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**ANTECEDENTS OF ELECTRIC VEHICLE ADOPTION INTENTION IN  
INDONESIA: INSIGHTS INTO WILLINGNESS TO PAY, ENVIRONMENTAL  
AWARENESS, AND ENVIRONMENTAL COGNITIONS**



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**Abstract**

The purpose of this study is to analyze the insights into willingness to pay and environmental factors of attitude-intention on electric vehicle adoption in Indonesia. This research used a quantitative research method in the form of a survey using a purposive sampling technique applied to 220 respondents who planned to use electric vehicles. We used Multivariate Data Analysis, as the Partial Least Squares Structural Equation Modeling (PLS-SEM) method, to analyse the data through SmartPLS Version 4.0. The findings showed that: willingness to pay positively and significantly affects the intention to adopt electric cars; environmental awareness positively but insignificantly affects the intention to adopt electric cars. Environmental cognition negatively influences intention to adopt electric vehicles. In addition, willingness to pay has a significant positive effect on perceived value, while environmental awareness has a negative and insignificant effect, and environmental cognition produces the same results. This study shows that perceived value has a significant positive effect on the intention to adopt electric vehicles and mediates the relationship between willingness to pay and environmental cognition in the intention to adopt. Overall, the data confirms that willingness to pay and environmental awareness reinforced by "perceived value" are significant factors in increasing the intention of Indonesian people to use electric cars.

**Keywords:** Willingness to Pay, Environmental Awareness, Environmental Cognition, Perceived Value, Adoption Intention, Electric Vehicle (EV)

## INTRODUCTION

Climate change and environmental harm have become major global concerns in recent years. Transportation is one of the main sources of carbon dioxide (CO<sub>2</sub>) emissions. Despite some advances and policy initiatives in various countries, fossil fuel use within the sector has not begun to drop significantly. One way to lessen this environmental impact is by adopting electric vehicles (EVs), now becoming increasingly popular because they don't make any direct emissions during operation. Alongside these developments, electric vehicles are taking shape gradually signing onto the global auto market and representing a more environmentally friendly choice (Yusuf et al., 2024).

Indonesia As a developing country with the fourth largest population in the world and a rapidly growing transport sector, Indonesia certainly has both opportunities and challenges in its transition to electric vehicles. Recently, governmental policies such as Presidential Decree No 55 of 2019 on the Development and Promotion of Green Energy Products and technologies', as well as fiscal and non-fiscal policy measures to promote electric vehicles have been introduced. However, the pitching of electric vehicles in Indonesia.

Recent works suggest that besides technical and economic considerations, consumer behavior and attitudes are substantial driver of adoption for new technologies. As such, psychological and behavioral factors with respect to EV adoption need to be understood. It is suggested that the adoption decision is driven not just by rational factors like price but by values, perceived benefits, awareness, and attitudes regarding environmental issues over behavior and psychology (Harnisch, 2017). Respectively, in this context, dispositions such as willingness to pay, environmental consciousness and environment cognition & perceived value are equally influential in determining the consumer behavior towards electric vehicles (Shaikh et al., 2023).

Willingness to pay is the extent to which consumers are willing to pay a premium for certain EV characteristics including extended range, reduced battery charge time, equivalent performance with gasoline-powered vehicles, or air pollution reductions. Environmentally conscious consumers and consumers who value high technological benefits also have a tendency to agree Persons with high tech products that are cheaper to produce but completely matched in energy performance standards with any other alternative on the market, for example, say they feel best purchasing at the expense of sacrifice persons with traditional commodities but simply because they are priced lower. So knowing about the heavens of willingness to pay can be a major help for producers and Related Posts it can be a major help for politician in writing more effective prices-and promotion strategies (Pang et al., 2023).

Environmental awareness reflects a person's ability to understand and empathize with the environment. People with high levels of environmental awareness tend to be more aware of how daily habits impact the natural environment and thus support environmentally friendly products or future policies that contribute to the preservation of our precious resources. Although increased emphasis on environmental issues in public lectures and the media has raised awareness of environmental issues across Indonesia, practical actions such as the adoption of electric vehicles are still far from widespread. Therefore, it is important to understand how this awareness emerges and influences our consumption decisions (Alamsyah et al., 2018).

Environmental cognition refers to the scope and parameters that shape an individual's awareness. It is environmental cognition that influences how a person assesses the ecological impact of their own actions. For example, regarding electric vehicles, misunderstandings or

lack of knowledge about their efficiency, long-term costs, or performance can be barriers to adoption, even if the level of understanding is high. Therefore, improving one's environmental knowledge is a crucial step in narrowing the gap between what is known and how one behaves (Ferreira et al., 2023).

Perceived value is an important aspect which mediates between above factors and decisions on adoption. Users consider the benefits and trade-offs of using an electric vehicle with perceived value. Electric vehicles will achieve greater benefits than costs in consumers' minds, whether in terms of financial gains, convenience of access to at home recharging stations or protection for nature if little else. This is when it becomes most likely for them as consumers to adopt such a product. Thus, perceived value is an important place to intervene for behavior-An analysis of direct effects model (Luo et al., 2013).

This study offers promise by depicting the relationship between willingness to pay, environmental awareness, cognitive processes, and perceived value. This expected practical contribution will be helpful for policymakers in the automotive industry in general or marketers. Specifically, this information can help design better communication strategies, educational efforts, and incentives to promote electric vehicle purchases in Indonesia. Furthermore, the study's findings can serve as a theoretical foundation for further research on environmental technology adoption in developing countries.

The novelty of this research is the combination of three psychological variables (willingness to pay environmental quality and environmental cognition) with the mediation of perceived value. Indonesian scholars have seldom analyzed this concept simultaneously before. More over, while most of the previous studies tended to be concerned with approaches in the soft or only two kinds of behavioral factors, both are contained in large measure here. Further, this research was done at a time when the Indonesian government is in the midst of a huge depletion of traditional sources of energy. We therefore consider the results of the present study essential in creating policy recommendations that are also based on actions, experiences and feelings. Rather than making business operations and investment decisions based purely from calculative, statistical point or an economic analysis.

This research contributes theoretically by producing an electric vehicle adoption model that speaks to the changing psychological attitudes and perceived value. Finally, the model's utility is detailed for several developing countries facing similar challenges and conditions in adopting electric habits, by introducing new terms to old assumptions about cast-iron corn threshers. This research has concrete practical value. This user-friendly model provides strategic advice for automakers and regulators in designing interventions that can make the public aware of the value of electric vehicles. In the longer term, we expect that by releasing concrete research into these psychological forces, we will be able to further expedite the already apparent trend toward sustainable mobility. That is to say, this study not only investigates what encourages consumers to purchase electrical vehicles (EVs) but also researches how to make them view EVs as part of life and ecological responsibility. In other words, it is significant. In making a concrete contribution towards national emission reduction targets and sustainable development. The new approach and combination of variables employed in this research is expected to add significantly to the scientific literature in the areas of consumer behavior and green technology.

## REVIEW OF LITERATURE

### TAM Theory

Davis (1989) developed the Technology Acceptance Model (TAM) theory in order to explain what factors affect the acceptance of technology by users (Kuswati et al., 2021). TAM is a widely used theory in many different domains to forecast and comprehend user behavior for new technologies, such as using things we've never used before (television sets, cars (integrated circuits) smartphones). And it also has proven popular because it focuses on psychology aspects concerning users' intentions or plans in adopting technological products such as electric vehicles, software rollouts etc (Yuriev et al., 2018).

### Intention to Adopt Electric Vehicles (EV)

Adoption intention refers to the extent to which an individual is willing or plans to use a product or innovation in the near future (Ajzen, 1991). In the context of electric vehicles (EVs), adoption intention refers to an individual's desire or willingness to purchase and use an electric vehicle as an alternative to fossil-fueled vehicles. This intention is an important indicator in predicting actual behavior, as explained in Ajzen's Theory of Planned Behavior (TPB), which states that adoption intention.

### Willingness to Pay

Willingness to Pay (WTP) is the maximum price that indicates a customer's willingness to pay for a product or service (Santos & Schlesinger, 2021). The WTP value varies widely and can change over time. A good understanding of WTP makes it easier for businesses to adjust prices. This, in turn, can increase sales conversions. Essentially, willingness to pay is a method used to measure product value. Measuring WTP will help you understand what customers value in a product or service.

### Environmental Awareness

Usman et al., (2023) Environmental awareness, is defined by cognitive, attitudinal, and behavioral components of a belief held by an individual. (1996). The cognitive component can be defined as consumers' subjective understanding of their environmental impact or lack thereof. The affective component refers to how much someone cares about the environment, which is key to predicting attitudes. Those who genuinely care about the environment are more inclined to adapt their behaviour for its preservation. Environmental awareness is the notion that people have knowledge of environmental problems and are willing to support solutions to the problems or contribute to improving the environment on a personal basis

### Environmental Cognition

Environmental cognition is an individual awareness and understanding of the environmental context, issues, and challenges that exist around them. As Gifford (2013) has mentioned this environmental awareness does not only include knowledge about environmental issues but also the process of evaluating whether your behaviour is beneficial or harmful to nature and society. People with sound environmental perception often possess a greater understanding of how reasonably their different decisions as consumers and citizens are likely to more or less directly impact the environment (Henry & Dietz, 2012).

### Perceived Value

Sabono & Murwaningsari, (2022) Define perceived value as the perception of a consumer of the overall value of the product/service as compared to the alternative. Buyers compare what they get against what they give, be it monetary or other cost in form of convenience or time. (Source). The perceived value can also be seen as an important

determinant in ensuring a customer wants to continue purchasing and being loyal. The benefit communicated to consumers can enhance purchase frequency and protect consumers from switching to competitive products escoda (Higuera-Castillo et al., 2024).

## RESEARCH METHOD

In that manner the current research adopts a quantitative research methodology, such type of translation process is ordered, planned, structured and constructed from the outset. According to Sekaran & Bougie (2019), quantitative research is a philosophy of science characterized by the positivist paradigm, used to study a population or sample. It means collecting data via structured research instruments with subsequent statistical or numerical data analysis frequently carried out with survey-based research techniques. Research population represents the total sum of entities or psychological phenomena defined by specific characteristics. In this research, the population that we are going to use is Indonesian people who have an intention to buy electric vehicles. The sample, according to Achmad & Kuswati (2021), is a part of psychological elements or members extracted systematically from the population via certain selection processes. This study employs purposive sampling, which is used to by selecting participants based on specific characteristics in order to provide relevant and representative data.

Acknowledging the infinite nature of the target population, the sample size is determined according to the Malhotra (2006) who suggested at least ten respondents for each indicator in the questionnaire. Given that the study incorporates 22 indicators, the sample size is then determined as  $n = 10 \times 22 = 220$  respondents. The study leverages PLS-SEM (Partial Least Squares Structural Equation Modeling) to analyze the data collected, a powerful statistical approach based on minimal distributional assumptions and capable of predicting and testing complex structural models (Gio et al., 2019). Analytical use of SMARTPLS software, a computer application that is wellknown because it is a strong software, elastic software, because it does not require strict parametric assumptions, that can be easily applied to measurement models that contain any type of scale from ratio, interval, and Likert (Harahap, 2020).

Within the PLS-SEM framework, analysis is bifurcated into two primary components: the outer model, which evaluates the measurement relationships between constructs and indicators, and the inner model, which assesses the structural relationships among latent variables.

## RESULTS AND DISCUSSION

To conduct this study, researchers recruited 266 respondents. The analysis process was conducted using the Smart PLS 4.0 application.

**Table 1.**  
**Respondent Description**

<b>Age</b>	<b>Frequency</b>	<b>Percentage</b>
17-20	55	20.7%
21-30	165	62%
31-40	12	4.5%
>40	34	12.8%
<b>Gender</b>		
Woman	172	64.7%

Man	94	35.3%
<b>Education</b>		
Students	158	59.4%
Businessman	42	15.8%
Private sector employee	28	10.5%
Civil Servants/TNI/POLRI	26	9.8%
Etc	12	4.5%
Amount	266	100%

Source: Processed Primary Data (2025)

Based on the results of the analysis of respondent characteristics, the majority of respondents in this study were aged 21–30 years, as many as 165 people (62%), followed by the 17–20 age group as many as 55 people (20.7%), the age of >40 years as many as 34 people (12.8%), and the age of 31–40 years as many as 12 people (4.5%). Based on gender, female respondents dominated with a total of 172 people (64.7%), while men were 94 people (35.3%). Viewed from the type of occupation, most respondents were students or university students as many as 158 people (59.4%), followed by entrepreneurs 42 people (15.8%), private employees 28 people (10.5%), and civil servants/military/police as many as 26 people (9.8%). This shows that the respondents in this study were dominated by the young age group, female, and working as students or university students.

### Outer Model Analysis

#### Convergent Validity

An indicator is considered to exhibit satisfactory convergent validity when its outer loading surpasses the threshold of 0.7. Presented below are the respective outer loading coefficients corresponding to each indicator within the research variables.

**Table 1. Outer Loading Values**

Variables	Indicator	Outer Loading
Willingness to Pay (X1)	X1.1	0.859
	X1.2	0.881
	X1.3	0.788
	X1.4	0.822
Environmental Awareness (X2)	X2.1	0.754
	X2.2	0.898
	X2.3	0.909
	X2.4	0.871
Environmental Cognition (X3)	X3.1	0.809
	X3.2	0.808
	X3.3	0.859
	X3.4	0.887
	X3.5	0.874
Perceived value (Z)	Z.1	0.755
	Z.2	0.843
	Z.3	0.876
	Z.4	0.876
	Z.5	0.855
EV Adoption Intention (Y)	Y.1	0.901
	Y.2	0.923

Y.3	0.878
Y.4	0.895
Y.5	0.808

Source: Processed primary data (2025)

Based on Table 1, we can see that most of the indicators of the research variables have outer loading values above 0.7. However, as Chin (1998) described, an approximated coefficient value between 0.5 and 0.6 is considered permissible in achieving the convergent validity criterion. The data presented here also suggests that none of the indicators of the variable has an outer loading value less than 0.5. Therefore, all the indicators are considered relevant and statistically significant for inclusion in the research model and are eligible for further analysis.

**Discriminant Validity**

The discriminant validity evaluation is conducted through examination of the Average Variance Extracted (AVE), wherein values greater than 0.5 signify compliance with the convergent validity criterion, as proposed by Fornell and Larcker (1981). The corresponding AVE values for each variable utilized in this study are presented below:

**Table 2.**

**Average Variance Extracted Value**

Variables	AVE (Average Variance Extracted)	Information
Willingness to Pay (X1)	0.702	Valid
Environmental Awareness (X2)	0.740	Valid
Environmental Cognition (X3)	0.719	Valid
Perceived value (Z)	0.709	Valid
EV Adoption Intention (Y)	0.778	Valid

Source: Processed Primary Data (2025)

Table 2 Comparison of All AVE Values Referring to Table 2[6] The AVE (Average Variance Extracted) values for all variables analyzed in this research are above the threshold (that is, 0.5). In particular, Willingness to Pay scores 0.702, Environmental Awareness scores 0.740, Environmental Cognition scores 0.719, Perceived Value scores 0.709, and EV Adoption Intention scores 0.778. Thus, these results confirm that all constructs used in this study have acceptable discriminant validity, validating that each latent variable is unique.

**Reliability Test**

Reliability testing is an assessment of an instrument, in terms of internal consistency and how measurement stability is the extent to which the instrument is able to measure a theoretical construct (Abdillah and Hartono, 2015). To assess the reliability in this study, Composite Reliability and Cronbach’s Alpha indices were used. Composite Reliability acts as a diagnostic instrument to genuineness check the internal reliability of the indicators that make up each variable. It's more than 0.7, which indicates an adequate composite reliability for an individual construct. The table presented below displays the values of composite reliability for the variables of this research framework.

**Table 3.**

**Composite Reliability**

Variables	Composite Reliability
Willingness to Pay (X1)	0.904
Environmental Awareness (X2)	0.919

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Environmental Cognition (X3)	0.927
Perceived value (Z)	0.924
EV Adoption Intention (Y)	0.946

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Source: Processed primary data (2025)

As seen in Table 3, the composite reliability coefficients of all research variables are above 0.7, confirming the strength of the measurement model. The values are as follows, Willingness to Pay 0.904, Environmental Awareness 0.919, Environmental Cognition 0.927, Perceived Value 0.924, and lastly EV Adoption Intention 0.946. Clearly all construct meets the threshold of composite reliability, which together by not pencil function that all variables are reasonably highly internally reliable.

### **Cronbach's Alpha**

The next reliability test is Cronbach's  $\alpha$ , which is a statistical measure to determine the internal consistency and homogeneity of measurement items in a construct. According to Cronbach (1951) if the alpha coefficient of a construct is 0.60 or higher, the internal consistency of a scale in terms of reliability is acceptable. The following are the calculated Cronbach's Alpha values for this research, indicating the reliability of the measurement instruments used.

**Table 4.**  
**Cronbach's Alpha**

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<b>Variables</b>	<b>Cronbach's Alpha</b>
Willingness to Pay (X1)	0.859
Environmental Awareness (X2)	0.880
Environmental Cognition (X3)	0.903
Perceived value (Z)	0.896
EV Adoption Intention (Y)	0.928

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Source: Processed Primary Data (2025)

According to Table 4, the Cronbach's alpha coefficients for every variable in this research exceed the threshold of 0.6, signifying that the reliability criterion has been satisfied and, consequently, all constructs can be deemed dependable.

### **Inner Model Analysis**

#### **Goodness of fit test**

The evaluation of the structural model can also be seen as a form of correlation, which provides understanding on the dynamic relationships exhibited between manifest and latent variables to begin to map the interplay within the complex system of higher level predictor, mediating, and outcome variables. There are two main statistical tests to assess the fit of the model: R-Square ( $R^2$ ) and Q-Square ( $Q^2$ ) tests. Where in  $R^2$  coefficient of determination indicates how much of the variance of an endogenous variable is explained by exogenous variables. The closer the  $R^2$  value is to (1) the better the model explains the data. Even so,  $R^2$  scores of 0.75, 0.50 and 0.25 have conventionally been interpreted as demonstrating strong, moderate and weak robustness of a model, respectively (Ghozali, 2015). Following are the essential parameters obtained based on this study:

**Table 5.**  
**R-Square Value**

	R-Square	R-Square Adjusted
Perceived value (Z)	0.603	0.599
EV Adoption Intention (Y)	0.673	0.668

Source: Processed primary data, (2025)

According to the R-Square coefficient Based on Tabel 5, the variables of Willingness to Pay, Environmental Awareness, and Environmental Cognition, have a collective effect on Perceived Value. The value of 0.603 (60.3%) obtained indicates a moderate strength relationship. In addition, the R-Square value of 0.673 (67.3%) per cent, that we can see in Table (5), also expresses a moderate level of conversation between Willingness to Pay Environmental Awareness and Environmental Cognition when it comes to EVs adoption intention.

Next, the test Q-Square is used for evaluation. Within the structural model assessment, this Q2 (Predictive Relevance) is used if we want to evaluate the predictive ability of the model. So this Q2 value indicates the accuracy of the model with its parameters in the real observed data. A  $Q2 > 0$  represents predictive relevance of the model while  $Q2 < 0$  indicates a lack of predictive value of the model. The calculated value of the Q-Square value is shown as under:

$$\begin{aligned}
 Q\text{-Square} &= 1 - [(1 - R^2_1) \times (1 - R^2_2)] \\
 &= 1 - [(1 - 0.603) \times (1 - 0.673)] \\
 &= 1 - (0.397 \times 0.327) \\
 &= 1 - (0.129819) \\
 &= 0.870181
 \end{aligned}$$

Based on the research results above, the calculated Q-Square value of 0.870181. This figure implies that the proposed research model accounts for as much as 87% of the variance explained in the data, leaving only 13% of variance unexplained or generated from other factors that cannot be explained by the model. Thus, this quantitative proof corroborates that the goodness of fit of the research model is solid and reliable.

**Hypothesis Testing**

To test the proposed hypothesis more rigorously, the analysis uses a table with path coefficient values, to show the relative effect sizes between variables. A p-value of 0.05 indicates no direct effect. In the method used in this study, the statistical significance threshold is t-statistic = 1.96 ( $\alpha = 5\%$ ). Thus, the factor is said to be significant if the t-statistic > 1.96. Data were analyzed using SmartPLS (Partial Least Square) software version 4.0 to perform the hypothesis testing procedure. The following table shows the path coefficient values obtained from the analysis.

**Direct Effect**

**Table 6.**  
**Path Coefficient (Direct Effect)**

	Hypothesis	Original Sample	t-Statistics	P Values	Information
Willingness to Pay Adoption Intention	->EV H1	0.231	3,602	0,000	Significant Positive

Environmental Awareness (X2->EV Adoption Intention	H2	0.053	0.559	0.275	<b>Positive Not Significant</b>
Environmental Cognition -> EV Adoption Intention	H3	-0.031	0.221	0.413	<b>Negative Insignificant</b>
Willingness to Pay -> Perceived value	H4	0.187	3,111	0.001	<b>Significant Positive</b>
Environmental Awareness-> Perceived value	H5	-0.055	0.702	0.242	<b>Negative Insignificant</b>
Environmental Cognition -> Perceived value	H6	0.685	7,431	0,000	<b>Significant Positive</b>
Perceived value -> EV Adoption Intention	H7	0.653	7,834	0,000	<b>Significant Positive</b>

Source: Processed primary data, (2025)

### Indirect Effect Test

The next step is to check the indirect effect, from Specific Indirect Effect results. A p-value of 0.05, the finding is not significant, indicates that the mediator variable does not channel the effect of the exogenous variable on the endogenous variable. Here, the relationship acts like a direct effect. This is followed by Specific Indirect Effect values.

**Table 7.**  
**Specific Indirect Effect**

	Hypothesis	Original Sample	t-Statistics	P Values	Information
Willingness to Pay -> Perceived Value -> EV Adoption Intention	H8	0.112	2,934	0.002	<b>Significant Positive</b>
Environmental Awareness -> Perceived Value -> EV Adoption Intention	H9	-0.036	0.694	0.244	<b>Negative Not Significant</b>
Environmental Knowledge -> Perceived Value -> EV Adoption Intention	H10	0.447	5,091	0,000	<b>Significant Positive</b>

Source: Processed primary data, (2025)

### Discussion

This research aims to "Assessing Factors Influencing Electric Vehicle Adoption Intentions in Indonesia: Insights into Willingness to Pay, Environmental Awareness, and Environmental Confidence". To conduct this research, the researcher took 266 respondents. This analysis process was carried out using the Smart PLS 4.0 application.

### **The influence of willingness to pay on the intention to adopt electric vehicles**

The results of the hypothesis testing from the initial analysis revealed that willingness to pay exerts a positive and statistically significant impact on EV adoption intention. This conclusion is substantiated by a t-statistic value of 3.602, which surpasses the critical threshold of 1.96, alongside a p-value of 0.000, remaining well below the 0.05 level of significance. Furthermore, the original sample coefficient of 0.231 confirms a direct correlation, implying that as consumers' willingness to pay increases, their intention to adopt electric vehicles also strengthens proportionally.

The empirical findings highlight that economic variables remain primary drivers of consumers' adoption of electric vehicles (EVs). While the environmental sustainability and energy efficiency of EVs is a well known fact, they still have a much higher market price than fossil-fueled vehicles, a strong barrier that classify EVs as high-cost vehicle. Consumers who are more willing to pay value the long term benefits of owning an EV like lower operating costs, better energy efficiency, and contributions to reducing carbon emissions. These results are consistent with previous work by Rezvani et al. (2020) and Hardman et al. (2021), both of which highlight the rationale for EV adoption that is mainly governed by the readiness and expected economic value of the EVs. Thus, the more prepared a consumer is to pay additional money to switch from conventional vehicles to environmentally conscious options, the more likely it is that they will actually do so.

From a practical standpoint, these results generate significant implications for industry stakeholders and policy architects. Firstly, it is imperative to develop more competitive pricing frameworks achieved through enhanced production efficiency and fiscal incentives from the government to increase the affordability of EVs among the broader population. Secondly, manufacturers should reinforce the perception of value for money by emphasizing long-term cost savings and non-financial advantages, including comfort and social prestige. Through the synergy of strategic pricing and heightened consumer awareness of EV benefits, the intention to adopt electric vehicles among Indonesian consumers can be substantially amplified.

### **The influence of environmental awareness on the intention to adopt electric vehicles**

The findings of the second hypothesis test reveal that environmental awareness exerts a positive yet statistically negligible influence on EV adoption intention. This conclusion is substantiated by a t-statistic of 0.559, which falls short of the critical threshold of 1.96, alongside a p-value of 0.275, exceeding the 0.05 significance criterion. Consequently, while the association between environmental awareness and electric vehicle adoption intention demonstrates a positive trajectory (original sample = 0.053), the magnitude of the effect is insufficient to attain statistical significance.

These results suggest that Indonesians have not yet fully internalized their environmental awareness into their consumption behavior, particularly when it comes to choosing eco-friendly cars. This means that while some may understand the importance of protecting the environment and reducing carbon emissions, this level of awareness is not enough to motivate them to switch to electric cars. The survey results appear to align with the findings of several previous studies showing that environmental awareness does not always lead to consumer intentions or real-world behavior (Joshi & Rahman 2023; Li et al. 2022). Factors such as the cost and availability of electric charging facilities often play a greater role in consumer decisions than simply awareness of environmental issues. In reality, public environmental awareness alone will not lead Indonesians to choose to purchase an

electric car. Affordable EVs will likely be a priority, followed by convenient local charging; this is because Nodes are more closely considering the reduced barriers to attraction and are hesitant about certain noble initiatives, such as those they hope will be adopted by some at all costs. A more accessible yet fresh method for the general public to understand that consumption power will always be a part of our lives has been introduced. This has led to the imposition of operating hours and increased fees. Some states also want others to abandon their zero-limit regulations or adopt open-store policies. As a result, environmental awareness can translate into behavioral changes among electric car buyers.

### **The influence of environmental cognition on electric vehicle adoption intention**

The findings derived from the third hypothesis evaluation reveal that environmental cognition exerts a negative yet statistically insignificant influence on EV adoption intention. This conclusion is substantiated by a t-statistic score of 0.221, notably lower than the critical threshold of 1.96, along with a p-value of 0.413, which substantially exceeds the 0.05 significance benchmark. Furthermore, the original sample coefficient (-0.031) reinforces the existence of a weakly negative association. Consequently, it can be inferred that an individual's comprehension of environmental concerns fails to produce a meaningful impact on their intention to adopt electric vehicles.

The outcome is very interesting: how much one knows and understands about environmental issues, the likelier they are to make environmentally friendly decisions, such as driving electric vehicles ( Zhang et al. 2024 ). But: in the context of this study, environmental cognition was far from proven significant and even had a negative relationship. This may mean that knowing about environmental issues does not necessarily drive consumers to change their consumption behavior, particularly in choosing what car they use to go shopping with. There are multiple explanations for these findings. First, although people are knowledgeable about the effects of pollution and climate change practical economic factors like price, infrastructure availability and battery life of electric vehicles usually determine car purchasing decisions more frequently than good intentions. Second, information about electric vehicles in Indonesia is still very limited so even if people do possess environmental cognition they may remain skeptical about the tangible benefits of an electric vehicle. Third: there could be a so-called attitude-behavior gap where cognitive understanding does not immediately translate into concrete action, someone else erects obstacles.

The practical implications of these results are that strategies designed solely for raising environmental knowledge are not enough to induce undereducated consumers to pick up new habits of environmental protection. A more holistic approach is needed, combining environmental education with other causes such as subsidy programs, developing supportive infrastructures and promoting the immediate benefits of electric vehicles to their users' daily lives. Then public environmental cognition will be closer to actual adoption behavior.

### **The influence of willingness to pay on perceived value**

According to the results of the fourth hypothesis test, willingness to terms of pay has a significant and positive effect on the perceived value. This can be seen from the t is greater than 3.111 ofstastistic, which critical limit 1.96; andp value 0.001 is less than 0.05. The original sample figure of 0.00000041 indicates that the higher the willingness of consumers to pay, they perceive more value for electric vehicle products. These findings show that consumers willing to pay more for electric vehicles than the benefit received feel it was worthwhile. In guide losstworit Cany words, when amann has both in amans priori to another

time basedet andadayo your money firhed car is entire worthten You might even say that those journeysticks However, thanks to a tired sale on the cars mentioned (more than one hundred occasions) jamuandster can be changed instantly This is done in twoopposite applications by making only five sales Thankout of these sales.

Another five examples come from our line one to nine, where the purchaser has damaged his completely legitimate interest. A final five suggestions are tricks that since they are outside normal business hours those who know can easily see which way their house falls give an added tastele end well done This is because if sense can encompass: economic aspects (fuel savings), functional aspects (more modern technology); and emotional aspects satisfaction at participating in the environmental movement. The corollary of this is that when individuals are able and prepared to allocate appropriations for an electric vehicle, they can perceive that increased value in energy efficiency, cost savings on operating expenses environmental liabilities reduced markedly. These results are in agreement with prior research which laid stress on the importance of willingness to pay in influencing consumer value perceptions (Zeithaml, 2020; Monroe, 2023). At the same time, consumers with high willingness to spend money usually perceive the quality and benefits of a product as more important than its price. As a result they will also increase their perceived value. At the level of electric vehicles, this perception are many-sided including economic aspects (fuelsaving), functionally advanced aspects (latest technology), and emotional ones like savoring environmental sustainability Functions are divided and environmental impact is now miniaturized electric cars.

Practically, these results imply that electric vehicle marketing strategies need to be geared toward enhancing consumer perceptions of value. Manufacturers and marketers can emphasize the long-term benefits and value for money offered, for example by presenting a comparison of the operating costs of electric vehicles with fossil-fueled vehicles. Furthermore, government policies in the form of subsidies or price incentives can also strengthen consumer perceptions of value, thereby converting their willingness to pay into a more positive perception of electric vehicles.

### **The influence of environmental awareness on perceived value**

The empirical examination of the fifth hypothesis reveals that environmental awareness exerts a negative yet statistically insignificant influence on perceived value. This inference is substantiated by a t-statistic of 0.702, which falls below the critical threshold of 1.96, and a p-value of 0.242, exceeding the significance benchmark of 0.05. In addition, the original sample coefficient (-0.055) signifies a negative directional relationship, albeit of minimal magnitude. Consequently, it can be inferred that the degree of consumers' environmental awareness does not exert a sufficiently robust impact to enhance their perceived value toward electric vehicles.

This result is of interest as, in theory, environmental awareness should enhance consumer belief that buying an environmentally friendly vehicle can be beneficial. However, the findings from this study indicate that increased awareness of environmental problems does not significantly contribute to consumers viewing electric vehicles as being of greater value. Other barriers like the cost of electric vehicles, charging infrastructure, and the reliability and effectiveness of the technology could be the reason as well. However, although consumers understand that protecting the environment is extremely important, they still not classified electric vehicles into a solution with similar value proposition. These results also are in accordance to Joshi & Rahman (2024) who identified an attitude-behavior gap in the

context of eco-friendly products. High environmental awareness from the group of consumers does not translate into corresponding value perceptions or purchasing behavior. This gap in the Indonesian context is even wider in more practical economic considerations than ecological considerations.

Practically, these findings imply that environmental education strategies alone are insufficient to increase consumers' perceived value of electric vehicles. Manufacturers and governments need to emphasize the immediate benefits consumers experience, such as fuel savings, ease of maintenance, and a more modern driving experience. With this approach, the public's existing environmental awareness can be more closely linked to perceived tangible value of electric vehicles.

### **The influence of environmental cognition on perceived value**

The findings derived from the sixth hypothesis test demonstrate that environmental cognition exerts a positive and statistically significant influence on perceived value. This conclusion is substantiated by a t-statistic of 7.431, which overwhelmingly surpasses the critical threshold of 1.96, alongside a p-value of 0.000, notably below the 0.05 significance criterion. Moreover, the original sample coefficient of 0.685 signifies a robust positive association, implying that as consumers' awareness and comprehension of environmental concerns intensify, their perceived value of electric vehicles correspondingly escalates. These results indicate that comprehension of the aforementioned effects of fossil-fueled vehicles versus electric vehicles will facilitate positively-valued perceptions of the consumption of environmentally friendly vehicles. Consumers with a higher awareness of the need for carbon emission reductions, energy conservation, and sustainability via electric vehicles will approach electric vehicles not just as transportation, but as a social and environmental benefit. These outcomes echo the findings of earlier studies reporting the importance of environmental knowledge in shaping how consumers perceive the value of a green product (Chen & Chang, 2022; Yadav & Pathak, 2024). Put simply, the more an individual understands environmental issues, the more likely he or she will consider electric vehicles to be products with a joint economic, functional, emotional, and ecological value.

particular need to be improved. Information campaigns could better highlight technological benefits, the quantifiable contributions toward lowering pollution levels, and the long-term economic advantages of electric vehicles by manufacturers and the government. With higher consumer environmental literacy, perceived value will be more positive leading to wider adoption of electric has become one of the important issues in improving electric vehicle adoption in Indonesia.

### **The influence of perceived value on the intention to adopt electric vehicles**

Perceived value exerts a robust and statistically substantial influence on EV adoption intention. This inference is substantiated by a t-statistic of 7.834 (surpassing the critical benchmark of 1.96) and a p-value of 0.000 (far below the significance threshold of 0.05), decisively confirming the relationship. Furthermore, the original sample coefficient of 0.653 indicates a strong positive association, underscoring that an increase in perceived value directly amplifies consumers' intention to adopt electric vehicles. In essence, when consumers ascribe greater worth to EVs, their likelihood of adoption intensifies correspondingly. This outcome reinforces that perceived functional, emotional, and ecological advantages of electric vehicles serve as pivotal psychological drivers influencing adoption intentions. For example, consumers whose perceived benefits of EVs were operational cost efficiency, maintenance ease, driving comfort, and environmental

sustainability enablers were expected to provide more motivation for purchase or usage decisions.

These results support earlier findings where perceived value is one of the most important motivators of consumer intention and behaviour for environmentally friendly products (Chen & Chang, 2022; Wang et al., 2023). However, in the context of Indonesia, which is still at a high price point for electric vehicles, perceived value becomes an important mediating variable. Thus the interest and intention to adopt EVs are still high for consumers who perceive high value regardless of the price or infrastructure constraints. Practically, these results imply that electric vehicle marketing strategies should focus on increasing customer perceived value. Manufacturers and governments can highlight the long-term benefits of electric vehicles, such as fuel savings, environmental sustainability, and a positive social image for users. By strengthening consumers' perceived value, the intention to adopt electric vehicles in Indonesia can significantly increase.

**Perceived value mediates the relationship between willingness to pay and electric vehicle adoption intention.**

Results of Hypothesis Testing indicates that perceived value was confirmed as a positive and significant indirect variable between WTP and EV adoption intention. The t-statistic value of 2.934 is above the critical limit of 1.96 which in turn shows that it is significantly different.  $p\text{-value } 0.002 < 0.05$  reach significance. The original sample value of 0.112 has a positive relationship, by which it can be concluded that consumer willingness to pay for perceived value can increase the intention to adopt electric vehicle. These results strengthen the idea that willingness to pay affects adoption intention directly, but also indirectly through consumer perceptions of product value. An EV that costs more is also one that a consumer will be willing to pay more for due to the perceived economic, functional, and ecological benefits and advantages that come with the product. This perceived value grows and so does their intention to adopt an electric vehicle for real.

The outcomes of this investigation are in strong alignment with the principles of the value based adoption model (VAM), emphasizing that perceived value functions as the pivotal mediating construct linking external determinants (such as WTP) to consumer behavioral intentions (Kim et al., 2007). Comparable conclusions were drawn in preceding research, which identified perceived value as a moderating force influencing the interplay between economic variables and the intention to adopt green products (e.g., Chen & Chang, 2022; Sang & Bekhet, 2025). Collectively, these findings bear substantial practical significance for both electric vehicle developers and marketing strategists. Since purchasing power is limited among consumers, further perceived value has been an effective strategy to induce adoption intentions. As a result, both manufacturers and governments must promote the benefits of electric vehicles, whether financial (cost savings over a vehicle's lifetime), technological (reliability, durability, etc.), or environmental (sustainability, pollution reduction, etc.). Enhancing these perceived values can ensure more effective conversion of consumer willingness to pay into actual EV adoption intentions.

**Perceived value mediates environmental awareness on electric vehicle adoption intention**

The outcome of the ninth hypothesis assessment reveals that perceived value does not serve as a statistically significant mediator in the linkage between environmental awareness and EV adoption intention. This conclusion is substantiated by a t-statistic of 0.694, which falls below the critical threshold of 1.96, alongside a p-value of 0.244, surpassing the 0.05

significance benchmark. Furthermore, the association exhibits a slight negative tendency, reflected by an original sample coefficient of -0.036. Hence, the findings clearly imply that environmental awareness exerts no measurable influence on the intention to adopt electric vehicles, whether directly or indirectly through perceived value.

The current research shows, that while consumers are aware of the relevance of environmental sustainability, it does not result in an automatic increase of perceived EV value. Thus, environmental awareness has not yet converted into explicit intentions to purchase electric vehicles. This described phenomenon reflects a green attitude-behavior gap that we can observe as environmentally friendly consumption decisions do not always align with environmental concerns (Joshi & Rahman, 2020). These results may be explained by a number of factors. To begin with, the consumer might think his personal part with the motion of buying an electrical vehicle is insignificant in relation to the international environmental problem. Second, factors such as scarce charging infrastructure, high prices and uncertainty about the reliability of electric vehicle technology might dilute the association between environmental concern and perceived value. Third, high environment-conscious consumers are likely to take other alternatives, which they perceive as easier and low-cost options compared to buying an electric vehicle, such as reducing plastic consumption or more public transportation use.

What these results practically mean is that sustainability campaigns will not be enough by themselves to promote electric vehicles. The immediate tangible benefits consumers receive, often through cost savings, need to be communicated and highlighted by manufacturers and policymakers. Through this, the current public environmental awareness can be consolidated and transformed into beneficial value assessments so they significantly promote electric vehicle adoption intention.

#### **Perceived value mediates environmental cognition on electric vehicle adoption intention**

Results of test 10 According to these results, it can be seen that perceived value plays a significant mediating role between environmental perception and EVs adoption intention; this finding has been made completely clear. This is indicated by a t-statistic value of 5.091 which is bigger than 1.96; a p value of 0.000 implies that the probability is less than 0.05. The influence coefficient also confirms that this mediating relationship is positive and strong among 0.447. Using the value of perceived usefulness of electric vehicles and computing method1, one can conclude that the higher the environmental consciousness, the higher perceived utility or need for electric vehicle; with result in greater adoption intentions eventually.

These findings suggest that if consumers understand environmental cognition in various forms, such as the impact of carbon emissions and air contamination on people's health or of renewable energy sources, they are only to benefit from EVs with better understanding. When individuals possess rational knowledge and awareness of the urgency of energy reform into a clean power system far removed from fossil fuels, they grow to see electric vehicles as more beneficial to themselves and society. (Zhang et al., 2021) It thus raises the perceived value of electric vehicles, which in turn forms a key reason for purchase. In addition, these results are consistent with Sterns (2000) Value-Belief-Norm theory which holds that cognition about the environment can affect the attitude and action norms of individuals through value perception. Through economic aspects, consumers with high environmental cognition consider it a long-term benefit not only environmentally but also from energy efficiency and running cost savings to use an electric car.

The practical advice that can be derived from the results of these studies is the need for raising environmental consciousness among the public. For instance, public advertisement campaigns, education programs providing transparent information on electric vehicle benefits are all ways to improve people's understanding of their environment. In turn consumer values gravel expediency can become even more positive as manufacturers and regulators give a fairer description for electric vehicles, thereby accelerating their acceptance in society.

## CONCLUSION

This study concluded that willingness to pay significantly and positively influences intention, such that the greater a consumer's willingness to incur higher costs, the more likely they are to adopt an electric vehicle. Undoubtedly, environmental awareness positively, though not significantly, influences adoption intention. In other words, environmental awareness alone is not enough to convince people to adopt one. However, environmental cognition has a negative and insignificant impact on adoption intention, indicating that consumers' cognitive understanding of environmental issues is not sufficient to drive consumer transition to electric vehicles. As can be seen in the results, willingness to pay significantly and positively influences perceived value, while environmental awareness has an insignificant negative impact. Conversely, environmental cognition exerts a notable and affirmative influence on perceived value. In essence, individuals possessing an extensive comprehension of environmental concerns demonstrate a reduced inclination to select electric vehicles, yet they tend to interpret them as products that deliver beneficial outcomes in the long term. Moreover, perceived value continues to exhibit a decisive and positive correlation with the adoption intention of electric vehicles. Hence, perceived value emerges as a pivotal determinant in the decision-making process regarding adoption.

Furthermore, willingness to pay and environmental cognition are independent and do not influence perceived value. These results indicate that perceived value can enhance the positive effects of willingness to pay and environmental cognition on adoption intention. However, perceived value clearly does not mediate the relationship between environmental awareness and adoption intention. This indicates that environmental awareness has not been able to build a sufficiently strong perception of conservative values to convince people to use electric vehicles. Overall, this paper shows that willingness to pay and environmental cognition, reinforced by perceived value, are important factors in increasing adoption intention of electric vehicles in Indonesia. Essentially, environmental awareness alone is not sufficient to influence adoption behavior.

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