

INTENTION TO PURCHASE HYBRID CARS IN MALAYSIA AN OVERVIEW

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Abstract

The purpose of this study was to determine the significance factors that influence customers' intention to purchase hybrid cars in Malaysia. The variables consists cost, environmental concern and brand are stated as independent variables for this study. The respondents were 100 employers and workers both public and private institutions in Malaysia. The finding showed that cost, environmental concern and brand have influence on customers' intention to purchase hybrid cars in Malaysia. All variables show positive relationship towards the customers' intention to purchase hybrid cars. The result of the study presented in this research agrees that cost, environmental concern and brand influenced customers intention to purchase hybrid cars. This study can be seen as a foreword to a more detailed study to be carrying by future research on factors that influence customers' intention to purchase hybrid cars in Malaysia.

Keywords: Cost, Environmental Concern, Air Pollution, Automobiles

INTRODUCTION

Everyone consider their car as essential part of everyday life. However, they do not realize that cars are the major factor which contribute to the pollution and cause damages to our natural environment. The production of green cars such as hybrid cars is a solution to be much more environmentally friendly as they have less pollutant emission (Salisa et al, 2011).

It is due to many people are reluctant to give up their cars or reduce the number of time they spent on the road. When it comes to hybrid cars, you will realize it is about a car which is different from ordinary electric vehicles that ran from plug-in batteries. Hybrid car is a vehicle that uses at least two or more power supply as to make the vehicle move. The combination of an internal combustion engine and electric motors is one of the uniqueness owned by hybrid cars. These cars are commonly known as hybrid electric vehicles (HEVs) and they are considered as an innovative product in automotive field (Demirdoven and Deutch 2004).

The first hybrid car called as System Lohner-Porsche Mixte was introduced in the year 1899 by Ferdinand Porsche. It was the world's first front-wheel-drive. Second car built by Porsche was a hybrid which was using an internal combustion engine. The combustion engine helps to spin a generator that will generate power to electric motors (Hall, 2006). However, the most commercialized hybrid car nowadays is the Toyota Prius which was introduced worldwide in the year 2010. The Toyota Prius is categorized as the full hybrid vehicle since it is able to run solely under the right circumstances. While the mild hybrid vehicle is more suitable to be regarded to the Honda Jazz Hybrid where the electric motor only offers some level of power to enhance the engine and it is cheaper compared to full hybrid cars. It is because full hybrid cars need a better fuel economy and it takes higher cost (Griskevicius, Tybur & Van den Bergh 2010).

Most people are now realizing the benefits provides by hybrid cars which will help the driver to reduce their carbon footprint and it can opt to reduce their CO₂ emission. As in recent years, the number of consumers purchasing hybrid cars shows an incremental trend in worldwide. However in Malaysia, the citizens are still warming up to the idea of purchasing hybrid cars and it takes such a long time to create the awareness among Malaysian towards the benefits of owning the hybrid cars. However, the sales of hybrid cars are expected to be increasing in the next few years. It is mostly because the popularity of the hybrid cars is rising and most importantly, the awareness towards hybrid cars is increasing among Malaysian citizens. The hybrid cars are still considered as new in Malaysia since the sales in previous years are lower than expected due to the unawareness of the existence of the hybrid cars. According to chief executive officer Madani Sahani, the total sales of hybrid cars in Malaysia were 8334 units in year 2011 compared by the year 2010, the sales for hybrid cars are reaching

for only 328 units. The most popular purchased of hybrid cars sellers are Honda (4596 units), Toyota (2457 units), and Lexus (267 units) as stated in The Star (2012).

There are numerous benefits obtained by owning a hybrid car. However, most of the people nowadays do not realize it. The hybrid car is not only about a vehicle. It is for environment too. The concerned for green environment indirectly will increase the sales of hybrid cars since the environmental problems are now becoming global issue. Switching over to the hybrid car serves as a step to maintain green environment. Getting a hybrid car has its own advantages even though the price can be higher than the ordinary cars. It is the responsibility of the purchaser to get the vehicle which is equipped with the technologies that provided with fuel-saving benefits. One of the benefits obtained by using the hybrid car is it is equipped by a smaller engine. Smaller engine which has less cylinder displacement helps the vehicle to work and move smoothly and it also will prevent the vehicle to use more fuel in the process. When it comes to the fuel savings, a hybrid car needed less petrol rather than conventional car. It is because the hybrid car runs partly on electricity. Besides, the usage of less fuel by hybrid car would help to reduce the dependence on the foreign imported oil and it definitely will help to lower prices domestically. The hybrid car was produced to prevent the environment from being polluted and it helps to maintain the cleanliness of the planet. By owning a hybrid car, it helps to educate citizen to be more responsible and appreciative to the earth.

LITERATURE REVIEW

Since the dawn of the modern era, consumption and distribution of energy has quickly become mankind's highest priority. However, the continued apathetic attitude that was initially taken toward energy and its side effects can no longer be used. A new more environmentally friendly source of energy has to be utilized in order to fulfil our own needs otherwise we self-destruction while relying on non-renewable oil based methods. In the last few decades two new technologies have emerged; the development and implementation of Hybrid Electric Vehicles (HEVs) and more recently the Plug-in Hybrid Electric Vehicles (PHEVs). These emerging technologies may make it possible for the United States to adapt these technologies on a larger scale to reduce harmful emissions and cut our dependence on foreign oil dramatically. (Nicholas Bova et al, 2010). Moreover, according to research conducted by Jonathan Klein (2007), It neatly divides the world into two camps; early adopters, who are willing to pay more to be trendsetters or to do something good for the environment, and everyone else, who are motivated to buy a hybrid by the financial reward of the fuel savings that they expect to exceed the extra upfront cost. Furthermore, our findings are relevant to technology policy, especially

policy intended to encourage low-carbon technologies. Policies like tax incentives impact consumers' decisions to buy hybrid cars (Heutel and Muehlegger, 2008).

In addition, while the conventional wisdom leads to the conclusion that the overwhelming majority of the 455,000 hybrids sold in the US through 2006 were purchased by early adopters the people willing to pay a premium to help the environment or to be among the first to own a hybrid. (Jonathan Klein, 2007). According to Saurabh Mahapatra et al (2008), In recent years, research in hybrid electric vehicle (HEV) development has focused on various aspects of design, such as component architecture, engine efficiency, reduced fuel emissions, materials for lighter components, power electronics, efficient motors, and high-power density batteries. Increasing fuel economy and minimizing the harmful effects of the automobile on the environment have been the primary motivations driving innovation in these areas.

The research conducted by National Research Council (2010), the depreciation value of a hybrid car is much slower than traditional cars that use gas. This is mainly because they are currently in high demand but they will be in high demand for some time so if you are interested in buying a car, a hybrid is a good investment. According to research by Medlock et al. (2005), Hybrid electric vehicles are alternatives to conventional, internal combustion engine automobiles that achieve higher fuel economy by combining a conventional engine with a rechargeable battery. The increased fuel economy of hybrids is attractive because of concerns about both climate change and energy security.

In addition, the research by Heutel and Muehlegger (2010), Hybrid cars are capturing an increasing share of the domestic automobile market, rising from 0.4% of all retail sales in May 2004 to 3.6% in July 2009. As hybrids are a small but growing component of the vehicle fleet, and may be a significant component of a national strategy to deal with climate or energy security, it is important to know what influences consumers' decisions to buy hybrids rather than conventional vehicles. Because hybrids are a newer technology, issues arise that are similar to those involved with the diffusion of all new technologies. Thus, this shows that there is a customer intention to buy hybrid cars in Malaysia that needs to be concern of.

According to Gallagher, Kelly and Muehlegger (2008), explore the evaluation of willingness to buy a low-pollution car in Japan based on a price sensitivity measurement model through a questionnaire survey run in Tokyo and Sapporo. Their research shows that the correlation between environmental awareness and willingness to buy is high as well as not surprisingly the relationship between decrease in price and willingness to buy. Their most interesting result is their evaluation of the minimum, maximum, standard and reasonable price for hybrid cars. Furthermore, according Teske (2007), to the Being a major driver in the cost of ownership calculation, fuel price is considered the central variable in future market scenarios.

However, strong Hybrid Electric Vehicles (HEV) sales at times of high fuel prices in 2005 and 2006 also indicate a psychological dimension of this variable: Although those fuel prices did not necessarily make the purchase of a HEV worthwhile financially. According to the statistic of the De Haan et al. (2006) found it unlikely that HEV with a range of 40 miles would be cost effective until 2040. In addition, another study from Kahn, Matthew (2007) found the while PHEVs with a range of under 40 miles could be cost effective in certain situations, PHEVs with a range of 40 miles or more would not be cost effective due to the cost of the battery.

Furthermore, according to Jonathan Klein (2007), If you owned [a hybrid car], you could feel good about using less gasoline and being a trendsetter, but you couldn't expect the fuel savings to make up for the thousands of extra dollars that the hybrid cost. There was no financial reward for environmental virtue. In addition, for 40% of all study participants, the financial motivation was that they were able to purchase and operate the Prius for less, sometimes far less, than they would have spent on car if they had not purchased a hybrid. The conventional wisdom that hybrids do not pay for themselves starts from the assumption that the consumer is choosing between two otherwise identical cars and elects to purchase the hybrid car instead of the one with the conventional gas engine (for example, a Honda Civic Hybrid vs. a conventional Honda Civic). (Kahn, Matthew, 2007).

Environmental concerns become more and more a driver in consumers' purchase decisions. According to research by J.J. Chanaron and J. Teske (2009), The broad public discussion on global warming due to CO₂ emissions, also by cars, is impacting buying decisions of consumers. In the USA, this is leveraged by the argument of energy independence. Driving a "green car" allows people to adopt a responsible and proactive role in society. A new orientation towards ecology can be observed – in order to avoid remorse, the aspect of innovation gains importance over the classic interpretation of simply low fuel consumption.

Moreover, according the research conducted by Rosenkrantz (2003), environmentally friendly, or green, products are designed to minimize the environmental impact when they are consumed. Green products are interesting to firms because green issues and social responsibility are becoming important to consumers. Generally, a company's efforts toward social responsibility, including environmental sustainability, will lead consumers to give their products more favourable evaluations than products from less responsible organizations. In addition, according to research conducted by Laura Friedman (2010), Air pollution is another major factor in the problems facing is the internal combustion engine (ICE), which is also discussed in the first section. The exhaust gas from an ICE contains many chemicals that attribute to the much of the air pollution on the planet. Smog, global warming, depletion of the ozone layer and acid rain are all serious matters harmfully affecting the sustainability of the

planet's ecosystem. Chemicals such as carbon monoxide (CO), carbon dioxide (CO₂), unburned hydrocarbons (HCs), and nitrogen oxides (NO_x) are released into the atmosphere from ICEs, and they contribute to the aforementioned types of air pollution. HEVs attempt to reduce the emissions of these harmful chemicals by reducing the use of the ICE in an automobile.

According to the research conducted by Sirgy (1982), another characteristic that is likely to shape a consumer's intentions to purchase a product is whether the use of the product reflects the user's self-image. Self-image congruence captures how the consumer feels the product relates to his view of who he is and who he would like to be. In addition, according to Bearden et al. (1989), it is related to social value because others can influence the consumer's ideal self, or who they would like to be. Even though others can enhance or shape consumers' views of themselves, a consumer's self-image is an independent predictor of consumption behavior. Toyota and Nissan have, in my point of view, a strong and solid strategies which are capable to assist them being on the top of automakers. Of course they have different techniques but apparently the goals are sort of similar (Bamberg, 2003).

Furthermore, according to research conducted by Lescaroux et al. (2009), The evidence to support those subsidies is somewhat mixed. For example, in the two years since federal subsidies for the most popular hybrid, the Toyota Prius, have ended, it has continued to gain market share. According to the research conducted by Griskevicius, Tybur & Van den Bergh 2010; Bamberg (2003), Honda's hybrids including the Civic and the Insight use this design, leveraging their reputation for design of small, efficient gasoline engines; their system is dubbed Integrated Motor Assist (IMA). Starting with the 2006 Civic Hybrid, the IMA system now can propel the vehicle solely on electric power during medium speed cruising.

According to the research by Medlock et al. (2005), Despite the arrival of Ford Motor Co.'s Ford Escape hybrid in showrooms last year, Japanese automakers continued to control the vast majority of the U.S. market, Polk said. Japanese brands accounted for more than 96 percent of the hybrid vehicles registered. Toyota Motor Corp., which was the first automaker to commercially mass-produce and sell hybrid cars, continues to dominate the market. In addition, The Toyota Prius, which went on sale in the United States in 2000, occupied 64 percent of the U.S. hybrid market last year, with 53,761 new Prius cars registered, Polk said. Toyota is on track to double Prius sales again this year. The company sold 22,880 Prius cars in the first three months of the year, more than double the number it sold in the first three months of 2004, according to Autodata Corp. Toyota has said it plans to produce 100,000 Prius cars for the North American market this year. (Medlock et al., 2005)

METHODOLOGY

The design for data analysis explains the techniques that have been used to analyze data that is obtained from the questionnaire. The Statistical Packages for Social Science (SPSS) Version 20.0 was used to analyze the data. Descriptive data such as mean, median, mode, frequencies and percentages were used to analyze data. The data analysis is constructed from research objectives, concept/construct, measurement and scale. This software provided a powerful statistical analysis and data management system in a graphical environment, using descriptive menu and simple dialog boxes in order to complete the data. It will also allow the researchers to set and get the accurate data (Ong, 2011).

Furthermore, Cronbach's Alpha is been used to test the reliability coefficient all dependent variable and independent variables. For instance, to measure the factors that influence unemployment among graduates, it will be measured through the five point Likert Scales. Moreover, coding will be made before keying in the data into SPSS. This software is very important in data processing especially to link the data with the finding. This is because the data will be analyzed and presented in readable and interpretable form. The results of the findings were presented in the table showing the frequency and percentage.

ANALYSIS & FINDINGS

Reliability is the degree to which a measurement instruments is consistent in what it measure. The reliability of measure is established by testing for both consistency and stability. Consistency indicated how well the item measuring a concept being together as a net. Cronbach's Alpha is a reliability coefficient that indicated how well the items in a set are positively correlated to one another. Thus, the researcher has done the reliability test in order to checking whether the data gather from the questionnaire is reliable for the study. A frequency simply refer to the number of times various subcategories of a certain phenomenon occur from which the percentage and the cumulative percentages of their occurrence can be easily calculated (Sekaran, 2010).

Table 1: Gender

	Frequency	Percent	Valid Percent	Cumulative Percent
Male	30	31.6	31.6	31.6
Valid Female	65	68.4	68.4	100.0
Total	95	100.0	100.0	

Table 1 shows that most of the respondents were female which represent 68.4% meanwhile male represent only 31.6%.

Table 2: Age

	Frequency	Percent	Valid Percent	Cumulative Percent
21-30 years old	47	49.5	49.5	49.5
31-40 years old	30	31.6	31.6	81.1
41 and above	18	18.9	18.9	100.0
Total	95	100.0	100.0	

Table 2 shows that most of the respondents were 21 to 30 year old which is 49.5%. Next, the second higher percentages were 31 to 40 years old 31.6%, 18.9% were 40 years old and above.

Table 3: Marital Status

	Frequency	Percent	Valid Percent	Cumulative Percent
Single	34	35.8	35.8	35.8
Married	55	57.9	57.9	93.7
Divorced/Widows	6	6.3	6.3	100.0
Total	95	100.0	100.0	

Table 3 shows that 57.9% of respondents were married, 35.8% were single while 6.3% of the respondents were divorced.

Table 4: Income

	Frequency	Percent	Valid Percent	Cumulative Percent
Below RM 1000	7	7.4	7.4	7.4
RM 1001-RM 3000	40	42.1	42.1	49.5
Valid RM 3001-RM 5000	25	26.3	26.3	75.8
RM 5001 and above	23	24.2	24.2	100.0
Total	95	100.0	100.0	

Table 4 shows that 42.1% of the respondent receives RM1001-RM3000, while the second most is RM3001-RM5000 with 26.3%. Third is more than RM5001 with 24.2% and lastly less than RM1000 which is only 7.4%.

Table 5: Hybrid Car Purchase Intention

	Mean	Std. Deviation	Rank
Hybrid cars are a good return on investment for the long term.	4.2737	.69101	4
Interesting car exterior and interior design.	4.1789	.74347	5
Interesting sales promotion.	4.1263	.73285	6
Update technology and the new innovation.	4.4737	.61613	3
Your lifestyle / geographic location affect your decision.	4.5579	.52014	1
The increasing in petrol prices	4.4842	.88562	2

Table 5 shows the descriptive of Section B. The highest mean is on the first question of "Your lifestyle / geographic location affect your decision" consists of 4.5579. The standard deviation for this question is 0. 5201. Then it follows by the first question of Section B, "The increasing in petrol prices" with mean consists of 4.4842. The standard deviation for this question is 0. 8856. The question of "Update technology and the new innovation." was in the third ranking with mean 4.4737 and the standard deviation is 0. 6161. Meanwhile, the fourth ranking would be by question, "Hybrid cars are a good return on investment for the long term." with mean 4. 2737 and the standard deviation is 0. 6910. For the question of "Interesting car exterior and interior

design.” the mean is 4.1789 and the standard deviation is 0. 7434. The last ranking would be last question of section B, “Interesting sales promotion.” with mean 4.1263 and standard deviation is 0. 7328.

Table 6: Cost

	Mean	Std. Deviation	Rank
Good value for money.	4.1579	.73392	3
Hybrid costs less than normal cars.	3.8737	1.10359	5
I want to save fuel consumption.	4.7158	.49815	1
Hybrids are very economical for maintenance.	4.2421	.93075	2
Buying hybrid car will get tax incentives from government.	4.1158	.92095	4

Table 6 shows the descriptive of Section C, The highest mean is on the first question of “I want to save fuel consumption.” consists of 4.7158. The standard deviation for this question is 0.4981. Then it follows by the first question of Section C, “Hybrids are very economical for maintenance.” with mean consists of 4.2421. The standard deviation for this question is 0. 9307. The question of “Good value for money.” was in the third ranking with mean 4.1579 and the standard deviation is 0.7339. Meanwhile, the fourth ranking would be by question, “Buying hybrid car will get tax incentives from government..” with mean 4.1158 and the standard deviation is 0.9209. The last ranking would be last question of section C, “Hybrid costs less than normal cars.” with mean 3.8737 and standard deviation is 1.1035.

Table 7: Environmental Concern

	Mean	Std. Deviation	Rank
I want to preserve the environment.	4.6105	.53185	1
I love to see green environment.	4.4632	.57999	2
I want to buy hybrid car because of air pollution crisis.	4.3368	.73818	5
Hybrid car contributes to saving environment for the next Generation	4.4211	.67759	3
Hybrid cars cause less pollution.	4.3474	.63192	4

Table 7 shows the descriptive of Section D. The highest mean is on this question is “I want to preserve the environment” consists of 4.6105 it mean. The standard deviation for this question is 0. 5318. Then it follow with, “I love to see green environment” with mean consists of 4.4632. The standard deviation for this question is 0. 5799. The question of “Hybrid car contributes to saving environment for the next generation” was in the third ranking with mean 4.4211 and the standard deviation is 0. 6775. Meanwhile, the fourth ranking would be by question, “Hybrid cars cause less pollution” with mean 4.3474 and the standard deviation is 0.6319. The last ranking would be last question of section D, “I want to buy hybrid car because of air pollution crisis” with mean 4.3368 and the standard deviation is 1.057.

Table 8: Hypotheses Testing

	Beta	T	Sig.
H₁ There is a significant relationship between Cost and Intention to purchase hybrid car.	0.412	7.153	.000
H₂ There is a significant relationship between Environmental Concern and Intention to purchase hybrid car.	0.413	6.066	.000
H₃ There is a relationship between Brand and Intention to purchase hybrid car.	0.449	6.745	.000

From the table above, it shows that all hypotheses is accepted as the significant value is below 0.05 which H₁ H₂ and H₃ are the hypotheses accepted. This shows that Cost, Environmental and Brand have significant relationship with Intention to purchase Hybrid car. The most influential factor that influences Intention to purchase Hybrid car is Brand as the value of Beta is 0.449 which is the highest figure.

CONCLUSION

The purpose of this study is to examine the factors that lead consumer purchase intention towards hybrid car in Malaysia. In order to accomplish the purpose, this study has comes out with three objectives. First is to examine whether cost have significant relationship with the intention to purchase hybrid cars in Malaysia. Secondly, to examine whether environmental concern have significant relationship with intention to purchase hybrid cars in Malaysia. Lastly, is to examine whether brand have significant relationship with intention to purchase hybrid cars in Malaysia.

Based on the conducted study, all of the factors that are stated have positive relationship with intention to purchase hybrid car. The results support fact that the factor that leads to consumer purchase intention towards hybrid cars in Malaysia. , the government should play the role to increase the awareness of the customers about the benefit of hybrid cars. Firstly, the government should increase the tax exemption for the hybrid car purchasing in order to encourage the customers to purchase hybrid car rather than conventional car.

Besides of tax exemption, the government should do more awareness campaign in order to make the customers aware about what the benefit of hybrid cars towards the environment. Lastly, the government can encourage the local car manufacturers to produce the hybrid cars in order to give customers more choice and can afford to buy the hybrid car in order to reduce the pollution and to reduce the cost of living.

REFERENCES

- Babbie, E.R. et al. (2007), *Adventures in Social Research with SPSS Student Version : Data Analysis Using SPSS 14.0 and 15.0 for Windows*, 6th ed., Oxford University Press, Melbourne.
- Bova, N. et al. (2010). Environmental and Social Issues Concerned with Hybrid Cars. *Journal of Environmental and Social Issues Concerned with Hybrid Car*, 120(1), 4-20.
- Chris Mi. (2009). Hybrid Electric Vehicles: *Journal of Control, Design, and Applications*. 3, 2. p5-10.
- De Haan, Peter, Michael Mueller and Anja Peters. (2006). "Does the Hybrid Toyota Prius Lead to Rebound Effects? Analysis of Size and Number of Cars Previously Owned by Swiss Prius Buyers." *Ecological Economics*, Vol. 58, No. 3 (June 2006), 592-605.
- Gallagher, Kelly and Muehlegger, E. (2008). "Giving Green to Get Green? Incentives and Consumer Adoption of Hybrid Vehicle Technology." Working Paper, Harvard Kennedy School.
- Graham, R (2001). "Comparing the Benefits and Impacts of Hybrid Electric Vehicle Options." Electric Power Research Institute (EPRI).
- Heutel, G. & Muehlegger, E. (2010). Consumer Learning and Hybrid Vehicle Adoption, 9 (6), 11-38. Retrieved from www.hks.harvard.edu/mrcbg
- Kahn, Matthew. (2007). "Do Greens Drive Hummers or Hybrids? Environmental Ideology as a Determinant of Consumer Choice." *Journal of Environmental Economics and Management*, Vol. 54, No. 2 (September 2007), 129-145.
- Klein, J. (2007). Why People Really Buy Hybrids, 2(1), 95–105. Retrieved from www.toplinestrategy.com
- Lescaroux, Francois and Olivier Rech. (2008). "The Impact of Automobile Diffusion on the Income Elasticity of Motor Fuel Demand." *Energy Journal*, Vol. 29, No. 1 (2008), 41-60.
- Lescaroux, Francois and Rech, O. (2009). "The Impact of Automobile Diffusion on the Income Elasticity of Motor Fuel Demand." *Energy Journal*, Vol. 29, No. 1 (2008), 41-60.
- Mahapatra, S. et al. (2008). Model-Based Design. *Journal of Hybrid Electric Vehicle Systems*, 2(4), 2-5.
- Markel, T. & Andrew Simpson, A. (2006). Plug-in hybrid electric vehicles (PHEVs): Cost-Benefit Analysis of Plug-In Hybrid Electric Vehicle Technology. 1(2), 5-26.
- Markel, T. and Simpson, A. (2006). "Plug-In Hybrid Electric Vehicle Energy Storage System Design," Proc. Advanced Automotive Battery Conference, Baltimore, Maryland.

Medlock, Kenneth and Soligo, R. (2005). "Car Ownership and Economic Development with Forecasts to the Year 2015." *Journal of Transport Economics and Policy*, Vol. 36, No. 2 (May 2002), 163-188.

Rosenkrantz, K.(2003): "Deep-Cycle Batteries for Plug-In Hybrid Application," EVS20 Plug-In Hybrid Vehicle Workshop, Long Beach.

Salkind, N. J. (2009). *Exploring research* (7th ed.). Upper Saddle River, NJ: Pearson.

Sekaran, U. & Bougie, R. (2009). *Research Methods for Business: a skill building approach* (5th ed.). United Kingdom, John Wiley & Sons Ltd.

Teske, J. & Channaron, J.J. (2007). Hybrid vehicle: a Temporary Step. *International Journal of Automotive Technology and Management* 7, 4. p3-20.

Wipke, K.B., Cuddy, M.R., (2009). Burch, S.D.: "ADVISOR 2.1: A User-Friendly Advanced Powertrain Simulation Using a Combined Backward/Forward Approach", *IEEE Transactions on Vehicular Technology*, Vol 48, No. 6, 1999, pp. 1751-1761.

Zikmund, W.G (2003). *Business Research Method* (7th ed.). Cincinnati, Thomson/South-Western.