Human behavior: A perspective on the analysis of driver management of conventional vehicles and electric vehicles

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Abstract---The purpose of the study was to analyze the driver management of conventional vehicles and listic vehicles from a human behavior perspective. Research design uses quantitative descriptive with a post-positivism approach. The study sample was drivers who used conventional vehicles and drivers who used electric cars which amounted to 133 respondents. Data sources use primary data and skunders. The results of the study explained that conventional vehicle drivers are more self-interested due to habitual factors, as well as drivers in electric vehicles, also have the same thoughts, this is due to habitual factors. However, there is a noticeable difference that is when viewed from economic factors, namely in the aspect of fuel expenditure, prestice and smarter design.

Keywords---conventional vehicles, electriec vehicle, human behavior.

Introduction

Vehicles are a familiar transportation medium in the world as a support for distribution. Indonesia is one of the countries that has the fastest transportation

development rate in Asia. Likewise, the process of developing transportation equipment has the goal of supporting the distribution process from one tempt to another.

The distribution process has a scheme to maintain managerial patterns that have been managed by institutions that have competence. Competencies that have an impact on the legality aspect may be abuse of authority carried out by human resources.

Human resources that have the ability to follow up on these aspects, are now managed by an agency. Agencies that manage human resources in the field of transportation are better known as transportation agencies. Currently there are various sources that prioritize finalization to the impact on transportation infrastructure, but the management has not been maximized. The finalization in question is the development of vehicles that have been a distribution medium, due to the emergence of linstrik vehicles. Rolim et al (2012) with the results of research explained that the pattern of drivers as a medium of distribution from one place to another has a uniqueness, especially with the use of fuel. Likewise Labeye et al (2017) explained that users of conventional vehicles have the ability to drive conventional vehicles and need time to switch to electric vehicles. (Franke et al., 2012; Pichelmann, Franke, & Krems, 2013; Rolim, Gonçalves, Farias, & Rodrigues, 2012; Woodjack, Garas, Lentz, Turrentine, Tal, & Nicholas, 2012) and develop a charging routine (Bunce, Harris, & Burgess, 2014) also argue the same because driving behavior with electric vehicles turns out to require special attention.

Electric vehicles have a uniqueness when viewed from the design, resources and driving patterns. This has been conveyed at events organized by both national and international governments. Another thing to note is how the driver in driving if he was driving with a conventional vehicle and then switched electric vehicles. What needs to be considered and how to manage so as to reduce the risk on the road.

Various conditions have been conveyed that the pattern of driving using electric vehicles is a pattern that actually does not require special abilities, because basically electric vehicle supplements are the same as conventional vehicles. Jacobson et al (2015); Kroposki et al (2017); Gielen et al (2019) & IEA (2020) have the reason that driving using electric vehicles has more fashion so as to make the rider more comfortable and prestige increased.

A more interesting challenge for riders is when the rider does refills. This makes the rider more take into account the extent to which the locations are used as a place to fill the lsitrik. Listirk capacity must be considered and range also has special value to note (McCollum et al 2017, Venturini et al 2019 & Muratori et al 2020). From that phenomenon, the purpose of this study is to analyze the management of conventional vehicle drivers and listik vehicles viewed from the perspective of human behavior.

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Library Review

a. Human Behavior
   Behavior is the entire biological manifestation of the individual (Okviana, 2015). Notoatmodjo (2011) formulates that behavior is a person's response or reaction. Notoatmodjo (2011) formulates that behavior is a person's response or reaction. Notoatmodjo (2011) formulates that behavior is a person's response or reaction. Notoatmodjo (2011) formulates that behavior is a person's response or reaction. Behavior or activity in individuals or organisms does not arise by itself.

b. Conventional Vehicles
   Pasarl 1 number 3 of Law No.22 of 2009 concerning Traffic and Road Transport (hereinafter referred to as the Traffic and Road Transport Law) states that transportation is the movement of people and / or goods from one place to another by using road traffic space vehicles. The vehicle itself decreased Article 1 number 7 of the Traffic and Road Transport Law is a suggestion of transport on the road consisting of motor vehicles and non-motorized vehicles.

   Motor vehicles according to Article 1 number 8 of the Traffic and Road Transport Law are any vehicles driven by mechanical equipment in the form of engines other than vehicles that run on rails. From that direction then what is meant by vehicle zinc is something that can move then moved by a motor or other mechanical devices so that the process of motion occurs and able to help humans to complete their tasks.

   Vehicles can be seen from aspects according to the type and function of vehicles, namely motor vehicles and non-motorized vehicles. While motor vehicles consist of motorcycles, passenger cars, bus cars, freight cars and special vehicles. Non-motorized vehicles are non-motorized vehicles whose operations must meet technical requirements and procedures with predetermined dimensions and sizes..

c. *Electriec Vehicle*
   Eletric cars are known in the term Electric road vehicles which in America are developed into two (2) types, including; Zero Emission Vehicles (ZEV) and Low Emission Vehicles (LEV). Electric cars that are categorized into Zero Emission Vehicles are Batterai Car (Battery Operate) and Mobil Fuel cell. While categorized into LEV is a car whose driving system combines a convensional engine with an electric motor (Hybride car). (ISO 8713:2002).

   Electric Vehicle (EV), further will be translated as Electric Vehicle (KL) is all types of passenger vehicles driven by electric motors both in whole and in part for example in a system with a combination of combustion motors (Kumara & Sukerayasa, 2009). The listirk energy used as a mover is obtained through the charging process from an external electrical energy source. In fact, the process requires mechanical combined with the main energy source to move the wheels of the vehicle. In its development then came the term Zero Emision (ZEV) or Zero Emission vehicle (KEN) which is a vehicle that is categorized as a vehicle that does not emit exhaust emissions.

Along with the development of the times, electric vehicles are increasingly advanced with the naming of modern electric vehicles. Moderan electric vehicles are electric-powered vehicles with high operating specifications and include an optimal distance of tempu m or at least 50 miles for further charging. The vehicle uses Batteries with Lead (PbA) technology. Batteries with Lead (PbA) technology are Flooded Lead Acid (FLA) and Valve Regulated Lead Acid (VRLA). In general, FLA is cheaper than VRLA and VLRA can be classified as maintenance-free batteries and also more resistant to vibration.

Previous research

Rolim et al (2012) with the results of research that EV adoption impacted daily routines in 36% of participants and 73% observed changes in their driving style. Compared to conventional internal combustion engine vehicles that use gasoline or diesel, EVs reveal considerable reductions in both energy consumption and CO_2 emissions in a Well-to-Wheel life cycle approach, with 1.30 MJ/km and 63 g/km respectively. Nasution et al (2020) with research results are considered the most efficient in terms of access and cost aspects, besides that consumers are facilitated by the development of information technology today.

Zainuri et al (2020) explained that the weight transfer when turning and braking is also getting less and more legible, so the car is very easy to control by the driver. This research and trial aims to find out the pattern of power consumption in convertible vehicles and the reliability of the system. Kumara & Sukerayasa (2009) explained that electric vehicles that have been produced will be presented in the form of tables so as to make it easier to understand the development of the field of electric vehicles.

Labeye et al (2017) & Kuncoro, A, et al (2021) explain that driving an EV requires a learning phase to acquire the skills and knowledge necessary to operate a vehicle. Reiner et al (2020) explained that prospective buyers and consumers who drive electric vehicles have a good experience, so that consumers can share with other drivers. Muratori et al (2020) explained that with the existence of electric vehicles it causes the condition and climate of the air to be clean.

Concept framework

Riders have experience in driving that has been ingrained so that every driving experience causes a value that can be measured and made an unforgettable experience. Conventional vehicle drivers cause prolonged pollution that has not been overcome, but as the times develop, the emergence of electric vehicles is one alternative to break down pollution. Electric vehicles have a driving mechanism by using an electric motor, so that the impact caused, especially pollution, is reduced. Electric vehicles are an alternative transportation pattern by revealing safety, comfort and prestige, so that the design and benefits of electric vehicles are expanded into a phenomenon in digitalization. From the above information, the conceptual framework of this research is:
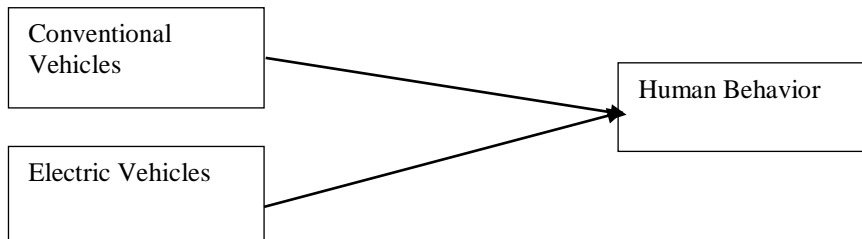
Figure 1. Research Concept Framework

Method

Research design uses quantitative descriptive with a post-positivism approach. The study sample was drivers who used conventional vehicles and drivers who used electric cars which amounted to 133 respondents. Data sources use primary data and skunders. Data analysis uses correlation regression analysis that connects exogenous variables with endogenous variables (Kuncoro, A & Sudarman, 2018).

Results

Estimation Method

Panel data regression analysis is carried out using three approaches, namely the common effect model, the fixed effect model and the random effect model. This is done to get a good model to use in this study. Here are the results of the regression model approach:

Table 1. Chow Test

Effect Test	Probability
Cross-section Chi-square	0.002

Source: processed data, 2022

The Chow test aims to determine whether the Common Effect or Fixed Effect model is most appropriate for estimating panel data. This can be seen from the chi-square cross-section probability value of 0.002. This value is smaller than alpha 5% which means the model is significant. So that the model that is worth using is the Fixed Effect Model.

Table 2. Hausman Test

Test Summary	Probability
Cross-section random	0.004

Source: processed data, 2022

The Hausman test aims to find out whether the Random Effect or Fixed Effect model is most appropriately used in estimating panel data. This can be seen from the random cross section probability value of 0.004, this value is smaller than

alpha 5% which means significant. So the exact panel data estimate for this study based on the Hausman Test is the Fixed Effect Model. After going through testing using Chow Test and Hausman Test, it was concluded that the Fixed Effect Model is the best panel data analysis model in this study. Then the third test, the Lagrange Multiplier Test no longer needs to be done. Furthermore, the selected model will be used for analysis at a later stage.

Significance Test

In the significance test using the Fixed Effect Model, the coefficient of determination (adjusted R2) is 0.89622. This means that the free variable contained in the model can explain the bound variable by 89.62%. The remaining 10.4 % is explained by other variables outside the model.

Table 3. Coefficient of Determination Test

Variables	Adjusted R-Squared
Conventional Vehicles Electric Vehicles	0.89622

Source: processed data, 2022

In other words, the variables conventional vehicles and electric vehicles can explain Human Behavior by 89.62%. The t-test aims to measure how far each independent variable influences in describing dependent variables. The results of the t-test with the Fixed Effect Model are as follows:

Table 4. Partial Significance Test (t-Test)

Variables	Prob(F-statistic)
Conventional Vehicles	0.5577
Electric Vehicles	0.1364

Source: processed data, 2022

It can be seen that the variable probability values of conventional vehicles and Electric Vehicles are 0.5577 and 0.1364, respectively, Both values are greater than 5% alpha. That is, both conventional vehicles and electric vehicles have no significant effect on human behavior. This could be because the people in Indonesia are still very small compared to public transportation which is only 10% of the total market share.

Discussion

Conventional vehicles have a strong role when viewed from activities from time to time. Conventional vehicles have a role to facilitate distribution from one place to another, so that the flow is distirubsi better. The results of the study explained that conventional vehicles have a role to improve human behavior, this is because people in Indonesia still have logic that the distribution process in Indonesia still uses the old concept of freight or passenger transportation vehicles. Another thing causes people to still have the logic that conventional vehicles are more suitable because in Indonesia it is still dominated by conventional vehicles for the distribution of goods. As for electric vehicles, it is still limited to private vehicles.

The results of the study are also supported by research Labeye et al (2017) explaining that driving an *Elektric Vehicle* (EV) requires a learning phase to acquire the skills and knowledge necessary to operate a vehicle. Another factor that causes electric vehicle drivers is limited to private vehicles is the absence of electric vehicles for road transportation.

Electric vehicles are able to increase the driver's prestice, on the other hand, the driver becomes more elegant. This is supported by the contributions of respondents represented through answers from questionnaires shared by researchers. The thing that makes the driver more confident is that the design of the electric car also has an aerodynamic design compared to conventional vehicles that have not developed from the design for decades. Conventional vehicles have developed in design during the last year is still around the interior coupled with ornaments and advanced features but has not touched on the elegant and prestige sector in general. So changes to conventional vehicles have not added to driver confidence.

Conclusion

The results of the study explained that drivers who drive in conventional vehicles have the spirit or motivation to complete tasks or activities and routines as usual. This is because conventional vehicles have existed since tens or even hundreds of years. Unlike motorists with electric vehicles who have different experiences because of new things for drivers so as to increase prestige for electric vehicle drivers. Another thing that causes improvements in electric vehicle driving is the type and design of electric vehicles prioritizing energy saving and increasingly modern design.

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