The Green Side of the Automotive Industry: A Consumer-Based Analysis

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In recent times, firms brand their products with environmentally friendly features and labels, as they are trying to convey to the market the image of a sustainable company. Relevant literature has explored whether environmentally-oriented marketing affects consumer behavior. This study aims to evaluate the effectiveness of car manufacturers' green marketing in promoting and building consumers' awareness on eco-sustainability issues. Based on a sample of 300 car-users, the results suggest the presence of a strong brand bias when consumers are called to assess the eco-sustainability factor, which is supposed to be the green facet of consumers' purchasing habit.

INTRODUCTION

In recent times, "green" has become a pervasive buzzword in business. Companies brand their products with environmentally friendly features and labels, as they are trying to convey to the market the image of a sustainable company. These efforts are generally referred to as *green marketing* strategies (for a deep review, see Chamorro, Rubio, & Miranda, 2009).

Considering the automotive industry, car manufacturers are pushing forward the competition through the ecological and sustainable path, betting on hybrid technologies and electrification. Transport accounts for roughly a third of greenhouse gases emissions worldwide and public opinion widely considers it as one of the most evident symbols of pollution. For this reason, car manufacturers are largely investing in the development of more efficient and eco-friendly products, as well as in the communication of such features to the market.

The decarburization of the industry is a top priority also in governments' and regional authorities' agendas. The European Union has established the European Clean Transport Facility (ECTF), a development fund for low or zero carbon projects. In the UK, the government announced plans to improve electric charging infrastructures and subsidy motorists to buy electric or hybrid cars. The US Advanced Technology Vehicle Manufacturing (ATVM) program has made funds available for the development of clean technologies, such as Electric Vehicles batteries and electric motors. In Japan, the government has been encouraging the electric automotive through tax incentives and R&D grants since the 1990s. Last but not least, Chinese government is aiming to become the world's leading manufacturer

of electric vehicles and batteries and is supporting the industry through consumer subsidies and extensive R&D grants (Milmo, 2009).

This eco-trend offers a wide range of innovative occasions for businesses. Consumers generally consider environmentally friendly innovation as an important driver of differentiation (Kassarjian, 1971). Car manufacturers are aware of this tendency, aiming to exploit this trend fruitfully. Still, do car manufacturers' green marketing strategies by correctly address the consumer choices and behaviors?

In light of this context, our study focuses on the consumer behavior tendencies in response to green marketing in the automotive industry. The aim is to evaluate the effectiveness of car manufacturers' green marketing in promoting and building consumers' awareness of eco-sustainability issues.

Based on a sample of 300 car users, a questionnaire has been developed and a factor and cluster analyses have been run to identify the components driving consumers' purchasing habits. These are performance, functionality, eco-sustainability and brand appeal. Then, each component has been evaluated for car manufacturers' brands. The results suggest the presence of a strong brand bias when consumers are called to assess the eco-sustainability factor, which is the main component of what is supposed to be the green facet of consumers' purchasing habit.

THEORETICAL BACKGROUND

Green Marketing and Consumer Behavior

The notion of green marketing stems out from a broader idea of "value for customers" that includes environmental and social responsibility elements. This re-interpretation of the customer value proposition relies on the strategic orientation of the firm toward corporate sustainability (Chamorro & Bañegil, 2006; Fisk, 1973; Henion & Kinnear, 1976; Peattie & Crane, 2005; Polonsky, 1995). Moreover, a large part of the literature has explored whether and how environmentally-oriented marketing affects consumer behavior, originating a vast and multilayered area of research (Hur, Kim, & Park, 2013).

The first point to be considered is the effect on consumers' willingness to pay. As reducing environmental impacts requires firms to consider extra investments, firms expect the market to pay a premium price for environmentally friendly products. Literature provides strong evidence on the existence of an increased willingness to pay when consumers face goods labelled as green: evidence has been found in several industries, such as the oil & gas (Kassarjian, 1971), food (Galarraga & Markandya, 2004; Teisl, Roe, & Hicks, 2002) , babyfood (2004), textile (Casadesus-Masanell, Crooke, Reinhardt, & Vasishth, 2009; Nimon & Beghin, 1999), and tourism (Ndahimana, Musonera, & Weber, 2013).

Nevertheless, some uncertainties still persist, calling for a deeper analysis of the green marketing-consumer behavior relationship (Chamorro et al., 2009). Some authors observed a gap between consumers' declared intention to purchase environmentally friendly goods and their actual consumption behavior (Peattie & Crane, 2005). The so-called attitude-behavior gap has gathered considerable scholarly attention to understand in which conditions it occurs. Initially, skepticism of the green committed consumers was indicated as a key bias in determining their purchasing habits. Zinkhan and Carlson (1995, p. 5) introduced the idea of a "green consumer, who is somewhat cynical about marketing activities and is likely to discount advertising messages." Their proposal was supported by Shrum, McCarty and Lowrey (1995), who observed a correlation between green consumerism and advertising skepticism. Their findings achieved wide recognition in green marketing literature, and still today are shared by a number of scholars (Bickart & Ruth, 2012; Paço & Reis, 2012).

Despite the spreading of the skepticisim argument, many scholars accepted the idea of the skeptical green consumer without systematically examining the factors that drive skepticism toward green ads (Matthes & Wonneberger, 2014). Matthes e*t al.*, (2014) claimed that general advertisement skepticism has to be distinguished from green ads distrust, as well as green consumers' reaction has to be disentangled from nongreen consumers' one. According to their research, green oriented consumers find informational utility in green ads, showing more trust when compared to nongreen consumers. Conversely, advertising claims that are difficult to verify for consumers are likely to prompt skepticism, consumer distrust, or disbelief in marketer actions (Bickart & Ruth, 2012). It is the case of the so-called "green washing" strategies, used to clean up a company reputation with illusory advertising or reparative

campaigns, or to cover up environmental or social misbehaviors. Thus, the reasons explaining the attitude-behavior gap do not lie in a general skepticism of the green consumers, but are linked to other factors (Gagnon, Michael, Elser, & Gyory, 2013).

Webb, Mohr, and Harris (2008) considered green consumption to be motivated by societal benefit appeal, because consumers pay more or give up part of their private benefit when they purchase environmentally friendly goods. On the other hand, Peattie (2001) argued that private motivations, like money saving, are the only way to encourage prosocial behaviors and they often succeed even when the environmental benefits are marginal. Green and Peloza (2014, p. 134) proposed that "consumers' responses to advertising appeals that encourage environmentally friendly consumption behavior are […] significantly influenced by the decision-making context." In particular, they introduce the moderating role of impression management, according to which individuals desire to have a positive impression on others and tend to present themselves in a favorable way. Their results showed that consumers' purchasing habits are driven by societal benefits appeals when they are publicly accountable for their behavior. Based on competitive altruism (Miller, 2000) and costly signaling theory (Van Vugt, Roberts, & Hardy, 2007), Griskevicius, Van den Bergh and Tybur (2010) supported this outcome, showing that preference for hybrid vehicles increases because they are publicly visible products. According to their view, altruism is a symbolic behavior that proves a prosocial status. Such status is highly desirable, as it is linked to reputation, trustworthiness, prestige and it can eventually affect the role of an individual in a group. For this reason, consumers compete to signal, even in a costly way, their prosociality and their capacity to spend resources, time and money for the collective sake without negatively affecting their lifestyle. This explains why, according to a market research appeared in 2007 on *The New York Times,* 57 percent of Prius owners bought the car because "*it makes a statement about me*", while just 36 percent cited energy saving as a key motivation. "By purchasing a Toyota Prius […] a person can signal that he or she is a prosocial, rather than a pro-self, individual. That is, instead of buying a conventional and more luxurious car that benefit only him or her, the Prius owner instead voluntarily chooses to benefit the environment for everyone - even though this act means forgoing the luxury of having a car with more features, comfort or performance" (Griskevicius et al., 2010, p. 393).

Propositions Development

As stated before, the automotive industry competitive arena is following the ecological and sustainable path, developing hybrid technologies and electrification. The investments in greener products are growing rapidly in this highly competitive sector. To quote some examples, Ford Motor Company planned investments on fuel-efficiency for $14 billion ($5 billion loan from the US Department of Energy and $9 billion in bridge loans), with the goal to achieve a 36 percent enhancement in fuel economy for its whole range by 2015. Audi challenged the energy production industry becoming itself a producer of alternative fuels in order to propose a valid ecological alternative to the oil market. As of today, Audi has invested roughly €65 million for a new center for electrified power trains.

Consequently, once understood the reasons and the dynamics of the relationship between investment strategies by car manufacturers, green marketing orientation, and consumers' behavior, it is important to be aware of customers' opinion and feel the reactions to this trend (Braimah & Tweneboah-Koduah, 2011). Therefore, based on the above mentioned literature and empirical evidence, this study first investigates the real distance between the green car and customers, since "to be green" has become a common factor for the entire automotive industry. The first proposition of this study regards the effectiveness of green marketing strategies by car manufacturers on consumers purchasing behaviors.

> *Proposition 1: Green marketing strategies by car manufacturer successfully generate "green" awareness in consumers, as they take environmental performance into consideration in their purchasing decision process.*

Bickart and Ruth (2012) observed that brand familiarity plays a central role in guiding the consumers' perception of a green advertisement. In particular, they observed that when consumer environmental concern is high, an on-package eco-seal shown in an ad helps familiar brands, but hurts unfamiliar brands.

Low environmentally concerned consumers evaluate the familiar brand more favorably than the unfamiliar brand. Evidently, brand image has the power to affect consumers' trust (or skepticism) in adverstising claiming the green performance of the product. Therefore, it is important to consider brand positioning effect in the mind of the customer, especially considering the car market, where brand image notably conveys the quality and the features of the car. For example, a brand commonly associated with the idea of safety might be as well considered as environmentally friendly. The second proposition therefore, deals with the relationship between perceived environmental performance and brand positioning.

Proposition 2: Car manufacturers' brand positioning affects consumers' percepetions concerning the environmental performance of the product.

METHODOLOGY

Sample

This study supports the propositions analyzing data collected through a survey. The questionnaire consisted of three sections: consumer general and specific purchasing habits, brand positioning and personal information. The questionnaire has been administered through the internet, and in particular via social networking services (Facebook and Twitter mainly) to about 500 car users. Accordingly, social media users holding or at least frequently using a car constituted the sample. Indeed, it was possible to collect 300 completed surveys, with a response ratio of 60 percent. A description of the sample is provided in Table 1.

TABLE 1
THE SAMPLE

Variable		Frequency	%
Gender	Female	123	41
	Male	177	49
Age	18-23	93	31
	24-28	138	46
	29-33	31	10.3
	34-38	18	6
	> 39	20	6.7
Occupation	Employee	57	19
	Entrepreneur	20	6.7
	Freelance	22	7.3
	Internship	25	8.3
	Part-time/Seasonal worker	12	4
	Student	137	45.7
	Unemployed	14	4.7
	Other	13	4.3
Geographical area	North Italy	166	55.3
	Center Italy	49	16.3
	South Italy	60	20
	Non-European Country	14	4.7
	European Country	11	3.7
Area of residence	City center	97	32.3
	Close to the city center	87	29
	Periphery/Suburbia	52	17.3
	Residential district	41	13.7
	Rural area/Mountain region	23	7.7

When looking at the gender of the interviewees, male respondents accounted for 59 percent of the sample, against the 41 percent of female respondents. The age distribution of the sample is concentrated in the lowest ranges, the first two brackets 18-23 and 24-28 represent the 77 percent of the sample. Accordingly, the most frequent occupation is student, followed by employee and internship. Students and employees represent together the largest part of the sample, nearly 65 percent. Considering provenience, the Italian respondents were the absolute majority, 55.3 percent coming from North Italy, 16.3 percent from Central Italy and 20 percent from South Italy, barely the 8.4 percent was non-Italian. "City center" and "Close the city center" accounted for the 61.3 percent of the responses regarding the area of residence.

The first feature emerging from the answers in the purchasing habits section of the questionnaire was the preponderance of the "Specialized magazine" as a reliable source of information. In the age of the Internet, the appeal of the periodical is still very high. However, web factors come into play: 34.6 percent of the answers were divided into researches through "Specialized forums and blogs" (18.8 percent) and "Web search engine" (15.8 percent). What is losing importance is one of the traditional ways of approaching to the information. "Information pack from local dealers" is becoming obsolete because of the above-mentioned internet generation explosion, as well as advice from friends or parents. Despite buying a car involves a significant amount of money and time gathering information, people consider easier and faster to find out opinions and characteristics on a website, rather than going physically to the local dealer, and discuss with a professional seller.

Here below, the bar charts present the answers regarding respondents' own cars (Figure 1), while a bar chart clustered by producer's country origin shows the weight of the most representative countries, led by Germany and Italy (Figure 2).

FIGURE 1
PERSONAL OR FAMILY CAR BY BRAND

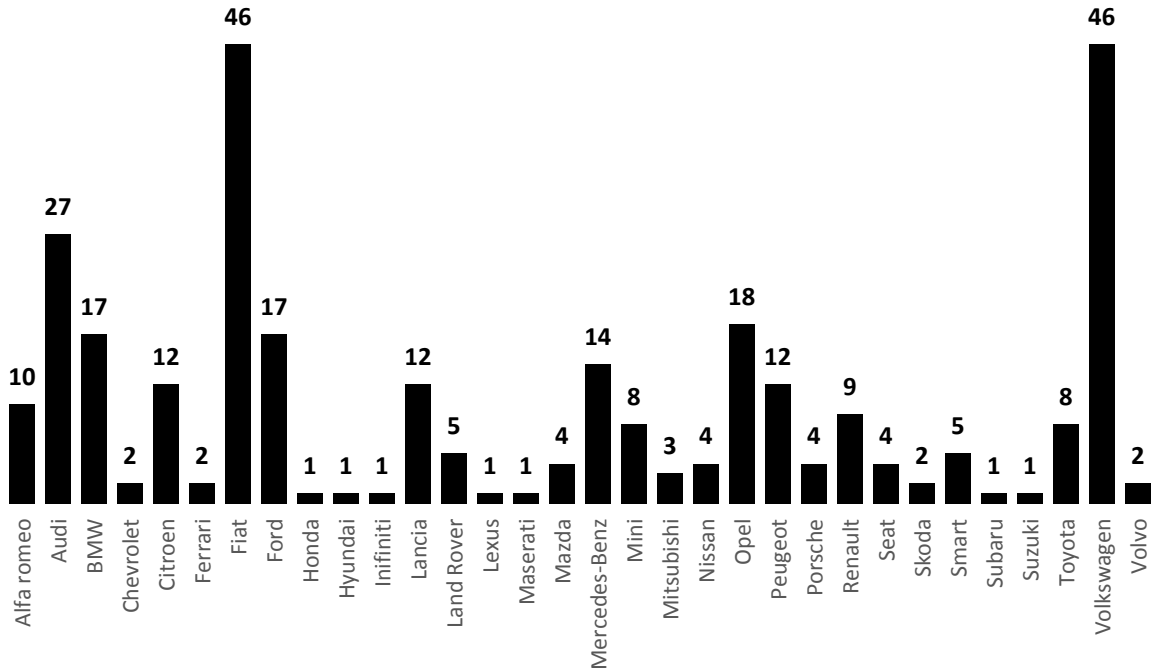
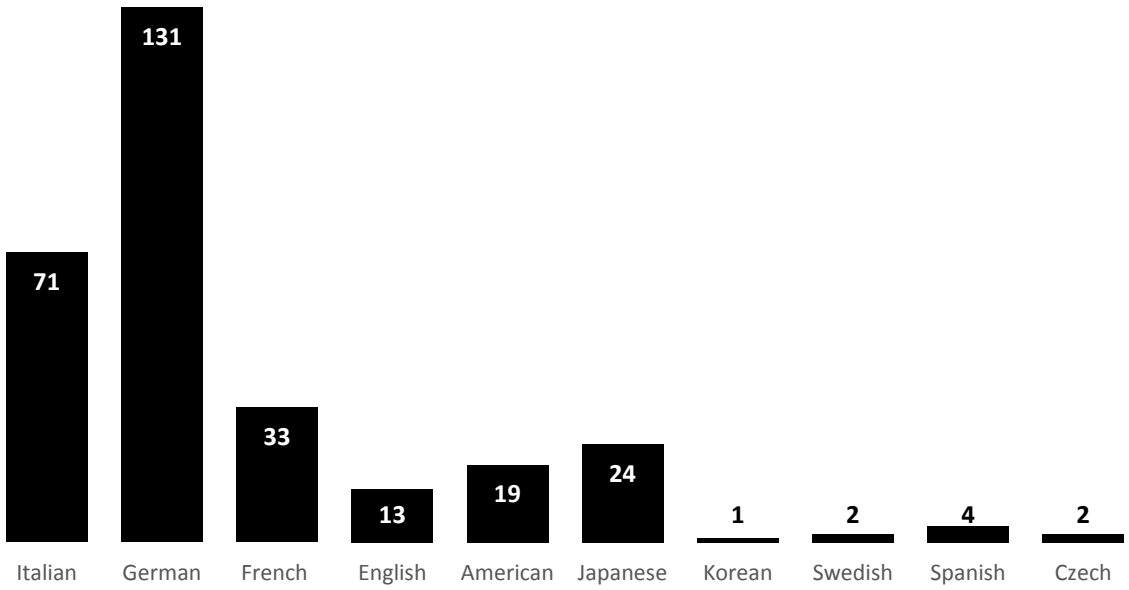


FIGURE 2
PRODUCER'S ORIGIN



RESULTS

Factor Analysis and Cluster Analysis

As a first step of the methodology used in this study, a focus group was established in order to identify the most important items directing the choice of a car. Semi-structured interviews were conducted and the respondents gave their free opinions about their perceptions, opinions, beliefs and attitudes towards the car. In particular, the interactive group made up of 10 people was stimulated to focus on the main drivers to take into consideration when buying a new car.

The results of the focus group converged into 16 variables, and these drivers have been revised for the questionnaire with Likert scales, a symmetric agree-disagree scale for a series of statements evaluated from 1 (strongly disagree) to 7 (strongly agree). The 16 statements are reported in Appendix A with their means, standard deviation, and sum. In the final survey they were mixed randomly.

In a second step of the research, the factor analysis was implemented in order to check the significance of each item and reduce the number of the factors explaining the phenomenon under investigation. The four extracted factors explained the 53.66 percent of the total variance. After rotation and optimization of eigenvalues, the values did not change considerably, providing evidence the distribution was less wide and ranged from the 18.44 percent of the first factor to the 10.13 percent of the fourth factor.

The factor loadings matrix responded to the first proposition of the analysis, showing that eco-performances are a significant driver when buying a new car. The output presented by the Rotated Component Matrix showed the correlations between the original variables and the detected components (factor loadings). Each variable was associated to a particular factor with the highest correlation after orthogonal rotation Varimax with Kaiser Normalization that has the aim to minimize the number of variables with high saturation for each factor. The result of the analysis was the determination of four macro-components including the original 16 items (Table 2).

TABLE 2
ROTATED COMPONENT MATRIX[A]

	Component			
	1	2	3	4
I use the car to hang out with my friends, go out by night, go to clubs and pubs				.641
I will choice a certain car in order to distinguish myself from other people				.497
When I consider a car, I like to compare the different models' design				.584
A label reputation is a byword for safety				.628
I can mention several eco-friendly car models			.570	
I am disposed to spend up to 20% more for a hybrid o electric car rather than the same with traditional engine			.740	
I consider the social and environmental policies of a brand before buying a car			.765	
I take into consideration eco-incentives before buying a car			.535	
I use the car mainly to go to work or to run an errand		.501		
When I choose a car, I am looking for a good quality/price ratio		.781		
Maintenance costs are a determinant factor in my choices about cars		.618		
I always consider the solidity and the practicalness of a vehicle before buying it		.643		
With my I car I would like to go on track days	.761			
I would like to buy cars only with more than 200 horsepower	.801			
When I choose a car, I am looking for a good 0-100 sprint	.743			
When I choose a car I inquiry about the maximum speed and the road-holding	.718			

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

[a] Rotation converged in 5 iterations.

Once the number of items had been reduced from 16 to 4 factors it was possible to proceed with the cluster analysis of the sample, in order to understand more about the potential presence of homogeneous groups. With the K-means method, we chose to assume 4 clusters, and in this way it was possible to obtain a model with a perfect statistical significance ($p < .001$ for each cluster). In addition, the population of each cluster showed a good homogeneity.

Table 3 shows the mean of the clusters for each variable used in the process; it was possible to discover the characteristics of the clusters compared with other variables used. Ranking each factor, the output highlighted the above mentioned 4 clusters, described as follows.

TABLE 3
FINAL CLUSTER CENTERS

	Cluster			
	1: Enthusiast	2: Conspicuous	3: Uninvolved	4: Eco-practical
Performance	1.18299	-.70566	-.01400	-.42496
Functionality	.40615	.25412	-1.53049	.46413
Eco-sustainability	-.03261	-.35253	.03543	.57347
Brand appeal	.18197	.58185	-.10281	-1.07524

Cluster 1 - Enthusiast (82 individuals): it is a group composed by truly car-lovers, always attentive and updated to the latest news. They judge a car on the design and the appeal, but especially looking at driving dynamics, performances, safety, and comfort. Their perfect car is technically valid, eye-catching, solid and reliable, but they are not so keen on considering the environmental issue as a crucial point. They might consider green features as clashing with the performances of a vehicle.

Cluster 2 - Conspicuous (99 individuals): people particularly brand sensitive. In their opinion, being part of an elite and distinguish from other people is fundamental, and achievable by owning a prestigious brand. It does not matter if the performances are poor or excellent, or the emissions are compliant with the latest standards; in their view a high brand reputation means safe and reliable cars. People in this group pay attention to the design of a car that should be eye-catching in order to communicate a good image of the owner.

Cluster 3 - Uninvolved (57 individuals): this is the less populated group including people who are not interested in the topic, so less informed and influenced in the purchasing behavior from friends and family. Here the car is seen as a means of transportation rather than a symbolic product.

Cluster 4 - Eco-practical (62 individuals): it is a group uninterested in brand appeal or in performances; customers recognize the functional features and the ecological orientation as fundamental when considering buying a new vehicle. Maintenance costs, solidness, comfort, emissions, environmental and social impact, value for money, are the key words for these people.

The Positioning

To answer proposition 2, a second step of the analysis was dedicated to the study of the brands' positioning, with particular reference to cluster 4, the eco-practical. Brands were identified through a top of mind process, whereas respondents were asked to indicate the first three automotive brands in their mind when thinking about a car. Then, they evaluated each chosen brand in four aspects: performance, functionality, eco-sustainability, and brand appeal. In more detail, the brands with a total score of more than 20 preferences were investigated, namely Alfa Romeo, Audi, BMW, Ferrari, Fiat, Lamborghini, Mercedes-Benz, Porsche, Toyota, and Volkswagen. The results have been then analyzed by testing the correlations between the four variables describing each brand.

Premium car manufacturers. BMW was the top of the choices in the test. In each pairwise correlation, the eco-sustainability value never reached a univocal evaluation in the BMW's case. Audi was in the second position according to respondents' choice. The latter revealed results oriented towards the top of the eco-sustainability variable and closer to the mean of the scale. Despite a few superior evaluations, Audi had the worse sustainable perception among the eco-friendly users, even if the results remind that Audi had the best fleet consumption against BMW and especially Mercedes-Benz. An explanation of this result could be that Audi suffered the lack of an eco-label, which could grab the

attention of the eco-practical consumers. It might also be that Audi experienced an inferior awareness because of the massive use of platform and component sharing strategies. Mercedes-Benz was the third of the German trio in this ranking with almost half of the preferences collected by Audi. The outcomes in terms of eco-sustainability were again a bit over the means of the scale but less scattered than the others premium producers, revealing a lower but focused consensus by respondents.

Generalist car manufacturers. In this section, despite the effort of building greener vehicles and work on the social responsibility, the respondents did not reward Fiat with a univocal rating. In fact, the cluster is not clearly grouped showing a positive correlation between eco-sustainability and the other three factors. The other Italian manufacturer in this block was Alfa Romeo, which is part of the Fiat Group together with Lancia, Ferrari and Maserati. Here again the respondents' perception seemed not univocal: nobody evaluated eco-sustainability with top scores; the values in relation with the other traits were mostly on average with negative peaks when tied to functionality and performance, while brand appeal was the less negative. Volkswagen showed the most aligned values in terms of eco-sustainability and with relation to the other factors the scores were always just over the average. Toyota had a modest number of respondents, but it was interesting to see how the Japanese manufacturer had completely opposite concentration groups. Bad evaluations about its performances were followed by good assessments in functionality and ambiguous references in brand appeal, while the eco-sustainability items depicted contrasting opinions, revealing a massive misunderstanding in the brand perception.

Sport-luxury car manufacturers. In this section, Ferrari and Porsche had almost identical matrixes in terms of sustainability. Lamborghini also showed similar results. The eco-sustainability label seemed to clash with the nature of the models produced in the sport-luxury segment, since powerful cars with big engines produce higher emission and show less efficiency than an average engine.

DISCUSSION

The aim of this study was to investigate the consumer behavior tendencies in response to green marketing in the automotive industry. The results represent an additional contribution to the consumer behavior-green marketing strategy debate, providing evidence of an alignment (and misalignment) between the effectiveness of car manufacturers' green marketing in promoting and building consumers' awareness on eco-sustainability issues and consumers' response to these strategies.

Numerous facets emerging from the results must be taken into considerations. First of all, even though the factor analysis confirms proposition 1, analysing the descriptive statistics of the four items defined in the eco-friendly group, it was possible to observe that their average evaluation was below the mean of 4.205. Our results suggest that consumers are driven mainly by the personal benefit appeal, as they demonstrate a poor involvement in the green issue and a lower knowledge about green promotions in general; consumers in fact, were not able to mention green models and they did not care much about green marketing and sustainability-oriented policies. Also the statement "I am disposed to spend up to 20 percent more for a hybrid o electric car rather than the same with traditional engine" had poor results, and in spite of the savings and the ecological advantages provided by green cars, a large number of respondents seemed not disposed to pay more for alternative fuel cars. In short, consumers recognize the importance of green features when considering to buy a new car, but this awareness does not go through an actual commitment stage.

Several exogenous causes might explain this outcome. First, there is a number of technical difficulties related to the product, as buying a hybrid vehicle means, among the others: installing an electric vehicle outlet at home, limited trip range, difficulties in recharging the batteries once far from home. In addition, as showed by people in the enthusiasts cluster, car lovers are generally against the use of alternative fuels because in their opinion cars lose appeal when the sound is not a traditional rumble and the smell is not burnt gasoline.

Second, the top of mind awareness was useful to get the picture of the most recognized brands among car manufacturers. In this way, it has been easier to test the impact of brand familiarity on consumers' judgement. Premium car manufacturers (e.g., Audi, BMW and Mercedes-Benz) have recorded very similar results and in every correlation there was not a clear polarization. A certain confusion pools these

manufacturers, since they have the wider range of models which covers almost all classes, going from the premium small family-car (e.g., Audi A3, BMW 1 Series, Mercedes-Benz A-Class) to fast and performing sports sedan (e.g., Audi RS4, BMW M3, Mercedes-Benz C63 AMG). This leads the consumer to consider each brand in an ambiguous way. Again, the consumers are torn between the premium BMW's and Mercedes-Benz's eco-labels Efficient Dynamics and BlueTec and the production of SUVs (e.g., Audi Q7, BMW X5, Mercedes-Benz ML-Class) or full-size luxury vehicles (e.g., Audi A8, BMW 7 Series, Mercedes-Benz S-Class) with low efficiency and high emissions. Furthermore, this unclear awareness could derive from the massive use of platforms and components sharing strategies with other generalist and low-cost car manufacturers.

When looking at generalist car manufacturers, the results showed again an unequal polarization, but with different features. Indeed, the cluster was not clearly grouped; in addition, it was found a general tendency of positive correlations between eco-sustainability and the other factors. This phenomenon is more evident in the cases of Fiat and Alfa Romeo, revealing a lower tendency in attributing an eco-sustainability label to the two Italian brands. Instead, this is not the case for Volkswagen. Toyota deserves a specific mention because the Japanese manufacturer is widely known for its environmentally friendly strategy, led by the iconic Prius. The Environmental Action Plans, constantly implemented through the years, allowed Toyota to reach several environmental records. Despite these acknowledgments, Toyota has been chosen few times and among the respondents only a small number of them were in the cluster of eco-practical. In addition, the results are controversial, as they are polarized at the opposite side. This demonstrated a big misunderstanding in how the brand is considered, that is a first clue of the effect of the brand familiarity bias.

Moreover, the more consumers considered the brand as appealing, well-performing and functional to all the needs, the more they saw it as ecological and vice versa. High values in the eco-friendly factor associated to high performances supported this bias. Sport-luxury car manufacturers revealed a common path and same results in the analysis. First thing to notice is the confusion on the environmental matter, since this segment had the worst environmental performance due to cars low efficiency and high fuel consumptions. However, consumers seemed not to be aware of this higher environmental impact, apparently judging a sport car as not functional in everyday life. Only Porsche had better values in this sub-matrix thanks to a soberer design and smaller engines. Once again, the high level of brand reputation associated to manufacturers belonging to this segment drove consumers' opinions. Furthermore, the high visibility of such brands overemphasised their efforts to become more environmentally friendly. Top producers are investing in eco-friendly factories with cutting edge technology, where they develop high-efficiency models (e.g., Ferrari introduced the HELE system on the model California, which stands for High Emotion Low Emissions).

CONCLUSIONS

This study confirms that green marketing strategies implemented by car manufacturers succesfully raised the consumers' awareness on sustainability issues. However, the gap separating recognition of the issue from enactment of environmentally friendly consumption is still to be filled. In addition, without a well-shaped opinion about the eco-sustainability of each brand, consumers extended their general opinion concerning the manufacturer when answering to environmental related items.

Car users have to take into consideration a number of trade-offs, mainly regarding the difficulty in recharging while undertaking long trips. The previsions estimate that this weakness will be solved in the upcoming years by introducing more efficient batteries and more recharge-station.

Bearing in mind the industry-specific factors, the gap analysis is able to point out that actually firms do not use resources properly in the face of large investment towards efficient technologies. Pointing the attention on the development of clean technologies and consumers' expectations on them, we suggest four different gaps, as described in Table 4.

TABLE 4
THE GREEN TECHNOLOGY GAP

		Green technology development	
		Ongoing	***Ready-to-market***
Consumer expectations	***Low***	Product gap	Pricing gap
	High	Communication gap	Eco-sustainability gap

Product gap: it indicates the discrepancy between the green product as expected by car users and the current green car, which presents some usability limitations as remarked before. This is a kind of "technological gap" for the reason that green solutions are still evolving and their upcoming path is still not fixed in the lence of consumers.

Pricing gap: when asked if disposed to spend 20 percent more for a green car rather than traditional car, customers' answer was considerably under the average value, although the potential savings in fuel's cost and the less polluting impact on the environment did represent valid motivations to pay more. Although technologies are at very good stage of development, car manufacturers are still not able to meet the consumers' expectations in terms of pricing.

Communication gap: The lack of an adequate communication is the main cause of the misunderstanding emerged here, and every brand should be more focused on promoting its own green models, keeping in mind the brand familiarity bias. According to our results, many respondents do not have a real awareness of the green issue, or they are not able to identify properly the greenest brands. The green cause seem to be an universal common factor for every car manufacturer, but on the other side, it seems to be a not-so-common factor among the consumers.

Eco-sustainability gap: industry reports underscore that more than 90 percent of CEOs think that the sustainability issue is and will be decisive to the upcoming success of firms (UNGC & Accenture, 2013). In this sense, Chief Sustainability Officers may have a key role to integrate environmental and social goals with economic targets, in a triple bottom line approach. Therefore, an eco-sustainability gap raises, whereas dark sides between the stage of development of green technologies and high consumers' expectations do exist.

Car manufacturers need to use the right tools to fill in these gaps. Only firms ready to accept the current challenge will be able to face the crisis and catch the opportunities generated by market pressure in terms of green demand. Many are betting on transports electrification, but new models of mobility, like car sharing, are emerging with several benefits for the environment. By means of a series of industry-specific aspects like strategies, networks, cross-sector partnerships, know-how and managerial skills, automotive has the new vital mission of challenging the way of interpreting the concept of mobility. Therefore, future research should clearly consider how innovative business models will have the tough duty to integrate software and hardware, services and products, in order to generate alternative sales sources.

Moreover, this work has started to assess the actual effectiveness of green marketing strategies, a topic that deserves a deeper and vaster analysis, making contributions for both academia and practitioners. New research avenues are still open, future research might also analyze in more detail the antecedents and determinants of consumers' reaction to green marketing initiatives.

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APPENDIX A
DESCRIPTIVE STATISTICS FOR STATEMENTS USED IN THE QUESTIONNAIRE

	Mean	Std. Deviation	Analysis N
I use the car to hang out with my friends, go out by night, go to clubs and pubs	4,82	1,466	300
I will choice a certain car in order to distinguish myself from other people	4,46	1,429	300
When I consider a car, I like to compare the different models' design	5,39	1,201	300
A label reputation is a byword for safety	4,66	1,360	300
I can mention several eco-friendly car models	3,61	1,678	300
I am disposed to spend up to 20% more for a hybrid o electric car rather than the same with traditional engine	3,68	1,839	300
I consider the social and environmental policies of a brand before buying a car	3,57	1,729	300
I take into consideration eco-incentives before buying a car	4,22	1,860	300
I use the car mainly to go to work or to run an errand	3,38	1,452	300
When I choose a car, I am looking for a good quality/price ratio	5,25	1,373	300
Maintenance costs are a determinant factor in my choices about cars	5,33	1,445	300
I always consider the solidity and the practicalness of a vehicle before buying it	5,73	1,279	300
With my I car I would like to go on track days	2,95	2,165	300
I would like to buy cars only with more than 200 horsepower	3,52	2,076	300
When I choose a car, I am looking for a good 0-100 sprint	2,67	1,758	300
When I choose a car, I look for maximum speed and road-holding	4,04	1,594	300