who consider themselves responsible for fighting climate change are significantly more likely to purchase electric cars. Furthermore, customers who think that the business sector should take the necessary measures to tackle climate issues are in fact less like-

TABLE 2: Results of the Heckman selection model

	Env-protect action	Electric car purchase
Climate change_biggest problem	.255 (.024)***	.003 (.003)
Climate change perception	.095 (.005)***	-.005 (.007)
Measures – national government	.103 (.020)***	-
Measures – EU	.025 (.020)	-
Measures – regional and local government	.107 (.022)***	-
Measures – business sector	.117 (.020)***	-004 (.003)*
Measures – personal level	.451 (.021)***	-0003 (.003)
Measures – environmental groups	-.016 (.022)	-
Measures – everyone together	.557 (.034)***	-.011 (.004)***
Measures – nobody	-.240 (.114)**	-
Reduction of CO2 emissions		.008 (.002)
Government support program		-.003 (.002)
Life satisfaction	-.077 (.014)***	-004 (.002)**
Age	-.0005 (.0005)	-.0001 (.00006)
Sex	-.106 (.018)***	.005 (.002)**
Bills	-099 (.021)***	-
SC-lower middle class	.184 (.027***	.002 (.003)
SC-middle class	.200 (.022)***	.007 (.003)**
SC-upper middle class	.357 (.041)***	.036 (.004)***
SC-higher class	.445 (.113)***	.052 (.012)***
Small or middle-sized town	-.035 (.021)*	.004 (.003)
Large town	.022 (.023)	.004 (.003)
Country	yes	no
No. of observations	25,009	
Selected	15,676	
Non-selected	9,333	
Wald chi2	140.79	
Prob > ch2	0.0000	
Log likelihood	-4693.673	

ly to buy electric cars, as are those who believe that fighting climate change requires a joint effort of all actors. Even customers who consider government support for energy efficiency to be an important factor are not significantly likely to purchase electric cars. The results reveal that the attitudes on climate change and the topics relevant for climate change response leading to environmental protection action in general are not relevant when it comes to the decision to buy an electric car.

Customers who are less satisfied with their lives show a lower probability of electric car purchase. A higher social class is a determinant of

a higher probability of electric car purchase. Customers belonging to the middle class, upper middle class, and higher classes are more likely to report having purchased electric cars than working-class respondents. However, lower-middle-class customers are not significantly more likely to be the buyers of electric cars. The results also reveal no significant difference between customers living in small, middle-sized, and large towns and those living in rural areas in terms of the probability of electric car purchase.

These results suggest that socio-demographic characteristics can explain the probability of climate change action and electric car purchase to a certain extent. While social class and sex affect consumers' green behavior and purchase, their place of living appears to be a less relevant predictor. It is especially encouraging to see that customers are willing to fight climate change regardless of age.

5. DISCUSSION

The findings indicate that attitudes are likely to prompt consumers to take action to fight climate change without affecting their decision to purchase an electric car. This confirms previous findings of a study conducted by Moser (2015) and also corroborates the conclusions reached by Degirmenci and Breitner (2017). The absence of impact of consumer attitudes on purchase in this case is likely to be strongly influenced by the difference in the price and performance of electric cars, as opposed to fossil fuel cars. This also raises the question of whether the customers who are deeply concerned about climate change and are willing to take individual action see electric cars as an adequate solution to this global problem. Electric cars are not perceived as environmentally friendly due to their use of electricity generated from fossil fuels and nuclear power, as well as potential environmental threats associated with the production and disposal of electric car batteries (Zaunbrecher, Beul-Leusmann & Ziefle, 2015). These are interesting venues for future research.

Raising awareness of climate change is strongly related to getting consumers engaged in relevant environmental protection actions in general. Activities aimed at climate change mitigation should include raising citizen/customer awareness sufficiently to encourage them to adopt environmentally friendly behavior. However, from the perspective of electric car manufacturers, these findings indicate that raising awareness will not contribute to higher sales of electric cars or to a reduction of CO_2 emissions. A finding which may be interesting to policy makers is that active support through government programs is not significantly related to the probability of electric car purchase. In fact, customers who think these programs should exist and are valuable are not more likely to become the owners of electric cars themselves. Therefore, it cannot be concluded that these programs will contribute significantly to a greater use of electric cars and, consequently, to climate change mitigation.

In general, the findings of this research testify to the difficulty of drawing general conclusions that would apply equally to green behavior and green purchases regardless of the product category. The findings lend support to complex interrelations between green behavior and purchasing habits (Liobikienė et al., 2017). While electric cars have a great potential for tackling environmental issues, including climate change, these results as well as the overall adoption rate show that customers (including those who are concerned about the environment) hesitate to purchase them. Therefore, it is important to emphasize that electric car manufacturers cannot rely on environmental consciousness or willingness of consumers to contribute to fighting climate change when they promote and sell their products.

6. CONCLUDING REMARKS

The results of the analysis provide relevant findings for firms engaged in the development and distribution of electric cars as well as policy

makers who design the environmental policy. According to these findings, customers who perceive the gravity of climate change and believe that it requires measures to be taken at all levels of national and local government, business sectors, and citizens (individually or jointly) are more likely to engage in pro-environmental activities in the first place. Life satisfaction, absence of financial problems and better social status contribute to active involvement in environmental protection and tackling climate change.

However, among the customers involved in actions aimed at environmental protection, these factors – or at least some of them – are irrelevant for determining their decision to purchase an electric car in the same way. People who are likely to buy electric cars, just as they are likely to act to fight climate change, are those satisfied with their lives and those belonging to the middle class and higher classes. However, their attitudes on climate change and responsible actors appear to have no impact on the actual purchase.

These results provide important input for managers in the automotive industry, especially electric car manufacturers. Despite the potential of electric cars to contribute to lowering CO_2 emissions and fighting climate change, the electric car industry should not target only customers with general pro-environmental attitudes. These findings imply that the emphasis on environmental aspects alone is less likely to attract new users of electric cars. On the other hand, stronger emphasis should be placed on lifestyle and the impact of electric car purchase have on life satisfaction. As for the findings on actions to fight climate change, they imply the importance of raising awareness of environmental issues, as this will in turn encourage consumers to act.

The available data provide insights into electric car purchases by customers who are concerned about environmental protection. However, some potential electric car users may be expected to base their decision to buy an electric car, for instance, on their interest in new technology. The study's focus on a narrow group of customers limits the generalizability of research findings for a broader group of customers. Further research may aim at including all customers to gain an understanding of what lies behind the decision to buy electric cars.

One of the limitations of the study lies most certainly in the choice of variables, which was limited to those available in the Eurobarometer survey. Therefore, future research may include other variables, including social pressure, values, and norms as well as lifestyle. Other characteristics of customers, such as education and marital status, may also be considered in addition to other internal and external factors to identify and explore the segments of electric car users.

The results of this research point to a rather complex behavior of electric car users. They represent a small segment of car owners whose behavior is not determined by their attitudes on environmental issues. As this study focused on electric car purchases by customers who are generally involved in actions to protect nature, it was not possible to compare the profile of an electric car user with that of a fossil fuel car user or with the profiles of persons who use other means of transport. This, however, is an interesting topic for future research. It would be worth exploring any factors affecting the choice of vehicle type too. Given that cars are often purchased for family use, future research should also focus on the environmental concerns and attitudes of household members rather than individuals.

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