

Green Value and Price Fairness on Young Consumers Purchase Intention of Electric Motorcycle: The Moderating Role of Environmental Knowledge

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ABSTRACT

The preservation of the natural environment is an increasingly growing issue in Indonesia. The program to convert oil-fueled motorcycles to environmentally friendly electric energy has not been successful as expected. This study aims to analysis the influence of Green Perceived Value and Price Fairness on Purchase Intention of Electric Motorcycle Moderated by Environmental Knowledge. The sampling method was purposive sampling with 119 university students as respondent. Data analysis techniques used linear regression with moderated variable. Result of research, Green Perceived Value and Price Fairness with moderated by Environmental Knowledge, have a significant effect on Purchasing Intention of Electric Motorcycle. It is hope to contribution a solution to the problems, with the implementation of green perceived value, price fairness, and environmental knowledge to increase purchasing intention of electric motorcycles among young customer.

Keywords: Green Perceived Value, Price Fairness, Environmental Knowledge, Purchase Intention

Pengaruh Nilai Produk Hijau dan Kewajaran Harga terhadap Niat Membeli Sepeda Motor Listrik : Pengetahuan Lingkungan sebagai Variabel Moderator

Abstrak

Kelestarian lingkungan alam merupakan isu yang semakin berkembang di Indonesia. Program konversi sepeda motor berbahan bakar minyak menjadi energi listrik ramah lingkungan belum berhasil seperti yang diharapkan. Penelitian ini bertujuan untuk menganalisis pengaruh Green Perceived Value dan Price Fairness terhadap Purchase Intention Sepeda Motor Listrik yang Dimoderasi oleh Pengetahuan Lingkungan. Metode pengambilan sampel adalah purposive sampling dengan 119 mahasiswa sebagai responden. Teknik analisis data menggunakan regresi linier dengan variabel moderat. Hasil penelitian, Green Perceived Value dan Price Fairness dengan moderasi Environmental Knowledge, berpengaruh signifikan terhadap Niat Beli Sepeda Motor Listrik. Hal ini diharapkan dapat memberikan kontribusi solusi atas permasalahan yang terjadi dengan penerapan green perceived value, price fairness, dan environmental knowledge untuk meningkatkan niat beli sepeda motor listrik di kalangan pelanggan muda.

Kata Kunci: Nilai Produk Hijau, Price Fairness, Pengetahuan Lingkungan, Niat Beli

INTRODUCTION

The dependence of the world community on fossil energy is one of the things that worsens global warming and climate change over time (Tanwir & Hamzah,

2020). Motorized vehicles are the largest contributor to fossil energy consumption sourced from crude oil, amounting to 49.3% of the total energy consumption in various sectors (International Energy Agency, 2018).

Burning engines with fossil fuels said to increase greenhouse gas emissions thereby worsening air quality (Al-Thani et al., 2022; Karjalainen et al., 2019; Liaquat et al., 2010).

As a concrete manifestation of preventing global warming, in 2015 the Paris Agreement created which was also signed by 171 countries, including Indonesia. Commitments in the implications of the Paris Agreement are contained in the Nationally Determined Contribution (NDC) contains the decarbonizations strategy for each country to reduce global warming caused by carbon emissions (Ministry of the Environment and Forestry, 2016). In Indonesia, the transportation sector ranks second as the largest contributor to emissions, 90% of which comes from land transportation (Ministry of Environment and Forestry, 2021). This creates an urgency to encourage a decarbonization strategy in the land transportation sector.

The motor vehicle electrification strategy considered the key to the decarbonizations strategy in the land transportation sector (Padhilah et al., 2023). Electric vehicles considered to have lower carbon emissions than conventional engine vehicles using fossil fuels (Sudjoko et al., 2021; Wu & Zhang, 2017).

Based on data obtained from the 2022 Emission Gap Report by the United Nations, Indonesia ranks 5th after China, the United States, India and the European Union as the country that contributes the largest emissions globally. This urgency encourages the creation of innovation by various parties, such as automotive companies which are starting to produce and market vehicles with alternative energy such as electricity and batteries which can reduce carbon emissions (Sudjoko et al., 2021; Wu & Zhang, 2017)., As well as the government starting to build infrastructure to support the creation of an environmentally friendly vehicle ecosystem (Yeğin & Ikram, 2022).

Table 1. Number of Electric Vehicle Sales in Indonesia (2020 – 2022)

Year	2020	2021	2022
Units Sold	2,176	7,498	33,457

Source: Indonesia Electric Vehicle Outlook, 2023

It known from table 1 that sale of electric vehicles in Indonesia have increased every year. In 2022, there will even be an increase of almost 5 times from the previous year. However, this number is considered to be still very far from Indonesia's de carbonization target which is trying to be met before 2025, with details of 0.4 million electric cars sold while 1.8 million electric motorbikes (Padhilah et al., 2023).

The government has supported the upstream electric vehicle industry by implementing Government Regulation no. 55/2019 to accelerate the growth of the electric vehicle business ecosystem. This ecosystem includes charging station

infrastructure, nickel raw material providers, battery manufacturers and electric vehicle assemblers. However, to be able to increase the growth rate of electric vehicles, there needs to be cooperation from various parties, especially automotive companies that produce electric vehicles. In this case, companies have a role in encouraging sales by producing vehicles that suit the preferences of the public as end users of electric vehicles.

People's buying interest in environmentally friendly vehicles is still much lower compare to conventional engine vehicles. In several countries that have introduced environmentally friendly vehicles

first, such as China, the United States, France, Germany, Switzerland and South Korea, sales of environmentally friendly vehicles are only around 5% of total vehicle sales (Febransyah, 2021).

In Indonesia, more people use motorbikes as the main vehicle for mobilization. This is because the nature of motor vehicles is suitable for the characteristics of regions in Indonesia, which are densely populated urban areas. The total number of motorbike users in 2022 will reach 126.99 million units or 83% of the total number of vehicle users (Polri, 2022). It known that this figure still dominated by conventional engine vehicles (Ministry of Industry, 2022). This situation is of course an obstacle for Indonesia to achieve its de carbonization target.

Based on this description, it show that the intention to buy electric motorbikes in Indonesia is still low. For this reason, research needs carried out regarding the factors that influence people's purchasing intentions towards electric vehicles.

Intention to purchase green products positively influenced by the value of green products (Arifin et al., 2022; Ayub & Kusumadewi, 2021; Zhao & Chen, 2021). Consumer evaluations regarding the comparison of costs and benefits of a product on the environment as a whole contribute to consumers' desire to buy environmentally friendly products (Ma & Chang, 2022). The higher the value that consumer give to a green product, the higher the consumer's purchase intention towards that product.

Consumer purchasing intentions also influenced by external stimuli provided by the company. In this case, price is one of the main stimuli that influences consumer responses in making purchasing actions (Simbolon et al., 2020). From an economic perspective, the price of electric vehicles tends to be higher than conventional engine vehicles. However, high prices do not always have a negative effect on purchase intentions (Budi et al., 2017). Consumer perception of fair prices is a

factor that encourages consumers to make purchases (Chen Chang & Tsung Wu, 2016). Price fairness occurs if the price set by the company is in accordance with the consumer's reference price, so that this conformity will have an impact on consumer satisfaction (Herrmann et al., 2007). This satisfaction, which is then researched further, can encourage purchasing intentions (Dai, 2010). Knowledge has a role in influencing consumer acceptance of information about products (Kumar et al., 2017). In the context of purchasing green products, the level of consumer knowledge regarding the solutions offered by a product related to environmental problems influences consumer purchasing intentions (Issock Issock et al., 2020). The higher an individual's knowledge of problems, solutions and responsibilities towards the environment, the greater the level of individual involvement in environmentally friendly product purchasing behavior (Delistavrou & Tilikidou, 2022).

Previous research focused on the intention to purchase electric vehicles (Ninh, 2021; Un-Noor et al., 2017). This research offers updates in terms of the research object, namely electric motors. This is because in Indonesia the use of motorbikes still dominates, so there is potential for electric motorbike companies to be able to encourage the growth of the electric motorbike industry by offering electric motorbike products so they can compete with conventional engine motorbikes.

Research Objectives

The research objectives are set so that the research runs according to what has been planned. The aim of this research is as follows: to build a research model that can clarify the relationship between Green Product Value, Price Fairness, and Environmental knowledge provide a solution to the problems of electric motorbike companies in Indonesia related to low purchase intentions for electric motorbikes.

Hence, forth, the objectives are describe in several sub-objectives including:

- a. This research model is expected to be able to explain the relationship between Green Product Value and Intention to Purchase Electric Motorbikes among Students in the city of Semarang
- b. This research model is expected to be able to explain Price Fairness towards the Intention to Purchase Electric Motorbikes among Students in the city of Semarang
- c. This research model i expected to be able to explain the relationship between Green Product Value moderated by Environmental Knowledge and Intention to Purchase Electric Motorbikes among Students in the city of Semarang.

Theoretical Background and Hypotheses Development

Purchase Intention

Bagozzi & Lee (2002) argues that intention is an individual's motivation to consciously plan an action or behavior. According to (Keller et al., 2016), purchase intention is consumer behavior that appears in response to an object that shows the customer's desire to make a purchase after carrying out a certain evaluation. Meanwhile, according to (Syauqina et al., 2022), green purchase intention is a consumer's desire or interest to consume products or services that have a small impact on the environment and that are not harmful or harmful to the environment.

Green Product Value

Green value is a set of attributes related to consumers' perceptions of the benefits of an environmentally friendly product, so that this perception can cause a word of mouth effect and increase purchasing intentions (Ashton et al., 2010; Sweeney et al., 1999). The value perceived by consumers in general can reflect consumer attitudes and behavior towards a product. A poor assessment of a product can lead to a loss of

consumer purchase intentions (Sweeney & Soutar, 2001). If consumer expectations regarding the benefits of a product are meet, consumers will tend to make a purchase (Chen et al., 2017).

H1: Green Product Value has a significant effect on the intention to purchase an electric motorbike

Price Fairness

Price is the amount of costs sacrificed by consumers to obtain benefits from a product or services (Nguyen & Meng, 2016). Consumers will tend to compare the costs incurred with the product benefits obtained. Prices said to be fair if consumers feel that the price offered commensurate with the benefits obtained (Wicaksana et al., 2021). The fairness of the price perceived by consumers can determine the level of consumer satisfaction regarding the suitability of the price offered and this satisfaction is what triggers purchase intentions (Herrmann et al., 2007). This is also reinforced by Dai (2010) which examines the impact of price fairness on purchase intentions with the results that price fairness has a significant direct influence on consumer purchase intentions.

H2: *Price Fairness* has a significant effect on the intention to buy an electric motorbike

Environmental Knowledge

Environmental knowledge is a variable commonly researched in studies related to green purchasing behavior. In previous research, knowledge acted as a variable that had a direct influence on pro-environmental attitudes and actions (Fabiola & Mayangsari, 2020; Mohiuddin et al., 2018b; Syauqina et al., 2022). However, different results were found in research by (Jaiswal & Kant, 2018), where environmental knowledge does not significantly influence consumer attitudes in purchasing environmentally friendly products.

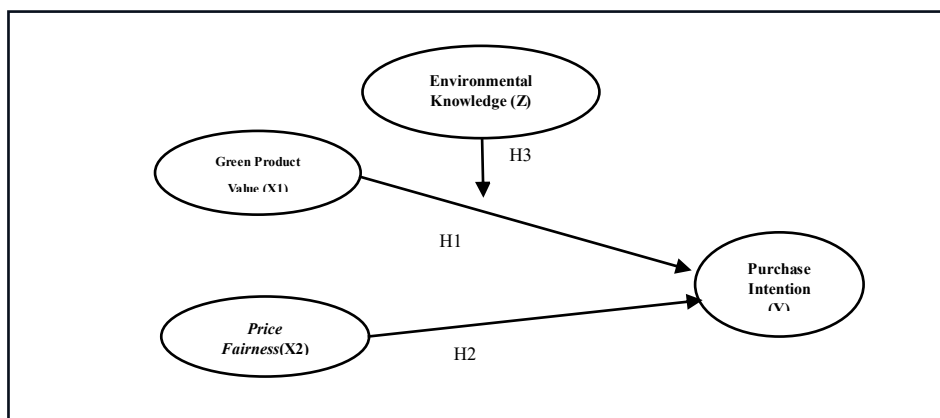
This research offers the role of environmental knowledge as a moderator variable between green values and consumer

purchase intentions towards environmentally friendly products. This is in line with research conducted by (Hamzah & Tanwir, 2021), where the role of environmental knowledge is able to moderate the influence of green values and green purchasing intentions. Individuals with a better understanding of environmental responsibility will have greater

environmental concern and thus have different levels of environmentally friendly purchasing intentions compared to those with low levels of environmental knowledge.

H3: Green Value moderated by Environmental Knowledge has a significant effect on intention to purchase an electric motorbike.

FIGURE 1. THEORETICAL FRAMEWORK



Source: Hamzah & Tanwir (2021), Konuk (2018)

RESEARCH METHODS

The population in this study were all university students in Semarang City who were accustomed to riding motorbikes for daily mobility purposes. Based on calculations using the Lemeshow formula, the number of respondents obtained was 96.04, which was then rounded to 100. This research used purposive sampling with the following sample criteria:

1. College students in the city of Semarang
2. Students aged 18 – 25 years
3. Students who in their daily lives are accustomed to riding motorbikes for mobility purposes

Primary data was obtained from the results of distributing questionnaires to respondents via online platforms from June to July 2023. There are four variables in this

research, namely 2 independent variables, 1 moderator variable, and 1 dependent variable. The independent variables in this research are Green Product Value (X1), Price Fairness (X2), the moderator variable in this research is Environmental Knowledge (Z), and the dependent variable in this research is Purchase Intention (Y). The scale used to measure the variables green value, fair price, environmental knowledge, and purchase intention is the semantic differential scale. The semantic differential scale is used to measure attitudes, opinions and perceptions of individuals or groups towards a phenomenon (Sugiyono, 2019). By using a semantic differential scale, the variables being measured are reduce to several indicators, which will then be used as a reference in creating question items in the research questionnaire.

In this questionnaire, interval answer options given with a value range of 1 to 10. A value of one represents the consumer strongly disagrees with the statement given, while a value of 10 means the consumer strongly agrees with the statement given.

Data analysis methods used include validity test, reliability test, classical assumption test, t test, F test, and coefficient of determination. Multiple linear regression analysis used to determine the influence of

each independent variable on the dependent variable. Moderated Regression Analysis analysis added to test the influence of the moderating variable whether it can strengthen or weaken the influence of the independent and dependent variables.

RESULTS AND DISCUSSION

Based on the research that carried out, the results obtained are in the form of descriptive analysis of respondents as Table 2.

Table 2. Characteristics of Respondents

Measurement	Items	%
Gender	Man	29.4
	Woman	70.6
Age	17 – 20	10.1
	20 – 23	89.1
	23 - 25	0.8
Campus Name	POLYNES	54.6
	UNDIPUNES	26.1
	UNISSULA	16
		3,4
EV Brand Familiarity	Alva One	5.2
	Be agile	13.5
	Selis	3,2
	Viar	22.6
	Volta	27.1
	None	28.4

Source: Processed Primary Data, 2023

The total respondents obtained in this study were 119 respondents. Based on the results of the questionnaire that was distributed, the characteristics of the respondents known diverse. Based on the table 2, it can be see that the respondents in this study dominated by women with a percentage of 70.6% of the total number of respondents. The majority of respondents were aged 20 to 23 years, most of whom came from POLINES as much as 54.6%. Based on questions regarding electric motorbike brands that have widely marketed, the majority of respondents, 28.4%, admitted that they had never heard of the brands mentioned.

Classical Assumption Test

The regression test equation in research must meet the BLUE (Best Linear Unbiased Estimator) criteria, which means that decisions taken through hypothesis testing cannot be biased. To achieve the BLUE criterion, the regression must prove not detect multicollinearity, heteroscedasticity, and autocorrelation (Ghozali, 2018). This research applies several tests including normality, multicollinearity, heteroscedasticity and linearity tests

Table 3. Classic Assumption Test Results

Test	Results	Information
Normality	Kolmogorov-Smirnov Test: 0.200 > 0.05	Data normally distributed
Linearity	<i>Deviation from Linearity</i> X1: 0.980 > 0.05 X2: 0.752 > 0.05	There is a linear relationship between the independent and dependent variables
Multicollinearity	VIF X1: 1,949 X2: 1,949	Multicollinearity does not occur
Heteroscedasticity	Sig X1: 0.244 X2: 0.621	Heteroscedasticity does not occur

Source: Processed Primary Data, 2023

Coefficient of Determination Test (R²)

The coefficient of determination (R²) measures the proportion of variance of the dependent variable that explained by the independent variable or predictor variable (Hair et al., 2019). The coefficient of determination value can vary from zero to one. If the regression model applied correctly, a higher R² value assumed to mean the greater the power of the regression equation in explaining or predicting the dependent variable.

It is known from table 4 that the adjusted R Square value is 0.438 which can be interpreted as meaning that 43.8% of the variance in purchase intention can be explained significantly by the variables green product value and price fairness while the remaining 56.2% is explained by other variables. Not examined in this study.

Table 4. Results of the R² Determination Coefficient Test

Model	R	R ²	Adjusted R ²	Std. Error of The Estimate
1	0.669a	0.448	0.438	1.41617

Source: Processed primary data, 2023

F test

The F test used to determine whether the regression model meets goodness of fit or in other words is suitable for use (Abebe, 2019). The F test carried out by comparing the calculated F value with the F table at a

significance level of 0.05. If the calculated F value is greater than F table then the null hypothesis can rejected.

Table 5. F Test Results

<i>Model</i>	<i>Sum of Squares</i>	<i>df</i>	<i>Mean Square</i>	<i>F</i>	<i>Sig.</i>
<i>Regression</i>	188,754	2	94,377	47,058	0,000
<i>Residual</i>	232,641	116	2,006		
<i>Total</i>	421,395	119			

Source: Processed primary data, 2023

Based on the results in table 5, it can be seen that the calculated F value of 47.058 is greater than the F table value of 2.349, and the sig value is $0.000 < 0.05$. Therefore It can concluded that the F ratio is significant so that the regression model in this study meets goodness of fit.

t test

Based on table 6, it is known that the t statistic value for the Green Product Value variable (X1) is 3.604, which means it is greater than the t table value, namely 1.657 with a significance value of $0.000 < 0.05$. These results indicate that the Green Product Value variable (X1) has a significant positive effect on the Purchase Intention variable (Y).

Table 6. t test results

<i>Variable</i>	<i>t statistic</i>	<i>t table</i>	<i>Significance</i>	<i>Information</i>
<i>Value of Green Products</i>	3,604	1.9804	0,000	Significant

Source: Processed primary data, 2023

Thus, H1 is accepted. These results are in line with previous research which states that Green Product Value has a positive effect on Purchase Intention (Hamzah & Tanwir, 2021; Ninh, 2021; Pradnyadewi & Warmika, 2019).

Meanwhile, the t statistic value for the Price Fairness variable is 3.936, which means it is greater than the t table value of 1.657 with a significance value of $0.000 < 0.05$. It concluded that the Price Fairness variable (X2) has a positive effect on the Belu Intention variable (Y) so it said that H2 is accepted. These results are consistent with previous research by Konuk (2019) which states that price fairness has a positive influence on the intention to purchase environmentally friendly products.

Multiple Linear Regression Analysis

Multiple linear regression analysis is a statistical technique that can be use to analyze the relationship between one dependent variable and several independent variables (Hair et al., 2019). In this research, the independent variables used are Green Product Value and Price Fairness. Meanwhile, the dependent variable used is Purchase Intention.

Table 7. Multiple Linear Regression Analysis

Model	Unstandardized Coeff		Standardized Coeff	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	-7,827	3,270		-2,394	0,018
Value of Green Products	0.528	0.147	0.347	3,604	0,000
Price Reasonability	0.528	0.134	0.379	3,936	0,000

Source: Processed primary data, 2023

Based on table 7, the regression equation can be explain as follows:

$$Y = 0.347X_1 + 0.379X_2$$

The regression coefficient value on the Green Product Value variable (X1) is 0.347, which can be interpreted as if there is an increase of one unit in the Green Product Value variable, it will have an impact on increasing the Purchase Intention (Y) variable by 0.347 units. Meanwhile, the regression coefficient value on the Price Fairness variable (X2) shows a result of 0.379, which means that for every one unit increase in the Price Fairness variable there will be an increase of 0.379 units in the Purchase Intention (Y) variable.

Moderated Regression Analysis

Testing the role of the Environmental Knowledge (Z) variable as a moderating variable can done using the Moderated Regression Analysis (MRA) test. The interaction test or what can be call Moderated Regression Analysis (MRA) is a special application of multiple linear regression where the regression equation contains an element of interaction in the form of multiplying two or more independent variables.(Ghozali, 2018).

Based on the moderation analysis that carried out, the moderation regression equation using the Moderated Regression Analysis method can be write as follows:

$$Y = -0.577X_1 - 0.579Z + 1.640X_1Z$$

Based on the results obtained, it is know that the significance value of the interaction variable between Green Product Value (X1) and Environmental Knowledge (Z) shows a value of 0.040. This result can be said to be significant because the Sig value is 0.040 < 0.05. Thus, it concluded that H3 accepted because the Environmental Knowledge variable (Z) is able to moderate the influence of the relationship between the Green Product Value variable (X1) on Purchase Intentions (Y).

CONCLUSIONS AND RECOMMENDATIONS

Conclusion

Based on research that conducted regarding Green Product Value (X1) and Price Fairness (X2) on the Purchase Intention (Y) of Electric Motorbikes among Students in the city of Semarang with Moderation of Environmental Knowledge (Z) the following conclusions can be draw:

- The value of green products proven to have a significant effect on the intention to purchase electric motorbikes among students in the city of Semarang. This indicates that companies must continue to increase the value of electric motorbike products so that consumers' purchasing intentions for electric motorbikes increase.
- Price Fairness proven to have a significant effect on the Intention to Purchase Electric Motorbikes among Students in Semarang City. This indicates that setting fair prices by electric motorbike companies will

influence consumers' intentions to buy electric motorbikes.

Suggestion

The company has expected to increase consumer value perceptions of electric motorbikes by carrying out several efforts. In general, electric motorbikes known to have a scooter design that is similar to a Vespa motorbike. In order to continue to follow market trends and needs for diverse design interests, it hoped that electric motorbike companies could produce electric motorbikes with various design choices that can reach more young people with various design preferences for motorbikes. Electric motorbike companies can add variations in electric motorbike designs with maxi scooter styles such as the designs on the Yamaha NMAX and AEROK, which are currently very popular.

In order for it to use for a long period, it is necessary to maintain the electric motor. The main component that requires routine maintenance and replacement is the battery of the electric motor. Electric motorbike companies such as Volta, Gesits, and Viar have provided after sales services in the form of a battery guarantee of up to 3 years. In addition, services such as exchanging old batteries for new batteries are also offer by electric motorbike companies. In order to increase consumers' perception of the durability value of electric motorbikes, companies can improve communication with consumers regarding the after sales services offered so that consumer confidence in electric motorbike company guarantees increases.

In connection with increasing price acceptance, automotive companies can

provide special discounts for students. Discounts can be in the form of discounts on purchasing electric motorbikes at certain moments such as the new school year or discounts related to motorbike maintenance such as motorbike service fees and battery replacement. Meanwhile, the government could consider providing subsidies for the purchase of electric motorbikes specifically for students.

Environmental knowledge has been proven to moderate the influence of the relationship between green product value and intention to purchase electric motorbikes. In this way, companies can emphasize environmental value in marketing electric motorbike products.

Limitations and Suggestions for Further Research

This research has several limitations that can be develop in further research, including:

- a. This research was not specifically conduct on electric motorbikes of a certain brand.

It is hope that this research model can be apply in further research specifically carried out by each electric motorbike company.

- b. This research only examines the variables of green product value, price fairness and environmental knowledge as factors that influence students' purchasing intentions towards electric motorbikes. Future research can add other factors such as government policies, which proven, by Hong et al., (2019) and Shen & Wang, (2022) can act as external stimuli in predicting pro-environmental behaviour in consumers.

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