

# Consumers’ Intention to Purchase Electric Cars: Study of Generation-Z in Indonesia

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**Abstract:-** This study aims to determine the variables that influence the purchase intention of electric cars among Generation Z, in the city of Jakarta, Indonesia based on a modified theory of planned behavior (TPB) model. Structural Equation Modeling (SEM) with S-PLS 4.0 was used to analyze the research model, using 100 valid respondents. The findings of this study explore how attitude (AT) and perceived behavioral control (PBC) significantly influence consumer intentions to buy electric cars. Another finding is that environmental

concern (EC) has no effect on purchase intentions. It was found that R-Square on purchase intention had a high influence of 67.4%. The conclusion from this research can help companies or policy makers to increase the purchase intention of potential consumers. They can create more intensive educational programs or campaigns about the benefits and advantages of using electric cars as well as the benefits for the environment.

**Keywords:-** Purchase Intention, Electric Car, Generation Z.

## I. INTRODUCTION

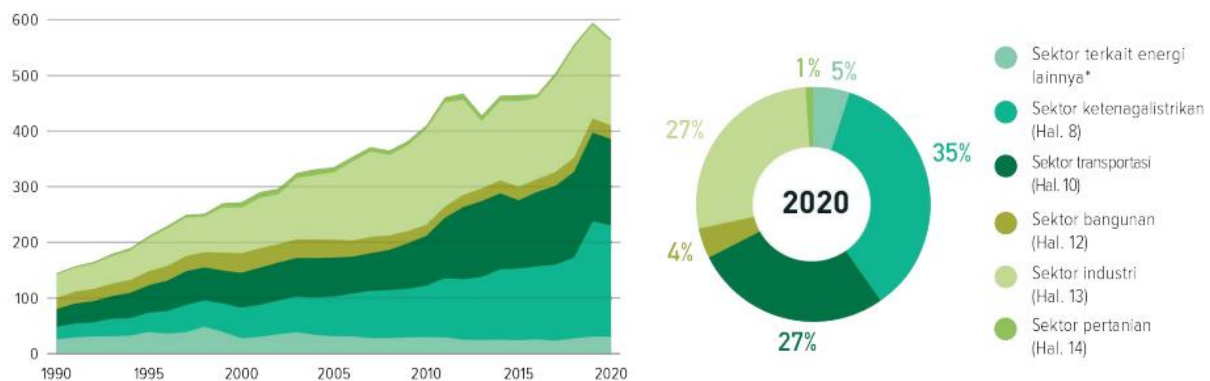


Fig. 1: Annual CO2 emissions from combustion fuel (MtCO2/year) in Indonesia. Source: Climate transparency, 2021

Air quality in Indonesia has again received a red report card from the 2021 IQAir World Air Quality Report [1]. Indonesia is ranked 17th as the most air polluted country in the world with the highest concentration of PM2.5, namely 48 µg/m3. Not only that, Indonesia is also ranked first in Southeast Asia as a country with air pollution. Following are the 5 rankings of the worst air countries in a row after Indonesia, Myanmar, Vietnam, Laos and Thailand. Meanwhile, Jakarta has won the world's worst air quality index (AQI) several times. The increase in the amount of CO2 emissions in Indonesia is inseparable from the increasing number of transportations in Indonesia, as well as the higher industrial activities that encourage higher CO2 emissions. An increase in CO2 emissions will result in many losses for the community such as less clean air resulting in various types of respiratory diseases [2].

The above is a graphical, figure 1. the image of annual CO2 emissions from fuel combustion (MtCO2/year) in Indonesia in 2020.

The solution to high pollution in Jakarta is to switch to electric cars. In addition to the many incentives provided by the government, electric car prices are also getting cheaper,

operational costs are low, electric car maintenance is also much cheaper than fossil fuel cars. Although there are deficiencies that are still being improved by the government by increasing battery charging stations, sales of electric cars in Indonesia are still very low compared to Thailand, which has a lower population density and pollution levels. Data from Gaikindo [3], states that sales of Thai electric cars in semester 1 of 2022 totalled 41,516. With the low growth of electric cars in Indonesia, the Indonesian government, sellers and other stakeholders need to make various efforts to increase the buying interest of potential consumers so that they will also increase sales.

Based on the gap phenomenon, there are indications of low purchase intention the Z generation for electric cars, so the researchers then conducted a review of previous studies related to electric vehicles and electric cars. The results of a review of previous research articles several variables that influence the purchase intention an electric car. Attitude, environmental concerns, perceived behaviour control affect purchase intention and also found that attitudes mediate environmental concern in purchase intention in electric vehicles [4.5]. Other variables such as green lifestyle was found to influence purchase intention electric cars [6]. The

feature variable of the electric car is a clear driving effect on purchase intention based on the perceived risk mediating variable [7].

Regarding several previous studies there are variables that influence the purchase intention an electric car such as environment concern, perceived behaviour control and attitude. There are also gaps or discrepancies in the results of inconsistent findings regarding the relationship between variables that influence purchase intention.

This study aims to determine the variables that influence the purchase intentions an electric car among Generation Z, in the city of Jakarta, Indonesia based on the modified theory of planned behaviour (TPB) model.

**II. LITERATURE REVIEW**

*A. Theory of Planned Behaviour (TPB)*

TPB theory provide a useful conceptual framework for dealing with the complexities of human social behaviour. This theory incorporates several central concepts in the social and behavioural sciences, and it defines these concepts in a way that allows the prediction and understanding of certain behaviours in defined contexts. Attitudes toward behaviour, subjective norms with respect to behaviour, and perceived control over the behaviour are usually found to predict behavioural intention [8].

*B. Environmental Concern*

In previous research, it was found that environmental concerns have a positive impact and has a significant effect on the intention to buy an electric car [15]. Other studies have found environmental concern to have a direct effect on the purchase intention of non-electric car users [16]. On this basis, the third hypothesis is:

*H1: Consumers' environmental concern has a positive and significant effect on the intention to buy an electric car.*

Perceived behavioral control has a positive and significant effect on the intention to buy an electric car [17]. Meanwhile, other studies have found that perceived behavioral control does not directly affect the intention to

buy an electric car [4]. On this basis, the fourth hypothesis is:

*C. Attitude*

Attitude is a learned tendency or tendency to respond to various things that are pleasant or unpleasant to an object, person, institution, or event [12].

*D. Perceived Behavioural Control (PBC)*

Perceived behavioural control is a feeling of self-efficacy or one's ability to show the desired behaviour [12]. Perceived behavioural control is also considered as a function of belief, namely a person's belief that there will be factors that support or hinder the emergence of behaviour (control belief).

*E. Purchase Intention*

Intention is assumed as a thing or component that becomes a motivational factor that influences certain behaviours so that it becomes an indication of how hard someone is willing to try or try to show his behaviour [13]. In the context of the consumer as a buyer, purchase intention is a benchmark used by consumers in predicting future purchase decisions (for example purchases in a short time, product knowledge, clear product descriptions, or consideration of one's profit and loss product with other products) [14].

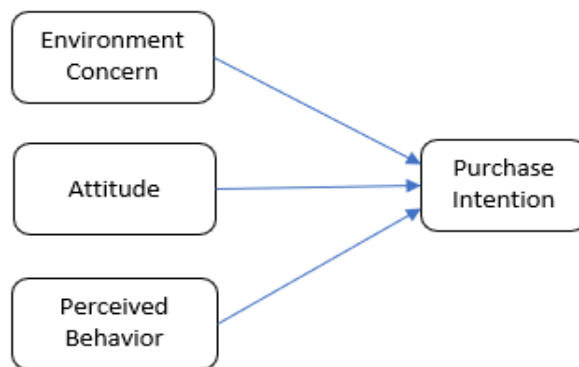


Fig. 2: Research Model

Source: Author, 2023

buy an electric car [4]. On this basis, the fourth hypothesis is:

*H2: Perceived behavioral control has a positive and significant effect on the intention to buy an electric car.*

Several previous studies have found that attitude has a positive and significant effect on the intention to buy an electric car [4,6,15]. Meanwhile, other studies state that attitude does not affect the intention to buy an electric car [18]. Thus, the sixth hypothesis is:

*H3: Consumer attitudes have a positive and significant effect on the intention to buy an electric car.*

**III. METHOD**

The research was conducted through a quantitative survey, The number of samples is 100 Respondents [19]. Author chooses a nonprobability sampling, where elements in the population do not have a known or predetermined chance of being re-elected as research subjects [20]. Research time about 3 months (January-March 2023) with place of research is Jakarta Indonesia. The population in the sample is Z generation with maximum age 27 years in 2023 who have an income. Data processing and hypothesis testing using S-PLS version 4.0.

**IV. RESULT AND DISCUSSION**

Based on the data from the respondents questionnaire to see the influence of purchase intention an electric car, it is necessary to test the feasibility of each of these variables and indicator or it can also be said as a data quality test that aims to determine the accuracy limits of a data measuring tool indicators of research variables can be done in the following way:

*A. Validity Test*

Validity Test to measure the magnitude of the correlation between constructs and latent variables. Convergent validity value or loading factor value per indicator > 0.70 [19]. Figure 3 shows the result of the validity test with the first loading factor parameter processed by Smart PLS 4.0

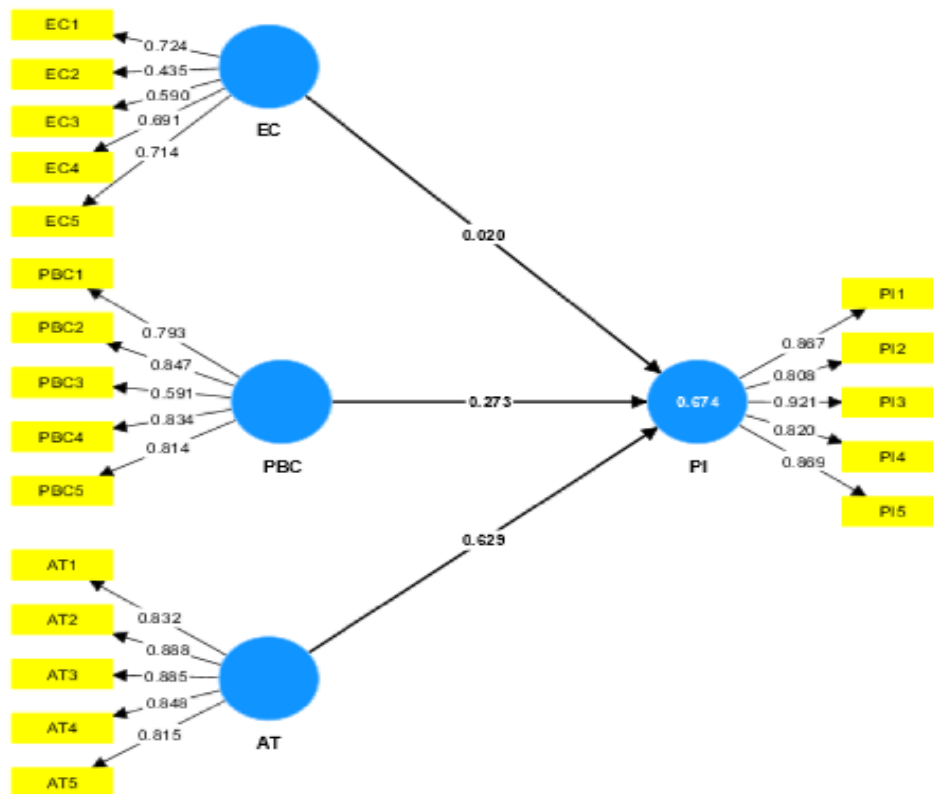


Fig. 3: Results of the validity test with the first loading factor parameter

Based on Figure 3, among the 20 indicators in this study, there were 3 indicators such as EC2, EC3 and PBC3 which were invalid because they did not meet the loading factor criteria (value below 0.7). So that it is necessary to test the validity of the next data by removing invalid indicators gradually from the indicator with the smallest

value and still seeing changes in the loading value of other indicator factors.

Table 1 shows the results of the validity test with the first loading factor parameter.

Table 1: Validity Test Results with Loading Factor Parameters

Item	Indicator	Loading Factor	Remark
Environment Concern (EC)	EC1	0.724	Valid
	EC2	0.423	Not Valid
	EC3	0.590	Not Valid
	EC4	0.691	Valid
	EC5	0.714	Valid
Perceived Behavior Control (PBC)	PBC1	0.793	Valid
	PBC2	0.847	Valid
	PBC3	0.591	Not Valid
	PBC4	0.834	Valid
	PBC5	0.814	Valid
Attitude (AT)	AT1	0.832	Valid
	AT2	0.888	Valid
	AT3	0.886	Valid
	AT4	0.848	Valid
	AT5	0.815	Valid
Purchase intention (PI)	PI1	0.867	Valid
	PI2	0.808	Valid
	PI3	0.921	Valid
	PI4	0.820	Valid

Sources: author 2023, processed data with S-PLS 4.0

Figure 4 is the results after several invalid indicators were deleted and reprocessed.

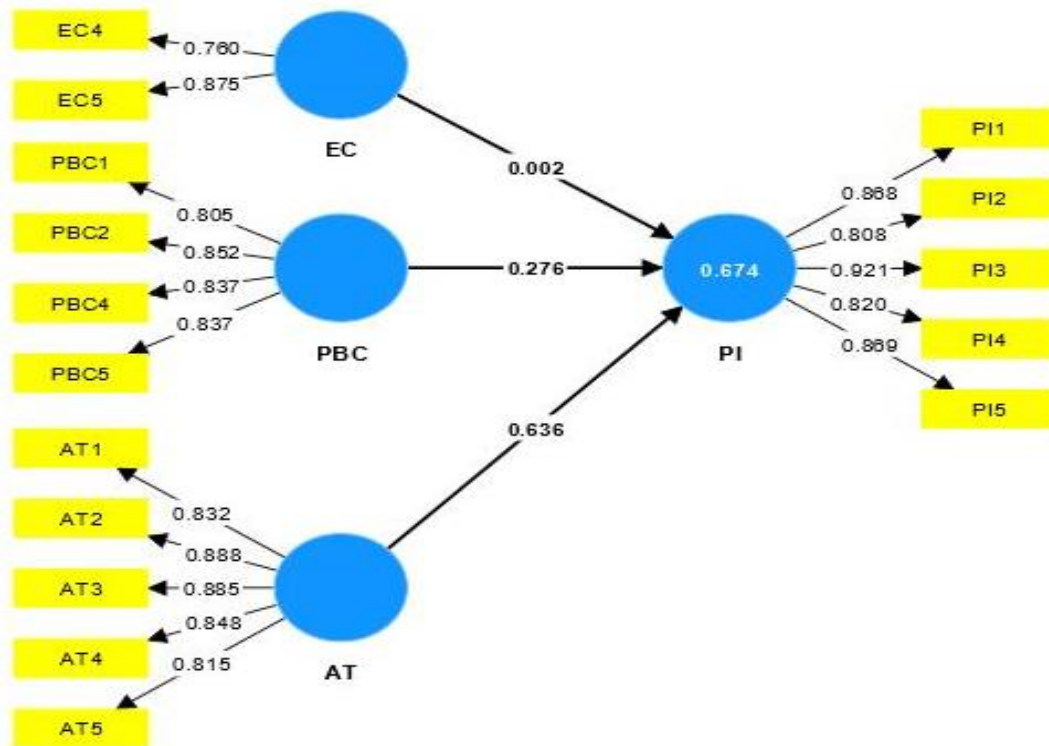


Fig. 4: Results of the validity test with the second loading factor parameter

In Table 2, all indicators are declared valid because they meet the factor loading criteria.

Table 2: Final Validity Test Results with Loading Factor Parameter

Item	Indicator	Loading Factor	Remark
Environment Concern (EC)	EC4	0.760	Valid
	EC5	0.857	Valid
Perceived Behavior Control (PBC)	PBC1	0.805	Valid
	PBC2	0.852	Valid
	PBC4	0.837	Valid
	PBC5	0.837	Valid
Attitude (AT)	AT1	0.832	Valid
	AT2	0.888	Valid
	AT3	0.885	Valid
	AT4	0.848	Valid
	AT5	0.815	Valid
Purchase intention (PI)	PI1	0.868	Valid
	PI2	0.808	Valid
	PI3	0.921	Valid
	PI4	0.820	Valid
	PI5	0.869	Valid

Sources: author 2023, processed data with S-PLS 4.0

From the results of the Convergent Validity test and after removing some of the indicators above, an AVE (Average Variance Extracted) value is obtained that meets

the requirements. Based on the AVE value which is declared valid if it is  $>0.5$ , the following is a table of these values which can be seen in table 3.

Table 3: Validity Test Results

Variables	AVE	Remark
Attitude	0.730	valid
Environment Concern	0.672	valid
PBC	0.694	valid
Purchase Intention	0.736	valid

Sources: author 2023, processed data with S-PLS 4.0

**B. Reliability Test**

Cronbach's alpha is a value that measures the internal consistency of a latent variable. Based on latent variables,

Cronbach alpha is said to be good  $\alpha > 0,60$  [19]. The result is declared reliable with a value of more than 0.6.

Table 4: Reliability Test Results with Cronbach's alpha

Variables	Cronbach's alpha	Remark
Attitude	0.907	Reliable
Environment Concern	0.620	Reliable
PBC	0.853	Reliable
Purchase Intention	0.910	Reliable

Sources: author 2023, processed data with S-PLS 4.0

**C. Inner Model Test**

The inner model test with R-Square value test was first carried out by looking at the R-Square value which is a goodness fit model test. The qualitative interpretation of R

square is 0.19 (low effect), 0.33 (moderate effect) and 0.66 (high effect) [21]. The result is declared that high influence with value of 0,694 and 0,560.

Table 5: R-Square Result

	R-square	R-square adjusted
Purchase Intention	0.674	0.663

Sources: author 2023, processed data with S-PLS 4.0

**D. Hypothesis Test**

The hypothesis test was carried out using the T-statistic test in the partial least squared (PLS) analysis model using

Smart-PLS 4.0 software. Using the bootstrapping technique, an R square value and a significance test value were obtained. If the T-statistic is higher than the T-table value, it

means that the hypothesis is supported, accepted or significant. For a 95 percent confidence level (alpha 5%),

the T-table value is  $\geq 1.96$ . Table 6 shows the hypothesis test result.

Table 6: Hypothesis Test Result

	Original sample (O)	T statistics	P values	Remark
Attitude -> Purchase Intention	0.636	7.258	0.000	Positive-Significant
Environment Concern -> Purchase Intention	0.002	0.030	0.976	Positive- Not Significant
PBC -> Purchase Intention	0.276	3.881	0.000	Positive-Significant

Sources: Author 2023, processed data with S-PLS 4.0

From Table 6 the bootstrap process shows that the hypotheses H2 and H3 are accepted, while the hypotheses H2 is not accepted.

### V. CONCLUSION

In this research, he analysed variables related to environmental concern, perceived behaviour control, attitudes toward and purchase intention of electric cars and their implicit. The research results were obtained from individuals who had never bought an electric car. Then, the research results that have been obtained are required to use the SEM-PLS method which is elaborated by Smart PLS 4.0 software so that some conclusions can be drawn as follows: Environmental concern has no effect on purchase intention. This means that a consumer's environmental concern is not an important factor in the intentions in buying an electric car. It could be that the respondent thinks that the whole process of electric vehicles does not fully consider concern for the environment. Perceived behaviour control has a positive and significant effect on purchase intention. This means that the better the perceived behaviour control of a consumer, the higher the consumer's buying interest. This shows that the wider the range of respondents who have financial freedom and knowledge about electric car technology becomes important in increasing purchase intention. So, it can be said that the purchase intention an electric car is directly influenced by knowledge of electric car technology and its financial capabilities. Attitude has a positive and significant effect on the intention to buy an electric car. This means that more positive the attitude towards of consumers to electric cars, purchase intention is higher. This shows that attitude directly plays a role in growing purchase intention an electric car.

### VI. SUGGESTIONS

Based on the results of data processing for variables that have a significant effect on the purchase intention an electric car, the following suggestions for companies or governance. First, For the Attitude variable, the companies can influence potential consumers in the process of increasing purchase intention an electric car, companies or government can create educational programs and campaigns that are more intense about the benefits and advantages of using electric cars and the benefits to the environment. Second, for perceived behaviour control variables, companies or government must also consider attractive price variants and conveniences that can be reached by potential consumers, especially generation Z, such as credit facilities, special subsidies from the government and others. In

addition, the companies can create promotional programs using the services of influencers in the youth segment. Meanwhile suggestions for further research are as follows, First, from the results of hypothesis testing using S-PLS 4.0, it is obtained that R<sup>2</sup> purchase intention of 67.4%. Other factors that were not examined in this study had an effect of 33.6%. Future researchers are expected to be able to add other research variables besides environmental concern variables, perceived behaviour control and attitudes. This is intended so that the information obtained is more complete about the variables that influence consumer purchase intention such as government incentives, features, infrastructure, and others. It is hoped that in future research the researcher will not only examine up to the purchase intention an electric car but can proceed to the purchase decision so that it is hoped that the research will be more comprehensive and limited.

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