



GLOBAL JOURNAL OF MANAGEMENT AND BUSINESS RESEARCH

INTERDISCIPLINARY

Volume 13 Issue 4 Version 1.0 Year 2013

Type: Double Blind Peer Reviewed International Research Journal

Publisher: Global Journals Inc. (USA)

Online ISSN: 2249-4588 & Print ISSN: 0975-5853

## Environment Friendly Car: Challenges Ahead in India

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*GJMBR-G Classification* : JEL Code: O13, O44



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# Environment Friendly Car: Challenges Ahead in India

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## I. INTRODUCTION

The authors have made every attempt to understand the automobile industry and they have observed that automobile industry plays a major role in the growth of a nation. Of late Automobile sector has received a lot of attention regarding the environmental issues in the popular and professional press. Terms like "Green Card" and "Environmental friendly car" appear frequently in the popular press. According to the information collected from automotive mission plan (ministry of heavy industries and Public enterprises, department of heavy industry, government of India) contribution of auto sector to the GDP in percentage is 5.20% in 2006 and is estimated to be 10.40% by 2016. Environmentally responsible consumption (Scott B.1999) emanated from criticism that the marketing concept ignored the impact of individual consumption upon the society as a whole.

The Indian automotive industry is witnessing a trend of volume growth, which has been defying all seasonality trends of the past. This is reflecting the structural change in consumer patterns driven by the

strong economic performance adding strength to the income levels of the urban as well as rural customers. The volume growth of the industry till date has been (Pander P. 2010 Sep 14) around 26% with the passenger car segment growing ~34% and commercial vehicle (CV) segment growing at ~45% leading the way. The robust growth across the segment has led to demand surpassing supply in all major segments with suppliers facing acute capacity shortages. The surprising and heartening trend can be ascertained from the fact that despite the OEMs having raised prices in response to higher commodity prices and newer emission norms, demand growth has not been deterred.

### a) Concept of Green Car

A Green Car is a vehicle that has low harmful emissions (predominantly carbon dioxide) and is fuel efficient. This includes certain petrol and diesel cars as well as hybrids and auto-gas powered vehicles. The "Greenest Car" in Australia currently is the Toyota Prius. But we should probably take into account a number of other elements when defining the "greenest car" that provides the whole picture and total contribution to greenhouse emissions including:

1. Manufacturing of the car
2. How many parts are made from recycled materials?
3. How many parts can be recycled?

A green car is a vehicle that is considered to be environmentally friendly and have less of a damaging impact on the environment than conventional cars. A green car consumes less petroleum than conventional cars or use renewable energy sources to fuel its engine. There are a number of green cars available today with green technologies. Some of the main green technologies available are as below:

1. Electric cars
2. Hybrid cars
3. Hydrogen cars
4. Solar cars

Car ownership and usage is rising continuously with numbers as high. (Nicolas Kruger and Jorge Pareigis, 2009) For many, it is simply the most attractive mode of transport, due to its convenience, independence, flexible, comfort, speed, perceived safety and privacy. What is more, the car has strong symbolic appeal, which denotes social status, confidence, power,

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and competence and might even become part of one's identity. This indicates that there is going to be an increase in the number of vehicles on the road. To cope up with the ever increasing population of the cars and the need of the aspirants to own a car there are three strategies which can be used to reduce the negative effects of the transportation. Due to the strong connection between economic growth and traffic demand it seems that promoting a more environmental friendly car fleet is essential in order to decrease emissions from car traffic. One important contribution is that researcher addresses the uncertainty faced by consumers and producers by means of primary research to understand whether the customer will really buy the eco-friendly cars and will he pay a premium if the eco-friendly cars cost him little more.

This study narrows down on one specific area and that is to measure the awareness level of the customers with reference to the green cars. Understanding the subject and the outcome of the study should help the marketers and the government to device the strategies which will motivate the customers to buy green product and save the earth. It will also highlight the challenges faced by the manufacturers for selling the green car and by the customers in purchasing.

#### *b) Review of Literature*

The beautiful earth over a period of time is getting converted into a place for garbage alone. Every year people living on the earth throw away enough garbage to cover a huge part of the world. Most of the waste ends up in landfills which are very costly and which may have a major impact on the environment and on the health of the people living on this planet. Saving the environment has become a big issue in recent times. The messages are being promoted as REDUCE, RE-USE and RECYCLE. Consumer product companies (Sheryl Eisenberg, 2008) are always selling a new bill of goods. The latest is that one can shop on their way to a healthier planet. It has also been heard that cool cars would make us free and diet soda would make us popular. But there are some things money -- and advertising -- can't buy, and a clean environment is one of them.

The hard fact is that global warming, deforestation and other earthly ills cannot be solved by switching brands. It takes resources to manufacture and transport all products, even those made from recycled content. More often, it is greener to follow the old dictum: reduce, reuse, and recycle. Even if the phrase 3Rs has been heard a thousand times before, but with the "green" word now co-opted in the sales of services, the three R's are a phrase -- and a principle -- worth reviving. In many ways it is misleading to generalize and attempt to categorize the green consumer. One consumer might buy lead free petrol in a car which is relatively economical, safe, quiet and recyclable. Such a

consumer might be categorized as "green" in relation to car ownership, but perceived as a non-green consumer simply for owning a car. Green consumption is a behavior pattern which is fundamentally to a minority of consumers, but is superimposed on existing consumption behavior among the majority of consumers that can be classified as green Jennifer Weeks (2008) studied that green buying choices can be complicated, and green products often cost more than conventional alternatives. Brower and Leon (1999) have urged the customers to take steps such as driving fuel-efficient, low polluting cars, eating less meat and making their homes energy efficient.

Many studies broach the issue of environmental concerns related to consumer behavior and their purchase decision for personal cars. Many researchers (Ottoman 1993 and M. J. Polanski 1994) have studied that a majority of people believe that green marketing refers solely to the promotion or advertising of products with environmental characteristics. Roth and Benson's (1974) notion of "intelligent consumption" and Fisk's (1973) concept of "ecological imperatives" reflect the need to educate the consumer to become aware of environmental problems and their relation to his/her consumption patterns. Many believe that social marketing (A. R. Andreasen, 1994) can have a major impact on the society's myriad social problems. However, this impact can be seriously compromised if the technology is applied incorrectly or to areas in which is not appropriate. Consumers have more power than ever before. Leon G. Schiffman, (2004) has used intelligent agents to locate the best prices for the products or services, bid on various marketing offerings, bypass distribution outlets and middlemen, and shop for goods around the globe and around the clock from the convenience of their homes. To understand about the awareness of the consumers and their behaviors, in depth, study has been done on the various literatures available in the area of green marketing. From an empirical perspective, a substantial academic and professional literature explores the areas like sustainable marketing, consumer behavior and green car and its response in the marketplace. The methodologies of these studies vary widely but the major findings have been observed to define the research objective The above literature review gives an in-depth idea on the topic and it is also observed that not much work has been done in India in reference to the environment friendly car and customer's behavior with reference to the eco friendly cars.

#### *c) Rationale of the Study*

The concern for the environment has increased significantly during the past decades and at the same time people's values and attitudes towards nature have changed substantially. As far as the automobile Industry is concerned and that also the passenger cars many

research results have shown that environmental awareness has more to do with the customer attitudes and values. In other words there is lack of involvement of the customer in greening the earth.

Vehicular pollution is a bigger threat to human health than any other type of air pollution because this pollution exists at that level from where humans use air to breath. Rapid increase in the number of personal cars is the major cause of deteriorated air quality in the metro and non metro in India. Cars have two opposite personalities. One is friendly and attractive the other is destructive and lethal. The desire to own a car is linked to pleasure, social status, convenience and freedom.

There is a strong need for a joint effort of car manufacturers, the marketers, the government, the car customers and all the stake holders in the system to control and reduce the ever increasing problem of pollution and its impact on the earth.

d) *The Markets for Cars in India*

The cumulative growth of the Passenger Vehicles segment during April 2007 – March 2008 was 12.17 percent. Passenger Cars grew by 11.79 percent, Utility Vehicles by 10.57 percent and Multi Purpose Vehicles by 21.39 percent in this period.

Table 1 : Automobile Domestic Sales Trends (Number of Vehicles)

Category	(Number of Vehicles)						
	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10
Passenger Vehicles	902,096	1,061,572	1,143,076	1,379,979	1,549,882	1,552,703	1,949,776

Source : Society of Indian Automobile manufacturer Feb. 2010

Major automobile giants like Toyota, Suzuki, Ford, Chevrolet, Mercedes etc. have made a market for themselves in India. They did establish their own individual market in a country like India which is prone to diverse cultures. The passenger car industry has registered an impressive sales volume growth of 27.6 per cent during the first half of 2010-11. A robust domestic demand backed by rising income levels, new product launches and stable interest rates have been driving car sales in the domestic market. The industry is expected to end the year 2010-11 with a 19.6 per cent growth in sales. The industry is expected to record a sales growth of 19.5 per cent in 2010-11, driven by the robust growth in volumes. It is expected that domestic macro-economic environment to remain healthy and corporate incomes to continue to rise in the coming two years. Auto interest rates are also expected to remain more or less stable during this period. Hence, demand for cars is expected to remain healthy, aiding an over 13 per cent growth in car sales volumes. Sales revenue of the industry is expected to grow by a healthy 16.6 and 15.9 per cent in 2011-12 and 2012-13, respectively. The growth will be mainly driven by volumes. With the above reference there is although the more need for EFC in the market.

With reference to the automobile market if one really observes the rate at which the market is growing and number of automobiles being manufactured per day, it is surprising that not many are really worried about the future generation. A very rough approximation reveals the fact that one of the biggest Automobile manufacturer in our country produces close to 2000

vehicles per day.(icidirect.com 2010 sep) There are many car manufacturers in India itself and so many across the globe who are producing vehicles at a massive rate. We have already started feeling the pinch of it when it comes to parking spaces in metros. The other worry is even if the manufacturers shift their design from current state to green design; the cost of the final product may increase. In this price sensitive market increase in the prices for the sake of future generation may seem little difficult because the customer today is not realizing the impact which he is going to create on the environment by usage of non green products.

e) *Factors Influencing the Car-Purchasing Behavior*

A large number of factors influence the car-purchasing behavior of the customer in India. These include both objective and subjective factors as well as situational factors such as the economic and regulatory environments. The objective factors include price, mileage, resale value, performance etc however, in addition to such objective factors, are equally important subjective psychological factors that include the following: Brand image of the car, color, safety, exteriors, its interiors and its environment friendly design. . What makes the psychological factors of particular interest is that, not only do they influence behavior directly, but also they mediate the more objective situational issues. For example, it is often how customers perceive the economic environment that influences their purchasing behavior rather than the actual costs.

Customer's behavior is also formed by the habits they have developed over a period of time. There are evidences that habits alone are a strong predictor of

future behavior of a person. Customer personality including his value system, his beliefs, and knowledge (in particular of the environment) are also identified as an important factor in understanding pro-environmental customer choice. However, the issue here is that customers often lacked a detailed understanding about environmental issues such as the causes of climate change. They are not even aware of the impact the cars are going to have on this mother earth. They lack the knowledge about the dumping of the tires, the battery or even the scrap car. While there is mixed evidence of a link between environmental knowledge and concern, it has been shown that the level of knowledge can be a powerful predictor of behavioral intentions. Beliefs, attitudes and personal norms are formed and influenced by a large range of factors that are themselves difficult to quantify, predict and manage. Therefore, it is important that there is a need to create sufficient awareness about the methods of the preserving the earth and saving it from making a dump yard for the cars only.

## II. RESEARCH METHODOLOGY

The study has been exploratory in nature and a sample survey method has been employed for data collection. Primary data has been used for the purpose of the study. Research design for this research is planned structure and strategy of investigation conceived so as to obtain answers to research question or objectives and also to control variances. The said study is conducted to understand the behavior of the customers in India while purchasing an environment friendly car and also to understand their willingness to pay more in case the environment friendly car cost more. The scope of the research is limited to environment friendly car in India. In the present study all the cars owners or prospective car buyer in India is considered as the population. The prospective car owners could be all those people who intend to buy a

car in near future or are visiting the car showroom for a test drive or for collecting the information of the cars. This population includes people from metros and from non metros who own a car or who wish to purchase a car. A non-disguised structured questionnaire has been used as the tools for collection of data from the field. It has been designed with utmost care so that accuracy of the work could be high. The five point Likert scale has been used for the research purposes.

The sampling plan used has been consistent with the methodological guidelines provided for conducting survey research in marketing. The stratified random sampling technique was used for the present work. A sample of 500 respondents was selected with the help of stratified random sampling method. The sample has been chosen at selected dealers of cars in Metros and few non metros. These included prospective car buyers and people who came to buy their next car. The sample consisted on the basis of demographical variables such as, qualifications, and place of stay. Limitations of the study:

The research has made every effort to contribute best in his own capacity inspire of this there has been few limitations to the study.

1. The limited knowledge of the respondents
2. Sample size studied is a small.

### a) Hypothesis

**H01:** There is significant difference in the awareness level of the customers in the various age groups regarding the eco-friendly car.

**H02:** There is significant difference in the awareness level of the customers in the various income groups regarding the eco-friendly car.

### b) Analysis

**H01:** There will be significant difference in the awareness levels of the customers in the various age groups regarding the eco-friendly car.

	AGE	N	Mean	Std. Deviation	Std. Error Mean
AWARENESS	Less than 35	320	3.5008	.4269	2.386E-02
	More than 35	175	3.4429	.3894	2.944E-02

	Levene's Test for Equality of Variances		t-test for Equality of Means	
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		F	Sig.	t	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
AWARENESS	Equal variances assumed	.394	.531	1.489	493	.137	5.795E-02	3.893E-02
	Equal variances not assumed			1.529	386.733	.127	5.795E-02	3.790E-02

From the table no 1.2 it can be seen that measure of awareness values for both the age groups viz 3.5008 and 3.4429 respectively do not have significant difference. The hypothesis is rejected.

H02: There will be significant difference in the awareness levels of the customers in the Various income groups regarding the eco-friendly car.

Anova

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
0-5 lac	316	3.4700	.4043	2.275E-02	3.4252	3.5147	2.44	5.00
5- 7.5	116	3.4633	.4210	3.909E-02	3.3859	3.5407	2.63	4.98
7.5-10	39	3.5641	.3859	6.180E-02	3.4390	3.6892	2.37	4.11
10 and above	25	3.5548	.5362	.1072	3.3335	3.7762	1.69	4.30
Total	496	3.4801	.4142	1.860E-02	3.4436	3.5166	1.69	5.00

AWARENESS

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	.480	3	.160	.932	.425
Within Groups	84.440	492	.172		
Total	84.920	495			

Correlations

From the table no 1.3 it can be seen that measure of awareness values for respondents with various income levels viz 3.47 ,3.46 , 3.56,3.55, do not have significant difference. The hypothesis is rejected.

c) *Benefits of the EFC would drive customers for buying*

While trying to understand whether the benefits of the EFC could drive the buyer to buy a EFC. It was

observed during the analysis that 42% somewhat agree and 6% strongly agree that benefits of the car can drive them to buy EFC. However 134 out of the 500 respondents are confused and are not in a position to decide anything. Approx 17% some disagree that benefits will drive people to buy the EFC. 12 % strongly disagree to the view that it is the benefits of the EFC which can drive them to buy the green car.

Benefits of EFC would drive for Buying

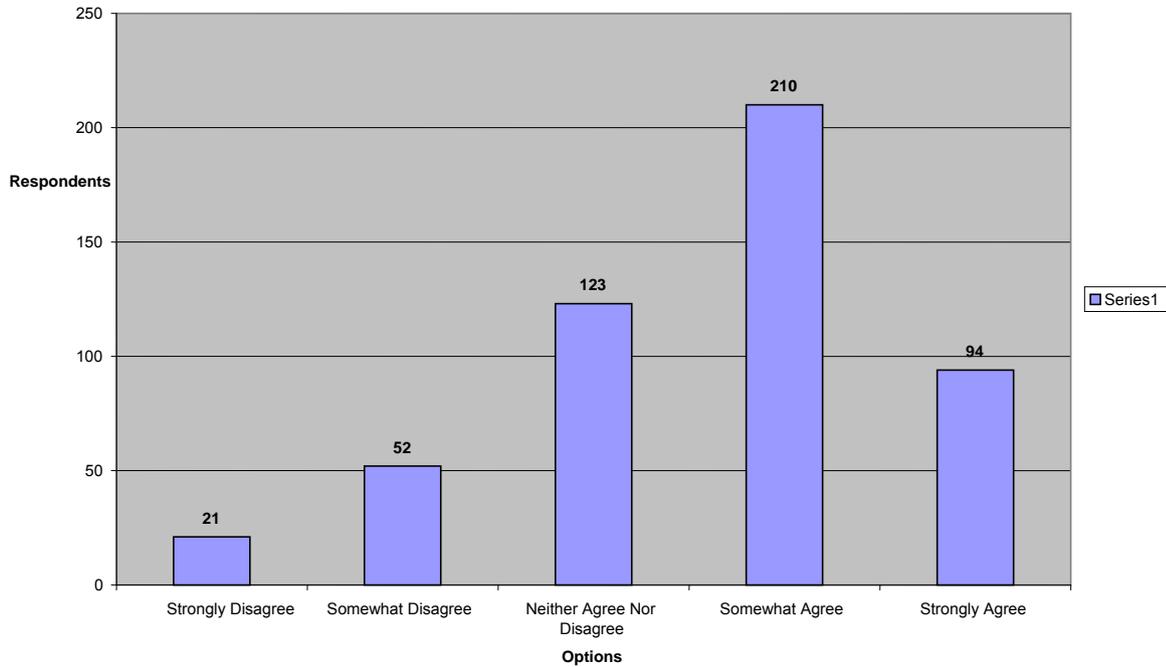


Figure 1 : Interpretation: Approx 60% somewhat or strongly agree that once benefits are known to then they could buy EFC.

d) Awareness about the benefits of the EFC

The respondents were asked about the benefits of the environment friendly car. There was a mixed view of the respondents. People in general were aware that environment protection is important but benefits of the green car and how this can have an impact on their life and also on the earth is not really known to them. Only 8% approx strongly agreed that they are aware of the benefits of the EFC. Approx 36% of the respondents

somewhat agreed that they were aware of the benefits of the EFC. This makes it very clear that benefits of the EFC are not known in the market place, other than the generic understanding that EFC will protect the environment. Marketers need to focus on the benefits which the customer is going to derive directly or indirectly so that they can make their purchase decisions accordingly.

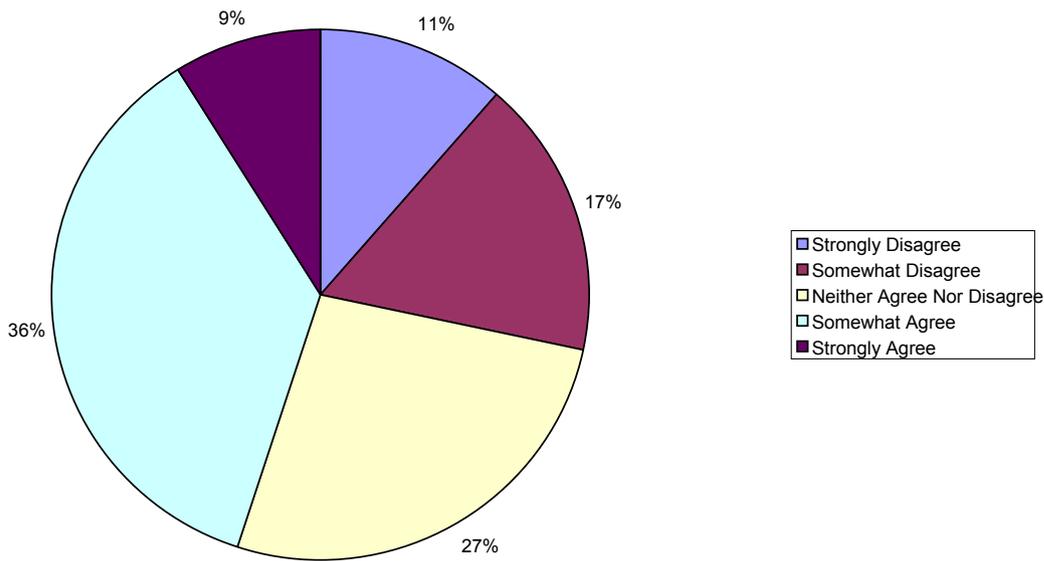


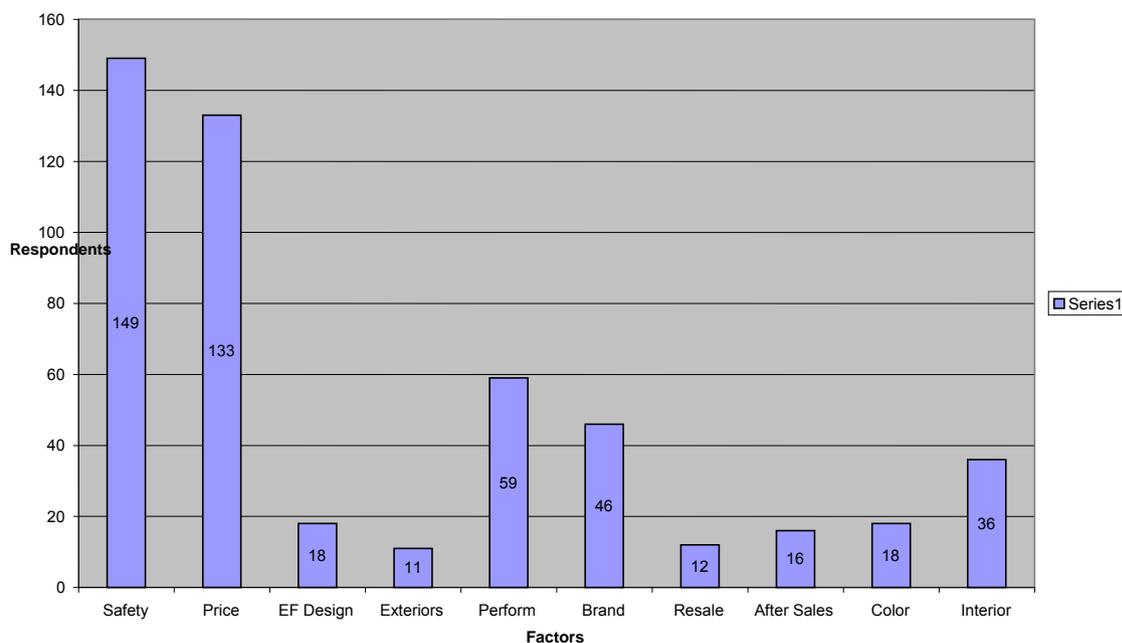
Figure 2 : awareness pattern about benefits of EFC

**Interpretation:** Only 9% of the respondents are aware of the benefits of the EFC.

*e) Factors influencing while buying a car*

There are many parameters which are kept in mind while buying a car. Some of them which were discussed during the research survey are: Safety, price, environment friendly design, exteriors, performance, brand, resale value, after sales services, color and interiors of the car. Safety is the factor which has been ranked as the most important parameter which is

observed while buying the car. Second important factor which was ranked as important is price. The third factor which emerged during the survey is performance of the vehicle where in buyers stress a lot on the types of performance and fuel efficiency while using the car. Brand name of the car stands fourth in the rank and interior is rated fifth. Color and Environment friendly design has been rated as sixth and then after sales on seventh. Resale values comes the next as the ninth factor and then the resale value the tenth.



*Figure 3 :* Factors influencing car buying behavior

Interpretation: Safety stands first and Environment friendly design stands sixth.

*f) Challenges ahead for an EFC*

A lot of firms would be planning to go green but the challenges they would be facing would be too many. One of the main problems is that firms using green marketing must ensure that their communications is not misleading to consumers or industry, and also do not breach any of the regulations or laws dealing with environmental marketing. Marketers must ensure their green marketing claims can meet the following set of criteria. Green marketing claims must derive few of the following benefits which are given below:

1. How the product is going to derive environmental benefits?
2. What are the different environmental characteristics the product possesses?
3. Explain how the product is different from the non green one?
4. There is a clear cut need to justify the differences in the tangible form.

It has been also observed by the researchers during study that consumers by and large are not

committed to improving their environment and may be looking to lay too much responsibility on industry and government. Ultimately green marketing requires that consumers should look forward for a cleaner environment and should be willing to "pay" for it, possibly through higher priced goods, modified individual lifestyles, or even governmental intervention. Until this occurs it will be difficult for firms alone to lead the green marketing revolution. As green products proliferate, innovative marketing will be a key to attracting consumer's attention.

The challenge is to create a brand consumers will buy whether or not it is good for the environment. "If one has an idea for an alternative to cotton shirts, make sure it is fashionable first and the green aspect is second or third down the list," says Sonora Beam, co-founder and creative director of Digital Hive Ecological Design, a green consulting firm in San Francisco. Many people are buying green products not because it's the right thing to do, says Beam, "but because they look or taste good."

### III. CONCLUSION

The results of study indicate that there is no significant difference in the awareness of the respondents for environment friendly car with reference to the two age groups which was considered in the research. The results indicate that the awareness amongst the various age groups is similar and hence the marketer and the government should create the desired knowledge and effective use of media should be made so that people are made aware of the environment problem arising out of the cars being used. New papers being the most effective media the benefits regarding EFC should be made public. The results indicate that the awareness amongst the various income group is similar and hence the marketer and the government should create the desired knowledge and effective use of media should be made so that people are made aware of the environment problem arising out of the cars being used. New papers being the most effective media the benefits regarding EFC should be made public. The segment in which the maximum cars are being sold need to be tapped by the marketer for promoting the EFC made for that segment.

Unfortunately, the majority of consumers do not yet realize that they can make a substantial impact on environmental problems. Despite the large number of consumers who express their concerns about the environment, few people are willing to act at personal expenses, such as paying premiums for environmentally friendly products and making a sacrifice in their present lifestyles

#### a) Suggestions

In our country electric car is yet to be launched in a big way and it is very important that following things need to be kept in the mind by the participants of the ecosystem that unless there is enough work done in term of infrastructure, customer will not be buying the green cars even if they are aware of the benefits.

There is a need to create servicing and maintenance facilities service the cars. There is also a need to train professionals for serving the green customer so that the continuity is built in the process itself. The researcher further recommends that further studies and research is required to fully ascertain the attitudes of the car buyers in India and their behavior for the environment friendly car. Attitudinal issues that require further investigation include vehicle technology; the impacts on the earth through the cars, ownership cost of the car etc which would help provide insights as to how messages are interpreted by the customer. This will further enable the marketers of these cars to improve the design and make the future educational campaigns for effective. The study will help the marketers to design the marketing strategies so that benefits of the environment friendly car are continuously demonstrated

in their product promotion to the customer in the form he understands the best.

The efforts will have to be made by the manufacturers that the TCO (Total Cost of Ownership) of the environment friendly car should be made low to the extent possible to reduce the overall financial burden on the customer and this will enable the marketers to promote the cars easily in the market place.

The marketers have to understand the segment and based on the preference it is important that environment friendly car be projected as status symbol. This will help promoting the cleaner vehicles. Creating a green parking space or policy for giving preference for parking to the green customer can further enhance the social value in term of status symbol. There is a need to map the customer dynamic behavior as new green technologies need to be encouraged and adopted.

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