

# Green Behaviour of The Customers of Four-Wheeler Automobiles - An Application of Dummy Variable Regression Model

**Dr. P. N. HARIKUMAR**

Associate Professor & Head, Post-graduate Department of Commerce,  
Catholicate College, Pathanamthitta, Kerala. Ph : 09447304912 sushahari@gmail.com

## **Introduction**

Green marketing activities will enable the companies to shine next to their competitors by offering new products with extra ecological advantages, in the new markets. This will cause the companies' image to brighten in their customers' eyes and will increase the loyalty of their customers, which, in the final analysis, means increase in profits and extension of the brand. Environmentally-concerned people who believe that pollution is a problem and also have a favourable attitude toward greening the environment, are more inclined to purchase Green products. Hence, as people become aware of environmental problems and eco-production, eco-marketing, and eco-consumption, their attitudes, responses, perceptions and purchase intentions also may, in turn, change.

Green marketing involves developing and promoting products and services that satisfy customers' wants and needs in respect of quality, performance, affordable pricing, after-sales service and convenience without having a detrimental impact on the environment. Green marketing implies marketing strategies which, through the establishment of identifiable environmental benefits (based on the consumers' expectations), would support the environment. Sustainability consists in internal reforms in the organizations and serves as a "bridge between business and Green consciousness", ensuring better life of everyone now and for generations to come". The objective of Green marketing is to minimize environmental harm and as well increase the economic benefits. Green marketing satisfies two objectives: improved environmental quality of the products and customer satisfaction. Green marketing objective is to educate and make people willing to go for green, because it influences changing of the life style attitude, perception and purchasing behaviour of the people. There are steady movements in public interest and concern about the environmental issues. A company must accept its responsibility for its operations and their impact on society and natural environment. Companies should work for the betterment of society as a whole and for more greening of the world.

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 and the purchasing behaviour of the customers of different formats of vehicles are considered, many research results have shown that environmental awareness has more to do with 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 vehicles is the major cause of deteriorated air quality in the metros and non-metros in India. Vehicles have two opposite personalities. One is friendly and attractive; the other is destructive and lethal. The desire to own a vehicle is linked to pleasure, social status, convenience and freedom. There is strong need for a joint effort of the vehicle manufacturers, the marketers, the government, the customers of automobile industry and all the stakeholders in the system to control and reduce the ever-increasing problem of pollution and its impact on the earth, so that the automobile companies design, produce and develop their vehicles in a way suitable to the Green environment or ensure that the use of these vehicles will not have any detrimental impact on the Green and natural environment.

## **Objective of the Paper**

To analyse the factors affecting the Green purchasing behaviour of the customers of four-wheeler automobiles in Kerala.

## **Research Methodology and Sample size**

The present study is descriptive and analytical in nature. The study attempts to describe the Green marketing practices followed by the vehicle companies, to analyse the impact of these practices on the Green purchasing behaviour of the customers. Survey research using a well-structured interview schedule for selected customers and questionnaires for

the automobile companies was adopted in this study. For an assumed level of 5 per cent error in the estimates of the means of these 152 responses using the information on variances from the pilot study, the sample size was obtained based on each response. The formulae used is  $n \geq (1.96 s/d)^2$ . When 'n' is the sample size, 's' is the estimate of standard deviation, 'd' is the standard error of the estimate of the population parameter, and the value 1.96 is the critical value from normal test at 5 per cent level of significance. The calculated sample size of 686 was the maximum among the sample size obtained from responses of all the statements. Hence, the sample size was fixed finally at 700 for four-wheeler customers.

## Result and Discussion

### Demographic Profile of the Selected Customers of Four-wheelers

**Table 1 Demographic Profile of the Selected Customers of Four-wheelers**

	Area	Frequency	Per cent	Valid per cent	Cumulative per cent
<b>Area</b>	Urban	316	45.1	45.1	45.1
	Semi urban	268	38.3	38.3	83.4
	Rural	116	16.6	16.6	100
	Total	700	100	100	
<b>Gender</b>	Male	687	98.1	98.1	98.1
	Female	13	11.9	11.9	100
	Total	700	100	100	
<b>Qualification</b>	SSLC	68	9.7	9.7	9.7
	PDC	131	18.7	18.7	28.4
	Degree	320	45.7	45.7	74.1
	PG	113	16.1	16.1	90.3
	Technical	68	9.7	9.7	100
	Total	700	100	100	
<b>Occupation</b>	Government Employee	129	18.4	18.4	18.4
	Private Employee	231	33.0	33.0	51.4
	Self-Employed or Businessman	250	35.7	35.7	87.2
	Workers	90	12.9	12.9	100
	Total	700	100	100	
<b>Age</b>	20-25 years	78	11.1	11.1	11.1
	26-30	163	23.3	23.3	34.4
	31-35	118	16.9	16.9	51.3
	36-40	146	20.9	20.9	72.1
	41-45	107	15.3	15.3	87.4
	46-50	41	5.9	5.9	93.3
	Above 50 years	47	6.7	6.7	100
	Total	700	100	100	

*Source : Survey data*

As per Table 4.1, it is observed that 45.1 per cent of the customers of four wheelers are belonging to urban area and 38.3 per cent are staying in semi-urban area, while 16.6 per cent are rural customers. Gender-wise classification shows that, out of the 700 selected customers, the majority are male (98.1 per cent, 687), while females account for only 13 per cent (13). Similarly, 45.7 per cent of the customers are graduates and 16.1 per cent are educated up to PG level, and the remaining have either technical qualification (9.7) per cent, or PDC (18.7 per cent) or only up to SSLC (9.7 per cent). It is also observed that the majority of the selected customers are self-employed or businessmen (35.7 per cent), followed by private (33 per cent) and Government employees (18.7 per cent). The Table also indicates that a majority of the selected customers of automobile industry belong to the age group of 26-30 years. This shows that youngsters are the main customers of this industry.

**Table 2 : Dummy Variable Regression Coefficients**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	5.137	1.518		3.385	.001
Dummy for Car	13.736	1.266	.413	0.846	.000
Dummy for Jeep	3.954	1.069	.145	3.697	.000
Dummy for Mini-bus	4.245	1.048	.146	4.697	.000
Dummy for Mini-bus	11.950	1.303	.359	9.173	.000
Environmental Activism	.522	.036	.510	14.41	.000
Concern for Self Image in Environmental Protection	.341	.36	.243	9.384	.000
Response to Green Companies and their products	.458	.39	.333	11.822	.000
Response to Green Advertising Green Brand Image	.231	.028	.216	8.307	.000
Social Influence	.249	.043	.212	5.848	.000
Perceived Effectiveness of Environmental Attitude	.304	.047	.206	6.437	.000
Expectation of Green Pricing	.232	.044	.141	5.229	.000
Environmental Attitude	.175	.036	.129	4.878	.000
Awareness of Environmental Laws and Regulations	.204	.065	.081	3.125	.002
Perceived Environmental Responsibility	.072	.032	.094	2.267	.024
<b>R Square .814, ANOVA F 249.937, Sig 0.000</b>					

a. Dependent Variable: *Green Purchasing Behaviour*

### Impact of the Factors on Green Purchasing behaviour

Green purchasing behavior is considered as the consequence of Concern For Self Image In Environmental Protection, Response To Green Companies And Their Product, Environmental Activism, Response To Green Advertising, Green Brand Image, Social Influence, , Perceived Effectiveness Of Environmental Behaviour, Expectation Of Green Pricing, Environmental Attitude, Environmental Concern, Perceived Environmental Responsibility, Awareness Of Environmental Laws And Regulations.

In addition, this dependence between Green behavior and other factors may be at varying levels for those belonging to car, lorry, jeep Mini lorry and Mini Bus. This problem is studied using the Dummy Variable Regression Model. In this problem the Explained variable GB as well as the explanatory variables is in Interval scale, while the variable of type of vehicle is in Nominal Scale. This nominal variable has to be quantified by using variables supposed to take either 0 or 1 as values; such variables are called Dummy variables here. Dummy variables are generated taking one option for the nominal variable considered as a reference, in this case Car, Lorry, Jeep Mini Lorry and Mini Bus.

They are defined as,

$D_1$  (for car) as  $D_1=0$ , if respondent is not from the customers of Car

$D_1=1$ , if respondent is from the customers of Car

$D_2$  (for Jeep) as  $D_2=0$ , if respondent is not from the customers of Jeep

$D_2=1$ , if respondent is from the customers of Jeep

$D_3$ (for Mini Lorry) as  $D_3=0$ , if respondent is not from the customers of Mini-lorry

$D_3=1$ , if respondent is from the customers of Mini-lorry

$D_4$ ( for Mini-bus) as  $D_4= 0$ , if respondent is not from the customers of Mini-bus

$D_4=1$ , if the respondent is from the customers of Mini-bus

And the model will be

$$GB = \beta_0 + \beta_1 D_1 + \beta_2 D_2 + \beta_3 D_3 + \beta_4 D_4 + \beta_5 EA + \beta_6 CSIEP + \beta_7 RGCP + \beta_8 RGA + \beta_9 GBI + \beta_{10} SI + \beta_{11} PEEB + \beta_{12} EGP + \beta_{12} EA + \beta_{13} EC + \beta_{14} AELR + \beta_{15} PER + u$$

From Table, it may be noted that the regression model is valid with 81.4 per cent explanation of the variation in GB and this explanation is statistically valid as the associated F value (249.937) is significant ( $p=0.000 < 0.01$ ). Besides the coefficients of predictor variables are also significant, as the associated t-values are significant ( $observed\ p=0.000 < 0.01$  in all cases). From these findings, the relationship between GB and Concern For Self Image In Environmental Protection, Response To Green Companies And Their Product, Environmental Activism, Response To Green Advertising, Green Brand Image, Social Influence, , Perceived Effectiveness Of Environmental Behaviour, Expectation Of Green Pricing, Environmental Attitude, Environmental Concern, Perceived Environmental Responsibility, Awareness Of Environmental Laws And Regulations is completely explained and such a relationship is seen to be at different levels. The regression equation may be reduced to:

$$GB = 18.873 + 0.522 EA + 0.341 CSIEP + 0.458 RGCP + 0.231 RGA + 0.463 GBI + 0.249 SI + 0.304 PEEB + 0.232 EGP + 0.175 EA + 1.44 EC + 0.204 AELR + 0.072 PER + u \text{ for customers of Car}$$

$$GB = 9.091 + 0.522 EA + 0.341 CSIEP + 0.458 RGCP + 0.231 RGA + 0.463 GBI + 0.249 SI + 0.304 PEEB + 0.232 EGP + 0.175 EA + 1.44 EC + 0.204 AELR + 0.072 PER + u \text{ for customers of Jeep}$$

$$GB = 9.382 + 0.522 EA + 0.341 CSIEP + 0.458 RGCP + 0.231 RGA + 0.463 GBI + 0.249 SI + 0.304 PEEB + 0.232 EGP + 0.175 EA + 1.44 EC + 0.204 AELR + 0.072 PER + u \text{ for customers of Mini Lorry}$$

$$GB = 17.087 + 0.522 EA + 0.341 CSIEP + 0.458 RGCP + 0.231 RGA + 0.463 GBI + 0.249 SI + 0.304 PEEB + 0.232 EGP + 0.175 EA + 1.44 EC + 0.204 AELR + 0.072 PER + u \text{ for customers of Mini Bus}$$

It may be noted that the intercept is seen at different levels, with Lorry, Car, Jeep, Mini-lorry, Mini-bus, and Bus. This implies that car customers have high levels of Environmental attitude with Mini-bus and Bus following in that order. Therefore, it is concluded that this model is valid and statistically significant and that it may be more applicable in the case of the customers of cars and Mini Bus.

## Findings

Green purchasing behavior of the customers of automobile industry in Kerala is affected by Concern For Self Image In Environmental Protection, Response To Green Companies And Their Product, Environmental Activism, Response To Green Advertising, Green Brand Image, Social Influence, Perceived Effectiveness Of Environmental Behaviour, Expectation Of Green Pricing, Environmental Attitude, Environmental Concern, Perceived Environmental Responsibility, Awareness Of Environmental Laws And Regulations. It is also seen that this relationship more valid in the case of Car and Mini Bus customers.

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