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The Influences of Environmental Knowledge and Awareness towards Electric Car Purchase Intention Mediated by Green Purchase Attitude

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ABSTRACT

Objectives*: The objectives to this study are to determine the effect of environmental knowledge and awareness on consumers' intention to purchase electric car, emphasizing the mediating role of green purchase attitude. The research aims to identify factors influencing the adoption of environmentally friendly transportation*
Methodology*: A comprehensive quantitative approach was employed, with data collected from 101 respondents, specifically parents using vehicles for school transportation. A structured questionnaire assessed variables like environmental knowledge, awareness, and purchase intentions. Data were analyzed using Partial Least Squares Structural Equation Modelling (PLS-SEM) and additional advanced statistical techniques to explore interrelations among constructs.*
Conclusion*: The results reveal that only environmental awareness significantly influences green purchase attitude, which mediates its impact on green purchase intention while environmental knowledge don't have any significant impact towards green purchase attitude and no mediating effect toward green purchase intention.*

Keywords: *Environmental knowledge; Awareness; Green Purchase Attitude; Purchase Intention; Electric Car.*

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INTRODUCTION

Climate change and environmental degradation are among the most pressing global challenges of our time. The increasing concentration of greenhouse gases in the atmosphere, largely driven by human activities such as deforestation, industrial processes, and transportation, has accelerated global warming. This phenomenon has severe implications, including rising sea levels, extreme weather events, and biodiversity loss. Addressing these challenges requires urgent action, particularly in reducing carbon emissions from the

transportation sector, which is a significant contributor to global pollution (IPCC, 2021; NASA, 2022).

Electric vehicles (EVs) offer a promising solution to mitigate the environmental impact of traditional internal combustion engine vehicles. By relying on electricity instead of fossil fuels, EVs can significantly reduce greenhouse gas emissions and air pollutants (IEA, 2022). However, despite their environmental benefits, the adoption rate of EVs in many countries, including Indonesia, remains low. Factors such as high initial costs, limited infrastructure, and lack of consumer awareness contribute to this slow adoption (McKinsey & Company, 2023).. Understanding the factors that influence consumer intentions to purchase EVs is crucial to addressing these barriers and promoting sustainable transportation.

One of the key psychological factors influencing consumer behaviour is environmental knowledge, which refers to an individual's awareness and understanding of environmental issues and their potential solutions (Huang et al., 2023). Consumers with higher levels of environmental knowledge are more likely to recognize the benefits of EVs and consider them a viable alternative to traditional vehicles. Additionally, environmental awareness, which encompasses a broader sense of responsibility toward the environment, plays a critical role in shaping consumer attitudes and intentions. These factors, when combined with supportive policies and market incentives, can significantly enhance the adoption of EVs (Wang & Yu, 2022).

The Theory of Planned Behaviour (TPB) provides a robust framework for understanding the relationship between environmental knowledge, awareness, and consumer intentions. According to TPB, an individual's behaviour is influenced by their attitudes, subjective norms, and perceived behavioural control. In the context of EV adoption, these constructs can help explain how environmental knowledge and awareness translate into green purchase attitudes and intentions (Zhang et al., 2021). By examining these relationships, this study aims to provide valuable insights into the behavioural dynamics of sustainable consumer choices.

This research focuses on parents as a target demographic, as they often play a pivotal role in shaping household purchasing decisions and influencing the next generation's values and behaviours. By understanding the factors that drive parents' intentions to purchase EVs, this study seeks to contribute to the broader goal of fostering a culture of sustainability and environmental responsibility. The findings are expected to inform policymakers, marketers, and educators in their efforts to promote sustainable transportation and support the global transition to a low-carbon future.

LITERATURE REVIEW

The Theory of Planned Behaviour (Ajzen, 1991) underpins this study, providing insights into how attitudes and external factors influence behavioural intentions. Research in recent years has expanded upon this foundation to explore environmental factors more deeply. Studies like those by Zhang et al. (2021) and Lee et al. (2022) have demonstrated that integrating environmental values into the TPB framework enhances its predictive power for green behaviours.

Environmental Knowledge and Awareness

Environmental knowledge refers to an individual's understanding of ecological issues and sustainable solutions. Recent studies, such as by Huang et al. (2023), have emphasized that targeted environmental education significantly increases knowledge levels, which in turn positively impacts green attitudes and behaviours. Awareness, on the other hand, encompasses an individual's perception of their impact on the environment. Li et al. (2021) noted that awareness campaigns highlighting personal contributions to pollution have successfully driven pro-environmental behaviours.

Green Purchase Attitude

Green Purchase Attitude, defined as a consumer's predisposition to evaluate environmentally friendly products positively, plays a pivotal role in bridging knowledge and behavioural intentions. Factors such as environmental education, perceived product quality, and government policies are crucial determinants (Indriani et al., 2019). This study posits that a robust green purchase attitude significantly enhances the likelihood of adopting EVs.

Consumer attitudes toward green purchases are further influenced by cultural norms and economic considerations. In emerging economies, the affordability and accessibility of EVs often shape attitudes, necessitating tailored interventions to foster green consumerism. For instance, targeted subsidies and public awareness campaigns have shown significant success in shifting consumer preferences toward sustainable options (Xu et al., 2020). Expanding on these ideas, it becomes clear that green purchase attitudes also interact dynamically with societal pressures and technological advancements. Understanding these nuanced interactions can help refine strategies to accelerate green adoption rates across diverse demographics.

Green Purchase Intention

Green purchase intention refers to a consumer's willingness to buy environmentally friendly products, such as EVs, as a reflection of their pro-environmental values. Recent studies have shown that green purchase intention is influenced by a combination of cognitive and emotional factors. For example, Chen et al. (2022) demonstrated that consumers with stronger environmental commitments are more likely to exhibit green purchase intentions. Similarly, Nguyen and Lobo (2023) highlighted the role of perceived behavioural control and financial incentives in reinforcing green purchase intentions in emerging markets. This study builds on these insights by examining how green attitudes mediate the relationship between environmental factors and green purchase intention in Indonesia.

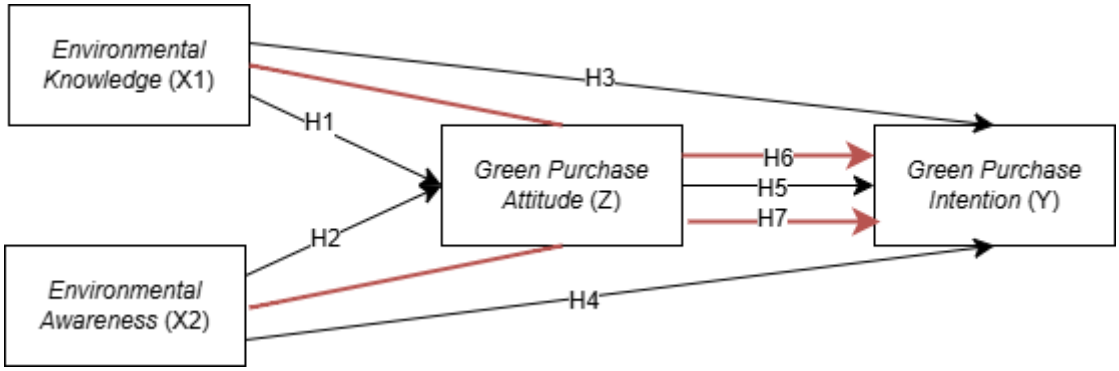
The relationship between environmental knowledge and awareness, green purchase attitude, and green purchase intention is interconnected and cyclical. Environmental knowledge provides the foundational understanding of ecological issues and solutions, while environmental awareness enhances the sense of urgency and personal responsibility toward pro-environmental actions. These two constructs work synergistically to influence green purchase attitude, which serves as an evaluative mechanism. A positive green purchase attitude increases the likelihood of forming a strong green purchase intention, as consumers perceive

environmentally friendly products like EVs as viable and socially responsible choices. Studies by Tan et al. (2023) and Lee et al. (2022) highlight how these constructs collectively shape sustainable consumer behaviour, making them critical focal points for intervention strategies.

Research Hypotheses:

1. Environmental Knowledge positively influences Green Purchase Attitude.
2. Environmental Awareness positively influences Green Purchase Attitude.
3. Environmental Knowledge positively influences Green Purchase Intention.
4. Environmental Awareness positively influences Green Purchase Intention.
5. Green Purchase Attitude positively influences Green Purchase Intention/
6. Green Purchase Attitude mediates the relationship between Environmental Knowledge and Green Purchase Intention.
7. Green Purchase Attitude mediates the relationship between Environmental Awareness and Green Purchase Intention.

Figure 1. Research Framework



METHOD

This research is quantitative research with a causal research design was employed to test the proposed hypotheses. The target population consisted of parents who use vehicles for school transportation. Purposive sampling yielded 101 respondents. Data collection involved a structured questionnaire with Likert-scale items derived from validated instruments. The instrument measures constructs such as Environmental Knowledge, Awareness, Green Purchase Attitude, and Green Purchase Intention. Reliability and validity were ensured through statistical checks, including Cronbach's alpha and composite reliability. PLS-SEM was used to analyse the structural relationships among variables, focusing on the mediating role of green purchase attitude. PLS-SEM was selected due to its robustness in handling complex models and small sample sizes. In addition, studies like those by Hair et al. (2021) highlight its efficacy in examining mediation effects. The analysis included both measurement model evaluation (for construct validity and reliability) and structural model assessment (to test hypotheses and path coefficients).

RESULTS AND DISCUSSION

Respondents

In this study, researchers grouped respondents into several characteristics, namely gender, age, educational background and monthly income.

Table 1. Respondent Characteristics

No	Gender	Age	Educational Background	Monthly Income
1.	Male =15 (15%)	< 25 years = 2 (2%)	High School = 19 (19%)	<15 million = 32 (31%)
2.	Female =8 (85%)	25-30 years =0 (0%)	Diploma = 10 (10%)	15-20 million =24 (24%)
		30-35 years =13 (13%)	Bachelor = 65 (64%)	20-25 million = 15 (15%)
		>35 years = 86 (85%)	Master = 7 (7%)	>25 million = 30 (30%)

Based on table 1, out of 101 respondents there were 15 male respondents (15%) and 86 female respondents (85%). The highest number of respondents were older that 35 year and the lowest were less than 25 year old. Most of the respondent were having bachelor educational background and the least were having diploma. The highest number of incomes were below 15 million and the lowest number of incomes were around 20-25 million.

Outer Model Analysis

Outer model analysis was done to check if the instrument used for the research are valid and reliable. The AVE value indicates that the construct explains a large portion of the variance in its indicators, and the common threshold is AVE > 0.5. The composite reliability assesses the reliability of the construct, and the common threshold value is > 0.7. The Cronbach's Alpha measure the internal consistency, and the threshold values is >0.7 indication acceptable reliability.

Table 2. Goodness of Fit Model

Variable	**AVE**	**Composite Reliability**	**Cronbach's Alpha**	**R-Square**
Environmental Knowledge	0.748	0.922	0.884	-
Environmental Awareness	0.724	0.929	0.903	-
Green Purchase Attitude	0.808	0.962	0.953	0.669
Green Purchase Intention	0.850	0.958	0.941	0.597

Source : PLS 2024 output

Inner Model Analysis

The inner model analysis evaluates how well the hypothesized relationships between constructs are supported by the data. The R-Square indicate the proportion of variance in the dependent variable that is predictable from the independent variables, it is the inner model analysis. Higher R-Square values indicate a better fit, with value > 0.25 is consider weak, value

> 0.5 often consider good or moderate, and > 0.75 is strong. From all the values in table 2, it can be concluded that the instrument used are valid and reliable.

Hypothesis Test

To know if the research hypothesis is valid, bootstrapping procedure are done. The significance of the hypothesis is gain by seeing the parameter coefficient values and the T-Statistics significance value in the bootstrapping process. The threshold values for T-Statistic is 1.96.

Table 3. Hypothesis Test

	Original Sample	Sample Mean	Standard Deviation	T Statistics	P Values	Information
EA -> GPA	0.777	0.777	0.055	14.095	0.000	Positive-Significant
EA -> GPI	0.252	0.248	0.116	2.182	0.030	Positive-Significant
EK -> GPA	0.072	0.074	0.058	1.240	0.215	Positive -Not significant
EK -> GPI	-0.045	-0.041	0.070	0.635	0.526	Negative -Not significant
GPA -> GPI	0.586	0.588	0.093	6.288	0.000	Positive-Significant
EA -> GPA -> GPI	0.455	0.453	0.077	5.902	0.000	Partially Mediated
EK -> GPA -> GPI	0.042	0.041	0.036	1.166	0.244	Unmediated

Source : PLS 2024 output

Discussion

1. **The influence of Environmental Knowledge on Green Purchase Attitude.**
   Based on the hypothesis testing in this study, the results show T-statistic value of 2.182, P Value of 0.000, and an original sample value of 0.072. The T-statistic value is greater than 1.96. The P Value is consistent with the recommended value of less than 0.05. The original sample value is positive. From these results, it can be concluded that environmental knowledge has a positive but not significant effect on green purchase attitude towards electric cars in Indonesia. The results of this research align with findings by Huang et al. (2023), which highlight the complex relationship between knowledge and green attitudes.
2. **The influence of Environmental Awareness on Green Purchase Attitude.**
   Based on the hypothesis testing in this study, the results show T-statistic value of 14.095, P-Value of 0.000, and an original sample value of 0.777. The T-statistic value is greater than 1.96. The P Value is consistent with the recommended value of less than 0.05. The original sample value is positive. From these results, it can be concluded that environmental awareness has a positive and significant effect on green purchase attitude. This aligns with Wang & Yu (2022), who found a strong link between awareness and attitudes.
3. **The influence of Environmental Knowledge on Green Purchase Intention.**
   Based on the hypothesis testing in this study, the results show T-statistic value of 0.635, P-Value of 0.000, and an original sample value of -0.045. The T-statistic value is greater than 1.96. The P Value is consistent with the recommended value of less than 0.05. The

original sample value is positive. From these results, it can be concluded that environmental knowledge has a positive but not significant effect on green purchase intention towards electric cars in Indonesia. These findings echo the study by Huang et al. (2023), which suggests knowledge alone may not suffice to influence intentions.

4. **The influence of Environmental Awareness on Green Purchase Intention.**
   Based on the hypothesis testing in this study, the results show T-statistic value of 2.182, P-Value of 0.000, and an original sample value of 0.252. The T-statistic value is greater than 1.96. The P Value is consistent with the recommended value of less than 0.05. The original sample value is positive. From these results, it can be concluded that environmental awareness has a positive and significant effect on green purchase intention. Wang & Yu (2022) corroborate these findings, emphasizing the critical role of awareness.
5. **The influence of Green Purchase Attitude on Green Purchase Intention.**
   Based on the hypothesis testing in this study, the results show T-statistic value of 6.288, P-Value of 0.000, and an original sample value of 0.586. The T-statistic value is greater than 1.96. The P Value is consistent with the recommended value of less than 0.05. The original sample value is positive. From these results, it can be concluded that green purchase attitude has a positive and significant effect on green purchase intention. Zhang et al. (2021) provide further evidence of the significant impact of attitudes on intentions.
6. **The influence of Knowledge and Green Purchase Intention through Green Purchase Attitude.**
   Based on the hypothesis testing in this study, the results show T-statistic value of 1.166, P-Value of 0.000, and an original sample value of 0.0042. The T-statistic value is greater than 1.96. The P Value is consistent with the recommended value of less than 0.05. The original sample value is positive. From these results, it can be concluded that environmental knowledge has a positive but not significant effect on green purchase intention towards electric cars in Indonesia through the mediation of green purchase attitude. This research supports the nuanced findings by Huang et al. (2023).
7. **The influence of Awareness and Green Purchase Intention through Green Purchase Attitude.**
   Based on the hypothesis testing in this study, the results show T-statistic value of 5.902, P-Value of 0.000, and an original sample value of 0.455. The T-statistic value is greater than 1.96. The P Value is consistent with the recommended value of less than 0.05. The original sample value is positive. From these results, it can be concluded that environmental awareness has a positive and significant effect on green purchase intention towards electric cars in Indonesia through the mediation of green purchase attitude. The findings are in line with Wang & Yu (2022), highlighting the mediating role of attitudes.

CONCLUSION

This research is examining the intertwined relationships among environmental knowledge, awareness, green purchase attitude, and green purchase intention. The findings validate the Theory of Planned Behavior by highlighting the mediating role of green purchase attitude in converting environmental awareness and knowledge into actionable intentions. The results show that enhancing environmental awareness significantly impacts green purchase

intention, making green purchase attitude a pivotal factor while environmental knowledge don't have any significant impacts. This is due that human are prone to do action based more on their affective than rational aspects. Meaning that every policy and strategy that going to be implemented should be able to connect to the affective aspects of a person.

The study's implications are manifold. Policymakers should prioritize educational programs that enhance environmental literacy and promote awareness campaigns emphasizing the benefits of adopting sustainable practices, such as using electric vehicles. Businesses should leverage consumer trust through green certifications and branding while ensuring affordability and convenience to overcome barriers.

To solve the research problem, an integrated approach is essential. Financial incentives, infrastructure development, and public-private partnerships should be aligned with educational strategies to encourage widespread EV adoption. Future research could expand on this framework by incorporating longitudinal studies to capture changes in consumer behavior over time or exploring the influence of social norms and technological advancements on green purchase intention.

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