

# Analysis of Jakarta Workers Who Have Not Used Electric Cars as Daily Transportation Using the Grounded Theory Method

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**Abstract**— Transportation is a means of mobility of people or goods from one place to another. Apart from that, transportation is a means of supporting interaction activities with fellow humans. By having adequate means or means of transportation, social and economic life activities will be supported. The currently popular means of personal transportation are means of transportation powered by oil, gas, and electricity. This research aims to find out the reasons why not many workers in Jakarta use electric cars as a means of daily transportation. This research uses non-probability sampling and purposive sampling techniques. Through interviews with 15 samples of Jakarta workers who use oil-fuelled cars which were then coded and analysed, this research has explained the reasons why workers in Jakarta do not use electric cars as daily transportation. The reason is that infrastructure facilities such as SPKLU (Public Electric Vehicle Charging Stations) and special workshops for electric cars are not yet available in many places, causing workers in Jakarta to be overly concerned about using or buying electric cars.

**Keywords**— **Transportation; Sustainability; Electric Cars; Infrastructure; Grounded Theory**

## INTRODUCTION

Transportation has an important role in the development of a country because transportation is support to social and economic activities. Good transportation facilities can support economic growth. Transportation as a means of moving goods from one place to another, for interacting with fellow humans, and with good tools or facilities in community activities it will support social life activities. Therefore, transportation also plays an important role in human life from a social perspective (Faqih and Moersidik, 2008). Transportation is a means of connecting production areas and market areas, or as a bridge the producers with consumers. Transportation plays an important role as a means of connecting, bridging, bringing parties who need each other closer (Karim et al., 2023)

In generally, transportation is divided into 3 (three) types, there are transportation land, sea, and air. In terms of development, transportation is developing very rapidly to meet the level of satisfaction and comfort of users of the transportation. Until year 2023, most of the operating transportation use fuel made from fossil fuels. Fossil fuels are fuels obtained from fossils that have been embedded in the ground for hundreds of years or more which will turn into oil. From

this oil, humans will process the oil into fuel which is useful as a source of power in machines, the use of this fuel has been going on for many years until now.

The vehicle that uses of oil fuels is increasing very rapidly (Aziz et al., 2020). If the use of these oil fuels continues, over time these fossils will become low and could even run out. From this issue, there is a new discovery namely vehicles with electric fuel. One of the electricity producers is PLTU (Steam Power Plant) which uses coal as fuel. Coal is a combustible sedimentary rock formed from the remains of plant fossils which are formed through the coalification process, coal is processed to become electricity, electricity is a source of power to run a vehicle. Vehicles that use this fuel are environmentally friendly because they do not produce CO<sub>2</sub>. Indonesia has started to make moves to make electric vehicles the main form of transportation in Indonesia to reduce the use of fossil fuels and reduce CO<sub>2</sub> pollution. Due to the seriousness of this matter, the government issued Presidential Regulation No. 55 year 2019 concerning "**Acceleration of the Battery-Based Electric Motor Vehicle Program for Road Transportation**".

Vehicle use in Indonesia, especially in Jakarta, is increasing over time. According to BPS (Central Statistics Agency) data, in year 2020 passenger car users in Jakarta were **3,365,467**, then increased in year 2021 to **3,544,491**, and in year 2022 reached **3,766,059**. In supporting energy security in the transportation sector, the government currently supports the development of electric vehicles to achieve a clean and environmentally friendly environment by reducing pollution and exhaust emissions due to the use of oil-fuelled vehicles (Zakarya & Novri, 2022)

Electric vehicles are one solution to anticipate the impact of the energy crisis. Using electric cars will certainly create environmentally friendly technological innovations because air pollution will be reduced (Cakrawati, 2021) . Apart from that, the government has also implemented several policies that are beneficial for electric vehicle users, including subsidies and taxes that are cheaper than fuel vehicles. This research uses grounded theory, which is a method in qualitative research to analyse and understand data through several systematic procedures in the theory development process. Theory, data, and research results using a grounded theory approach are studied based on their relevance to the research problem. Based on the explanation above, this research will discuss "**Analysis of Jakarta Workers Who Have Not Used Electric Cars as Daily Transportation Using the Grounded Theory Method**".

## **RESEARCH METHODS**

Research requires a methodology that can influence the quality of knowledge in research results. This research uses grounded theory study. Grounded theory is a form of inductive research method on an unknown area or focus (Karuntu et al., 2022). Grounded Theory is a research analysis method data and used to broadcast interviews, observations, protocols, participation, involvement straight away, and so on. It is a system of rules for the purposeful evaluation of qualitative data Methodically control this process and thereby make it understandable and work (M. Askari et al., 2020). Grounded theory can also simply be used as a unique research method to discover theories that have not previously existed (Glaser & Strauss, 2017). Research using the grounded theory method can give birth to new theories based on field data. Grounded theory has quite high or accurate validity because the research data comes from actual field data, and the phenomenon of the birth of new theories means that qualitative research using the grounded theory method is not tied to previous theories, so this phenomenon can potentially produce fresh innovations (Kosasih, 2018). This research will be conducted in the Jakarta area for 2 weeks starting from 3 to 17 October 2023. This research will use non-probability sampling and purposive sampling techniques, namely by selecting samples that are appropriate to the research topic. Researchers determine the standards of sources who are directly related to car users who use oil fuel. In the data collection process, researchers interviewed 15 workers as sources who use oil-fuelled cars in Jakarta. Selection of respondents through the sampling technique used in this research is purposive sampling, namely determining samples that are in accordance with the research objectives through sample characteristics due to the coding process and data analysis can experience distortion because at this stage the researcher will select several subjects research that stands out and represents the views of the respondents (Lenaini, 2021).

The aim of this research is to find out why with all benefits of electric cars, not many workers in Jakarta use electric cars. Interviews were conducted in various places in Jakarta using notes. After the interview data is recorded, then grouped based on frequency (coding). The data analysis technique in this research uses a grounded theory approach, so the data analysis process will start with collective data, coding the data that occurs, creating categories, formulating themes, and giving rise to new theories, because the grounded theory approach has a flow of data collection, creating codes and sub codes (if any), creating categories and sub categories (if any) and creating themes that give birth to new theories.

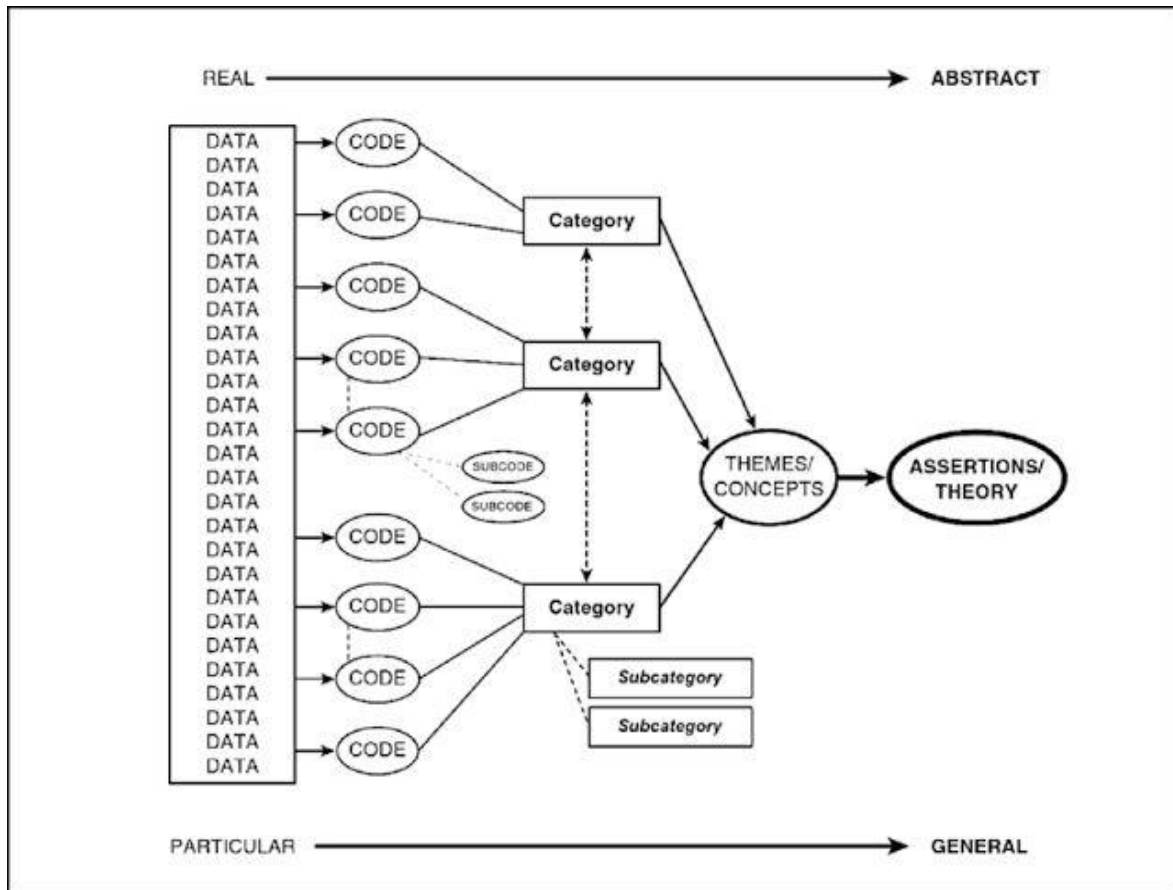


FIGURE 1. THE FLOW OF GROUNDED THEORY METHOD

Figure 1 as above, explaining about Grounded theory does not test a hypothesis about a reality, but how to inductively construct a theoretical reconstruction from empirical data encountered in the field, namely an analytical approach from specific categories to general categories (Jones & Alony, 2011). In a grounded theory approach, researchers have sufficient space to engage in the context, processes, and interpretations of key actors (Kathy, 2000). Grounded theory analysis is carried out through 3 (three) sequential stages of coding procedures, there are open coding, axial coding, selective coding, and then at the theory formulation stage. Theoretical memo writing was carried out at the open coding stage. The writing of this memo is not rigid, so changes and developments and even revisions are possible during the data collection and analysis process (Gidey et al., 2017). The open coding process includes identifying words, naming them, categorizing the process, and then describing the symptoms found in the text based on the results of the researcher's diary notes during interviews and observations. The process of identifying key words is based on all data obtained from the actors involved, to produce a frequency distribution for each category.

The axial coding process is done by grouping more general categories (core categories) based on closeness in meaning or nature. Grouping of core categories will stop once the incoming data has reached the saturation level. Meanwhile, at the

selective coding stage, looking for relationships between previously obtained core categories, then determining the core categorization, and making relationships between the core categories and other categories (Vollstedt & Sebastian, 2019)

## RESULTS AND DISCUSSION

This research was carried out for 2 weeks starting from 3 to 17 October 2023. The first stage of research based on grounded theory is interviews. Where the research results refer to the results of interviews conducted by researchers with 15 (fifteen) workers who live in Jakarta. In Table 1 are the 15 respondents who were interviewed.

TABEL 1. DATA RESPONDENTS

No	Name	Occupation
1	Inayatus Sholichah	Employee
2	Felicia Go	Employee
3	Janice Muljana	Employee
4	Daniel Jilies	Employee
5	Eugenie Faustine	Employee
6	Tenny Anfrioza	Employee
7	Brenda Samiadji	Employee
8	Wido	Employee
9	Bagus Suranto	Employee
10	Setiyo Joko S	Employee
11	Deo	Employee
12	Selly	Employee
13	Uteng	Employee
14	Andi	Employee
15	Fahmi	Employee

Based on interviews and processing of interview data, the results of the interviews are processed into coding and categories according to the identification of existing problems. Where the coding and category results show that many respondents choose places to recharge electric cars which are still difficult to find in Jakarta, which is the main problem in owning an electric car. Meanwhile, from the interview results, respondents did not really respond to the types of electric cars available so that the problem of type was the lowest result from the coding and categories in Table 2.

TABEL 2. CODING AND CATEGORY

CODING	CATEGORY											
	Vehicle Price	Maintenance Cost	Recharge Cost	Maintenance Place	Recharge Place	Recharge Duration	Distances	Safety	Quality	Pollution & Sustainability	Types	Segmentation
Battery short circuits easily								2				
Not proven long term									1			
Costs for charging are expensive			2									
Battery life is still unclear										1		
Vehicle prices are expensive	6											
Vehicle types are limited											1	
Vehicle is not safe								3				
Worried about long distances							7					
Vehicle quality has not been proven to be good									1			
Waste batteries create pollution										1		
Vehicle maintenance is not cheap		5										
Vehicle for the upper middle class												2
Use only in big cities												2
Charging takes a long time						1						
SPKLU is still rare					14							
Sustainability of battery use is still unclear										1		
Vehicle maintenance places are still rare				5								
<b>Grand Total</b>	<b>6</b>	<b>5</b>	<b>2</b>	<b>5</b>	<b>14</b>	<b>1</b>	<b>7</b>	<b>5</b>	<b>2</b>	<b>3</b>	<b>1</b>	<b>4</b>

After coding and categories have been carried out, the next step is to process the coding and category data into category and theme data. Theme processing is adjusted to the results of the category. Where in the Vehicle Price category, Maintenance Cost and Recharge Cost are included in the Cost Theme. Maintenance Place and Recharge Place are included in the Facility Theme, then Recharge Duration, Distance, Safety and Vehicle Quality are included in the Quality Theme. Then it continues with Types and Segmentation which is included in the Market Theme, while the last one is Pollution & Sustainability which is included in the Environment Theme. Category and theme result can be seen in Table 3 below.

**TABEL 3. CATEGORY AND THEME**

No	Category	Frequency	Theme				
			Cost	Facilities	Quality	Environment	Market
1	Vehicle Price	6	6				
2	Maintenance Cost	5	5				
3	Recharge Cost	2	2				
4	Maintenance Place	5		5			
5	Recharge Place	14		14			
6	Recharge Duration	1			1		
7	Distances	7			7		
8	Safety	5			5		
9	Quality	2			2		
10	Pollution & Sustainability	3				3	
11	Types	1					1
12	Segmentation	4					4
<b>TOTAL</b>		<b>55</b>	<b>13</b>	<b>19</b>	<b>15</b>	<b>3</b>	<b>5</b>

After carrying out the steps above, we can get the results of the grounded theory process regarding electric car ownership in Jakarta. Following are the results of the research that has been done and giving rise to several theories, there are:

- a) Workers in Jakarta have not yet or do not use electric cars for their daily transportation because electric car facilities are not as complete as those offered by petrol cars. The facilities in question are public facilities, such as there are not many electric cars repair shops, and SPKLU (Public Electric Vehicle Charging Stations) are not yet available in many places.
- b) Workers in Jakarta have not yet or do not use electric cars for their daily transportation because of the quality of the product. The product quality in question is people who are still worried about the quality or durability of electric cars, the ins, and outs of which many people don't yet know.
- c) Workers in Jakarta have not yet or do not use electric cars for their daily transportation because the price of electric cars until 2023 is still high when compared head-to-head with petrol cars.
- d) Workers in Jakarta have not yet or do not use electric cars for their daily transportation because there are not many variations in electric car models.
- e) Workers in Jakarta have not yet or do not use electric cars for their daily transportation because there are some people who believe that waste from batteries for electric cars and power plants still causes environmental pollution.

## CONCLUSION

Transportation has an important role for daily activities. Good transportation facilities can support all aspects of human life. The number of passenger cars in Jakarta continues to increase from year to year. This has negative impacts, including air conditions in Jakarta which are getting worse due to pollution fumes caused by vehicles. One solution to reduce air pollution in Jakarta is to switch to electric vehicles. However, the solution to switching to electric vehicles is not easy.

From the results of this research, the researchers found that the reasons why workers in Jakarta have not yet or do not use electric vehicles include is the lack of infrastructure facilities to support electric cars, such as electric car repair places and SPKLU (Public Electric Vehicle Charging Stations). This is the biggest supporting factor because many workers in Jakarta are worried that they will be affected by big problems in the short and long term when they are unable to maintain their electric cars properly, and they are afraid that electric cars will run out of electricity somewhere in the Jakarta area does not have a SPKLU (Public Electric Vehicle Charging Station).

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