CAR PURCHASING SELECTION OF WOMEN AND MEN: A DIFFERENT BEHAVIOR

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Abstract: Women and men are having a different buying behavior in selecting their type of car in terms of class, style, and car size; these are influenced by age, class, and style as well as car size. Women are more car efficiency minded instead of car technical characteristic evaluation. They need efficient car instead of luxury or stylish and size. Men are always choosing car efficiency instead of technical characteristics and some times considering car class, style and car size. Compare to women who need more car efficiency, men are more detail consider to car characteristics evaluation. Car seller explains efficiency superiority, practicality and car safety for women, and explains to men technical characteristics, style and car size in detail. This is useful for auto industrialists to modify its products for additional attractiveness, quality and size or car type preferably to consumers; industrialist can improve sales volume later.

Keywords: women’s choice, men’s choice, characteristics, class, style and car size.

JEL classification: M10, M21, M31

1. Background of Information

Car ownership would really help women and men would be able to go any journey direction they want. Car buying decisions is important for consumer to faster their daily mobility economically, faster social access and comfortable, nevertheless car buying selection is more important. Presumably women and men behavioral factors influence car selection efforts before buying.

Physically and psychologically women and men are having different needs, standard evaluation, interest, and behavioral selection influencing their choice of buying car for daily activities match with their needs criteria considers to car’s characteristics, style, and car’s size. Which car characteristics most prominent have choosen by women and men, hence it is predicted that there is significant different between women and men of selecting the car in terms of car class, style, characteristics and car size.

The paper has identify and limited to women and men behavioral factors influencing car selection before buying a car, and provides behavioral differences total picture prior to car buying decisions. The women and men car selection is influenced by some variables as in car characteristics, class, and car size match with their criteria. They are few brands car users in Jakarta, the study did not distinguish the age of the respondents.

The results of this study are useful for science to identify various factors affecting women and men to choose their car, useful information for science development, specifically concerning women’s studies in the future. This research can be useful for women and men consumers considering purchasing variety car standard selection. This research information will be useful for auto industrialists to modify its products for additional attractiveness, quality and size or type of car preferably to consumers, so that industrialist can improve sales volume later in the future.

This study would also useful for car dealers; they can identify how to persuade consumers unboring and yet effective and well targeted. The research results are also useful for transportation policy makers or other vehicle trade and the role behavior of women and men in the
vehicles selection types before buying a car because of many factors that affect women and men in selecting different attributes such as cars and women and men individual characteristics.

In recent years there have been some researches regarding economical product buying behavior prediction. Some most up to date researches among other are in transportation and womanhood with regard to auto mobile dynamic engineering and car ownership (Miller 1996), and destination interest majority have driven behavioral change in car characteristics selection prior to buying decision as stated by Salvini and Miller (2003) and PB Consult (2002). It is interesting to remember that car ownership comprehension that buying cars should have considered to green environment. Analysis of individual and families travelling around Indonesia has varied reflecting some differences in journey intention and number taken by women and men. Data shows that women have different behavior in their trip model compared to men. Most women are traveling short distances between home and their work office, most of their journey in the context of the family as the primary role of housewife (Wachs 1997). Wachs also have indentified that the lower income women more likely to use public transportation to transport over their economic activities. Mokhtarian (1997) found that women changing their traveling behavior and mode of journey due to traffic congestion; furthermore women are better to reduce car usage compared to men (Matthies et al. 2002). Based on the fact, it can be estimated that there are differences behavior of automobile ownership and usage behavior.

Sex differences may be driving behavioral differences vehicle ownership policies goals at all levels of age (Prskawetz et al. 2002). The Widowed women as heads of households are less likely to choose having a car and may have fewer cars compare to male household head car ownership and the differences possibly occur even more dramatic due to higher age would diminishing trend of car ownership. These trends indicate marital status and age affects car ownership rate, the older a person is more likely to choose not to purchase or own a car. However, as an example that female drivers total number showed an increase, while the percentage of men in American public riders tend to decrease, according to information obtained from the Department of Transportation driver's rate of women rose from 44% in the year 1972 to 49.7% in 2000, compared with the percentage of male drivers decreased from 56% in 1972 to 50.3% in 2000 (FHWA 2004). These conditions are a sign that generally women have more powerfull influence in buying car process selection than men. Some data indicate half of new cars bought by women and the marketing research Ford Motor Company stated that their research data showed women influence 80% of car purchase decisions and tend to have different options or reasons for car selection compared to men car buyers.

The way someone selecting and decide to buy car have been widely studied from different types of studies. So far the transpotation planners are always interested to understand deeper about the choice of car type and how much the number of cars purchased by domestic consumers and how the designation of the use of vehicle, and actually there are a lot of research have been done by previous expert regarding such matter. As an example, a similar field study carried out by Manski and Sherman (1980), multinomial logit models have been developed to investigate how many cars have purchased and how the way to select such purchased car. Several car type selection models have been developed for individual and household owner of one or some cars in their house (Manski and Sherman, 1980). Mannering and Winston (1985) model the number of cars, car type and the use of cars within an interconnected framework; they form a separate model for an individual or household ownership of a car or some cars. Hensher and Le Plastrier (1985) using nested logit structure to model car ownership structure based on basic composition variety of options before buying a car. Brownstone et al. (1996) has developed buying a car tendency using selection of stated-preference data. Their study has used six alternative hypotheses with a different specific attributes. Yamamoto et al. (1999) developed consumer transactions competition period risk model by estimating economic risks maybe occur for every transaction in order to determine bargaining transaction separately considering choice differences possibility between survey respondents and somebody who are not respondent observed during study. Relatively new research conducted by Mohammadian and Miller (2002b, 2003a, 2003b) developed a study regarding dynamica of car selection and selection of transaction type of car using nested logit, mixed logit, and machine learning methods.
The model uses dummy variables to specify sexes, nevertheless there have no research yet regarding car type selection based on differences of gender behavior.

2. Conceptual Framework

![Conceptual Diagram]

Abolfazl (Kouros) Mohammadian, 2004, supported by some other similar research done by Ben-Akiva and Bolduc (1996) and Bhat (2000) as well as (Mohammadian and Miller 2002a).

3. Hypotesis

The research predicted that there are significant differences between choices of car made by women and men with regard to characteristics, class, style and size of the car. It is needed to find differences of car buying selection between women and men and identify various factors influence car purchase selection between women and men resulted in differences of car purchases between women and men.

4. Methodology

The research was inspired by previous research done by Abolfazl (Kouros) Mohammadian from the University of Illinois, Chicago, USA, 2004. This type of research is a descriptive study carried out by doing some testing quantitative hypotheses. This study is a survey aimed at testing the hypothesis about the various factors that affect women and men choose the type of car in the social and economic life. They are car users of some brands like Honda, Mitsubishi, Isuzu, Suzuki, Toyota, Daihatsu, Nissan, Mazda, Kia, Daewoo, Hyundai, Timor, BMW, Peugeot, Renault, Citroen, Mercedes, Chevrolet, Chrisler, Jeep, Audi and Ferrari in Jakarta. Respondents were randomly selected according to car owners’ convenience of how easy they can be found in any place. Car user are located in Jakarta during 2008 amounted 533.992 car buyer (Kompas, ATPM/ Gaikindo, 2008). It is necessary to determine sample techniques with convenience sampling method of 100 respondents of all car users. The research used degree of confidence at significant level $\alpha = 0.05$, Bound of Error is 5% based with homogeneous population (Chochran, 1991). The research used convenience sampling consists of 100 people applied to woman and man who use certain car as stated above who reside in Jakarta. Selection of respondents conducted by convenience sampling method, in which researchers determined the respondents as easy as possible by way of encounter and asked...
permission to fill out questionnaires the respondents were in place around the city of Jakarta, among other locations as in the PGC Mall Cililitan East Jakarta, Palm d'Ivoire Mall North Jakarta, Pondok Indah Mall South Jakarta, Orchid Garden Mall West Jakarta, Grand Indonesia Hotel Indonesia Mall Central Jakarta. Variables and measurements in this study refer to a previous study conducted by Abolfazl (Kourosh) Mohammadian, University of Illinois, Chicago, 2004. This study measured the number of variables which are female, male, car characteristics, car class, style, and car size. Purchasing decision-makers in this study were responders’ car owner woman or man in Jakarta with no age limit who decided to use the car based on car characteristics, car class, style and size. There are several alternative options which are car with characteristics, class, style and size of vehicle known as luxury class, middle class, and lower class. Style cars like sports cars, sedans, jeeps, pick ups, vans, mini van. Size cars 1000 - 1500 cc, 1600 - 2000 cc, 2200 - 2400 cc, 2500 - 3000 cc. Car characteristics measured are fuel consumption, car sale price, purchase price, year made, latest model, maneuverability, axle ratio, rotary per minute, horse power, trunk size, cabin size, leg room size, length, car wide, engine size, ease of engine, spare parts availability, operating costs, power, practicality, security primacy of performance, capacity haulage, fashionable, used cars, new cars, ease of spare parts, availability of service stations, car insurance. Actually, many other car characteristics can be assessed but this study limits the assessment of particular matter to be concise, focused and consistent with previous research principles (Mohammadian and Miller 2002a), that for technological reasons, many of these variables are highly correlated. There parameters are mostly similar to Ben-Akiva instrument and Bolduc (1996) and Bhat (2000) and (Mohammadian and Miller 2002a). Subsequently respondents were asked to give statements regarding these items based on 5 (five) point Likert scale as in 5 = Strongly Agree, 4 = Agree, 3 = Quite Agree, 2 = Disagree, 1 = strongly disagree.

Carefull data collection techniques and test instruments was done. Measuring devices in this study was a measuring tool has been used in previous studies. Hopefully this study presents good information, because the test equipment used is also scalable test equipment, SPSS 11.5 version was used in this study. Instrumentation test based on cronbach alpha technique with reliability test coefficient of 0.87 means reliable so that research can be proceed (Nunnaly, 1978). Data collection techniques were using primary data questionnaires. The data collected inform respondent reasons to select and use such car. Data collection techniques were using questionnaire indirect communication. Analysis was using path analysis methods to test the effect between variables and hypothesis testing using maximum likelihood estimate, P-Value with alpha 0.05. The hypothesis was formulated as reject Ho and accept Ha when P-value < 0.05. Ho = no effect of independent variables to dependent variable. Ha = independent variable affects the dependent variable. The study presents car selection information results including some reasons conducted by woman and man.

5. Data Analysis

In this section is displayed the hypothesis testing tables reflects the results of analytical studies.

Table 1, Woman and car characteristics selection

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean</th>
<th>Std. Dev</th>
<th>n</th>
<th>df</th>
<th>r</th>
<th>t. test</th>
<th>t. tab</th>
<th>r^2</th>
<th>ANOVA</th>
<th>Hypotesis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Woman</td>
<td>4.3600</td>
<td>0.77618</td>
<td>50</td>
<td>48</td>
<td>0.266</td>
<td>1.912</td>
<td>1.684</td>
<td>0.071</td>
<td>0.062^a</td>
<td>Ho : rejected</td>
</tr>
<tr>
<td>Car characteristics</td>
<td>3.6690</td>
<td>0.30916</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Ha : accepted</td>
</tr>
</tbody>
</table>

Sources: Research data processing

Table 1 shows information about female choice mean value (Y) equal to 4.3600, this figure shows averagely respondents strongly agreed to question has been raised. The female choice standard deviation (Y) is equal to 0.77618, calculated mean standard deviation is quite small, below mean value, and the variable was good. Mean variable characteristics of the car (X) is equal to 3.6690, this value indicates that the average respondent had agreed to the questions have been raised. Car characteristics standard deviation (X) is equal to 0.30916, which means that calculated standard
deviation is quite small, because it is below the mean value meaning that the variable was good. Car characteristic t test (X) 1.912 and (df) = 48, t table at 95% confidence level (significant 5%) is approximately 1.684. Comparison of t test and the t table, and the Pearson correlation, we conclude that the value of t test > t table, meaning that there is a low relations between variables woman (Y) and car characteristics (X) so hypothesis conclusion: Ho = rejected and Ha = accepted, r square is: 0.071, means: woman (Y) is influenced by car characteristics factors (X) is equal to 7.1%, and the rest is influenced by other factors. Value = 0.062 by ANOVA because ANOVA > 0.05 means that the regression model can not be used to predict the female variable (Y).

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean</th>
<th>Std. Dev</th>
<th>n</th>
<th>df</th>
<th>Correlation</th>
<th>r²</th>
<th>ANOVA</th>
<th>Hypothesis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Women</td>
<td>4.3600</td>
<td>0.77618</td>
<td>50</td>
<td>48</td>
<td>-0.051</td>
<td>1.684</td>
<td>0.003</td>
<td>Ho: rejected</td>
</tr>
<tr>
<td>Car class</td>
<td>3.2934</td>
<td>0.67196</td>
<td></td>
<td></td>
<td>-0.353</td>
<td></td>
<td></td>
<td>Ha: accepted</td>
</tr>
</tbody>
</table>

Sources: Research data processing

Table 2 shows information of the mean or average female choice variable (Y) is equal to 4.3600, this value indicates average respondents strongly agreed to question has been raised. Female standard (Y) 0.77618, which means that the calculated standard deviation is quite small because the value is below mean and variable was good. Mean car class (X) indicates the value 3.2934 average respondent had agreed to questions have been raised. Car class standard deviation (X) 0.67196, which mean that standard deviation is quite small because the value below mean, and variable was good. Car class t test value (X) -0.353 and (df) = 48, t table 95% confidence level (significant 5%) of 1.684, then the inferred value of t test < t table shows relationship between female (Y) and car class (X) so that the conclusion of the hypothesis: Ho = accepted and Ha = rejected.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean</th>
<th>Std. Dev</th>
<th>n</th>
<th>df</th>
<th>Correlation</th>
<th>r²</th>
<th>ANOVA</th>
<th>Hypothesis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Woman</td>
<td>4.3600</td>
<td>0.77618</td>
<td>50</td>
<td>48</td>
<td>-0.028</td>
<td>1.684</td>
<td>0.001</td>
<td>Ho: rejected</td>
</tr>
<tr>
<td>Car style</td>
<td>2.9430</td>
<td>0.59514</td>
<td></td>
<td></td>
<td>-0.191</td>
<td></td>
<td></td>
<td>Ha: accepted</td>
</tr>
</tbody>
</table>

Sources: Research data processing

Table 3 shows mean of the woman (Y) 4.3600 indicates that average respondents strongly agreed on the questions have been proposed. Female standard deviation (Y) 0.77618, it means that calculated standard deviation is quite small because below the mean, the variable was good. The car style mean (X) 2.9430 shows respondents agree to the questions have been proposed. Car style standard deviation (X) 0.59514, means that calculated standard deviation is quite small because below the mean, the variable was good. Car style t test (X) -0.191 and (df) = 48, t table 95% confidence level (significant 5%) is equal to 1.684, it was concluded that the value of t test < t table shows no relationship between Woman (Y) and Car style (X) so that hypothesis conclusion: Ho = accepted and Ha = rejected.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean</th>
<th>Std. Dev</th>
<th>n</th>
<th>df</th>
<th>Correlation</th>
<th>r²</th>
<th>ANOVA</th>
<th>Hypothesis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Woman</td>
<td>4.3600</td>
<td>0.77618</td>
<td>50</td>
<td>48</td>
<td>0.291</td>
<td>1.684</td>
<td>0.085</td>
<td>Ho: rejected</td>
</tr>
<tr>
<td>Car size</td>
<td>3.0600</td>
<td>0.57932</td>
<td></td>
<td></td>
<td>2.110</td>
<td></td>
<td></td>
<td>Ha: accepted</td>
</tr>
</tbody>
</table>

Sources: Research data processing

Table 4 shows female mean (Y) 4.3600 it shows average respondents strongly agreed to the question has been raised. Woman standard deviation (Y) is 0.77618, meaning that the standard deviation
is quite small because below the mean, the variable was good. Size of car mean (X) is 3.0600 indicates average of respondents agreed to the question has been raised. Size of car standard deviation (X) 0.57932, meaning that standard deviation below mean is quite small, the variable was good. Car t test (X) 2.110 and (df) = 48, t table 95% confidence level (significant 5%) is 1.684, the Pearson correlation = 0.291. T test compare t table as well as the Pearson correlation, we conclude that t test > t table, meaning there is a low relationship between female (Y) and size of a car (X) so that the conclusion of the hypothesis: Ho = rejected and Ha = accepted. 

R square 0.085, meaning that woman (Y) is influenced by car size (X) equal to 8.5%, and the rest is influenced by other factors. ANOVA = 0.040 < 0.05 regression model can be used to predict female variable (Y).

Table 5, Man and car characteristics selection

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean</th>
<th>Std. Dev</th>
<th>n</th>
<th>df</th>
<th>Correlation</th>
<th>r2</th>
<th>ANOVA</th>
<th>Hypothesis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Man</td>
<td>4.6038</td>
<td>0.49379</td>
<td>53</td>
<td>51</td>
<td>0.034</td>
<td>0.246</td>
<td>1.684</td>
<td>Ho: rejected</td>
</tr>
<tr>
<td>Car characteristics</td>
<td>3.6042</td>
<td>0.24604</td>
<td></td>
<td></td>
<td>0.001</td>
<td>0.807</td>
<td></td>
<td>Ha: accepted</td>
</tr>
</tbody>
</table>

Sources: Research data processing

Table 6, Man and car class selection

<table>
<thead>
<tr>
<th>Variabel</th>
<th>Mean</th>
<th>Std. Dev</th>
<th>n</th>
<th>df</th>
<th>Correlation</th>
<th>r2</th>
<th>ANOVA</th>
<th>Hipotesa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laki-laki</td>
<td>4.6038</td>
<td>0.49379</td>
<td>53</td>
<td>51</td>
<td>0.510</td>
<td>4.232</td>
<td>1.684</td>
<td>Ho: Ditolak</td>
</tr>
<tr>
<td>Kelas Mobil</td>
<td>2.7923</td>
<td>0.61090</td>
<td></td>
<td></td>
<td>0.260</td>
<td>0.000</td>
<td></td>
<td>Ha: Diterima</td>
</tr>
</tbody>
</table>

Sources: Research data processing

Table 7, Man and car style selection

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean</th>
<th>Std. Dev</th>
<th>n</th>
<th>df</th>
<th>Correlation</th>
<th>r2</th>
<th>ANOVA</th>
<th>Hypothesis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Man</td>
<td>4.6038</td>
<td>0.49379</td>
<td>53</td>
<td>51</td>
<td>0.584</td>
<td>0.341</td>
<td></td>
<td>Ho: rejected</td>
</tr>
<tr>
<td>Car style</td>
<td>2.6600</td>
<td>0.61424</td>
<td></td>
<td></td>
<td>0.317</td>
<td>0.000</td>
<td></td>
<td>Ha: accepted</td>
</tr>
</tbody>
</table>

Sources: Research data processing
Table 7 shows the mean of male (Y) 4.6038 the respondents strongly agreed to the question has been raised. Standard deviation of male (Y) 0.49379 standard deviations below mean is small enough, the variable was good. Mean style of car (X) 2.6600 the respondents stated they were quite agreed to the question has been raised. Car style standard deviation (X) 0.61424 standard deviations below the mean is small enough, the variable was good. t test of car style (X) 5.137 and (df) = 51, t table at 95% confidence level (significant 5%) 1.684, Pearson correlation = 0.584, t test compare t table, as well as the Pearson correlation test is concluded t > t table, these conditions show a strong relationship male (Y) with the style of car (X), hypothesis: Ho = rejected and Ha = accepted. r square 0.372, t test shows low relationship of men (Y) and size of the car (X), the hypothesis: Ho = rejected and Ha = accepted. R square = 0.138, means that men (Y) is influenced by the size of car (X) 13.8%, the rest is influenced by other factors. ANOVA = 0.006 < 0.05 regression model can predict the male (Y).

Table 8 Man and car size selection

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean</th>
<th>Std. Dev</th>
<th>n</th>
<th>df</th>
<th>t test</th>
<th>t tab</th>
<th>r²</th>
<th>ANOVA</th>
<th>Hypothesis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Man</td>
<td>4.6038</td>
<td>0.49379</td>
<td>53</td>
<td>51</td>
<td>0.372</td>
<td>2.862</td>
<td>1.684</td>
<td>0.138</td>
<td>0.006²</td>
</tr>
<tr>
<td>Car style</td>
<td>2.7311</td>
<td>0.63898</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Sources: Research data processing

Table 8 shows the mean of male (Y) 4.6038, average respondents strongly agreed to the question has been raised. Standard deviation of male (Y) 0.49379, meaning that the standard deviation below the mean is small enough, the variable was good. Mean size of the car (X) 2.7311 the respondents simply agree to the questions that have been proposed. Standard deviation of the car size (X) 0.63898, meaning that the standard deviation below mean is small enough, the variable was good. T test of car size (X) 2.862 and (df) = 51, t table at 95% confidence level (significant 5%) 1.684, r = 0.372, t test > t table shows low relationship of men (Y) and size of the car (X), the hypothesis: Ho = rejected and Ha = accepted. R square = 0.138, means that men (Y) is influenced by the size of car (X) 13.8%, and the rest influenced by other factors. ANOVA = 0.006 <0.05 then the regression model can predict the Female (Y).

6. Conclusions
The analysis can be summed up that women are not very detailed attention to the car characteristics, for woman efficiency of the car is more important. Woman does not require luxury and medium class vehicles but economical vehicles and not consider the style and size of the car she bought while engage with vehicle purchase selection process. Similarly, men car buyers do not consider car characteristics detailed but its efficiency, but always consider car class in the car purchase selection process, man sometimes influenced by class and style and size while engaged in car selection purchases. So men are more concerned about detail in considering car selection purchases than women who only pay attention to the efficiency of the car. In accordance with the results of the study it is recommended that car seller should better explains the advantages of various efficiency factors, practicality and car safety when dealing with women car shoppers. Meanwhile, when dealing with male car buyers, the salesman should explain more details in terms of technical factors characteristics, style and size of the car.

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