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ENHANCING PURCHASE INTENTION OF ELECTRIC VEHICLE: IMPLEMENTING THEORY OF PLANNED BEHAVIOR AND GREEN PURCHASE BEHAVIOR

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ABSTRACT

The development of sustainable energy in Electric Vehicles (EV), is highly dependent on customer perceptions of purchase intentions (EV). The purpose of this study is to identify the motivations that influence the purchase intention of EVs either directly or indirectly by using product attribution, theory of planned behavior, green purchase behavior, and purchase intention with environmental consciousness as moderation. To test the 13 hypotheses, data were collected using a quantitative survey design, and 826 respondent's car users in Jabodetabek were selected using the purposive sampling method, and processed using the Structural Equation Modeling (SEM) method to examine the direct, indirect, and moderating effects, as well as multi-group SEM to test the effect of purchase intention based on income group. The results of processing the data show that there are 12 accepted hypotheses, which show that there is an indirect effect of product attribution and a direct effect of the theory of planned behavior and green purchase behavior on EV purchase intention. Furthermore, there is a moderating effect of environmental consciousness in influencing purchase intention, and it is found that there are differences in purchase intentions based on income group. This finding will assist policymakers in adopting effective variables to set the overall communication strategy as well as in EV segmentation to build potential purchase intentions of electric cars in a structured manner.

Keywords: *Electric Vehicle, Product Attribution, Theory of Planned Behavior, Environmental Consciousness, Green Purchase Behavior*

1. Introduction

In recent years, researchers already knew not only in Indonesia but also globally that oil and coal are one of the important sources for energy that always increases year by year (Sperling & Deluchi, 1989). Most of the usage is for transportation while transportation itself is a fundamental tool to increase a country economic growth especially for developing countries (Li et al., 2017). Indonesia itself is one of the biggest developing countries in transportation, especially for a private vehicle. As of 2019, Indonesia has more than a 133-million-unit vehicle with an incremental of around 6% each year (CNN Indonesia, 2021). According to the latest data (Badan Pusat Statistik, 2021), 84.4% is for motorcycles while others are for the private and public vehicles. In 2020, the automotive industry hit a huge challenge because of COVID-19 but the automotive industry regains its sales in 2021 by around 47% (GAIKINDO, 2022). Hence, even though COVID-19 has a huge impact, however, mobilization of transportation can't be stop year by year. As for the environment, there is some in Paris Agreement that to reduce the earth temperature to 2^{o} C (Plakitkina et al., 2021), greenhouse emissions need to be 0 in 50 years onward (Global, 2017). And of course, the most contributor to this emission is from the transportation sector where transportation contributes 23% which will increase to 50% if researchers doesn't do something about it (Global, 2017). Over usage of coal and oil, air pollution and greenhouse emission will become a threat in the future (Li et al., 2017). The impact

of this air pollution will reduce dramatically the life expectancy of humans (Guerra, 2019). As for Indonesia, Indonesia in the 10 biggest populated countries with a dangerous situation specifically Jakarta because of the incremental fossil fuel vehicle in big cities year by year (IQAir, 2020). The same thing also happens for China and India with the biggest population country same as Indonesia which causes their life expectancy is decreasing also (Y. Chen et al., 2013), even though the technology of 4-stroke for motorcycle is less emission compared to 2-stroke, but a big city like Hanoi and Ho Chi Minh still populated because mostly 95% - 99% motorcycle in those cities is 4-stroke (Kim Oanh et al., 2012).

To counter this situation, Electric Vehicle (EVs) is an important measure to reduce the environmental problems of transportation using the electric batteries as energy and many countries have already researched this technology (Li et al., 2017). Some of the studies shows that EV is much more efficient and environmentally friendly (Hoen & Koetse, 2014; Ma et al., 2017; Shi et al., 2016; Smith, 2010). On the other hand, the Indonesia government show its commitment to a developed country or automotive maker by opening big investment in the EV ecosystem. In 2020, the Indonesia government signed an agreement with LG Company to build an EV plants with a value of investment of 137, 5 trillion rupiahs. (Ferry, 2020) and open negotiation with automotive maker Tesla to have an investment in Indonesia (Dionisio, 2021). Other automotive makers in Indonesia such as Hyundai and Toyota also promise to give government EV investment with Hyundai with 21 trillion rupiahs and Toyota with 28 trillion rupiahs (Ferry, 2020). State-owned enterprise ministry also announced that officially founded holding company for battery EV developer with a value of holding is 238 trillion rupiahs, this holding company is made by big 4 state-owned enterprises like PERTAMINA, PLN, PT. ANTAM & Mining and industry Indonesia (GAIKINDO, 2021). One of the big reason for this investment is Indonesia's nickel resources even globally, Indonesia is big 4 for biggest exporter of nickel outside Russia and the Philippines (Garside, 2021). (Tim, 2021) also, state in the next 8 years, Indonesia will be the biggest exporter of Nickel in the world from 30% to 60%. Currently, Indonesia Ministry of Industry is targeting Indonesia's EV production for 600,000 4-wheel and 2,45 million units 2 wheel up to 2030. To do this, the central government, the ministry of industry, the ministry of energy, and other ministry is collaborating by publishing new regulation to support EV both monetary subsidy and non-monetary subsidy. As stated in presidential decree number 55-year 2019 about "Acceleration of Program for Battery-Based Electric Motor Vehicles for Road Transportation" which set about the local content minimum for Indonesia production (80% up to 2030). The other decree is coming from Government Regulation number 74-year 2021 which set about luxury tax for a vehicle with battery EV technology become 0% supported by non-monetary regulation from the ministry of energy which set about infrastructure building for charging station in Ministry of Energy Regulation number 13-year 2020. All of this regulation is used to support EV ecosystem penetration in Indonesia (Kemenperin, 2021; Rangga, 2021; Sorta, 2020).

However, the penetration of EVs in Indonesia did not have significant progress even after some regulation from the government. In 2021, the total unit EV in Indonesia is only 400 unit which consists of only around 0.3% (GAIKINDO, 2022). This low purchase intention of EV only comes from Hyundai with a price range of around 600 million rupiahs. Out from infrastructure readiness from the government, after-sales concern, battery durability (Andika, 2020), price of a vehicle is one of the root cause why EV penetration in Indonesia is very slow while acceptance price of Indonesia's potential market is around 300 million rupiahs (Emir, 2021). So EV product attribution in Indonesia is still weak in terms of the facility, and economic benefit with higher perceived risk.

Out from product perception and acceptance, green purchase behavior nowadays becomes a habit and behavior especially for developing countries. Some of the countries like Indonesia and India have incremental environmental consciousness which influences green purchase behavior for the green product (Sharma & Bansal, 2013; L. Wang et al., 2014). So nowadays, customers avoid buying products that environmental harm instead they choose the green products (Llerena, 2011). One of the ways to communicate EV in Indonesia is through a green campaign, However, is it impactful enough to influence researcher's customers into purchase intention? (Goldsmith et al., 2000) suggest that each company or even government need to have communication skills of environmentally friendly product. Green purchase behavior is one of the knowledge areas that is very important to develop green products and know what is

researcher's customers want through this product (Yen, 2018). Referring to the theory of planned behavior (TPB), the importance of customer purchase intention is needed to predict customer purchase behavior. In this paper, the researcher will focus on studies what is the direct influencing factor for customer purchase intention and what is the indirect influencing factor for customer purchase intention, and how significant it is using product attribution and environmental consciousness variable as moderation.

Therefore, using green purchase behavior (Kautish et al., 2019) and product attribution perspective (Zhang et al., 2018) to influence customer purchase intention is suggested to answer the question of EV purchase intention, what is the direct and indirect variables affect EV purchase intention? And is it different between each group for EV purchase intention? By answering these questions, the contribution of the researcher study is as follows. First, to develop and prove the TPB extension model researchers knows product perception isn't the only factor that influences purchase intention but also green purchase behavior. Second, as a comparison for next to dig deep on insight and initial study using the qualitative survey know which factor that impact to purchase intention more deeply. Third, research results can be used by automotive makers and the government to adjust their communication strategy based on customer's perception of green purchase behavior. Using this strategy, communication strategy can be more efficient and effective on target customer without spending too much budget on mass communication to increase EV purchase intention. While the rest of the paper is organized as follows. Section 2 will include a literature review of previous related research on green purchase behavior and EV purchase intention. Section 3 will describe the research model and hypotheses. Section 3 also will describe the research design and method, including descriptive statistics of the questionnaire data and the SEM fit test. Section 4 describes what factors influencing EV purchase intention direct and indirect and the result of a multi-group SEM analysis. Section 5 will focus on policy implications and finally the conclusion and issues for further research.

2. Literature Review

Much research has already taken regarding EVs in the world, especially in the technology field. With the need for energy and the necessity to reduce global pollution from the transportation sector, study on EVs for strategy, and policy research has emerged (Degirmenci & Breitner, 2020; Huang & Ge, 2019; Mohamed et al., 2016; Schmalfuß et al., 2017; Z. Wang et al., 2017; Zhang et al., 2018). Previous studies in EV, mostly focus on how the technology and industry exploration of the EV industry at the macro and upper levels. However, in this research, researchers know that at the end of the industry chain, how to promote EVs becomes of great significance on a large scale. Some studies already explored which factors influence customer behavior from many different perspectives, and one of the factors that influence intention is an environmental factor (Kautish et al., 2019; Zhang et al., 2018). Given the research focus of this paper, researchers will review the literature on factors that influence EV purchase intention, especially for green factor in customer behavior.

2.1 Theoretical Study

Consumer behavior studies have shown that customer intention is a good indicator to know and predict individual behavior because it included relevant factors that affects customer behavior (Ajzen, 2005; Hawkins, 2016; Sun & Morwitz, 2010). Other than that, the influence factor on purchase intention is green purchase behavior, nowadays researchers know that green environmental concern is increasing especially in developing countries. In that sense, many companies tries to adjust their marketing approach to respond to this increased behavior (Zhang & Dong, 2020). Most of the customer behavior that analyze the individual impact on green purchase behavior believe that knowledge and belief about the environment will bring into green purchase behavior how to influence environmental concern or consciousness on customer (Zhang & Dong, 2020). Usually, this green purchasing behavior is related to buying intention or behavior (Chan & Chan, 2017). So, researchers can conclude that green purchase behavior represents complex formation and ethic of customer decision on its green responsibility, initiative ,and willingness (Moisander, 2007). As of extension of TPB, TPB can explain factors that impacts individual intention. TPB was proposed by Ajzen to explain customer process on behavior during decision making (Ajzen, 2005), while TPB is the successor

of TRA (Theory of Reasoned Action) which suggest that attitude and subjective norm are the driving factors. However, behavioral intention doesn't depend entirely on attitude and subjective norms because the degree of ease or difficulty perceived by the consumer regarding the behavior of purchasing EV is one factor. Therefore, to improve the interpretive power of the TRA, (Ajzen, 2005) introduced the perceived behavioral control variable. While in TPB, perceived behavioral control can directly influence behavioral intention and indirectly affect behavior. Because of this strong explanation, TPB has been widely adopted to investigate environmentally friendly intentions and behavior related to green purchase behavior such as EV intention with environmental benefit (Zhang et al., 2018), household energy-saving intention (Tan et al., 2017; Z. Wang et al., 2011), green product purchase intention (Z. Wang et al., 2017; Yadav & Pathak, 2016) and environmental protection intention and behavior (López-Mosquera et al., 2014). Besides environmental benefit, the factor of the product also impacts purchase intention. (Keller & Swaminathan, 2019) said that product is an important factor in how the customer will feel about the brand, experience about the brand, and so on. So that's why the product is an important factor in how to influence the customer. A company in general when introducing a product to the customer, will consider about an attribute that will be offered. The attribute is an adjective that will add more value to a product regarding (Kotler, 2010).

2.2 Empirical Study

This study develops a research model that analyzes influencing factors on EV purchase intention, and many previous empirical studies provide a logical foundation for this model. Usually most of the studies concern product factors as well as the individual and social factors that influence EV purchase intention. However, in the study (Zhang et al., 2018) try to distinguish and extend the usage of TPB using product perception including product economic benefit, perceived risk , and environmental benefit that will impact to attitude, because based on the previous study, attitude is the most influencing factor to EV purchase intention (Zhang et al., 2018). This is also supported by (Huang & Ge, 2019) that TPB can be explored and extended to add more influence factors such as product perception outside attitude, subjective norms, and perceived behavioral factors. First, product economic benefits, which includes incentive policies, the environmental impact of EVs, and associated risk are the most relevant factors that consumers take into account when purchasing EVs. The economic cost is one of the key factors that influence consumer's purchase intention, such as incentive policies from the government that help drive down the cost of EVs will help them to make more economically competitive to attract customers (Zhang et al., 2018). Second, perceived risk, including how the infrastructure, and battery life of EV, is after sales will impact customer purchase intention. Third, the environmental impact of EVs, and how the benefit of the environment will influence buying intention of the customer. In this study (Zhang et al., 2018), also find that economic benefit, perceived risk, and environmental correlated to each other and affect direct and indirectly to purchase intention through attitude even though some studies found EV (Degirmenci & Breitner, 2017), that environmental concern is an important part of the EV but not significant, instead its mediated through other beliefs. In that sense, this research also will focus on how extended TPB can be done, especially since researchers know that EV is already affected by the environmental behavior of the customer. Using (Kautish et al., 2019), this research focuses on how the psychology of customer regarding perceived consumer effectiveness on how the believe that they can change the environmental to be better and their willingness to be environmentally friendly. So, in summary, the review of the literature reveals that previous studies had some inadequacies. First, the majority of EV studies analyze purchase intention using product perception on some environmental benefit, however, researchers know environmental concerns can be more explored especially in EVs. And most of the studies are conducted in China and developed countries of EV, how about Indonesia's unique policies as an emerging country that start to develop EV. Second, most of the green studies include many psychological factors of environmental how to affect intention on the green products, but how about EV as an object? Does it impact more compare to product perception on intention or does green purchase behavior still play a big role in EV, especially in Indonesia as a developing country? In this research, researchers argue how green purchase behavior and product perception should combine and affect EV purchase intention in Indonesia country, a country that still developing and starting EV technology.

2.3 Concept Framework

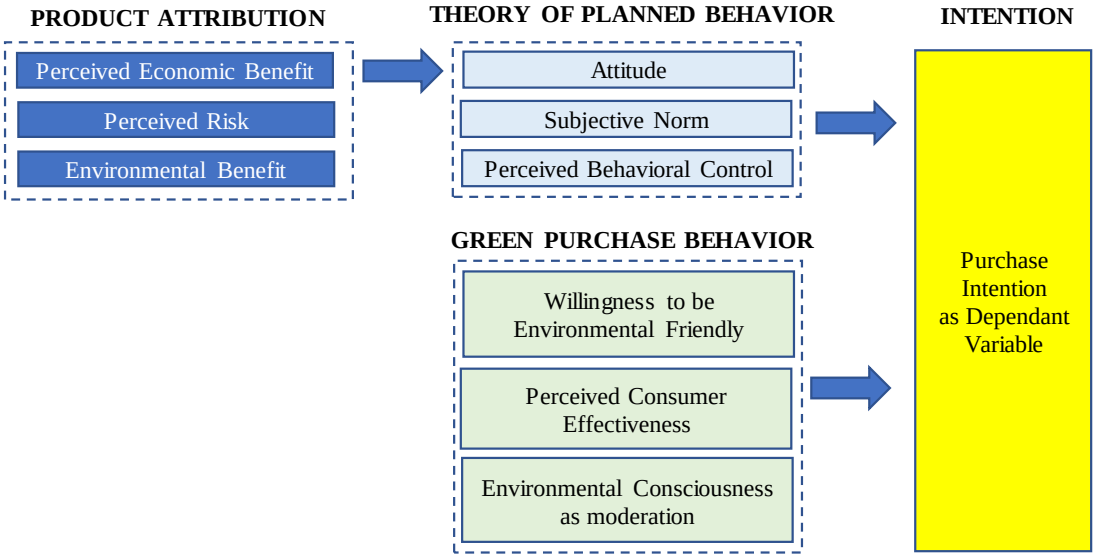

Figure 1. Concept Framework
(Source: Researcher's Data Analysis, 2022)

3. Research Method

With the combination of the previous results from other researchers and the theoretical theory of planned behavior and green purchase behavior, this study focuses on extending of the theory of planned behavior, especially for the attitude aspect. Based to Zhang et al. (2018), researchers found that attitude is the most influential variable to purchase intention, therefore this study will explore the influence variables of attitudes such as perceived economic benefit, perceived risk, and environmental benefit. In this study also, researchers found that purchase intention is also affected by psychological aspects of customers especially from the environment, along with the theory of planned behavior (purchase behavioral control), (Kautish et al., 2019) using perceived consumer effectiveness, willingness to be environmentally friendly that influence into purchase intention. Other than that, researchers will define low and high customers who are environmentally friendly by using moderation variables such as environmental consciousness, this study also refers to (Kautish et al., 2019) and researchers try to implement in EV. Therefore, researchers try to develop a new model of purchase intention using those theories with the hypothesis.

The most important elements that customers consider when acquiring EVs are incentive programs, the environmental effect of EVs, and the accompanying hazards. The economic cost is always one of the most important aspects that influences a customer's decision to buy. Incentive programs assist down the prices of electric vehicles, making them more economically viable and appealing to customers.

Hypothesis 1a. Perceived economic benefits are positively correlated with the environmental benefit

Inadequate charging infrastructure, low battery life, and long charging times, on the other hand, have generated a lot of uncertainty for future EV use and are seen as dangers by customers. Consumers' aversion to buying electric vehicles as a result of these perceived concerns might be a stumbling block to widespread adoption. Incentives can help mitigate these risks to some extent. In other words, the promotion impact of incentives is mitigated by the perceived hazards associated with EVs. As a result, I've come up with the following hypothesis 1b.

Hypothesis 1b. Perceived economic benefits are negatively correlated with perceived risk

Depending on how powerful she/he believes EVs' environmental benefits are if a buyer cannot be certain of how to overcome the hazards linked with them, she will be less enticed. A potential customer who knows more about the environmental advantages of electric vehicles will be less concerned about the perceived hazards than someone who doesn't know. To put it another way, perceived environmental benefits and hazards interact in the other direction. As a result, researchers have come up with hypothesis 1c.

Hypothesis 1c. Perceived risk is negatively correlated with the environmental benefit

Their views about EV buying intentions are formed based on their pre-existing beliefs of the likely results. Incentive schemes surely improve consumers' perceptions of economic gains by lowering purchasing costs. Meanwhile, customers can readily comprehend and appreciate the environmental benefits of electric vehicles. Positive views about the purchasing of electric vehicles may result from these perceptions. However, the inconvenient nature of charging, as well as a lack of charging infrastructure and a long charging period, may create an unfavorable impression. These imagined dangers will have a detrimental influence on one's attitude toward the intended conduct. As a result, hypotheses 2a, 2b, and 2c are developed.

Hypothesis 2a. Perceived Economic Benefits have a positive influence on EV purchase intention
Hypothesis 2b. Perceived Risk has a negative influence on EV purchase intention
Hypothesis 2c. Environmental Benefits have a positive influence to EV purchase intention

Behavioral intention is influenced by attitudes, subjective norms, and perceived behavioral control, with intention referring to how hard and how much work an individual is willing to put in to complete an action (Ajzen, 1991). Attitudes are utilized in TPB to predict behavior intention directly. In an EV adoption scenario, the more favorable a person's assessment of her desire to acquire an EV, the more likely she is to do so. As a result, a person's sentiments regarding EV adoption can predict and explain her desire to buy an EV. As a result, I've come up with the following hypothesis 3a.

Hypothesis 3a. Attitudes have a positive influence on EV purchase intention.

Subjective norm is one of the antecedents of intention, according to TPB (Ajzen, 1991). In other words, a person's purpose may be predicted and determined by the subjective standards. A person who sees a more favorable subjective norm will be more likely to engage in the action in question (Ajzen, 1991). In the case of EV adoption, if a person's coworkers, parents, or neighbors give her more positive approval for purchasing an EV, she is more likely to do so. As a result, a person's subjective standard for EV adoption can forecast and decide her intention to buy an EV. As a result, I've come up with the following hypothesis 3b.

Hypothesis 3b. Subjective norms have a positive influence on EV purchase intention

One of the determinants of intention is perceived behavioral control, which refers to the ease or difficulty of completing an action; the higher the perceived behavioral control, the stronger the intention to conduct the activity (Ajzen, 1991). In the case of EV adoption, if a person believes she has total control over whether or not to acquire an EV, and that she can make that decision without difficulty, she is more likely to do so than those who believe they have less power. As a result, a person's perceived behavioral control might explain her desire to buy an electric vehicle. As a result, the following hypothesis 3c.

Hypothesis 3c. Perceived purchase behavioral control has a positive influence on EV purchase intention

Product price is always seen as one of the most important variables influencing customers' decision-making processes, and knowing consumers' desire to purchase environmentally friendly items is vital for businesses since premium pricing is a barrier to green consumption. Consumers' willingness to behave (or incline) in an ecologically friendly manner (Kumar et al., 2017) is defined as their willingness to act (or incline) in an environmentally friendly manner. Therefore, researchers come up with hypothesis 3d.

Hypothesis 3d. Willingness to be environmentally friendly have a positive influence on EV purchase intention

Perceived Consumer Effectiveness (PCE) is a controlling factor that indicates how much people feel their activities help to solve environmental problems (Ellen et al., 1991). TPB-based research stresses the importance of PBC in predicting intents and actions when the conduct in question is outside an individual's volitional control (Paul & Mas, 2016).

Hypothesis 3e. Perceived consumer effectiveness has a positive influence on EV purchase intention

In the realm of green marketing, research has confirmed the remarkable association between environmental consciousness and behavioral intentions (Ahn et al., 2012; Mishal et al., 2017). According to (Ahn et al., 2012), social norms and personality traits are important determinants of environmental behavior. Environmental consciousness is a mental state study variable, a multi-dimensional construct that ranges from low (generic) to high (product), and it differs from its antecedents as well as behavioral effects (Sharma & Bansal, 2013). According to (Tobler et al., 2012), perceived climate costs and benefits have proven to be the most reliable indicators of willingness to act or support climate strategy initiatives. Furthermore, several empirical studies show a beneficial relationship between environmental consciousness and green purchasing intentions (Y. S. Chen & Chang, 2012; Walker, 2013). By addressing the moderating influence of pro-social status, (Zabkar & Hosta, 2013) proposed a complete gap model for environmentally conscious consumer behavior between willingness to act and actual GPB. As a result, the following possibilities are proposed:

Hypothesis 4a. Environmental consciousness moderates positively the relationship between PCE and EV purchase intention

Hypothesis 4b. Environmental consciousness moderates positively the relationship between WEF and EV purchase intention

Through research that has been done by Zhang et al. (2018) and (Huang & Ge, 2019). It is found that perceived behavioral control and attitude have the greatest influence in influencing purchase intention. Where perceived behavioral control and attitude itself are influenced by the type of benefit obtained by the behavior and beliefs of the respondent in making decisions for a behavior. Based on the condition of electric cars in Indonesia, currently, the penetration of electric cars is not comprehensive due to one of the factors being price. In addition, psychological environmental factors, especially in terms of purchasing green products even though they have to pay more, encourage researchers to conduct multi-group analysis by dividing groups based on income as the novelty of this study. Where according to the study by Huang & Ge (2019), demographic differences in a group will produce different purchase intentions, so the researchers propose H5 as follows.

Hypothesis H5a. The group with low income will have TPB and product attribution influence higher compared to the green purchase behavior variable.

Hypothesis H5b. The group with high income will have a green purchase behavior influence higher compared to TPB and product attribution.

3.1. Questionnaire Design and Data Collection

The questionnaire utilized in this study was a level-7 Likert scale in addition to the demographic characteristics. There were three sections to the questionnaire which first is a screening question to know customer experience with vehicle, a section of exploration on attitude (AT), perceived economic benefit (PEB), perceived risk (PR), and environmental benefit (EB), and then next section is attitude (AT), subjective norm (SN), perceived behavior control (PBC), willingness to be environmental friendly (WEF), perceived consumer effectiveness (PCE), environmental consciousness (EC) and purchase intention (PI). The last section is about demography such as gender, age, education, and income. Questions were designed on a 7-point Likert-type scale from "Strongly disagree" (1) to "Strongly agree" (7). The survey was conducted from March to April 2022. Adopting a purposive sampling method, the survey was distributed online. Considering that the research object of this study was a potential buyer of EVs in Jakarta, researchers mainly invite researcher's colleagues, classmates, and friends who worked in Jakarta and already experienced/own vehicles in their households to complete this online questionnaire. Researchers obtained 1,238 online replies. After removing the ineffective questionnaire, 826 valid responses were ultimately obtained for a valid rate of 66,7%.

Table 1. Demographic information of sample

. Demography	Category	Frequency (n: 826)	Percentage %
Gender	Male	305	*36.9%*
	Female	521	*63.1%*
Marital Status	Single	232	*28.1%*
	Married	594	*71.9%*
Age	20-24	172	*20.8%*
	25-34	506	*61.3%*
	35-44	123	*14.9%*
	45-54	25	*3.0%*
Education	High School	371	*44.9%*
	Bachelor	398	*48.2%*
	Master	53	*6.4%*
	PhD	4	*0.5%*
Occupation	Entrepreneurs	313	*37.9%*
	Professional	16	*1.9%*
	Private Employee	357	*43.2%*
	Gov't Employee	81	*9.8%*
	Others	59	*7.1%*
Household Income	5-10 million rupiah	415	*50.2%*
	b. 10-25 million rupiah	300	*36.3%*
	c. 25-50 million rupiah	82	*9.9%*
	d. 50-100 million rupiah	29	*3.5%*
Frequency		826	*100.0%*

(Source: Researcher's Data Analysis, 2022)

3.2 Measurement Model

First, researchers will conduct a reliability and validity pre-test on a data survey using 30 respondent4s, which reliability and validity test was used to measure the consistency of questionnaire data, and SPSS v22.0 was used to test these. The result showed that Cronbach's alpha coefficients of all variables were greater than the standard value ≥ 0.6, indicating that the design of this scale was reliable. As for validity, by using KMO (Kaiser-Mayer-Olkin) and factor loading for each indicator with a standard value ≥ 0.5, data shows that all indicators are valid

Second, this study used Smart PLS to conduct confirmatory factor analysis on the measurement model and tested the structural validity of the measured variable by using 826 data participants. Same as the previous pre-test, researchers tested validity and reliability using Cronbach's Alpha and Composite Reliability ≥ 0.7 of all variables and Convergent validity, Discriminant validity for all indicators. Measurement of convergent validity is factor loadings ≥ 0.5, average variance extracted ≥ 0.5. The result showed that all the indicators indicated that the questionnaire had good convergent validity and reliability.

3.3 Model Fit Test

SEM allows for the measurement of unobservable variables using observable indicators. The degree of fit to the proposed model may be measured using several metrics (Swami et al., 2011). Researchers investigated the impact of indirect impact on perceived economic benefit, perceived risk, environmental benefit and direct impact of attitude, subject norm, and perceived behavioral control, willingness to be environmentally friendly, perceived consumer effectiveness moderate by environmental consciousness on EV purchase intention using the theoretical model and hypotheses proposed in the previous section. The degree of influence of each variable was judged by the significance of the relevant path coefficient. Researchers input the survey data into the model. Multiple indicators were used to assess the R2, Q2, and goodness of fit. All of the evaluation indicators meet the criteria. These results show that the theoretical framework assumed in this study fits the actual survey data

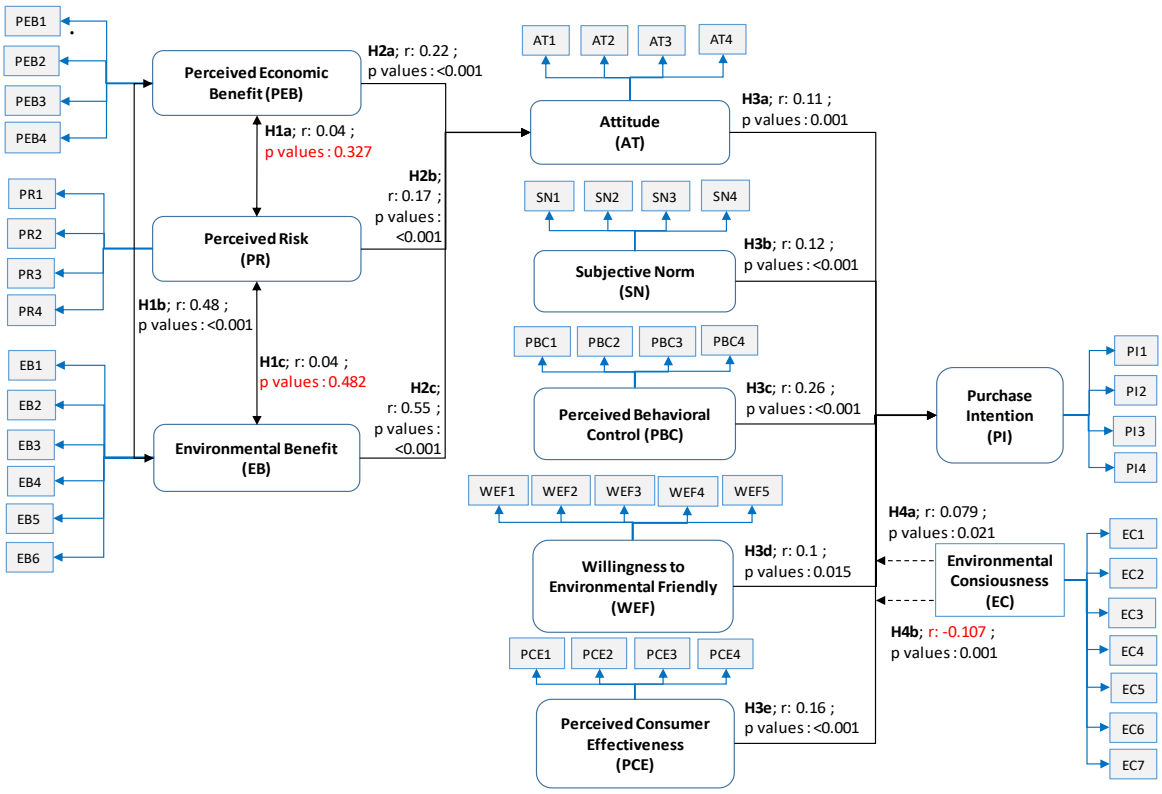

Figure 2. Research framework
(Source: Researcher's Data Analysis, 2022)

4. Results and Discussion

4.1 Measurement Model

Hypothesis test was based on the path in the structural model showing us that all of the hypothesis is accepted and provided us with good evidence except for the moderation case. Especially for EC moderate

negatively to the relation between PCE and PI. The result shown in Fig. 1. Indicated an adequate fit for the structural portion of the model, number R2, Q2, and goodness of fit will act as evidence for this model (Q2: 0.9; GoF AT: 0.61; GoF PI: 0.78) that ≥ 0.38 as standard (Sihombing, 2022).

While the result of the analysis generally provided supporting evidence, hypothesis 1a was positive but insignificant with p-values = 0.327. The same thing also happens for hypothesis 1c which was positive but rejected due to insignificancy with p-values = 0.482. Correlation between hypothesis 1b support the researcher's hypothesis that indicates environmental benefit is correlated positively with economic benefit. Hypothesis 2 is also supported by the result that economic benefit, environmental benefit, and risk influence attitude toward EVs. Economic benefit positive and significant influence to attitude with r = 0.22 and p-value = ≤ 0.001 same with environmental benefit with r = 0.55 and p-value = ≤ 0.001. Lower perceived risk also influences high attitude on EV with result r = 0.17 and p-value = ≤ 0.001

Hypothesis 3 was supported also and indicates that attitude, perceived control behavior, and willingness to be environmentally friendly influence EV purchase intention. Among all of these data and evidence, attitude have the biggest impact with the direct impact of 0.11 and an indirect impact of 0.1 for PEB, PR, and EB to EV purchase intention. SN also show good significance and influence to PI with r = 0.12 and p-value = ≤ 0.001. Meanwhile, PBC also show good significance and influence on Purchase intention, on top of that PBC have the biggest influence on PI compared to other direct variable. This is because EV is considered expensive and a luxury vehicle with the latest technology, therefore able to make a decision and purchase an EV is become important for all the customers. For PCE and WEF, green purchase behavior also affects purchase intention with good significance, this shows us that EV become a symbol of environmental improvement for Indonesia and need to be boosted always through marketing way because green purchase behavior affect how customer reacts and belief improve the environment through EV.

4.2 Moderating Effect of Environmental Consciousness

The result supported the hypothesis only for environmental consciousness strengthens the influence of willingness to be environmentally friendly with EC affecting WEF to PI with r: 0.079 and p-value: 0.021 (significant). However, for perceived consumer effectiveness to purchase intention, PCE to PI with r: -0.107 and p-value: ≤ 0.001 (significant). With this result, researchers can tell that EC moderates positively to WEF, but different results coming from EC moderate negatively to PCE. This result happens because PCE itself is already high to influence purchase intention, which means customers agree that EV is a symbol of commitment to improving the environment and they believe that if they buy EV then the environment in Indonesia will get improved. This research results is already in line with (Kautish et al., 2019) that environmental consciousness is an important part to moderate environmental psychologic factors to influence intention or behavior. The willingness of environmentally friendly is about how customers want to sacrifice their benefit to be more concerned about the environmental (Kautish et al., 2019) both those factors will be moderated by the inner beliefs of customers regarding their consciousness to be more pro-environmental (environmental consciousness). This study states that, perceived consumer effectiveness and willingness to be environmentally friendly highly impact to purchase intention of a customer with environmental consciousness becoming a positive moderating factor.

4.3 SEM Multi Group Analysis

By using the method of multi-group structural equation modeling (Barbara M. Byrne, 2009), the whole sample was divided into two sub-samples of high household income group and the low household income group by using a median split procedure (Brochado, A, Teiga, 2016; Hiramatsu et al., 2016). With high household income, green purchase behavior such as PCE and WEF is still significant and influences purchase intention. This happens also for environmental consciousness as moderation. A different result coming from the low household income groups that green purchase behavior isn't valid and significant to influence purchase intention. This happens because the low-income group is much more focused on product attribution and benefit such as economic benefit, and less risk for EVs which result in the attitude of the customer to purchase intention.

Table 2. Multi group data sample

Relation	Path Coefficients		t-Value		p-Value	
	<10 million/month	>10 million/month	<10 million/month	>10 million/month	<10 million/month	>10 million/month
AT -> PI	0.15	0.08	2.66	1.68	0.00	0.05
EB -> AT	0.57	0.53	14.65	10.77	0.00	0.00
EC -> PI	0.18	0.23	2.31	3.02	0.01	0.00
PBC -> PI	0.29	0.25	5.25	5.25	0.00	0.00
PCE -> PI	0.25	0.15	2.59	2.55	0.01	0.01
PCE_EC -> PI	0.00	-0.17	0.05	3.96	0.48	0.00
PEB -> AT	0.21	0.23	5.00	3.99	0.00	0.00
PR -> AT	0.20	0.14	5.86	3.88	0.00	0.00
SN -> PI	0.09	0.14	1.83	3.57	0.03	0.00
WEF -> PI	0.04	0.11	0.54	2.03	0.30	0.02
WEF_EC -> PI	-0.02	0.13	0.37	2.64	0.36	0.00

(Source: Researcher's Data Analysis, 2022)

5. Conclusion and Implications

In the era of industrialization and high levels of mobility around the world, 2022 is an important year for Indonesia to determine the direction of development and vision and mission for the country. The electric vehicle itself is one of the ideas for the latest technological developments that are present as a solution for environmental problems and renewable fuels (sustainable energy) to cope with climate change challenges. Although this has been realized by most of the developed countries in the world, unfortunately, Indonesia is still in the development and introduction stage for this electric vehicle itself with various risks. Indonesia's Government already taking serious action for the development and investment environment on EVs, together with automotive makers like Toyota, Honda, and Hyundai. Even though, researchers know that depending on incentives and infrastructure development alone can't guarantee customer purchase intention in the future. This study contributes to the literature and managerial implication by revealing what is the direct and indirect mechanism of how consumer purchase intention toward EVs such as economic benefit, environmental benefit, perceived risk, and green purchase behavior.

This study, using (Kautish et al., 2019; Zhang et al., 2018) as a reference models. Researchers develop three perception constructs of perceived economic benefit, perceived risk, and environmental benefit together with green purchase behavior variable both as independent variable and moderation. Researchers find that perception such as benefit and risk can predict attitudes toward EV purchase intention which play an important role in influencing EV. Because in this study researchers found that attitude has the biggest impact as a total effect to influence purchase intention. Environmental benefit plays a big role to predict attitude, so researchers can conclude environment will be the biggest factor to build a positive attitude toward EVs and their purchase intention. Meanwhile, the PBC in the theory of planned behavior as one variable to show customer belief to make the decision is the biggest direct effect to purchase intention. Researchers analyze that EV still considered an expensive or luxury vehicle which affect customer perception that they need huge saving or cash amount to purchase these high-technology vehicles. Green purchase behavior as a variable also affects purchase intention for how they are willing to be environmentally friendly and believe in themselves to improve the environment. Moderated by environmental consciousness as variables that shows how customers are aware of the condition of researcher's environment, successfully moderate relation between WEF and PI, however for failing to

moderate PCE to PI. This condition happens because the most customers already knows that EV is the vehicle that can improve researcher's environment a lot and consciousness and awareness of the situation don't impact how they consider purchase intention. So, as an overall model, product attribution still has the biggest impact on EV purchase intention compared to green purchase behavior. However, this situation doesn't mean that green purchase behavior isn't an important variable.

Researchers also found that high-income customer purchase intention will be affected by most of the researchers proposed models such as the theory of planned behavior and green purchase behavior. However, for the low-income group, researchers found that green purchase behavior isn't significant to them. This finding help researchers to adjust what is customer need based on their income that low-income customer only prefers how is the production attribution of EVs, like how this EV will benefit them both economic, environment, and risk also.

Researcher's finding also provides a strategy and literature on theoretical and managerial. For theoretical is (1) Extended theory of planned behavior help us to find what is the main variable to predict purchase intention, and (2) Research result can be used as a foundation to dig what customer need using qualitative survey. While managerial implication is (1) to increase EV environmental benefit through technology advancement since this factor predicts and build a positive attitude toward EV, and (3) to advertise EV environmental benefit of EV together with stimulation of environmental consciousness since EC can moderate the willingness of the customer to purchase intention, especially for high-income group, (3) to advertise and stimulate the system of product attribution such as economic benefit, infrastructure for perceived risk to attract both low and high-income groups since AT and PBC are the biggest variable to predict purchase intention, (4) to classify customer based on income group, (5) to take early EV adopters as important referent group or influencer to enhance their subjective norm which can turn into EV purchase intention.

For policy makers, by phasing out their roadmap on easiness to purchase such as incentive economic on EV, infrastructure (like charging facilities) EV to leverage perceived economic benefit and risk on attitudes. On top of that, environmental consciousness in Indonesia specifically in big cities needs to be communicated by policy makers since this variable will affect how their purchase intention. For the automotive maker, of course, how to communicate this EV will improve the environment, and the real latest technology of EV are the biggest tasks to influence purchase intention. On top of that, how they will communicate through media communication and utilize benefits for the government to push down the price plays an important role in the EV ecosystem.

As for limitation, this study only includes the customer in Jakarta, Bogor, Depok, Tangerang, and Bekasi area which are the biggest sales vehicle volume area in Indonesia. Researchers also filter respondents of this survey, only the respondent who already have vehicle minimum of 1 vehicle, and have a driving license and driving experience. Hence, for the future study, researchers propose to examine and explore more widely nationwide including small cities' perceptions of EVs. For the next study, this study can be a foundation also to divide customer segmentation by income, area, preference, age, and other things that impact the perception of EV. Specifically, for this, researchers recommend exploring gen millennials (15-20). Why? Because this customer will be a potential customer in the future when government policy and automotive technology have already adjusted to the EV ecosystem. Based on researcher's findings, the low-income group doesn't concern about the green purchase behavior of EVs. In the next study, researchers can explore why they don't concern about green purchase behavior and how to make sure this kind of attitude can get inside them.

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