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Analysis of Consumer Intentions to Avoid Purchasing Electric Motorcycle Products: An Innovation Resistance Theory Approach and the Moderating Role of Green Trust

Nenty Damayanti*, Adi Nurmahdi
Universitas Mercu Buana, Indonesia
Email: 55124110018@student.mercubuana.ac.id*, adi.nurmahdi@mercubuana.ac.id

ABSTRACT

Electric motorcycles are promoted as an environmentally friendly transportation solution to reduce carbon emissions and support sustainable development. However, consumer resistance to purchasing electric motorcycles remains a major barrier, particularly in developing countries such as Indonesia. This study aims to analyze the effects of innovation barriers on Intention to Resist Electric Motorcycle Product Purchase, namely Usage Barrier, Value Barrier, Risk Barrier, Tradition Barrier, and Image Barrier, and to examine the moderating role of Green Trust. The study employs a quantitative approach using PLS-SEM. Data were collected from 221 respondents aged 18–56 who live or work in Jabodetabek and Yogyakarta. The findings indicate that Usage Barrier, Value Barrier, Tradition Barrier, and Image Barrier have a positive and significant effect on consumers' intention to resist purchasing electric motorcycles, while Risk Barrier is not significant. Among all barriers, the Tradition Barrier is the most dominant factor. In addition, Green Trust is not proven to significantly moderate the relationships between the innovation barriers and the intention to resist purchase. This study extends the application of Innovation Resistance Theory (IRT) in the context of green products and offers practical recommendations for industry stakeholders to strengthen credibility and foster more positive perceptions of electric motorcycles.

Keywords: *Innovation Resistance Theory (IRT); electric motorcycle; consumer resistance; Green Trust; PLS-SEM*

INTRODUCTION

Attention to environmental issues has been a major global focus over the past few decades. The transformation toward sustainable mobility has become an urgent global agenda in response to the climate crisis and environmental degradation. According to the International Energy Agency's (IEA) Global EV Outlook 2024 report, global electric vehicle sales have reached record highs, with more than 14 million units sold in 2023—a 35% increase over the previous year. The global electric vehicle market share has reached 18% of total new vehicle sales, with China leading as the largest market (60% of global sales), followed by Europe (25%) and the United States (10%) (Hao et al., 2020; Hertzke et al., 2018; Khaleel et al., 2024; Zhou et al., 2015).

The transportation sector contributes significantly to global greenhouse gas emissions, accounting for about 16% of total global emissions and 37% of energy-related emissions by 2021 (Timilsina et al., 2025). The transition to electric vehicles is a key strategy for achieving the net-zero emissions target, with the potential to reduce emissions by up to 1.5 Gt CO_2 by 2030 if adoption targets are met (IEA, 2024). However, the adoption of electric vehicles still faces a range of universal challenges, including high initial prices, limited charging

infrastructure, concerns about battery range, and consumer resistance to technological change (Patil et al., 2024).

Cross-country comparative studies show that the success of electric vehicle penetration is strongly correlated with supportive fiscal and non-fiscal policies. Norway has achieved the highest adoption rate—with more than 90% of new vehicle registrations being electric vehicles—thanks to a combination of tax incentives, dedicated lane access, and massive infrastructure investment (Patil et al., 2024).

This research demonstrates novelty in three main aspects: context, theoretical approach, and moderation variables used. First, contextually, this study is among the early works applying Innovation Resistance Theory (IRT) to two-wheeled electric vehicle products in Indonesia, whereas most previous research focused on non-automotive eco-friendly products such as green cosmetics or eco-labeled products. Second, theoretically, this study integrates the concept of innovation resistance with the construct of environmental trust (Green Trust) to explain consumer rejection behavior toward electric motorcycles, which has not been done before. This approach emphasizes behavioral factors influencing resistance to electric vehicles (EVs). The combination of IRT and Green Trust as a moderating variable has not been widely explored in developing countries, thereby making a conceptual contribution by expanding the application of IRT to the sustainable transportation sector. Third, empirically, this study contributes by presenting primary data from residents of Greater Jakarta and Yogyakarta that represent the characteristics of Indonesian urban consumers—price-sensitive yet increasingly aware of sustainability issues. Thus, this study is expected to enrich the literature on consumer resistance to green innovation and provide an empirical basis for policy strategies and electric motorcycle marketing in Indonesia.

Previous research in Indonesia using Innovation Resistance Theory (IRT) has been limited to non-automotive eco-friendly products such as green cosmetics (Kurnia & Mayangsari, 2020), green cosmetics with personal and social norms as moderation variables (Puspitasari & Alversia, 2023), and eco-labeled products (Hendiawan & Wibowo, 2025). These studies found that barriers such as Value Barrier, Tradition Barrier, and Image Barrier significantly affect purchase intention decline. International research has also expanded the application of IRT, including Xue et al.'s (2024) study in China on consumer resistance to electric vehicles and Leong et al. (2021), which analyzed cross-cultural innovation resistance. In addition, Claudy et al. (2015) developed IRT with Behavioral Reasoning Theory, showing that resistance is influenced not only by functional barriers but also by the process of evaluating benefits and risks. These findings deepen the understanding of the dynamics of consumer resistance to sustainable products and new technologies.

Considering previous studies and pre-survey data, a significant research gap remains. First, research on electric motorcycles in Indonesia has mainly focused on purchase intentions based on the Theory of Planned Behavior (TPB), while studies using IRT and resistance variables are still limited (Aqmarina et al., 2024). Second, moderation variables such as Green Trust are rarely included in IRT research, even though they theoretically have important potential to influence consumer resistance (Tan et al., 2022).

In light of the identified phenomenon gap and research gap, this study focuses on communities in Greater Jakarta and Yogyakarta to analyze how innovation barriers affect consumers' intention to reject the purchase of electric motorcycles, as well as the moderating

role of Green Trust in this relationship. Therefore, this study is titled "Analysis of Consumer Intention to Reject the Purchase of Electric Motor Products: Innovation Resistance Theory Approach and the Role of Green Trust Moderation."

This study aims to identify and analyze the barriers that influence consumers' intention to refuse the purchase of electric motorcycles in Indonesia, using the Innovation Resistance Theory (IRT) approach. The main problems addressed include the increase in carbon emissions caused by fossil-fuel vehicles—a serious environmental issue in Indonesia—and the low adoption rate of electric motorcycles, which has not yet reached government targets. Based on the results of a pre-survey of 47 respondents, it was found that the Usage Barrier, Value Barrier, Risk Barrier, Tradition Barrier, and Image Barrier significantly affect consumers' intention to reject electric motorcycles. Among these barriers, the Usage Barrier and Tradition Barrier are the main obstacles, while Green Trust has not yet been optimally formed, even though 80% of respondents believe that electric motorcycles are environmentally friendly. Research gaps were also identified, as most studies in Indonesia focus more on green purchase intention than on intention to resist, and studies combining IRT and Green Trust in the context of electric motorcycles remain scarce.

The main objective of this study is to test and analyze the influence of each barrier on consumers' intention to refuse the purchase of electric motorcycles, as well as to examine whether Green Trust can moderate the effects of these barriers. Specifically, this study investigates the effects of the Usage Barrier, Value Barrier, Risk Barrier, Tradition Barrier, and Image Barrier on Intention to Resist Electric Motorcycle Product Purchase, and analyzes whether Green Trust weakens the influence of these barriers among respondents with a high level of environmental trust. With this objective, the study is expected to provide insights into factors hindering electric motorcycle adoption in Indonesia and to explore how Green Trust can influence consumer decisions in overcoming these barriers.

METHOD

Research Design

This study uses a quantitative approach with a causal descriptive design to test the relationship between variables based on the hypothesis that has been formulated, with the aim of understanding how changes in one variable can affect other variables (Hair et al., 2022). The analytical methodology uses Partial Least Squares Structural Equation Modeling (PLS-SEM), which is well-suited for managing complex variables, small sample sizes, and predictive structural models (Hair Jr et al., 2022). PLS-SEM allows researchers to evaluate the linkages between latent variables and validate the theoretical framework, making them ideal for predictive research. The data collection process was carried out using a questionnaire validated with the Likert scale, while the data analysis was carried out with PLS-SEM software. The design of this study is correlational, aiming to investigate the impact of the interaction between Usage Barrier, Value Barrier, Risk Barrier, Tradition Barrier, and Image Barrier on Intention to Resist Electric Motorcycle Product Purchase moderated by Green Trust. This quantitative methodology includes several stages such as problem formulation, model development, data collection, and analysis of results carried out through validity and reliability tests to ensure the reliability of measurement instruments (Sekaran & Bougie, 2016).

Definition and Operationalization of Variables

Variable Definition

In this study, there are *five* independent variables, namely *Usage Barrier, Value Barrier, Risk Barrier, Tradition Barrier*, and *Image Barrier,* and, one *dependent variable*, namely *Intention To Resist Electric Motorcycle Product Purchase* and one moderation variable, namely *Green Trust*. The measurement level in this study uses ordinal scale measurement. An ordinal scale is a type of measurement scale that expresses the degree or order of a variable, without measuring the magnitude of the difference between the categories (Arvidsson, 2019).

Research Population

In this study, the population was defined as all individuals aged 18–56 years who were domiciled or actively active in the Greater Jakarta and Yogyakarta areas and the number of the population was unknown. These areas were chosen because they are urban centers and economic agglomerations that show the concentration of activities of the younger generation, and are located in the Java Island region which accounts for around 57% of the national GDP (Katadata.co.id).

The latest data from the Central Statistics Agency (BPS) shows that the productive age group (15-64 years) covers around 70.72% of the total national population (kemenkopmk.go.id). The 18–56 age range was chosen to include most productive age groups and potential consumers who are in the active consumption stage and are more sensitive to sustainability issues and the adoption of green products.

Thus, this population definition is expected to reflect a representative group of urban consumers who actively interact with the market and have the potential to have awareness and behavior towards environmentally friendly products.

Research Sample

The Purposive Sampling method is used because the researcher has special considerations in determining the characteristics of the respondents (Sugiyono, 2017). The criteria for determining the sample in this study are as follows:

1. Have knowledge or awareness of environmental issues,
2. Know or know environmentally friendly products (Electric Motorcycle products),
3. Be between 18–56 years old, and
4. Domiciled or permanently active in the Greater Jakarta and Yogyakarta areas.

Sample size was determined using the G*Power device to ensure adequate statistical strength, avoid Type II error (β), and determine the minimum number of valid respondents. Some of the important components in G*Power analysis include: *Effect Size* (f^2) which indicates the strength of the relationship between variables (e.g. medium category of 0.15), alpha (α) which indicates the level of significance (usually 0.05), power (1–β) which indicates the ability of statistical tests to detect effects (usually 0.8 or more), and the number of predictors that indicate the number of independent variables affecting dependent variables.

Based on the moderation model and reference from Ali Memon et al. (2020), this study determined the number of predictors as many as 11, with *Effect Size* (f^2) = 0.15, alpha (α) = 0.05, and power (1–β) = 0.95. Based on the results of G*Power's calculations, the minimum number of samples needed is 178 respondents. However, to increase the reliability of the data and anticipate potential bias, straight lining, and data cleaning, the number of questionnaires to be distributed is set at a minimum of 300 respondents.

Data Collection Methods

The data collection method in this quantitative research uses primary data sources, namely data obtained directly from respondents through research instruments. The questionnaire is compiled based on the variables that have been determined in the research model and serves as the main measurement tool to obtain empirical data. Each question item is designed using simple, clear, and easy-to-understand language so that respondents can fill out comfortably without confusion. This research instrument was distributed in the form of an online form (online form + offline (hybrid) which was accessed through a link and distributed digitally using the WhatsApp application. Thus, all data collection procedures in this study were carried out through the distribution of online questionnaires to respondents who met the research criteria.

Data Analysis Methods

Data analysis is the process of processing raw data into structured information so that the results are easy for readers to understand ((Sahir, 2022)). This analysis activity includes the preparation, grouping, and summarizing of data processing results to produce conclusions that are in accordance with the research objectives. The stages of data analysis include data collection, scoring respondents' answers, coding process to make data easier to process, then tabulation and descriptive analysis are carried out. In this process, the data used must be valid and trustworthy so that the research results have a high level of accuracy (Sahir, 2022).

This study aims to analyze the relationship between variables in the research model, namely to explain how dependent variables are influenced by independent variables, as well as how moderation variables play a role in strengthening or weakening the relationship between the two.

Uji Hypothesis

The hypothesis test in the Partial Least Squares Structural Equation Modeling (PLS-SEM) method aims to assess whether the relationships between latent variables hypothesized in the research model are empirically supported by data. After the measurement model (outer model) is declared valid and reliable, the analysis is continued on the structural model (inner model) to test the hypothesis that has been formulated.

The hypothesis testing process is carried out through the bootstrapping technique, which is a non-parametric procedure that produces an empirical distribution of the estimated path coefficient to obtain t-statistical and p-Value values. This value is used to determine the level of significance of the relationships between variables in the model (Hair et al., 2022).

RESULTS AND DISCUSSION

Results of SEM-PLS (*Partial Laest Sqaure*) Data Analysis

The data analysis used in the study was *Partial Least Square* Structural Equation Modelling (PLS-SEM). Data processing is carried out with SmartPLS 4.1.1.4 software.

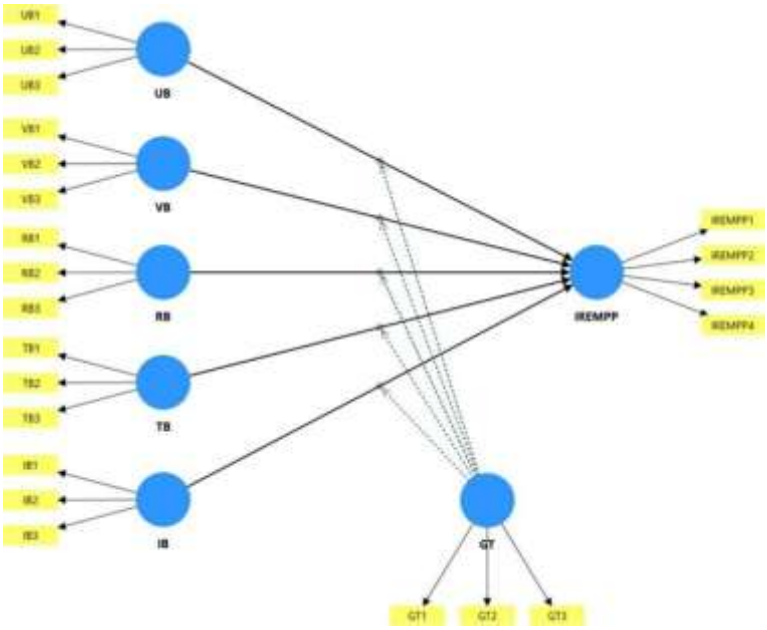

Figure 1. Research Model Path Diagram
Source: SmartPLS Data Processing Results.4.1.1.4

Measurement Model Test Results (*Outer Model*)

The measurement model test (*outer model*) is carried out to assess the level of validity and reliability of the research instrument in explaining the relationship between measurement indicators and the latent variables used in the research model. This test aims to ensure that each indicator is able to represent the measured construct accurately and consistently before testing the relationships between variables in the structural model.

In this study, the measurement model consists of seven latent variables, namely *Usage barrier, Value Barrier, Risk Barrier, Tradition Barrier, Image Barrier, Green Trust*, and *Intention To Resist Electric Motorcycle Product Purchase*. All of these latent variables were measured using several indicators which were then evaluated through PLS-SEM analysis to ensure adequate measurement quality.

Test Results of Measurement Model (*Inner Model*)

a. Test Results of the R-Square Determination Model (R^2)

The R-square value of 0.558 indicates that 55.8% of the variation in consumer intention to refuse the purchase of an electric motorcycle can be explained by the *variables Usage Barrier* (X1*), Value Barrier* (X2), *Risk Barrier* (X3), *Traditional* barrier (X4), *Image Barrier* (X5), and *Green Trust* (Z). Meanwhile, the remaining 44.2% were influenced by factors outside of this research model that were not further studied.

These results show that the exogenous variables used in the model have a significant contribution in explaining consumer resistance behavior to the purchase of electric motors.

b. Effect *Size* Test Results (F-Square)

In detail, the *Traditional barrier variable (X4) has an f² value of 0.228, which is included in the category of moderate influence, thus showing that* habit factors and preferences for conventional products make the most dominant contribution in influencing consumer resistance to the purchase of electric motorcycles. Meanwhile, the *Value Barrier* variable (X2) showed a value of f^2 of 0.032, which was in the low influence category, but still had a

contribution to the endogenous variable.

Other variables, namely *the Usage Barrier* (X1) with an f^2 value of 0.017, *the Image Barrier* (X5) of 0.014, and *the Risk Barrier* (X3) of 0.004, were also in the low or small influence category. This indicates that although these variables play a role in shaping consumer resistance intentions, their influence is relatively limited when viewed individually.

Overall, these findings show that the role of exogenous variables becomes more meaningful when analyzed simultaneously, as reflected in the substantial R-square value, compared to when partially evaluated through the *Effect Size* value of each variable.

c. Predictive *Relevance* Test Results (Q-Square)

This value shows that this research model has good predictive capabilities, because the Q^2 value is above zero as recommended by Hair et al. (2022). Therefore, this model can be considered fit or feasible to proceed to the hypothesis testing stage.

d. Uji PLS *Predict*

These findings indicate that the PLS-SEM model built has adequate out-of-sample prediction capabilities, making it suitable for use in social research, especially in exploratory and expplanatory studies. However, these results also suggest that there is still room for further model development so that predictive performance can be optimally improved.

Pengujian Hypothesis

Based on the results of hypothesis testing using the PLS-SEM approach with the bootstrapping method in SmartPLS software 4.1.1.4, hypothesis decision-making is based on t-statistical and p-Value values with a significance level of 5% ($\alpha = 0.05$) and t-table (one-tailed) values of 1.650. The results of hypothesis testing in this study can be explained as follows:

1. **H1: *Usage Barrier* has a positive and significant effect on *Intention To Resist Electric Motorcycle Product Purchase***

   The test results showed that the relationship between *Usage Barrier* (UB) and *Intention To Resist Electric Motorcycle Product Purchase* (IREMPP) had a path coefficient of 0.102, with a t-statistic value of 1.690 and a p-value of 0.046. Because the t-statistic value > 1.650 and the p-Value < 0.05, it can be concluded that *the Usage Barrier* has a positive and significant effect on IREMPP. Thus, the H1 hypothesis in this study which states that "*Usage Barrier* has a positive and significant effect on Intention to Resist Electric Motorcyle Product Purchase" **is accepted**, which indicates that the higher the perception of the difficulty of using electric motors, the greater the consumer's intention to refuse the purchase.

2. **H2: *Value Barrier* has a positive and significant effect on *Intention To Resist Electric Motorcycle Product Purchase***

   Testing the effect of *Value Barrier* (VB) on IREMPP yielded a path coefficient of 0.158, with a t-statistic value of 2.424 and a p-value of 0.008. The value meets the significance criteria, so it can be concluded that *the Value Barrier* has a positive and significant effect on IREMPP. Therefore, the H2 hypothesis is accepted, which suggests that the perception of a disproportionate value between the benefits and costs of an electric motor increases consumer resistance.

3. **H3: *Risk Barrier* has a positive and significant effect on *Intention To Resist Electric Motorcycle Product Purchase***

   The test results showed that *the Risk Barrier* (RB) had a path coefficient of 0.058, with a t-statistic value of 0.897 and a p-value of 0.185. Because the t-statistic value < 1.650 and the p-Value > 0.05, the effect of *Risk Barrier* on IREMPP is not significant. Thus, the H3 hypothesis is rejected, which means that risks related to electric motors have not been statistically strong enough to drive consumer resistance intentions.

4. **H4: *Tradition Barrier* has a positive and significant effect on *Intention To Resist Electric Motorcycle Product Purchase***

   Testing of *the Tradition Barrier* (TB) showed the highest path coefficient, which was 0.461, with a t-statistical value of 5.663 and a p-value of 0.000. These results showed **a positive and very significant influence**, so the H4 hypothesis **was accepted**. These findings indicate that consumers' attachment to the habits and norms of using conventional motorcycles is the most dominant factor in increasing the intention to refuse the purchase of electric motorcycles.

5. **H5: *Image Barrier* has a positive and significant effect on *Intention To Resist Electric Motorcycle Product Purchase***

   The results of the test of *the relationship between the Image Barrier* (IB) and IREMPP showed a path coefficient of 0.123, with a t-statistical value of 1.860 and a p-value of 0.031. Because these values meet the significance criteria, it can be concluded that ***the Image Barrier* has a positive and significant effect on IREMPP**. Thus, **the H5 hypothesis is accepted**, which means that doubts about the image and eco-friendly claims of electric motors increase consumer resistance.

6. **H6: *Green Trust* moderates the influence of *the Usage Barrier* on IREMPP**

   The results of the test of the interaction effect of GT × UB → IREMPP showed a coefficient of 0.007, with a t-statistic value of 0.111 and a p-value of 0.456. Because these values are not significant, Green *Trust* has not been proven to moderate the influence of *Usage Barrier* on IREMPP. Thus, **the H6 hypothesis is rejected.**

7. **H7: *Green Trust* moderates the influence of *Value Barrier* on IREMPP**

   The interaction of GT × VB → IREMPP yielded a coefficient of -0.024, with a t-statistic value of 0.390 and a *p-value* of 0.348. This value did not meet the significance criteria, **so the H7 hypothesis was rejected.** This means that the level *of Green Trust* possessed by consumers does not weaken or strengthen the influence of *the Value Barrier* on resistance intentions.

8. **H8: *Green Trust* moderates the influence of *Risk Barrier* on IREMPP**

   The results of the GT × RB → IREMPP moderation test showed a coefficient of 0.064, with a t-statistic value of 1.007 and a p-value of 0.157. Because these values are not significant, **the H8 hypothesis is rejected**, meaning that *the Green Trust* does not moderate the relationship between *the Risk Barrier* and consumer resistance intentions.

9. **H9: *Green Trust* moderates the influence of *the Tradition Barrier* on IREMPP**

   The GT × TB interaction test → IREMPP yielded a coefficient of -0.016, with a t-statistical value of 0.187 and a p-value of 0.426. This value is not significant, **so the H9 hypothesis is rejected**. These findings suggest that despite high *Green Trust*, attachment to old habits remains a strong and not easily weakened resistance factor.

10. H10: *Green Trust* moderates the influence of *Image Barrier* on IREMPP

The results of the GT × IB → IREMPP moderation test showed a coefficient of -0.025, with a t-statistic value of 0.352 and a p-value of 0.362. Since this value is not significant, **the H10 hypothesis is rejected**. Thus, *Green Trust* does not act as a moderation variable in the relationship between *Image Barrier* and the intention to refuse the purchase of electric motorcycles.

The Effect of *Usage Barrier* on *Intention To Resist Electric Motorcycle Product Purchase*

Usage Barrier has a significant effect on Intention to Resist Electric Motorcycle Product Purchase, indicating that the higher the perception of barriers to electric motorcycle use, the greater the consumer's intention to reject it. This aligns with the Innovation Resistance Theory (IRT), which states that barriers to use arise when an innovation is incompatible with consumer habits. In the context of electric motorcycles, use barriers such as the perception that electric motorcycles are impractical (UB1) and have limited model options (UB2) are the main factors causing resistance. Time-consuming charging, limited mileage, and lack of model variety are challenges that reduce the attractiveness of electric motorcycles compared to conventional motorcycles, which already have better infrastructure and operational convenience (Xue et al., 2024).

The characteristics of respondents—dominated by men of productive age living in urban areas—show the relevance of use barriers to resistance intentions. Most respondents, who work as private employees with higher education and middle- to upper-income levels, prefer vehicles that are practical, flexible, and efficient. This indicates the importance for electric motorcycle manufacturers to enhance user comfort by improving charging infrastructure, motorcycle design, and offering more diverse model options. By reducing the barriers to use, resistance to electric motorcycles is expected to decrease, thereby improving their competitiveness against conventional motorcycles that are easier to operate in daily life.

The Effect of Value Barrier on Intention to Resist Electric Motorcycle Product Purchase

Value Barrier has a significant effect on Intention to Resist Electric Motorcycle Product Purchase, showing that the higher the perceived value barrier in electric motorcycles, the greater the consumer's intention to reject them. Consumers who consider electric motorcycles not worth the price—in terms of efficiency and performance compared to conventional motorcycles—are more likely to delay or refuse a purchase. This finding is in line with the Innovation Resistance Theory (IRT), which posits that value barriers arise when consumers perceive that an innovation does not provide sufficient benefits or advantages compared to existing products. For example, consumers may believe that the initial purchase cost of an electric motorcycle, battery replacement costs, and charging time are not proportional to its daily-use benefits. These findings are consistent with previous studies showing that value barriers often represent a major obstacle to new product adoption, as seen in the banking sector with internet banking (Sadiq et al., 2021).

Among respondents—dominated by those of productive age, with higher education and upper-middle income—the perception that electric motorcycles are "inefficient" and "not superior" is particularly relevant. This group tends to be rational and highly sensitive to the Value for Money concept. Although most respondents have sufficient income, they continue to demand high product quality and performance. When electric motorcycles have not yet proven to offer more value than conventional motorcycles, which are known to be efficient and

easy to maintain, Value Barrier becomes a key factor strengthening resistance. Practically, manufacturers need to enhance the value proposition of electric motorcycles—for instance, by reducing prices, offering incentives, and educating consumers about long-term operational cost efficiency. Transparency regarding the benefits of electric motorcycles, such as lower cost per kilometer, is also crucial in reducing the Value Barrier and increasing competitiveness against conventional motorcycles.

The Effect of Risk Barrier on Intention to Resist Electric Motorcycle Product Purchase

Risk Barrier has no significant effect on Intention to Resist Electric Motorcycle Product Purchase, indicating that perceived risk barriers—such as concerns about battery performance, safety, and maintenance costs—are not strong enough to deter consumers from purchasing electric motorcycles. This implies that although some concerns exist, consumers do not view them as major factors inhibiting their purchasing decisions. One explanation could be that consumers have not yet fully understood or considered the risks of electric motorcycles, or they believe these risks can be mitigated through warranties, improved safety standards, and future technological innovations. Furthermore, most respondents demonstrate good information literacy and perceive risk as an inherent aspect of emerging technologies rather than a significant threat. These findings align with earlier studies showing that Risk Barrier is not always a major obstacle to innovation adoption, as evidenced in the study of mobile payment systems in Turkey by Arslan et al. (2025).

In the context of electric motorcycles, respondents—mostly of productive age, highly educated, and urban-based—focus more on practicality and value aspects than on risks. They do not regard risk as a major barrier but rather emphasize ease of use and cost efficiency. Nevertheless, it remains important for manufacturers and marketers to maintain and strengthen consumer confidence in the safety and reliability of electric motorcycles. Risk mitigation efforts, such as ensuring battery quality, providing accessible after-sales services, and maintaining transparent communication in case of incidents, are still essential. Although risk currently does not significantly affect purchase resistance, anticipatory measures will be vital to ensure long-term adoption sustainability for electric motorcycles.

The Effect of Tradition Barrier on Intention to Resist Electric Motorcycle Product Purchase

Tradition Barrier has a significant effect on Intention to Resist Electric Motorcycle Product Purchase, indicating that the stronger the traditional barrier—such as habitual use of conventional motorcycles—the greater the consumer's intention to reject electric motorcycles. Consumers who are accustomed to using gasoline motorcycles, characterized by quick refueling, familiar maintenance practices, and conventional driving experiences, tend to maintain these habits and are more reluctant to switch. According to the Innovation Resistance Theory (IRT), Tradition Barrier represents a psychological obstacle that arises when innovations conflict with long-established cultural values or habits. Although electric motorcycles offer environmental benefits, resistance remains high because adoption is perceived as disruptive to established routines. These findings are consistent with studies in various sectors showing that consumers often prefer maintaining the status quo rather than adapting to innovations that demand behavioral changes.

The presence of Tradition Barrier in resistance to electric motorcycles is reinforced by respondent characteristics—mostly of productive age and urban dwellers—where conventional

motorcycles have become an integral part of daily life. Although respondents have higher education, they still favor conventional motorcycles due to familiarity, comfort, and proven reliability. In this study, the preference for retaining and using conventional motorcycles strongly influenced the decision to reject electric ones. From a practical standpoint, these findings underscore the importance of behavior-change-oriented approaches in promoting adoption. Social campaigns framing electric motorcycles as a modern lifestyle and offering accessible trial experiences may help reduce habit-based resistance. Additionally, improving charging infrastructure comparable to fuel stations and designing aesthetically appealing motorcycles can mitigate traditional barriers and encourage adoption of new technologies.

The Effect of Image Barrier on Intention to Resist Electric Motorcycle Product Purchase

Image Barrier has a significant effect on Intention to Resist Electric Motorcycle Product Purchase, meaning that the higher the perceived image barriers—such as doubts about quality, brand reputation, and eco-friendly claims—the greater the consumer's intention to reject electric motorcycles. Although its effect is relatively smaller than that of other barriers like habit or price, these findings suggest that consumer perception and product image also contribute to resistance. Doubts about eco-friendly claims, perceptions of difficulty in operation, and concerns about product quality and brand credibility reinforce these results. Consumers who view electric motorcycles as less appealing or inconsistent with their self-image, or who doubt their quality, are more reluctant to adopt them. These findings align with previous research indicating that Image Barrier is a significant, though not always dominant, factor hindering innovation adoption (Xue et al., 2024).

In the Indonesian context, Image Barrier is particularly relevant because electric motorcycles are still perceived as new products with uncertain images—unlike conventional motorcycles, which are long established and widely trusted. Respondents with higher education and private-sector employment tend to be more critical and rational when evaluating "eco-friendly" claims without compelling evidence, leading to doubts regarding quality and image. These findings suggest that effective communication and branding strategies are crucial to overcoming image-related resistance. Electric motorcycle manufacturers must build positive and credible images through transparency, third-party certification, and verifiable performance evidence. Strengthening consumer trust and shaping positive perceptions can reduce Image Barrier, ultimately supporting the broader adoption of electric motorcycles in the Indonesian market.

The Effect of *Green Trust* Moderation on *Usage Barrier* and *Intention to Resist Electrict Motorcycle Product Purchase*

Green Trust does not moderate the effect of the Usage Barrier on the Intention to Resist Electric Motorcycle Product Purchase, which means that consumers with high or low Green Trust levels still show resistance if they find the electric motor difficult to use. Although consumers who believe in electric motor eco-friendly claims are expected to be more tolerant of practical obstacles such as time-consuming charging, the results of the study show that the Green Trust is not strong enough to mitigate the negative impact of the Usage Barrier. This is consistent with the findings from Xue et al. (2024) who state that although consumers care about the environment, the impracticality of use remains the dominant factor driving resistance to electric motors. Therefore, although ecological beliefs are important, convenience and ease of use have more influence on consumer decisions.

This finding can be explained by two main reasons. First, barriers to use such as long charging times or limited charging stations are immediate and concrete, while Green Trust is a more abstract and long-term belief about the positive impact of products on the environment. Second, the level of Green Trust among respondents may not be high enough to overcome more real barriers to use. From a managerial perspective, the implication of these findings is that electric motor manufacturers cannot rely solely on green narratives or increase Green Trust to overcome resistance. The main focus should be on the functional improvement of the product, such as the development of fast charging technology and the provision of a wider charging infrastructure. By improving ease of use, manufacturers can more effectively reduce resistance, although Green Trust remains an important factor that can strengthen overall product acceptance.

The Effect of Green Trust *Moderation* on *Value Barrier* and *Intention To Resist Electric Motorcycle Product Purchase*

Green Trust does not moderate the influence of the Value Barrier on the Intention to Resist Electric Motorcycle Product Purchase, which means that even though consumers believe electric motorcycles are environmentally friendly, they still reject if they feel that electric motorcycles are not worth the value and benefits. These findings show that both consumers with high and low Green Trust remain sensitive to value issues; If they feel that the price or benefits of an electric motor are not comparable, they tend to refuse to buy it. The results of this study are different from the initial assumption that consumers with high Green Trust will be more tolerant of high prices or suboptimal performance of electric motors because they believe electric motors contribute positively to the environment. However, the reality is that consumers with high Green Trust still prioritize Value for money, and price and benefits remain the main consideration in purchasing decisions.

These findings indicate that there is a price tolerance limit for pro-environmental consumers. Although they believe that electric motors are more environmentally friendly, they are less likely to pay a premium if the difference in value is perceived to be too great. Additionally, it is possible that even though consumers have a high Green Trust, they may feel that their individual contribution to the environment is not large enough to justify the additional costs incurred. This suggests that Green Trust is not strong enough to shift consumer focus to financial and utilitarian considerations. For manufacturers and policymakers, these results confirm that they cannot rely solely on the "green narrative" to drive adoption. Financial incentives such as subsidies, light credit schemes, or the emphasis on the economic benefits of electric motors need to be strengthened to overcome value barriers. Green Trust is important for building a positive image, but without a strong value proposition including competitive price and quality it won't be enough to reduce consumer resistance to electric motors.

The Effect of *Green Trust* Moderation on *Risk Barrier* and *Intention To Resist Electric Motorcycle Product Purchase*

Green Trust does not moderate the influence of Risk Barrier on Intention to Resist Electric Motorcycle Product Purchase, which means that even if consumers believe electric motorcycles are environmentally friendly, concerns related to technical and financial risks still impact their intention to refuse to buy. These results show that the level of trust in green claims does not affect risk perception, both for consumers who believe in the "green" aspect and those who are skeptical. Both groups of consumers will show the same resistance if they feel a high

risk on an electric motor, and conversely, if the risk is considered low, resistance will also be low, without affecting their Green Trust level. This indicates that the Green Trust, which has more to do with confidence in the environmental aspects of the product, is not strong enough to reduce concerns about risks related to the functionality and technology of electric motors.

These findings reinforce the view that risks (such as battery safety, lifespan, and parts availability) are considered separate from environmental issues, and that the Green Trust cannot address consumers' technical concerns. This is compounded by the fact that the Risk Barrier itself was not directly significant in this study, which suggests that the effect of risk on resistance was relatively weak in the sample population. Therefore, to reduce the Risk Barrier, manufacturers need to take more direct steps, such as education on the safety features of electric motors, providing a long battery warranty guarantee, and publishing independent safety test results. While Green Trust does not moderate these relationships, building public trust in brands and technology remains important, as it can improve overall product evaluation and potentially increase purchase intent. However, to drive wider adoption of electric motors, marketing strategies must include both sides: the "green" aspect and the reliability of the product.

The Effect of *Green Trust* Moderation on *Tradition Barrier* and *Intention To Resist Electric Motorcycle Product Purchase*

The Green Trust does not moderate the influence of the Tradition Barrier on the Intention to Resist Electric Motorcycle Product Purchase, which means that even though consumers believe in the environmental benefits of electric motorcycles, the old habit of using conventional motorcycles remains a strong driver of resistance. These findings suggest that the level of consumer confidence in electric motor eco-friendly claims does not affect the power of influence of old habits and preferences in driving resistance to electric motor adoption. Despite high Green Trust, old habits and comfort towards conventional motorcycles remain dominant in purchase decisions, suggesting that traditional barriers are stronger and independent of environmental trust.

This result is in line with Innovation Resistance Theory which states that traditional barriers arise when innovation conflicts with values and habits that are already rooted in consumers' lives. Therefore, while Green Trusts can promote positive attitudes towards the environment, they are not enough to change old habits that have been formed. From a practical point of view, these findings emphasize the importance of a more comprehensive approach to driving the adoption of electric motors, including gradual behavioral changes, the formation of new social norms, as well as hands-on experience that reduces differences with conventional motors. The competitive advantages of conventional motorcycles based on habits and social norms make the change towards sustainable consumption require deeper interventions, not just increased environmental awareness.

The Effect *of Green Trust Moderation* on *Image Barrier* and *Intention To Resist Electric Motorcycle Product Purchase*

The results of the study show that *Green Trust* does not moderate the influence of *Image Barrier* on the intention of resistance to purchase electric motorcycles. Although the level of trust in green claims is quite high in both regions, this is not enough to reduce the resistance of consumers who still doubt the image and quality of electric motors. These findings suggest that if consumers have a negative view of the product's image (e.g. doubting quality or environmental claims), then *the Green Trust* cannot reduce their resistance. Conversely, despite

a positive product image, *Green Trust* is not strong enough to lower resistance in consumers who have a high *Image Barrier*. Therefore, *Green Trust* is more appropriately seen as a factor that directly affects *the Image Barrier*, rather than as a moderator in the relationship.

These findings also emphasize the importance of a more concrete approach in building product image and consumer trust. Campaigns to improve *Green Trust* must be accompanied by tangible evidence that improves the product's image, such as public trials, credible environmental certification, and transparency in green claims. In addition, companies need to proactively manage public opinion by educating consumers about the advantages of electric motors, for example in terms of emissions or battery recycling plans. Building a strong reputation and ensuring products meet the promised environmental claims is key to strengthening *Green Trust* and reducing *Image Barriers*, thereby accelerating the adoption of electric motors.

Differences in Characteristics and Patterns of Consumer Resistance between the Greater Jakarta and Yogyakarta Regions

The results of the analysis showed significant differences in the barriers to the adoption of electric motorcycles between respondents in Greater Jakarta and Yogyakarta, which were influenced by the demographic and socio-economic characteristics of each region. Yogyakarta respondents were more influenced by *the Value Barrier* and *intention to resist*, which reflected economic prudence and rational evaluation of prices, benefits, and sacrifices. On the other hand, respondents in Greater Jakarta were more influenced by *Image Barrier*, showing sensitivity to image and product credibility, with high expectations for performance and electric motor technology. The two regions show similarities in *the Tradition Barrier* and *the Risk Barrier*, which suggests that the habit of using conventional motors as well as technical concerns constitute cross-region barriers.

Although *the level of Green Trust* is quite high in both regions, trust in the environment is not enough to reduce resistance to electric motors. This indicates that practical barriers such as habits and economic values are more dominant in consumer decisions. These findings confirm that resistance to electric motors is contextual and region-specific, so adoption acceleration strategies must be tailored to the demographic and socio-economic characteristics of each region. More concrete approaches, such as improvements to the value proposition and user experience, as well as customized communication, are needed to increase the adoption of electric motors.

CONCLUSION

This study analyzes the factors that hinder innovation and influence the intention to refuse the purchase of electric motorcycles, as well as the role of Green Trust as a moderating variable. The results show that the Usage Barrier, Value Barrier, Tradition Barrier, and Image Barrier have a positive and significant influence on the intention to reject electric motorcycles, with the Tradition Barrier being the most dominant factor. Meanwhile, the Risk Barrier does not show a significant effect. Green Trust does not moderate the influence of these barriers—whether Usage, Value, Risk, Tradition, or Image Barrier—on the intention to refuse the purchase of an electric motorcycle. These findings emphasize the importance of improving functional factors such as product practicality, efficiency, and reputation to reduce resistance, while also indicating that although Green Trust is important, functional barriers remain the key

determinants in consumer decision-making. Based on these findings, it is recommended that manufacturers and policymakers focus on enhancing product practicality, cost efficiency, and brand reputation to minimize consumer resistance. In addition, educational campaigns that highlight the functional benefits and long-term value of electric motorcycles can help shift consumer perceptions, as Green Trust alone is insufficient without addressing core functional barriers.

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