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CONSUMER BEHAVIOUR | RESEARCH ARTICLE

Electrifying Consumer Choices: Unveiling the Road to Green Intentions and EV Adoption

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Abstract: Electric vehicles (EVs) are considered to combat environmental issues globally, including Indonesia, where transportation is believed to contribute to air pollution and greenhouse gas emissions. This study analyzed consumers' attitudes and intentions to purchase electric vehicles in Jakarta by focusing on environmental concerns, perceived usefulness, and incentives. Descriptive quantitative data were used in this study. Data were collected from 156 respondents using a questionnaire with a purposive sampling technique and analyzed using structural equation modeling with SmartPLS. The study found that environmental concerns, perceived usefulness, and incentives positively and significantly affected consumer attitudes. Consumer attitudes mediate the relationship among perceived usefulness, incentives, and purchase intention, indicating that information about electric vehicles and incentives can shape positive consumer attitudes and lead to positive purchase intentions. However, environmental concerns only affect consumer attitudes and do not directly affect purchases. Therefore, it is recommended to better explain the benefits of electric vehicles in terms of environmental protection and cost efficiency, as well as incentive policies for purchasing electric vehicles, to influence consumer behavior and purchase intentions.

Keywords: consumer attitude, environmental concern, incentives, perceived usefulness, purchase intention

JEL Classification: L67, L70, L94, N3

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PUBLIC INTEREST STATEMENT

Electric vehicles are becoming a new technology that continues to be echoed to overcome environmental problems, namely air pollution. With this, of course, electric vehicles as a solution can be implemented if consumers react to them and intend to buy them. In this case, of course, it can look at consumers, namely related to consumer awareness of the environment, perceived usefulness, and policies related to electric vehicles, such as incentives, whether it can lead to the intention to buy electric vehicles and how consumers respond to electric vehicles, then knowing this can be a mas.

A new thing or innovation will certainly succeed if the community accepts it and makes people realize that it is good for them, so they want to move forward and adopt it in their daily activities.

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1. Introduction

The world faces many crucial issues including energy scarcity, air pollution, and greenhouse gas emissions (Adnan et al., 2018). Transportation is believed to be the main contributor to pollution and greenhouse gas emissions, leading to climate change in urban areas (Jaiswal et al., 2021; Kumar & Alok, 2020). Indonesia is one of the countries that support zero emissions within its territory by promoting renewable energy, particularly electric power, strengthened by Presidential Regulation No. 55 of 2019 concerning electric vehicles. Indonesia is among the 17 countries with poor air quality, especially in the DKI Jakarta Province. Therefore, the government has considered electric vehicles as a solution to address environmental issues, particularly pollution, in Indonesia (Ministry of Industry, 2021; Ministry of Transportation, 2022).

Several studies are continuously being developed concerning the technology acceptance model to understand consumers' attitudes toward adopting electric vehicles. Electric Vehicles (EVs) are a new technology that has received attention for addressing current environmental issues. Various studies have been conducted on the influence of consumers' purchase intentions and product adoption. These factors can be internal or external (Adnan et al., 2018; Jaiswal et al., 2021; Kumar & Alok, 2020). Therefore, this study examines the internal and external factors influencing consumers' desire to adopt and purchase electric vehicles, which can help reduce air pollution. The solution will be effective with consumers' willingness to purchase EVs and their positive attitudes toward them. This study analyzes the factors that determine consumer attitudes and intentions to purchase electric vehicles, particularly in Jakarta.

Several studies indicated that environmental concern leads to purchase intentions towards environmentally friendly products, implying that consumers' environmental awareness influences their intention to buy eco-friendly products (Adnan et al., 2018; Jaiswal & Kant, 2018; Kirmani & Khan, 2018; Kumar & Alok, 2020; Al Mamun et al., 2018). Although some studies suggest that environmental concerns may not always lead to purchasing eco-friendly products, such as electric vehicles, plenty of alternatives are available for environmentally conscious individuals to consider (Chaudhary, 2018; Chaudhary & Bisai, 2018).

Another factor that can influence purchase intention for environmentally friendly products is the product's usefulness or how the product can provide utility to a user (Jaiswal et al., 2021). Research related to this perceived usefulness factor also provides mixed results, with some studies showing that perceived usefulness influences consumer attitudes and purchase intentions for green products such as electric vehicles (Huang et al., 2021; Jaiswal et al., 2021; Sun & Wang, 2020), it is inversely proportional to research that states that perceived usefulness can not affect a consumer's purchase intention because it is only momentary for consumers (Krishnan & Koshy, 2021).

In addition to other factors, government subsidies are an effective way to encourage people to purchase environmentally friendly products. Unfortunately, extensive research on the effects of incentives on consumer attitudes is lacking. Nonetheless, a study discovered that incentives, such as subsidies, can favor purchase intentions, whereas risks do not seem to have the same effect. Risk can affect people's attitudes toward a product, leading to behavioral changes. However, incentives can act as substitutes for perceived risks, making it important to examine how incentives can shape attitudes towards environmentally friendly vehicles, which are gaining

popularity in Indonesia (Asadi et al., 2021; Bhutto et al., 2022; Dutta & Hwang, 2021; Huang & Ge, 2019; Jaiswal et al., 2021).

Several studies related to incentives for purchase intention have found religious results. Thus, the results show that incentives positively affect purchase intention (Huang & Ge, 2019; Liao, 2022; Shanmugavel & Micheal, 2022). Several studies have found that incentives do not affect EV purchase intentions of electric vehicles (Asadi et al., 2021; Dai et al., 2020; Krishnan & Koshy, 2021). The novelty of this research is the comprehensive evaluation of incentives and consumer attitudes toward electric vehicles, utilizing consumer attitudes as a mediation tool to examine the impact of incentives on electric vehicle purchase intentions. This is a novel approach in contrast to previous studies that have mainly focused on assessing the relationship between incentives and purchase intentions.

This study aimed to predict consumer behavior towards electric vehicles in Jakarta using the theory of planned behavior approach. This research examines how environmental concerns, perceived usefulness, and incentives influence consumer attitudes and purchase intentions. This study is driven by the need to address pollution problems and promote the use of electric vehicles. Therefore, this study examines the impact of incentives on consumers' attitudes and purchase intentions towards electric vehicles.

2.   Literature Review

2.1   Purchase Intention

When buying something, purchase intention is an important factor that influences decisions. This factor is significant in forecasting the purchasing behavior of an individual (Ahmad & Zhang, 2020; Simamora & Djamaludin, 2020), making it a reliable indicator of one's behavior. In the technology acceptance model, intention plays a crucial role in predicting the acceptance of new technology (Huang & Ge, 2019). Furthermore, the notion of green purchase intention pertains to an individual's inclination to procure eco-friendly items because of their concern for the global welfare of the world (Jaiswal et al., 2021).

Purchase intention is assumed to reflect a consumer's motivation to buy a specific product or technology. This indicates an individual's effort to engage in behavior based on their willingness to try (Sharma & Foropon, 2019). Purchase intention represents an individual's tendency to buy a product or to engage in an action related to it. It is measured by the probability that a consumer makes a purchase (Handayani, 2017).

2.2   Consumer Attitude

Consumer attitude is a key indicator of willingness to adopt novel items or technologies. Consequently, attitude is crucial for comprehending and forecasting future consumer behavior regarding this technology. Whether a consumer likes something, their attitude can be used to gauge their level of acceptance of new products or technologies (Jaiswal et al., 2021).

Attitude refers to consumers' actions when assessing whether a product is good or not (Chaudhary, 2018; Prayidyaningrum & Djamaludin, 2016; Sholihat & Djamaludin, 2017). It is an overall individual evaluation of participation in specific behaviors (Huang & Ge, 2019). Consumer attitude can be defined as beliefs and feelings about

an object that direct individuals to consistently behave towards that object (Naalchi Kashi, 2020).

In this context, attitudes towards electric vehicles have positive feelings towards environmentally friendly vehicles, thereby promoting environmental well-being (Bhutto et al., 2022). Attitude refers to an individual's psychological inclination that results in either positive or negative evaluations of certain objects or behaviors (Sun & Wang, 2020).

2.3 Environmental Concern

Environmental concern refers to the awareness and consideration of environmental issues, which can positively influence individual behavior (Adnan et al., 2018). The level of concern for the environment can impact one's attitude towards eco-friendly products (Sharma & Foropon, 2019; Solekah et al., 2022). Environmental concern is an individual's supportive attitude toward solving environmental problems (Chaudhary, 2018). It involves attitudes toward facts, oneself, and others related to the environment (Al Mamun et al., 2018). Environmental concern is derived from knowledge, attitude, and behavior (Sharma & Foropon, 2019). The level of concern for the environment directly impacts how consumers view electric vehicles and their likelihood of buying them (Adnan et al., 2018; Jaiswal & Kant, 2018; Kumar & Alok, 2020).

H1: Environmental concern has an impact on consumer attitude.
H2: Environmental concern has an impact on purchase intention.

2.4 Perceived Usefulness

The term' perceived usefulness" refers to the extent to which a technology or system can be helpful in improving the performance or services of individuals. This can influence people's attitudes towards new technologies and innovations (Jaiswal et al., 2021). This is related to how much consumers believe that new technologies, such as electric vehicles, are beneficial in enhancing their travel efficiency to work (Huang & Ge, 2019; Krishnan & Koshy, 2021; Shanmugavel & Micheal, 2022). Perceived benefits encompass information on the advantages of electric vehicles that shape consumer attitudes. The more information consumers receive about the benefits of electric vehicles, the more likely they are to form positive attitudes toward them (Matubatuba & De Meyer-Heydenrych, 2022). Perceived usefulness directly influences individuals' acceptance of new technology and tends to elicit positive attitudes toward new technologies such as electric vehicles (Wang et al., 2018). A positive attitude formed through perceived usefulness leads to purchase intention (Khotimah et al., 2022; Shanmugavel & Micheal, 2022). Consumers are motivated to desire electric vehicles because of their perceived usefulness, which increases purchase intention (Huang & Ge, 2019; Wang et al., 2018).

H3: Perceived usefulness has an impact on consumer attitude.
H4: Perceived usefulness has an impact on purchase intention.

2.5 Incentives

An incentive is one of the policies set by the government in the form of financial or non-financial subsidies used to encourage a change towards new technologies. Thus, incentives can shape consumers' attitudes towards electric vehicles (Jaiswal et al., 2021). Research has shown that incentives can have a positive impact and increase

the likelihood of purchasing electric vehicles (Huang & Ge, 2019). Incentives, whether financial or non-financial, can act as catalysts for adoption (Liao, 2022) and motivate consumers to adopt a positive attitude toward purchasing electric vehicles (Asadi et al., 2021). Thus, we propose the following hypothesis:

H5: Incentives have an impact on consumer attitude.
H6: Incentives have an impact on purchase intention.

2.6 Consumer Attitude and Purchase Intention

Attitude refers to an individual's overall assessment of engaging in a particular behavior (Huang & Ge, 2019), that encompasses their beliefs and emotions toward an object (Naalchi Kashi, 2020; Simamora & Djamaludin, 2020). Attitudes can be either positive or negative, greatly impacting a person's behavior and triggering their intentions. Consequently, positive attitudes can result in the emergence of consumers' purchase intentions. Thus, we propose the following hypothesis:

H7: Consumer attitude has an impact on purchase intention.

3. Conceptual Framework

According to the study discussed earlier, a person's concern for the environment, the perceived usefulness of a product, and the incentives offered can affect how they view a product and their likelihood of buying it. Additionally, their attitude towards a product can affect their decision to purchase it. This is illustrated in Figure 1, which illustrates the conceptual framework.
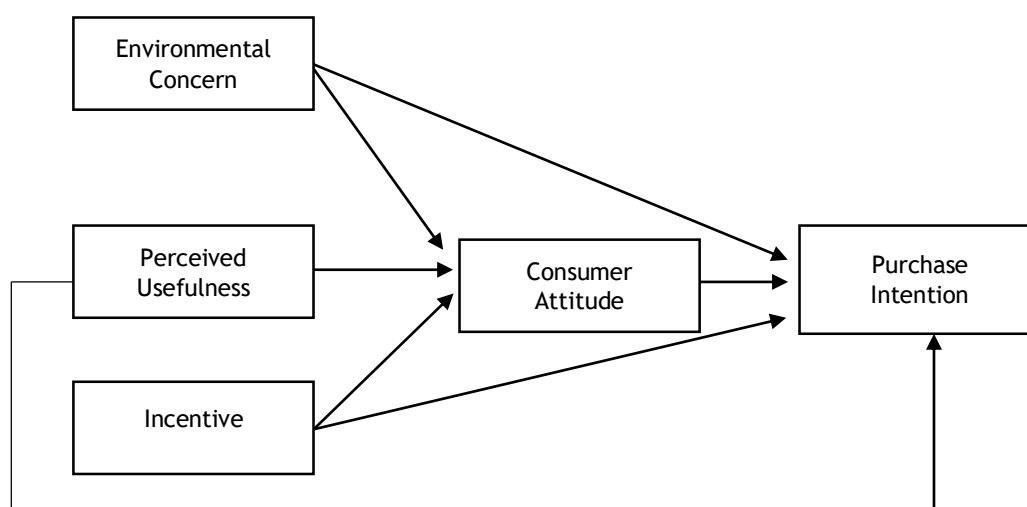

Figure 1. Conceptual framework

In the conceptual framework above, the relationship between five variables and seven research hypotheses, namely, H1 shows the relationship between incentives and purchase attitude, H2 shows the relationship between consumer attitude and purchase intention, H3 shows the relationship between perceived usefulness and consumer attitude, H4 shows the relationship between perceived usefulness and purchase intention, H5 shows the relationship between incentives and consumer attitude, H6 shows the relationship between incentives and purchase intention, and H7 shows the relationship between consumer attitude and purchase intention (Adnan et al., 2018; Jain et al., 2018; Jaiswal et al., 2021).

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4.   Methods

4.1   Participant

The present study adopted a quantitative research design, employing questionnaires as the principal instrument for data acquisition. The data comprised samples procured through nonprobability purposive sampling, a technique that deliberately selects individuals who conform to predetermined criteria. The stipulated criteria for participant inclusion encompassed non-possession of electric vehicles, familiarity with electric vehicle incentives, and domicile in Jakarta. A minimum of 100 respondents satisfying these prerequisites were selected for the study (Ghozali and Kusumadewi, 2023; Santosa, 2018). This study was conducted in Jakarta between May and July 2023. This study included a sample of 156 participants.

4.2   Measurement

This study gathered primary data by having respondents complete questionnaires. The Likert scale includes five levels:1. Strongly Disagree, 2. Disagree, 3. Neutral, 4. Agree, and 5. Strongly Agree (Hair et al., 2019; Tatlan & Renhard, 2014; Santosa, 2018; Solimun & Fernandes, 2018) constitutes the measurement framework for constructing a questionnaire. The variables were assessed using the following indicators.

Environmental concern is an overall consideration and awareness of environmental issues, which then acts as a determinant of environmentally friendly behavior change, particularly when using electric vehicles. Environmental concerns were measured using four indicators: (1) I am concerned about environmental issues; (2) I need to change my behavior to reduce air pollution; (3) climate change is a threat to me and my family; and (4) environmental issues have become more serious in recent years (Dutta & Hwang, 2021).

The term "perceived usefulness" relates to how much a technology or system can benefit users and make their tasks easier to complete (Jaiswal et al., 2021). Four indicators were used to measure the perceived usefulness of electric vehicles. These include (1) the belief that electric vehicles can reduce carbon emissions and energy consumption, (2) the belief that electric vehicles can improve environmental health, (3) the belief that electric vehicles can lower household transportation expenses, and (4) the belief that electric vehicles can increase travel efficiency (Jaiswal et al., 2021).

An incentive is the monetary benefit customers receive when purchasing an electric vehicle. EV marketers provide this benefit based on government policies regarding incentives for electric vehicle buyers (Shanmugavel & Micheal, 2022). Three indicators were used to measure incentives related to purchasing electric vehicles. First, they should be aware of the incentives provided by the government. Second, incentives offered by the government appeal to buyers. Finally, the buyer is willing to purchase an electric vehicle with incentives provided by the government (Shanmugavel & Micheal, 2022).

Consumer attitude refers to how an individual's behavior is evaluated regarding the potential purchase of an electric vehicle. This evaluation is important for predicting whether someone will buy an electric vehicle (Sun & Wang, 2020). Consumer attitude is measured using four indicators: (1) taking responsibility for protecting the environment by using electric vehicles, (2) considering purchasing an electric vehicle

to as a good idea, (3) supporting the use of electric vehicles, and (4) being committed to using electric vehicles as environmentally friendly products (Sun & Wang, 2020).

Consumers' desire to buy an electric vehicle is known as purchase intention and is motivated by internal factors. Purchase intention comes from an individual encouraging them to make purchases (Bhutto et al., 2022). This variable is measured by three indicators: (1) I intend to buy an electric vehicle, (2) I am currently considering buying an electric vehicle, and (3) I plan to switch from a fossil-fuel vehicle to an electric vehicle in the future (Bhutto et al., 2022).

4.3   Analysis

To gather information, questionnaires were distributed on various social media platforms, including WhatsApp, Instagram, Facebook, and Telegram. Participants were required to live in Jakarta and not own an electric car. The goal was to receive responses from at least 100 individuals; however, only 202 data sets were received. Unfortunately, 46 questionnaires did not meet the criteria and were not completed correctly, leaving only 156 usable data sets. The data collection process spanned over 45 days.

The data collected for this research were analyzed using structural equation Modeling (SEM) techniques with SmartPLS 3.0. The structural equation Modeling used here is based on Partial Least Squares (PLS). The analysis was conducted in PLS-SEM by testing the inner and outer models. The outer model analysis examined the validity and reliability values, whereas the inner model analysis used the coefficient of determination (R square) and path coefficient (Joseph et al., 2022).

To test the validity, we examined convergent and discriminant validity. Convergent validity was observed by examining the outer loading value under conditions above 0.70. Discriminant validity was tested using the Fornell–Lacker criterion. Additionally, we conduct reliability tests by examining the composite reliability value and Cronbach alpha, which must be above 0.70 (Ghozali & Kusumadewi, 2023; Joseph et al., 2022; Santosa, 2018).

The outer model analysis involved examining the R-squared value to determine the effect of the independent variables on the dependent variable. We also examined the path coefficient value to determine the influence of each variable on another variable (Joseph et al., 2022).

Once the inner and outer models were analyzed and passed the test, the hypothesis was tested by examining the t-value and p-value. If the statistical value is greater than or equal to 1.96 and the p-value is less than or equal to 0.05, it is deemed to have a significant impact and answers the hypothesis being tested (Ghozali & Kusumadewi, 2023; Joseph et al., 2022).

5.   Findings

5.1   Characteristics of Respondent

The study successfully collected responses from 202 participants, of whom only 156 were residents of Jakarta and did not own electric vehicles. Participants were categorized based on gender, type of vehicle they wanted to purchase, residence, and education level. In terms of sex, this study included males (67.3%) and females (32.7%). They were also distributed across the five main areas of Jakarta: South

Jakarta (12.9%), North Jakarta (29.5%), West Jakarta (23.7%), Central Jakarta (14.7%), and East Jakarta (19.2%). In this study, the education levels of the respondents varied as follows: junior high school (2.6%), senior high school (26.9%), bachelor's degree (59.6%), and master's degree (0.6%). Regarding purchase intention, participants planned to buy electric motorcycles (61.9%) while purchasing electric cars (51.6%). Some participants were interested in buying electric cars and motorcycles (13.5%). Therefore, based on data from the respondents, it can be inferred that there is an opportunity to enhance men's awareness of electric vehicles. The implementation of electric vehicles can begin in northern Jakarta through government initiatives. Moreover, each regional office's acquisition of electric vehicles should prioritize electric motorcycles.

5.2 Environmental Concern

The results of this study show that, overall, respondents are aware of environmental issues and stated that environmental issues are a serious problem for them. This is reinforced by the measurement results obtained using the indicators of the environmental concern variable (Table 1).

Table 1. Statistic descriptive of environmental concern

Codes	Indicators	Mean
EC1	I am concerned about environmental issues.	4.37
EC2	I need to change my behavior to reduce air pollution.	4.46
EC3	Climate change is a threat to me and my family	4.44
EC4	Environmental issues have become more serious in recent years.	4.54
Mean		4.45

Table 1 shows the mean value of each research indicator for the environmental concern variable, namely EC1, EC2, EC3, and EC4, which have mean values ranging from 4.37 to 4.54, indicating that respondents are concerned about environmental problems and believe that environmental problems are a serious problem and a threat to them and their families, so that respondents will change their behavior in reducing air pollution.

5.3 Perceived Usefulness

This study indicates that, overall, respondents believe that electric vehicles can be a solution to the problem of air pollution and will reduce travel costs during activities. Table 2 shows that the mean value of each research indicator for the perceived usefulness variable, namely PU1, PU2, PU3, and PU4, has a mean value ranging from 4.25 to 4.49, which means that respondents believe that electric vehicles can reduce carbon emissions and energy consumption and that electric vehicles can also increase their travel efficiency and reduce household expenses for transportation.

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Table 2. Statistic descriptive of perceived usefulness

Code	Indicators	Mean
PU1	The belief is that electric vehicles can reduce carbon emissions and energy consumption.	4.47
PU2	The belief that electric vehicles can improve the health of the environment	4.49
PU3	The belief that electric vehicles can lower household transportation expenses	4.37
PU4	The belief that electric vehicles can increase travel efficiency	4.25
Mean		4.39

5.3 Incentive

The results of this study indicate that respondents were aware of incentives when buying electric vehicles (Table 3). Based on Table 3, the mean value of each research indicator for the incentives variable, namely ICT1, ICT2, and ICT3, has a mean value ranging from 4.35 to 4.46, which means that respondents know the government's incentives for purchasing electric vehicles. It is attractive to them so they will buy electric vehicles with these incentives.

Table 3. Statistic descriptive of incentive

Code	Indicators	Mean
ICT1	One must be aware of the incentives provided by the government	4.46
ICT2	The incentives offered by the government apply	4.39
ICT3	The buyer is willing to purchase an electric vehicle with the incentives provided by the government	4.35
Mean		4.40

5.4 Consumer Attitude

The results of this study show that, overall, respondents expressed a supportive attitude toward using electric vehicles. Table 4 shows the mean value of each research indicator for the customer attitude variable, namely ATT1, ATT2, ATT3, and ATT4, which have a mean value ranging from 4.42 to 4.52. This means that respondents consider using electric vehicles as a wise act in protecting the environment and a good idea to buy electric vehicles so that they support the use of electricity and are committed to supporting electric vehicles as environmentally friendly products.

Table 4. Statistic descriptive of consumer attitude

Code	Indicators	Mean
ATT1	Taking responsibility for protecting the environment by using electric vehicles	4.45
ATT2	Considering purchasing an electric vehicle to be a good idea,	4.42
ATT3	Supporting the use of electric vehicles	4.52
ATT4	Being committed to using electric vehicles as environmentally friendly products	4.50
Mean		4.48

5.5 Purchase Intention

The results of this study show that, overall, respondents intend to buy an electric vehicle. The results of the questionnaire on the purchase intention variable evidenced this. Table 5 shows that the mean value of each indicator for the purchase intention variable, namely PI1, PI2, and PI3, ranges from 4.36 to 4.48, which means that respondents intend to buy an electric vehicle and consider buying it by planning to replace fossil-fuel vehicles with electric vehicles.

Table 5. Statistic descriptive of purchase intention

Code	Indicators	Mean
PI1	I have the intention to buy an electric vehicle	4.48
PI2	I am currently considering buying an electric vehicle	4.40
PI3	I plan to switch from my fossil fuel vehicle to an electric one in the future.	4.36
Mean		4.42

5.6 Validity and Reliability Test

Validity and reliability tests were conducted after collecting data from the completed questionnaires. The desired sample size was at least 100 participants. The study included 18 indicators and five variables, all of which underwent validity and reliability testing. Convergent validity, which can be observed from the values of outer loading, and discriminant validity, which can be assessed through the Fornell–Larcker criterion, are included in the validity testing. Additionally, Cronbach's alpha and composite reliability were included in the reliability test. Table 6 presents the results of the validity and reliability tests.

Table 6. Result validity and reliability of each research variable

Indicator variables	Loading factor	Fornell lacker criterion	Cronbach's alpha	Composite reliability
EC1	0.786	0.789	0.812	0.875
EC2	0.818			
EC3	0.834			
EC4	0.753			
PU1	0.817	0.833	0.853	0.901
PU2	0.862			
PU3	0.833			
PU4	0.819			
ICT1	0.856	0.866	0.833	0.900
ICT2	0.896			
ICT3	0.844			
ATT1	0.860	0.864	0.887	0.922
ATT2	0.871			
ATT3	0.885			
ATT4	0.841			
PI1	0.865	0.841	0.794	0.879
PI2	0.823			
PI3	0.835			

Note: EC= Environmental Concern; PU= Perceived Usefulness; ICT= Incentives; ATT= Consumer Attitude; PI= Purchase Intention

Table 6 presents the results of the outer loading values for the 18 indicators, all exceeding the threshold of 0.70. Consequently, it can be inferred that these indicators demonstrate strong convergent validity, signifying their ability to measure their respective variables effectively. Moreover, the Fornell–Larcker criterion values in the table also exhibit favorable outcomes, as each variable shows stronger correlations with its related variables than unrelated variables. Consequently, this study's discriminant and convergent validity tests can be deemed successful, providing evidence that all indicators can elucidate or gauge their corresponding variables.

Table 6 displays reliability testing, particularly in Cronbach's Alpha and composite reliability columns. Both values exceeded 0.70, meaning they met the criterion for good reliability. This also indicates that every indicator shows high consistency in measuring its variable. Therefore, the data in this study have demonstrated good validity and reliability, meeting the criteria, and can proceed to further analysis.

5.7   Path Analysis

We tested the inner model once validity and reliability tests were conducted for the outer model. This involves determining the path coefficient values and coefficient of determination (R-squared) to evaluate the significance of the relationships between variables using the t-value and the p-value. The results of this study explain the path coefficients and hypothesis testing (see Figure 2).
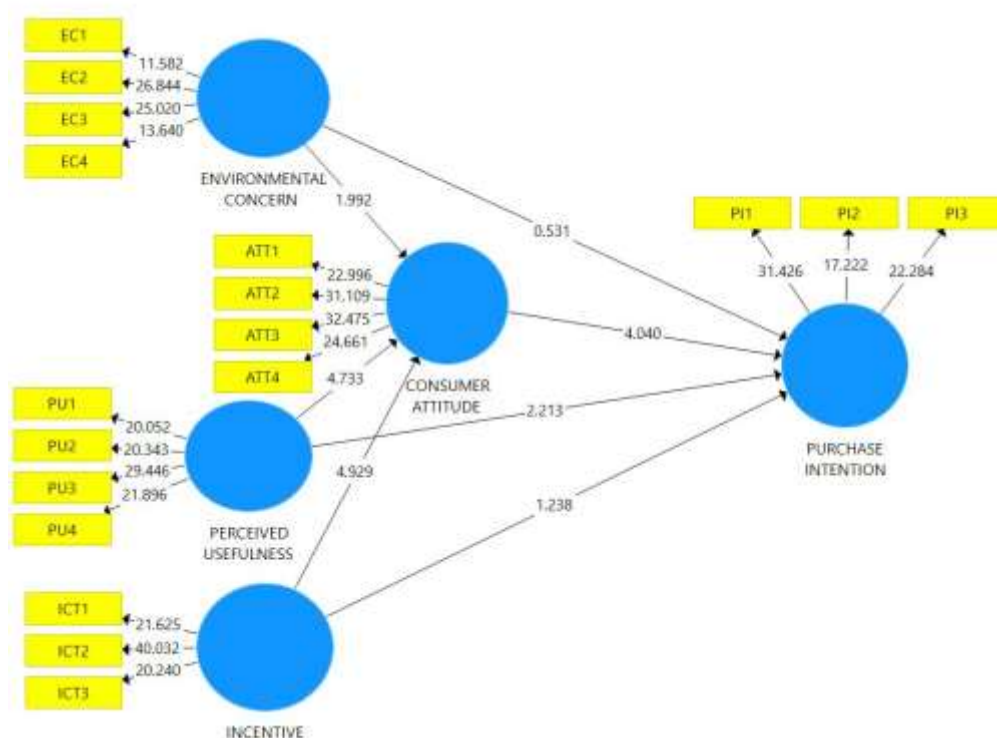

Figure 2. Inner model of partial least square

The analysis of the inner model, as shown in Figure 2, can be explained using path analysis. This shows that the first factor influencing consumer attitude is incentives, with a coefficient of 4.525. The second influence is perceived usefulness toward consumer attitude, with a coefficient of 4.243. The third influence is consumer attitude toward purchase intention, with a coefficient of 4.124. The fourth influence is perceived usefulness toward purchase intention, with a coefficient of 2.245. The

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fifth influence was environmental concern toward purchase intention, with a coefficient of 1.983. The sixth influencing incentive toward purchase intention has a coefficient of 1.276. Finally, the seventh influence was environmental concern toward purchase intention, with a coefficient of 0.511.

From the given explanation and information, all the factors yielded positive outcomes. The analysis found that two factors, incentives, and environmental concern, had coefficients below the standard value of 1.96. Thus, it can be inferred that these factors did not significantly impact purchase intention. However, several other independent variables strongly and positively affected the dependent variable.

The coefficient of determination measures the predictive power of the path model by examining the R square value of the dependent variable, which indicates how much the combination of influences from exogenous variables to endogenous variables in Table 7 for the coefficient of determination. Table 7 displays the coefficients of determination (R-squared) of the variables. According to the findings, 64.5% of consumer attitudes were influenced by environmental concerns, perceived usefulness, and incentives, while other factors influenced the remaining percentage. Moreover, the purchase intention variable was influenced by environmental concern, perceived value, incentives, and consumer attitude, accounting for 64.3% of the coefficient of determination value. Other variables influence the remaining percentage.

Table 7. R-square of partial least square

Variables	R square	R square adjusted
Consumer attitude	0.645	0.638
Purchase intention	0.643	0.633

5.8 Hypothesis Testing

In this study, seven hypotheses required answers through testing. This involves examining the t-value and the p-value. If the t-value is greater than 1.96 or the p-value is less than 0.05, the hypothesis is accepted. Additionally, indirect effects can be observed alongside the direct effects. Table 8 presents the t-value and p-values.

Table 8. Hypothesis testing results based on partial least square

Paths	Original sample	t-value	p-value	Conclusions
Environmental concern -> Consumer attitude	0.144	1.992	0.047	Significant
Perceived usefulness -> Consumer attitude	0.405	4.733	0.000	Significant
Incentives -> Consumer attitude	0.380	4.929	0.000	Significant
Environmental concern -> Purchase intention	0.040	0.531	0.596	Insignificant
Perceived usefulness -> Purchase intention	0.252	2.213	0.027	Significant
Incentives -> Purchase intention	0.168	1.238	0.216	Insignificant
Consumer attitude -> Purchase intention	0.437	4.040	0.000	Significant

Table 8 shows that environmental concerns have an impact on consumer attitudes. Therefore, the hypothesis of this study that high environmental concern has a positive and significant effect on consumer attitudes towards electric vehicles is supported. The perceived benefits variable then positively and significantly affects consumer attitudes. This suggests that higher perceived benefits of electric vehicles correspond

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to the development of more positive consumer attitudes towards electric vehicles. Furthermore, the incentive variable positively and significantly impacts consumer attitudes. This suggests that the continued provision of incentives to purchase electric vehicles promotes positive consumer attitudes towards such vehicles. Then, the environmental concern variable does not affect purchase intention. This shows that an individual's environmental concern does not influence their intention to purchase an electric vehicle. The perceived usefulness has a positive and significant effect on purchase intention, which means that the higher the perceived usefulness of electric vehicles, the higher the purchase intention of the respondents. Incentive variables do not affect purchase intention. This hypothesis is not accepted in this study. This shows that the incentives provided for the purchase of electric vehicles will not significantly affect the purchase intention of electric vehicles. Consumer attitude variables have a positive and significant effect on purchase intention, and it can be interpreted that the higher the consumer attitude, the higher the consumer purchase intention.

5.9   Indirect Effect Testing

The results of indirect testing of variables, known as mediation, are presented in Table 9. Consumer attitudes were used as the mediating variable in this study. The mediation test results of this study were as follows:

Table 9. Indirect effect based on partial least square

Paths	Original sample	t-value	p-value	Conclusions
Environmental concern -> Consumer attitude -> Purchase intention	0.063	1.858	0.063	Insignificant
Incentives -> Consumer attitude -> Purchase intention	0.166	3.229	0.001	Significant
Perceived usefulness -> Consumer attitude -> Purchase intention	0.177	2.785	0.005	Significant

According to Table 9, consumer attitude does not act as a mediator between environmental concerns and purchase intention. This is because the t-value (1.858) and p-value (0.063) do not meet the criteria of t-value≥ 1.96 and p-value ≤ 0.05. However, it is important to note that consumer attitude functions as a mediator between perceived usefulness and purchase intention, as the t-value (3.229) and p-value (0.001) meet the criteria. Additionally, consumer attitude also acts as a mediator between incentives and purchase intention, because the t-value (2.785) and p-value (0.005) meet the criteria.

6.   Discussion

In this study, researchers found that consumers concerned about the environment have positive attitudes towards green products. The results of this study answer the first hypothesis, that environmental concern has a positive and significant effect on consumer attitudes. Therefore, environmental concerns can shape consumer attitudes toward electric vehicles as a solution to environmental problems, particularly air pollution. Consumers in this study are aware that environmental issues related to air pollution are a serious concern, and they care about this problem and support electric vehicles as a wise idea and action to protect the environment. This finding is consistent with and supported by Kirmani and Khan (2018), Paul et al. (2016), and Wu et al. (2019), who explain that environmental concerns have a significant impact on attitudes, resulting in positive consumer attitudes through sensitivity to environmental issues and active participation in environmentally friendly programs.

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Environmental concerns can motivate consumers to desire environmentally friendly products (Adnan et al., 2018). Similarly, Al Mamun et al. (2018) found that environmental concerns have a positive and significant impact on attitudes towards green products. This is also consistent with research on environmental concerns, which is one of the strongest factors influencing attitudes towards green products. Research indicates that today's educated and mature generations take environmental issues seriously and are environmentally responsible (Jaiswal & Kant, 2018). Therefore, the results of the respondents in this study, who are predominantly university-educated and aged between 20-30 years, take environmental issues seriously and are environmentally responsible and indicate that environmental concerns influence consumer attitudes.

This study also found that environmental concerns do not influence purchase intention. The results of this study reject the second hypothesis. This finding is supported by the statement that environmentally concerned consumers tend to see green energy consumption as the best option and support it but may not be at the stage of directly using it (Chaudhary, 2018; Chaudhary & Bisai, 2018; Policarpo & Aguiar, 2020). This study shows that consumers' environmental concerns encourage them to think about buying a product. Even consumers who do not want to buy green products have environmental concerns and believe that environmental friendliness is important. Thus, environmental concerns can influence positive consumer attitudes. As a result, environmental concerns do not influence or support consumers' purchase intentions in the results of this study. This result is in line with the findings of Chaudhary (2018), who found that environmental concerns do not lead to purchase intentions, and Chaudhary and Bisai (Chaudhary & Bisai, 2018), who found that environmental concerns do not influence electric vehicle purchase intentions. A previous study found that consumers who did not want to buy green products were still environmentally aware (Naalchi Kashi, 2020). Therefore, it can be concluded that environmental concern forms only positive consumer attitudes and does not directly lead to purchase intention or through attitude mediation.

Next is the aspect of perceived usefulness, and this study has identified that perceived usefulness can significantly influence consumer attitudes and subsequently affect their purchase intentions, both directly and indirectly, through the mediation of consumer attitudes. The results of this study answer the third and fourth hypotheses, namely, that perceived usefulness has a positive and significant effect on consumer attitudes and consumer purchase intentions. Therefore, it can be inferred that consumers believe that the advantages offered by electric vehicles can effectively offset energy consumption, thereby alleviating the financial burden on households. These findings are consistent with prior research that has established that perceived benefits can exert the most substantial impact on shaping attitudes, primarily because they instill positive convictions among consumers (Jaiswal et al., 2021). Consumers tend to form positive attitudes toward electric vehicles when they recognize benefits such as financial savings, enhanced performance, and increased comfort (Huang et al., 2021). In the context of Technology Acceptance Model, perceived benefits directly influence an individual's attitude toward embracing new technology (Sun & Wang, 2020). Perceived benefits have been observed to be a positive predictor of both attitudes and purchase intentions toward EVs, aligning with the notion that perceived benefits, particularly in the form of information, are more appealing and readily embraced by consumers (Sun & Wang, 2020).

The reduced expenses associated with electric vehicle usage and the perception that electric vehicles enhance travel efficiency and reduce pollution contribute to heightened consumer perceptions, consequently fostering purchase intention (Naalchi

Kashi, 2020). Perceived benefits within the realm of electric vehicles translate into purchase intent by effectively differentiating electric vehicles from other modes of transportation, thereby positively influencing consumers. Perceived benefits consistently play a pivotal role in introducing new technology, enabling consumers to evaluate their merits and develop purchase intentions (Shanmugavel & Micheal, 2022). These findings also corroborate prior research, indicating that when consumers perceive technology such as electric vehicles as offering beneficial information, they foster positive beliefs among consumers and, consequently, positively influence purchase intentions (Kessler & Buck, 2017; Matubatuba & De Meyer-Heydenrych, 2022; Ye et al., 2021; Yu et al., 2018).

This study found that incentives have a positive and significant effect on consumer attitudes, but incentives do not directly affect purchase intentions but must be mediated by consumer attitudes. Little attention has been paid to exploring incentives as independent variables in shaping consumer attitudes, as more use risk is an attitude-forming variable. Thus, this study uses the incentive variable to be tested in shaping attitudes based on Jaiswal et al., (2021)those who find that risk does not affect a consumer's attitude. Many studies have used incentives as variables to confirm purchase intentions on electric vehicles. Government support in the form of incentives does not have the expected effect of influencing and supporting consumer purchase intentions. It reports that it is better to support the performance or benefits of electric cars, which will further shape purchase intentions (Jaiswal et al., 2021; Wang et al., 2017). This study indicates that incentives do not influence purchase intentions. The findings of this study are supported by previous research, which suggests that incentives alone will not support purchases unless accompanied by a supportive technology infrastructure such as electric vehicle charging stations. A study conducted in Malaysia and India, in an area lacking electric vehicle facilities such as battery charging stations, found that incentives did not influence the purchase intention of electric vehicles (Krishnan & Koshy, 2021).

The findings of this study are also supported by Asadi et al., (2021) those who found that incentives do not significantly influence purchase intention. The results of this study answer the fifth hypothesis and reject the sixth hypothesis, namely that incentives only have a positive and significant effect on consumer attitudes but not on purchase intentions directly. However, these results contradict the previous findings (Liao, 2022; Shanmugavel and Micheal, 2022) who found that incentives stimulate purchase intention among EV consumers of electric vehicles. These differences could be attributed to variations in the research location and timing. Liao's research was conducted in China in three major cities with high electric vehicle sales, while Shanmugavel and Michael studied the existing electric vehicle market at that time. In contrast, this study was conducted in Jakarta, which has recently implemented electric vehicles with specific incentives for different vehicle types. In summary, this study supports the idea that incentive policies alone do not consistently influence the intention to purchase electric vehicles. This suggests the importance of considering other factors, such as infrastructure support and the actual benefits of electric vehicles when designing policies to promote electric vehicle adoption.

The results indicate that consumer attitudes positively and significantly influence purchase intention. The results of this study answer the seventh hypothesis, that consumer attitude has a positive and significant effect on purchase intention. This research finding is supported by Handayani (2017) that a consumer's positive attitude towards a product will affect the buying intention of the consumer, meaning that if a consumer understands and views electric vehicles positively, they are more likely to intend to purchase them. This finding is also consistent with Chaudhary and Bisai's

(2018) research, in which a positive consumer attitude results in positive consumer behavior, such as the intention to purchase electric vehicles. The research results also align with previous studies, indicating that purchase intention can predict fundamental buying behavior, particularly when consumer attitudes drive this intention (Jaiswal & Kant, 2018; Wei et al., 2017). These findings are consistent with several studies that have found that consumer attitudes can generate or influence consumer purchase intentions (Bhutto et al., 2022; Sun & Wang, 2020; Thi et al., 2019). Therefore, it can be concluded that if consumers in Jakarta support electric vehicles as environmentally friendly vehicles and consider them to protect the environment in Jakarta, this will impact their consideration and purchase of electric vehicles.

This study has limitations in the research area, namely, only research in Jakarta. The sample in this study was more general because questionnaires were distributed throughout the Jakarta area. The indicators of each statement also limit this study used to measure the variables.

7.   Conclusion

The results showed that environmental concern, perceived usefulness, and incentives have a strong relationship and significant influence on consumer attitudes toward electric vehicles. Perceived usefulness and consumer attitude strongly influence purchase intention for electric vehicles in Jakarta, whereas environmental concern does not have a significant effect directly or through consumer attitude. However, incentives indirectly influence consumers' attitudes toward purchase intentions.

Perceived usefulness is the largest contributor to consumer attitude and purchase intention; therefore, it can be maximized by explaining and informing consumers of activities related to using electric vehicles to reduce air pollution, reduce transportation costs, and increase travel efficiency. The results of this study also show that the incentives launched to increase purchase intention must first be serious enough to convince the public. Obtaining and packaging attractively and socializing or echoing continuously to obtain an assessment and evaluation from consumers will lead to consumer purchase intentions on electric vehicles. Environmental awareness should be intensified and taught to individuals related to considering when buying products. Individuals not only think that environmental concerns only act on the environment, so that electric vehicle solutions to environmental problems can be achieved.

8.   Recommendation

This study showed that the perceived usefulness of electric vehicles influences people's attitudes and intentions to buy them. However, incentives and environmental concerns do not directly affect purchase intention. It is important to note that this study was limited to Jakarta and examined only certain variables related to electric vehicles. Future research could be conducted in major cities across Indonesia and include additional variables such as ease of use and completeness to gain a more comprehensive understanding.

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