Evaluation the relationship between exposure to the brand purchase intention of luxury cars (With emphasis on the application of nano biotechnology)

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ABSTRACT

This result is a field of research that aims to examine the relationship between exposures to the brand purchase intent is a luxury vehicle. Luxury cars are increasing day by day. And therefore the buying pattern of consumers is becoming a form of symbolic and empirical research in this area is increasing. According to statistics compiled in 2004, the automotive industry has a market of about 54.2 billion dollars in 2015 this figure will reach $ 137.4 billion. Turnover of 8.6 billion dollars will be produced using nanotechnology. This study presents and tests a model of luxury cars, which are five hypotheses. In this research, to meet desired goals and sampling formula based on a sample size of 200 is finally, 200 questionnaires were distributed and 190 were collected. The questionnaire consisted of 21 questions that avulsion of luxury cars in the city was distributed according to the method of sampling and test models using spss software. The results show that the intention to purchase luxury cars with attitude, glaring with attitude, aesthetic attitude, you have a positive and significant relationship with attitude and durability, compatibility with the attitude of a relationship are significant.

Keywords: luxury cars, Brand, glaring, aesthetics, durability, compatibility, purchase intention, attitude

INTRODUCTION

Despite the intense competition and variety seeking consumers’ greater choice and opportunity for them to be productive when they run against the fallen further into consumer behavior and the factors influencing them. Brand is a valuable asset for many companies, particularly manufacturing firms are created. Understanding of brand and how to communicate and how they influence the response of consumers to help companies develop effective marketing plans and allocate resources as efficiently. Luxury cars are increasing day by day and hence the buying pattern of consumers is being transformed into symbolic form. In order for consumers to buy them to show off their personality [5]. Perceived value of the brand associated with the consumption of luxury cars. The role of the leading brand of consumer behavior that may indicate a significantly greater tendency for consumers to buy luxury cars content is symbolic, as their prestige and capabilities of its. [11]. In the field of consumer behavior, attitudes as shaped and has been purchased for the purpose. The demand for these products and competitive activities in this area by increasing consumer awareness. The perceived value of the brand, a large proportion of the world's nations in Europe is increasing. Since customer behavior and perception of luxury cars on the keystone of the products they intend to buy luxury cars is the exact attitude. This study examines the relationship between factors such as rank,
aesthetics, durability, adaptability, attitude and purchase intention of consumers of luxury cars, they will be provided.[8],[9]

**Literature**

**Consumer Behavior**

Beginning of the 1990s, writers began to discuss how advertisers can use the principles of psychology. Consumer behavior is defined as behavior during her search, buy, use, and evaluate products, services down this idea that the seal needs to be self-evident that Consumer behavior and mental activity, emotional and physical time of the purchase, use and dispose of products and services that will satisfy the need to be included. Every field of study of basic theories and assumptions that are subject to the opinions of experts to guide their use. In order to better understand consumer behavior experts stressed that the seven basic concepts has been the subject will be examined. These concepts are briefly as follows:

1 - Consumer behavior and motivation. Most basic questions about consumer behavior, consumer behavior is why. The answer can be sought in the definition of consumer behavior “In a way that will satisfy the needs and desires.” Overall, consumer behavior, a behavior that is motivated to achieve the goals of the special. These are two motives, one reason for buying a product that works and is linked to the performance of that product to the consumer in a way that helps to achieve the goal. For example, a car can be motivated to work for the welfare, transportation, tourism, environmental protection, clean air, and so forth. Another motivation, personal motivation, a consumer who wishes to express emotions or other things about him are concerned. Motivated person can buy a certain kind of luxury sedans esthetic person's reputation or.

2 - Consumer behavior is of great activities. Every consumer has the thoughts, feelings, plans, decisions, and many purchases. Note that only the person who bought up many of the activities associated with it is ignored. While marketers have a wide range of activities, including consumer into thinking the product information, the advertising, buying and re-refer the application to the satisfaction of the consumers are looking.

3 - Consumer behavior is a process. Define consumer behavior as expressed in the above mentioned consumer behavior, a series of activities (selection, purchase, consumption, etc.) are included.

4 - Consumer behavior is different in terms of time and complexity. The amount of time spent on consumer behavior is Period during which buying decisions are made or during the entire duration of the buying decision process and the complexity of consumer behavior the number of activities involved in a decision and issue its decision refers.

5- Various roles in consumer behavior are included.

A) The role of the Purchasing  B) the role of buyer  C) the role of consumer

6 - Consumer behavior is influenced factors. External forces that affect a consumer's decision process, but the effect itself is not bad or good. Several of these foreign troops subculture, social class, and family, environment of marketing, and environmental issues and air pollution and so on.

7- Consumer behavior is different for different people.

Due to individual differences and the influence of external forces people in different ways, and these differences lead to different consumer behavior has become difficult to predict consumer behavior, how to respond to the marketing mix, and so on.

**Brand**

In the last decade of research on brand important role in various fields such as academia and business to business accounts. Despite the existence of numerous definitions for no unanimous agreement about the meaning of the brand, brand value and how to measure it by the companies does not exist [2] Although several dimensions of brand value have been identified, but the interrelationships between different aspects of brand value are not well understood [4] Aaker (1991) Defines brand value as follows:

"A set of assets and liabilities linked to a brand, its name and symbol of the value provided by a product or service to a company or its customers or the company added. "Keller (1993) recognize the importance of brand value from customer perspective defines the" brand value customers - positive circuit can cause a higher revenue, lower costs and higher profits, and may direct applications to the company's ability in order to offer higher prices of consumer desires for new distribution channels, marketing communications effectiveness and success of the brand is authorized and opportunities. Following these two concepts Aaker and Keller and some subsequent results research has shown that consumers Murgand in 1996 against the products of different brands have different reactions show. These reactions can depend on consumer understanding of brands is original. They have offered so far may be attractive to brands and brands. This proposal is in most cases an increase in sales. Today the brand has become a valuable asset. Some perspective on the consumer goods brands is that brands will realize the value. These values include the marking scheme, marking feature, similar to the brands, products or goods in connection with a branded case, branded and brands are the attractions. We believe that the marking of place, region or country that belongs
branded consumer of it. Peter and Mark Nkl during its investigation in 2002 concluded that consumers' assessment of the image logo related to the success or failure of conformance or non-conformance or all the ingredients of the product. Consumers in the market are faced with a large variety of products under various brands. They can find much information about the product. This diversity can lead to increased competition between plants and also causes confusion and frustration among consumers is the norm. As the summary of product brands that provide information about its subsets play an important role. The role of information and its impact on the image of a brand is very important. The device features an image of marking all of its products, brands, expanded product lines or product innovation is determined by the factory and similar. Research shows that in 2005 Victor Fisher It is assumed that the finance company that focuses on consumer characteristics such as price, quality, durability and reuse of goods is while research shows that consumers choose brands. What is related to consumer satisfaction and violent behavior is suspicious, of loyalty to the brand. Brand loyalty or brand can be defined as the extent to which the customer has a positive attitude towards a brand, marking the extent of his commitment and intention to continue to define the future of shopping. [5]

Satisfaction or dissatisfaction directly affected brand loyalty the brand has collected over time and product quality is also affected [6]. Behavioral approaches to brand loyalty, the actual buying behavior of consumers about the product measurements. Purchases are appropriate methods most widely used measures of brand loyalty. In this approach, all brands purchased a particular item and for each designated consumer purchases of each brand are characterized by. Then, depending on the kind of brand loyalty, to a particular brand favorite purchases is measured. For example, if you purchase more than 50% over a period of time that is spent on a particular brand, the customer loyalty to brands they read it. Clear that behavioral approach to brand loyalty, the all-or-nothing phenomenon. Instead, loyalty should be considered a continuum of complete loyalty to the brand's complete indifference is widespread. There is no loyalty, except loyalty is divided into several types. In some cases of consumer loyalty is divided between the two brands. In other cases, consumers are generally loyal to a brand, but also have occasional reference to other brands. Perhaps because of this diversity and to raise their arousal. However, in other cases, the distinction between brands and customers completely the indifferent. From a marketer's perspective, the problem is that the measures of behavioral measures of brand loyalty, the reason to buy a particular brand from a consumer are not affected. Special marking is possible due to the convenience, availability or price of purchase. If any of these factors change, consumers may soon have to go to another brand. In such a scenario can not be said that the idea implication is that consumer loyalty to the brand is more than just a passing interest, then this brand loyalty to the show. [6]

Nano biotechnology in the car industry
According to statistics compiled in 2004, the automotive industry has a market of about 54.2 billion dollars in 2015 this figure will reach $ 137.4 billion. Turnover of 8.6 billion dollars will be produced using nanotechnology. In this study, the use of nanotechnology in three parts, tires, chassis and engine are described.

Nano & car tire
In automotive; the tires are definitely more potential for the application of Nano technology. Material plays an important role in the properties of mixed rubber tires. This material covers the function to identify the tire in contact with the road.30% covering generally involves filling and reinforcing the desirable properties for scratch resistance, resistance to tear propagation provides initial rupture. To optimize the tires, conflicting operations must be performed. Sides have a good grip on the road surface and tire rolling resistance on the other hand it down as much as possible. In addition, it is necessary to be resistant against abrasion. Also, due to the anti slip properties of the vehicle to prevent slipping. The mechanism of how this tire property that are contradictory in some cases with a complex physical and chemical interactions between the rubber and the filler material. Features listed Run on flat tire being blown out to at least 160 km, which means that the low-speed driving can be 90 km/h. Three types of material that plays an important role in improving the properties of natural rubber include carbon black, silica and Argon sylan. The exact composition of the soot secret is added to the rubber mixture with the silica to form a chemical bond Argon silica is added to the mix. Of silica and carbon black particles in the nanometer range can be produced. The size and shape of the particles as well as the inter-linked natural rubber molecules, plays a key role in the properties of the tire. Using Nano-structured carbon black as filler for tires, fuel efficiency increases and becomes more durable tires. These new particles rougher surface than that of the consumer. Because of the increased surface energy of nanoparticles, the interaction between the molecules of natural rubber is high. So it tends to reduce internal friction and rolling resistance tires are better. Strain concurrent vibrations that occur at high speeds for the material decreases. As a result, good traction, especially on wet roads occurs.

Nano & car chassis
The chassis design is always a conflict between comfort and safety. A soft chassis is significantly easier than the other type of firm it is safe. Adjust the system, depending on the situation hardly improved, adjustable. Adjusted
core systems, electromechanical or magnetic fluid MR / ER are known as smart materials. The fluid viscosity can quickly step in and help reverse an electric or magnetic field is changed. This effect is based on the fact that the polarized particles in the fluid layer arranged along the field lines and form a chain. It increases the viscosity of the fluid flow resistance is higher meaning. If the magnetic field is removed, the chains break and fluid would be diluted again. Figure 2 is a schematic viscosity control using an electric field is shown. As can be seen, the current is applied; the particles are polarized along the positive and the negative. These changes can happen quickly. Millisecond time a year can become a sticky gel. Special oil is able Fluidicon 1500 times per second between the solid and fluid phases of change. The speed of the hydraulic system is particularly interesting for the advanced high pressure systems today can only change from 400 to 500 times per second. Another advantage over traditional methods is that the new system can be made simpler and more compact. It also requires fewer mechanical components, resulting in reduced vehicle weight. Fluidicon these properties to design without moving parts used valves. Application areas include bumpers for classic cars, gear, and more. Dream of an active chassis can be achieved soon. In other words, the chassis can be activated even on an uneven road, the driver will move without difficulty. Other system, transportation systems Adaptronic is to keep the vehicle downhill and a rough surface has been developed.

Nano & car engine

Measures to improve efficiency Like a flexible control valve and extremely precise fuel injection to optimize the combustion process and fuel consumption is improved. Minimizing traction motors through Nano-layered systems can lead to fuel savings will be in the future. In passenger cars, 15-10 per cent fuel consumption is due to friction engine. These components can include the pistons, cylinder walls and piston parts, crank parts, as well as parts of the valve. Much of the friction of the piston friction problems. Nanotechnology can help to reduce fuel consumption by reducing friction. Coated nanostructured materials that are used in the cylinder wall friction and wear and thus reduce fuel consumption. The purpose of the project, covering the edges of the aluminum crankcase with straight edges is Nano materials. Whereby the possibility of removing the cylinder tube aluminum crank Firma edge is required. Coating material containing Nano-sized crystals of iron boride carbide nm130-60 is extremely hard surfaces with low friction properties will result. Reduce emissions in vehicles today are unthinkable without catalysts. Catalyst Network of steel that contains active ingredients containing catalyst to convert pollutants into nitrogen, steam and carbon dioxide are. Most passenger cars based on stoichiometric Otto engines work. In these engines, the fuel-air mixture so that the theory can be combined fuel consumption is achieved. The main catalyst SLT Tuesday pollutants (carbon monoxide, nitrogen oxides and hydrocarbons) are possible and therefore these contaminants may be removed from the vehicle. Turned over to non-toxic gases, toxic, Nano-technology will play a key role. If the material is used for the catalyst Nano-meter scale, Surface area is increased considerably. The structure of the material is so chosen Exhaust gases react in an appropriate manner with the catalytic active coating And become less harmful chemical substances will accelerate Several producers Otto engine is a direct injection system provides a rich mix of equipped and air are in line with the needs of today's work environment. The engines of 15 to 20 percent less fuel than conventional engines are used. Although the reduction in chemical oxygen-rich oxides in the atmosphere, Nox absorber catalysts are suitable for solving this problem.

MATERIALS AND METHODS

The aim of this research approach is applied. Research design in this study is a descriptive survey. The study collected data to test hypotheses about the research field method has been used mainly. The scope of the study population was all persons 20 to 50 years in Tehran. To this end, the study sample consisted of 200 randomly selected customers has been that they have a total of 190 questionnaires were returned and considered (because the population is infinite researcher has used the following formula to determine the sample size).

\[ n = \frac{Z_{\alpha/2}^2 PQ}{d^2} \]

\[ n = \frac{1}{0.5^2} \times \frac{0.05 \times 0.5}{0.07^2} = 196 \cong 200 \]

Questionnaire has been used in the present study. Questionnaire has been used in the present study. In this study the methods of descriptive statistics such as mean, standard deviation, compared to the information gathered by the questionnaire will be used. And inferential statistics to explain the relationships between variables in regression testing method to be used.
RESULTS

Sometimes two or more variables have a major impact on the dependent variable. In this situation, predicting the dependent variable, we need more than one independent variable in the regression analysis. We use the following estimates that are mathematically so that it can help an unknown variable by using the variable or unknown variables, can be determined. Assuming that there is little causal relationship between two variables is a linear relationship, the regression equation is defined $y = \alpha + \beta x + \epsilon$ in the dependent variable to independent variables are estimated. Represent matrices of the dependent variable.
\( \psi \): Matrix-intercept of regression line

\( \beta \): Matrix of regression coefficients that indicate how the dependent variable per unit change in the independent variable, varies.

\( x \): Representative matrix of independent variables

If the researcher can make use of linear regression that the following conditions are met:

1 - The mean error is zero.
2 - Variance of errors is one.
3 - There is no correlation between the model errors.
4 - The dependent variable is normally distributed.

The following tests are used to evaluate the hypothesis that we can mention.

For this purpose, the model was estimated using SPSS software and Significance of the regression model using level of error (P-VALUE) is the calculation for determining the F statistic significant at 95% confidence level is used. Thus, if the Sig calculated from the regression equation is smaller than the critical value 0/05, the regression model would be significant. To investigate the correlation between the errors of the test cameras Watson (DW) test for normality of the dependent variable Klmugraf - Smirnov test was used.

Klmugraf test - Smirnov (KS)

These tests evaluate claims about the distribution of a variable is used. The corresponding statistical hypothesis test is stated as follows:

\( H_0 \): Variable (attitude) has a normal distribution.
\( H_1 \): Variable (attitude) of the distribution is not normal.

<table>
<thead>
<tr>
<th>Number</th>
<th>Mean</th>
<th>SD</th>
<th>K-S</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>190</td>
<td>3/412</td>
<td>0/780</td>
<td>1/147</td>
<td>0/147</td>
</tr>
</tbody>
</table>

Table 1. Test Klmugraf - Smirnov KS

The output of the PD (P-value greater than 0.05), so the assumption of normality of the dependent variable indicated will be accepted.

Watson camera test

One of the assumptions is considered in the analysis, independence of errors (the difference between the actual values and the values predicted by the regression equation) of each other. If the hypothesis of independence is rejected in error, and errors are correlated with each other, there is the possibility of regression. To evaluate the independence of errors between cameras Watson test is used. The value of the test statistic is in the range of 0 and 4, and if this statistic range 1/5 or 2/5 is the correlation of test errors is acceptable, Otherwise, there is a correlation between the errors. The value of this test 1/950, which is above the range of the correlation between the errors there.

<table>
<thead>
<tr>
<th>D - W</th>
<th>SE</th>
<th>Adjusted coefficient of determination</th>
<th>Coefficient of determination</th>
<th>The multiple correlation coefficient</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/950</td>
<td>0/583</td>
<td>0/441</td>
<td>0/453</td>
<td>0/073</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 2. Regression Analysis for Variables self aesthetic, consistency, durability – Attitude

Linearity of the relationship between the dependent and independent variables

Because the researcher to test their assumptions of linear regression are used, so the relationship should be linear, scatter plot matrix to test the linear relationship between dependent and independent variables in each row of the matrix is important because we use the matrix image shows the relationship between the independent variables. As observed in the dependent variable associated with the attitudes of other independent variables is linear.
Normality of errors

One of the assumptions considered in the regression errors are normally distributed with mean zero. Obviously, if it is not the default setting, the regression can be used. Residual between observed and model predicted values of the dependent variable. Thus, with the default being established, the relationship between independent variables and the dependent variable regression can be used. Graphs or histograms p-p residual error term is used to evaluate the assumption of normality. The histogram should be approximately conforming to the shape of the normal curve [10]. To test whether or not the errors are normally distributed p-p plot the graph remains in use. The following chart is also known as the normal paper a normality test is that if the data sample belongs to a normal comprehensive, they are scattered in a straight line close to the expected if the chart shows a slight deviation from a straight line data we can conclude that the errors are normal.

Remaining in the chart should be subject to a 45 degree line. Chart p-p does not violate the normality assumption.
The above diagram to determine normality assumptions of regression errors as another explored

\[ \mu = 0, \text{std.Dev} = 1 \]

The linear assumption, the errors are normally distributed with mean zero. In other words, it is. The chart above is the standard deviation of the mean value close to zero and close to one (0.989), respectively. According to this graph, assumes normality for the error variable is confirmed. After testing the assumptions necessary for the use of regression, regression test, we claim that the researcher. If this is the first work of significance of the regression model is tested, this work is done by the ANOVA table, then the significant coefficient is independent of the work is done by using coefficients.

Results for the four outputs which are described respectively. Table 3 Independent variables entered, deleted and methods used in the regression analysis shows.

<table>
<thead>
<tr>
<th>Independent variable</th>
<th>Dependent variable</th>
<th>Standardized coefficient</th>
<th>Statistics t</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self</td>
<td>Attitude</td>
<td>0.240</td>
<td>3.65</td>
<td>+</td>
</tr>
<tr>
<td>Aesthetic</td>
<td>Attitude</td>
<td>0.446</td>
<td>6.572</td>
<td>+</td>
</tr>
<tr>
<td>Adjustment</td>
<td>Attitude</td>
<td>0.071</td>
<td>1.244</td>
<td>Rejection</td>
</tr>
<tr>
<td>Durability</td>
<td>Attitude</td>
<td>0.100</td>
<td>1.693</td>
<td>Rejection</td>
</tr>
<tr>
<td>Attitude</td>
<td>Want to buy a luxury car</td>
<td>0.634</td>
<td>11.248</td>
<td>+</td>
</tr>
</tbody>
</table>

**CONCLUSION**

Deprived of the luxury cars has a direct relationship with attitude. The results of the statistical analysis indicate that this hypothesis is supported. So the 95% confidence level can be argued that the show is correlated with perception of luxury cars. Aesthetic is correlated with perception of luxury cars. The results of the statistical analysis indicate that this hypothesis is supported. So the 95% confidence level can be claimed aesthetic is correlated with perception of luxury cars. Relationship is consistent with the perception of luxury cars. According to statistical analysis, the way in which these two variables together enables positive but not significant, so the hypothesis is not accepted. The results of this theory with the results of Han et al study in 2010 not consistent. Lasting relationship with the perception of luxury cars are. According to the results, tables and obtained the value of the statistic T 1/693 it was shown that this hypothesis could not be verified. Due to the purchase of luxury vehicles to suit fashion be done, and usually mode is changed every 6 months, who buys these products are not substantial enough to sustain it. The results of this hypothesis, the results are consistent with Han and colleagues in 2010. Attitude has a direct relationship with intention to purchase Luxurious car’s Error 0/05 and significant 0/95 this hypothesis is confirmed (t-statistic = 11/248). That attitude has a direct correlation with the intent to buy luxury goods. Since the standard ratio 0/634 is positive, we can say that this is a direct relationship. Results of this hypothesis with the results of the investigation are consistent with Han and colleagues in 2010.
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