Factors Influencing Consumers' Puchase Intantion To Use Battery Electric Cars In Indonesia

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***Abstract**.*

The market share of electric vehicles in terms of overall sales is still small in both developed and developing countries such as Indonesia. This study aims to determine the priority of factors that influence consumer purchase intention for battery electric cars in Indonesia by exploring public perceptions of this. This study uses quantitative research with a deductive approach and causality properties. The research population is consumers who buy and prospective buyers of battery electric cars in the DKI Jakarta area. With sample calculations using parameter 5, so that the minimum number of samples is 73 indicators X 5 = 365 respondents. The analysis technique uses SEM with the help of the AMOS program. The results of the study show that the integration of TPB, UTAUT-3, and NAM theories provides in-depth insights into consumer intentions to purchase battery electric vehicles (BEVs) in Indonesia. Positive attitudes and PBC contribute significantly to purchase intentions, at 16% and 14.8%, respectively, while subjective norms show a negative but significant influence. In the UTAUT-3 model, social influence and facilitating conditions contribute significantly, at 33.6% and 44.3%, respectively, emphasizing the importance of social support and infrastructure. Price value also contributes significantly at 33.2%, indicating that the perception of the economic value of electric vehicles greatly influences purchasing decisions, but other factors are not significant. Although awareness of consequences and ascription of responsibility in the NAM model have a positive effect, personal norms do not show a significant influence on purchase intentions. The implication of these findings is that to increase purchase intentions for electric vehicles, a marketing strategy is needed that includes education about the benefits, strengthening social norms, and improving infrastructure, as well as creating awareness of the economic and environmental value of electric vehicles.

Keywords: *Norm Activation Model, Purchase Intention, Theory of Planned Behavior, Unified Theory of Acceptance and Use of Technology-3.*

I.   INTRODUCTION

The Digital Era 4.0 is a phase of technological revolution that significantly changes people's activities, affects economic, social, and environmental aspects, and emphasizes the importance of collaboration in various fields. Companies are expected to create products that suit the needs and desires of the community (Firmansyah, Sugiat, & Yunita, 2023). The product innovation strategy implemented by the company shows that the company's innovation performance has improved better compared to companies that do not implement a product innovation strategy (Tricahyono et al., 2023), one of which is by creating an electric car (Battery Electric Vehicle – BEV).The market share of electric vehicles in terms of overall sales is still small, with electric vehicles accounting for only 14% of all passenger cars purchased globally (Tsakalidis et al., 2020). Some of the obstacles are the underdeveloped battery technology. Electric vehicles are less attractive to consumers in general because of their limited range, long charging periods, and high upfront prices (Capuder, Sprčić, Zoričić, & Pandžić, 2020). Limited availability of charging infrastructure is another significant barrier to widespread adoption of electric vehicles (Ramesan, Kumar, & Garg, 2022). Many drivers will not choose an electric vehicle unless significant infrastructure for charging them is in place. However, if there are not enough electric vehicles available, it is highly doubtful that charging service providers will make significant investments in infrastructure (Alanazi, 2023; Ibrahim, Rassõlkin, Vaimann, & Kallaste, 2022).Penetration of battery-based electric vehicles (BEV) in Indonesia is also still low, only 1%

of the total market, below the world average of 14% and ASEAN of 2% (investor.id, 2023). The slow adoption rate of electric vehicles can be caused by the lack of public acceptance.

Consumer concerns related to financial, technological, and infrastructure factors have been identified as barriers to EV adoption in Indonesia. This study aims to determine the priority of factors that influence consumer purchase intention for battery electric cars in Jakarta by exploring public perceptions of these.Several studies in various countries have explored the factors that influence consumer purchase intention for battery electric cars. One of the most popular underlying theories used to explain customer behavior towards BEVs is the theory of planned behavior (TPB) developed by Ajzen. Although TPB is widely used in explaining transportation behavior, empirical studies using TPB have found mixed findings in reality. Xu, Zhang, Bao, Zhang, & Xiang (2019) reported that all three TPB constructs showed a positive impact on electric vehicle purchase intentions in China. However, another study in China conducted by Huang & Ge (2019) just confirms the impact of the attitude, PBC. Asadi et al. (2020) reported positive effects of attitudes and subjective norms, but not for PBC. In addition, the explanatory power of the TPB has been criticized. According to Hassan (2021), the predictive power of TPB is low because the determinant factors are insufficient and assumes the decision-making process is carried out systematically and rationally. As noted by Asadi et al. (2020), The original TPB only emphasizes self-interest factors. Meanwhile, purchasing electric vehicles is not only an innovation adoption behavior (based on rational self-interest) but also a pro-environmental behavior.Several other studies integrate UTAUT theory with other factors. The results showed that electric car purchase intention is significantly and positively influenced by performance expectations, effort expectations, social influence, hedonic motivation, and environmental concerns.

In contrast, purchase intention is not significantly influenced by price value and policy. Facilitating conditions do not significantly influence purchase intention and usage behavior. In addition, only the age variable was found to have a significant influence on purchase behavior (Manutworakit & Choocharukul, 2022). Research on Vietnamese consumers' intention to purchase electric cars. The framework was developed by integrating UTAUT and Norm Activation Model (NAM) (Hoang, 2022).The problem of purchase intention for battery electric cars in Indonesia is the motivation for this study to examine the factors of personal interest, technology acceptance and pro-environmental factors. To fill this gap, this study proposes to explore the factors that influence the purchase of battery electric vehicles by integrating TPB, Unified Theory of Acceptance and Use of Technology (UTAUT) 3 and Norm Activation Model (NAM). According to the framework, consumer intention to purchase is influenced by performance expectations, effort expectations, social influence, facilitating conditions, personal norms, and perceived responsibility and awareness of consequences. Unlike TPB which is widely applied to explain behavior in general, UTAUT is specifically designed to examine innovation adoption behavior (Venkatesh, Morris, Davis, & Davis, 2003). With higher predictive power, the UTAUT model is proven to predict innovation adoption more effectively than TPB (Samaradiwakara & Gunawardena, 2014). Meanwhile, NAM is a powerful model in explaining pro-social and pro-environmental behavior (De Groot & Steg, 2009). The combination of the three models is expected to allow this study to comprehensively explore consumers' electric vehicle purchasing decisions.

II.   BASIC THEORY
1.1   Theory of Planned Behavior (TPB)
The theory of planned behavior (TPB) was developed by Ajzen in 1991. This theory focuses on the intention to engage in a behavior which can be considered as the best predictor of a behavior. This theory postulates that behavioral intention is determined by three main variables namely attitude toward the behavior, that is, subjective (either positive or negative) tendency towards such behavior; subjective norm, the perception of social pressure to perform (or not) such behavior that is exerted on the decision maker by relevant others; and perceived behavioral control, the perception of the ease (or difficulty) of performing such behavior. Each predictor of behavioral intention is based on beliefs, which refer to all mental associations between an object or behavior and its perceived attributes (Ajzen, 2020). In TPB, attitudes, subjective norms, and perceived behavioral control can directly influence behavioral intentions and indirectly influence behavior through behavioral intentions (Ajzen, 2020).

1.2 The Unified Theory of Acceptance and Use of Technology (UTAUT)-3

The Unified Theory of Acceptance and Use of Technology-3 (UTAUT-3) Model is a development of UTAUT 1 and 2. The UTAUT-3 framework by Farooq et al. (2017) introduced as an extension of the UTAUT-2 model and includes eight determinants of technology adoption, namely performance expectancy (PE), effort expectancy (EE), social influence (SI), facilitating conditions (FC), hedonic motivation (HM), price value (PV), habit (HB), and personal innovativeness (PI), which was added as an eighth factor. The authors of the UTAUT-3 model claim an explanatory power of 66% in predicting technology adoption.

1.3 Norm Activation Model (NAM)

Norm Activation Model (NAM) is a conceptual framework used to understand and explain prosocial behavior, which is behavior that aims to help others or society as a whole. This model was developed by SH Schwartz in 1977. The Norm Activation Model developed by Schwartz (1970s), proposes a mechanism for transferring moral norms into environmental actions. The model has been widely used in the context of pro-social behavior including pro-environmental behavior (De Groot & Steg, 2009). In the NAM model, behavior/intention is a function of personal norms, which in turn are regulated by awareness of consequences, and ascription of responsibility (De Groot & Steg, 2009; Hoang, 2022; Kim, 2023).

III. RESEARCH HYPOTHESIS AND FRAMEWORK

1.4 Relationship between Theory of Planned Behavior Model and Purchase Intention

The TPB is among the influential works in the field of psychology.(Ajzen, 2020).. It is often used to investigate consumer behavioral tendencies and purchasing behavior (Shalender & Sharma, 2021). In the context of this study, attitude refers to the consumer's overall evaluation of the purchase and use of electric vehicles. Subjective norm is the consumer's perception that most people who are important to them believe that they should or should not buy an electric vehicle. Perceived behavioral control in this case is the level of ease or difficulty felt by consumers regarding the behavior of purchasing electric vehicles (Xu et al., 2019).A number of studies have used the TPB model to explore buyer behavior based on rational self-interest that is environmentally responsible. Xu et al. (2019) reported that all three TPB constructs showed a positive impact on electric vehicle purchase intentions in China. Gunawan et al. (2022) also found that TPB constructs such as attitude, subjective norm, and perceived behavioral control have a positive influence on the intention to use electric vehicles in Indonesia. Jayasingh et al. (2021)shows that attitudes also significantly influence consumer intentions to purchase electric vehicles in India.

Based on the description, the hypothesis proposed in this study is:

H1: Attitude influences the purchase intention of battery electric car consumers in Jakarta

H2: Subjective norms influence the purchase intention of battery electric car consumers in Jakarta.

H3: Perceived Behavioral Control influences the purchase intention of battery electric car consumers in Jakarta.

1.5 Relationship between UTAUT-3 Model and Purchase Intention

A number of studies have used the UTAUT and UTAUT-2 models on the acceptance of electric car technology, while studies using the UTAUT-3 model are still limited. Bhat et al. (2022) using the UTAUT model reported that social influence and performance expectancy are positively related to the intention to adopt electric vehicles in India. Hoang et al. (2022) using UTAUT, it was found that performance expectancy, effort expectancy and facilitating conditions had an effect on BEV purchase intention in Vietnam, while social influence had no effect. Lee et al. (2021) using UTAUT confirmed that environmental concern, perceived ease of use, and effort expectancy have a positive impact on people's intention to use electric vehicles in the future. However, social influence and facilitating conditions do not contribute significantly to EV adoption. Higueras-Castillo, Singh, Singh, & Liébana-The Cabin (2023) using UTATUT-2, it was found that performance expectancy, effort expectancy, social influence, facilitating conditions, and hedonic motivation influenced the intention to adopt electric cars.

Manutworakit & Choocharukul (2022), in his research using UTAUT-2, he found that the intention to purchase an electric car was significantly and positively influenced by Performance expectancy, effort expectancy, social influence, and hedonic motivation, while facilitating conditions and price value were not significant. Meanwhile M. Zhou et al. (2021), using UTAUT-2, it was found that performance expectancy, effort expectancy, facilitating conditions, hedonic motivation, price value, and habit influence the intention to use electric cars, while social influence does not influence this intention. Ong et al. (2023) which also used UTAUT-2 found performance expectancy, hedonic motivation, and price value were considered significant in the technology aspect. With the lack of hybrid car utilization in the Philippines, habit, effort expectancy, and facilitating conditions became insignificant.

Based on the description, the hypothesis proposed in this study is:

H4: Performance expectancy influences purchase intention of battery electric car consumers in Jakarta

H5: Effort expectancy influences purchase intention of battery electric car consumers in Jakarta

H6: Social Influence influences the purchase intention of battery electric car consumers in Jakarta

H7: Facilitating Conditions influence the purchase intention of battery electric car consumers in Jakarta

H8: Hedonic motivation influences the purchase intention of battery electric car consumers in Jakarta.

H9: Price value influences the purchase intention of battery electric car consumers in Jakarta

H10: Habit influences the purchase intention of battery electric car consumers in Jakarta

H11: Personal innovativeness influences the purchase intention of battery electric car consumers in Jakarta.

1.6   Relationship between NAM Model and Purchase Intention

According to NAM theory, intention is influenced by personal norms, which are then influenced by awareness of consequences, and ascription of responsibility. In other words, intention to perform prosocial behavior is guided by individual moral norms. Moral norms are activated when a person is aware of the consequences of a problem and feels a strong sense of responsibility in dealing with it (Asadi et al., 2020).Awareness of consequences refers to the negative consequences perceived as a result of not acting pro-socially (Kim, 2023). In the context of BEV adoption, awareness of consequences represents the negative impacts of conventional vehicle use such as pollution, global warming, or running out of fossil fuel energy (He & Zhan, 2018). When individuals feel the negative impacts of not behaving pro-environmentally, and have greater responsibility. Asadi et al. (2020), He & Zhan (2018) found that when customers are aware of the serious impact of traditional vehicles on the environment, they will show higher responsibility in using electric vehicles. Hoang et al. (2022), Kim (2023) strengthens the opinion that awareness of consequences has a positive influence on ascription of responsibility. Javid et al. (2021) also found that there was a strong relationship between awareness of consequences and ascription of responsibility.

Ascription of responsibility is defined as the possibility of taking responsibility for the results of individual actions (Kim, 2023). Previous research revealed that ascription of responsibility describes a sense of responsibility for the use of conventional vehicles. Customers have a greater moral commitment to environmental protection if they are aware of the shared responsibility for the use of traditional vehicles (Asadi et al., 2020; He & Zhan, 2018). If customers know that environmental damage is caused by themselves, then personal norms will be activated (Hoang et al., 2022).Personal norm is a feeling of moral commitment to carry out certain behaviors in accordance with one's norms and values (Kim, 2023). In BEV adoption, PN refers to the feeling of obligation to adopt a BEV over a conventional vehicle, thus motivating customers to purchase a BEV (He & Zhan, 2018). The positive impact of personal norms on purchase intentions has also been documented in various studies (Asadi et al., 2020; Hoang et al., 2022; Shalender & Sharma, 2021). He & Zhan (2018) confirmed that personal norms have a positive influence on consumers' intention to adopt electric vehicles, indicating that altruistic values play an important role in encouraging pro-environmental behavior.

Based on the description, the hypothesis proposed in this study is:

H12: Awareness of Consequences influences ascription of responsibility of battery electric car consumers in Jakarta.

H13: Ascription of responsibility influences the Personal Norm of battery electric car consumers in Jakarta.

H14: Personal norms influence the purchase intention of battery electric car consumers in Jakarta.

Referring to the results of previous research and the hypotheses that have been developed, a research model is created as described below.
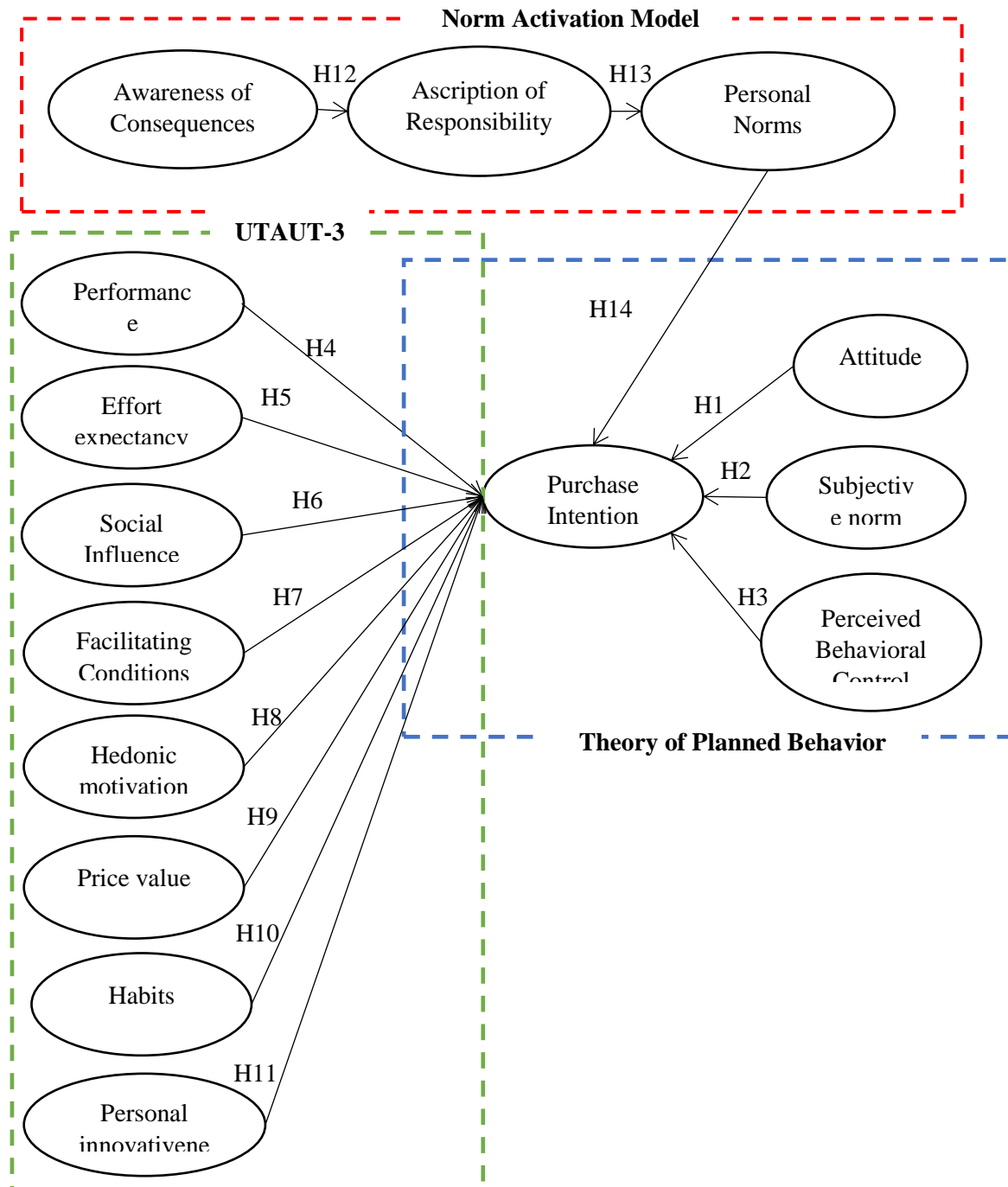

Fig 1. Framework

IV. METHODS

1.7 Research Object and Analysis

The population in this study were consumers who bought and prospective buyers of battery electric cars in the DKI Jakarta area. This study was a non-probability sampling with convenience sampling. In

determining the sample size, the researcher used the formula Hair, Black, Babin, & Anderson (2018) namely multiplying the number of indicators by the parameters (5-10), in this study using parameter 5, so the minimum number of samples is 73 indicators X 5 = 365 respondents. Data were collected from September 2024 to November 2024 using the Indonesian language Google form.

1.8 Variable Operationalization

In this study, operating variables are defined as follows:

Tablel 1. Operationalization of Variables

Variables	Operational Definition	Statement Items	Reference
TPB			
Attitude	Attitude is a positive or negative evaluation of consumers regarding electric cars in Indonesia.	Buying an electric car at this time is very wise	Huang & Ge (2019)
		the use of electric cars is very necessary	
		Using an electric car might be a good idea.	Gunawan et al., (2022)
		By purchasing and using an electric car, I can play an active role in supporting the government's electric car acceleration program.	
		I think the program to accelerate the procurement of electric cars is a positive/profitable thing.	
		I would be happy if in the end the electric car I bought could reduce pollution.	
Subjective Norm	Subjective norm refers to a consumer's perception of the extent to which people around them expect or support purchasing an electric car.	If people around me use electric cars, this will encourage me to buy one	Huang & Ge (2019)
		People who have influence over me (such as family and friends) think I should buy an electric car.	
		Advertisements about electric cars in various media can encourage me to buy and use an electric car.	Gunawan et al., (2022)
		The tax incentives offered by the government (free transfer fees for electric cars) made me interested in using an electric car.	
		If the environment where I work uses electric cars, I should use one too.	
PBC	PBC is the extent to which you feel you have the ability and resources to purchase an electric car.	I have the freedom to decide whether to use an electric car or not.	Huang & Ge (2019)
		I have the financial ability to buy an electric car in the future.	
		If I wanted to, I could definitely buy and use an electric car for my next vehicle purchase.	Gunawan et al., (2022)
		I have knowledge about how to use an electric car.	
		In the future, I am pessimistic about being able to buy an electric car (R)	
UTAUT-3			

Variables	Operational Definition	Statement Items	Reference
Performance Expectancy	Performance Expectancy measures consumer opinion about how well an electric car will perform.	Using an electric car for daily activities will hopefully help my work.	(Venkatesh et al., 2012), Gunawan et al., (2022)
		Using electric cars for daily activities may be more environmentally friendly	
		Using electric cars for daily activities can save expenses/costs	
		Using electric cars in daily activities can increase my work productivity.	
		Electric cars on the market today have acceptable quality standards in terms of body materials.	Bhat (2021)
		Electric cars on the market today have acceptable performance standards in terms of speed, acceleration, etc.	
		The use of electric cars will be a good alternative compared to conventional vehicles.	Higueras-Castillo (2022)
Effort Expectancy	Effort Expectancy refers to respondents' perceptions that EVs are generally easy to use, requiring little effort to learn how to drive.	It was easy for me to learn how to use an electric car.	(Venkatesh et al., 2012), Gunawan et al., (2022), Higueras-Castillo (2022)
		I understand and can use an electric car	
		In my opinion, using an electric car is easy	
		Becoming skilled and proficient in using an electric car was not difficult for me.	
		It's easy to charge a BEV	(Hoang et al., 2022)
Social Influence	Social Influence refers to people who have an important opinion about purchasing a BEV car.	Using electric cars will have a positive impact on society	Higueras-Castillo (2022)
		I will receive recognition from others if I adopt an electric car.	
		Drivers who use BEVs will be considered environmentally friendly.	(Hoang et al., 2022)
		I think that people who use electric cars have more prestige than those who don't.	(Ong et al., 2023)
Facilitating Conditions	Facilitating Conditions is the user's perception that the infrastructure is available to support purchasing a BEV car.	The Indonesian government is actively preparing electric car sales facilities.	(Venkatesh et al., 2012), Gunawan et al., (2022)
		The Indonesian government is actively building electric refueling facilities for the public.	
		The Indonesian government is actively offering incentives to increase electricity capacity for electric car owners.	
		Technological advances make me feel safe using an electric car.	
		There is a help center that can be contacted if there is a problem with the electric car.	
		How to use an electric car is not much different from other conventional	

Variables	Operational Definition	Statement Items	Reference
		vehicles.	
Hedonic Motivation	Hedonic Motivation includes the perception of getting pleasure, comfort, pride, social status, convenience over price, pride in being a pioneer when buying a BEV car.	Using an electric car seems fun.	Venkatesh et al., (2012), Gunawan et al., (2022)
		As long as an electric car can make me comfortable when using it, maybe I will buy it even though it is expensive.	
		Using an electric car seems to increase my social status.	
		I would be proud if I were one of the first people to buy and use an electric car.	
		I feel more satisfied when driving an electric car	(Ong et al., 2023)
Price value	Price value is the consumer's perception that the current price of electric cars is quite affordable and reasonable, the price paid is in accordance with the electric car that will be obtained.	The price of electric cars is currently quite affordable	Venkatesh et al., (2012), Gunawan et al., (2022), Wang et al, (2023)
		The price paid may be in line with the electric car I will get.	
		The current price of electric cars is the best deal.	
		With the quality of electric cars today, it is natural that the price is relatively expensive.	
		The use of electric cars will help reduce transportation costs significantly.	
Habits	Habits include frequency of technology use, habitual use that occurs without thinking, or difficulty changing vehicle usage habits.	Using an electric car has certainly become a habit for me.	(Ong et al., 2023)
		I will be addicted to driving an electric car	
		I'm willing to pay more for an electric car	
		I think I should use an electric car	
Personal innovativeness	Personal innovativeness reflects an individual's tendency to accept and adopt electric cars as a new transportation alternative.	When I hear about a new product, I will try it out.	Hoang et al. (2022)
		I love experimenting with new products	
		Among my colleagues, I am usually the first to explore new products.	
		In general, I feel excited to try new products.	
NAME			
Personal norms	Personal norms refer to the feeling of importance to travel as little as possible by fossil fuel-powered cars, the obligation to adopt BEVs over conventional vehicles, thus motivating customers to purchase BEVs.	It is my moral obligation to conserve fossil fuels and protect the environment.	He & Zhan (2018), Hoang et al. (2022)
		I think it is important to limit travel by vehicles that use fossil fuels.	
		I feel a moral obligation to drive a BEV over a conventional vehicle.	
		People like me should try to reduce the use of fossil fuels in transportation activities.	
Ascription of responsibility	Ascription of Responsibility refers to	I feel partly responsible for the depletion of fossil fuels.	He & Zhan (2018), Hoang et

Variables	Operational Definition	Statement Items	Reference
	consumers' feelings of being responsible for the negative impacts caused by using conventional vehicles, thus motivating customers to purchase BEVs.	I feel partly responsible for the contribution of conventional vehicles to global warming.	al. (2022)
		I feel partly responsible for the contribution of conventional vehicles to local ecological damage.	
		I feel partly responsible for the negative impacts of conventional vehicles.	
Awareness of Consequences	Awareness of Consequences represents the negative impacts of using conventional vehicles such as pollution, global warming, or running out of fossil fuel energy, thus motivating customers to purchase BEVs.	Driving conventional vehicles contributes to energy depletion	He & Zhan (2018), Hoang et al. (2022)
		Driving conventional vehicles contributes to environmental damage	
		Driving conventional vehicles worsens global warming	
		Overall, driving a conventional car has negative consequences.	
Purchase Intention	Purchase intention is the tendency or desire of consumers to buy or own a car that uses electricity as its main energy source.	I would consider buying an electric car.	(Gunawan et al., 2022; Hoang et al., 2022; Venkatesh, Thong, & Xu, 2012)
		I have plans to try to buy an electric car.	
		I would purchase and recommend an electric car to colleagues, friends and family.	
		I look forward to the introduction of various brands of electric cars in the market.	
		I imagine that in the future I will buy and use an electric car.	

1.9   Model Analysis and Test Techniques

The data analysis technique in this study uses the Structural Equation Model (SEM) with the AMOS program. The level of significance used in this study is (α = 5%). This means that the researcher's decision to reject or support the null hypothesis has a probability of error of 5% (Ghozali, 2017). In addition, the level of significance is also seen from the CR (Critical Ratio) value. If the CR value > 1.96 then the variable is said to be significant and if not then it is not significant, this is the same as if the p-value < 0.05 then the indicator variable is said to be significant, while if the p-value ≥ 0.05 then the indicator variable is said to be not significant (Ghozali, 2017).

V.   RESULT AND DISCUSSION
1.   Result

The characteristics of the respondents in this study showed that out of 365 respondents, the majority were male (76.7%) and the largest age group was 36-45 years old (44.9%). The highest level of education was dominated by those with a Diploma IV/S1 degree or above (54.5%), while the most jobs were private employees (45.5%). The highest household income was in the range of IDR 10 million to IDR 20 million (58.1%), and the majority of respondents owned conventional cars (48.2%). These findings reflect that respondents tend to come from more mature groups, are highly educated, and have access to vehicles, which can affect the acceptance of electric cars.

1.10   Confirmatory Factor Analysis Test

Confirmatory Factor Analysis (CFA) test is a statistical method used to test the construct validity of a model. The results of the CFA test are as follows:

Table 1. Operationalization of Variables

Variables	Indicator	Standardize Factor Loading	Construct Reliability	AVE
ATT	ATT6	0.817	0.916170718	0.693948938
	ATT5	0.77		
	ATT4	0.811		
	ATT3	0.822		
	ATT2	0.785		
	ATT1	0.815		
SN	SN5	0.778	0.924783559	0.744789874
	SN4	0.886		
	SN3	0.851		
	SN2	0.837		
	SN1	0.861		
PBC	PBC5	0.86	0.919690147	0.733158721
	PBC4	0.821		
	PBC3	0.858		
	PBC2	0.758		
	PBC1	0.871		
PE	PE7	0.918	0.951634024	0.735962047
	PE6	0.778		
	PE5	0.864		
	PE4	0.892		
	PE3	0.773		
	PE2	0.88		
	PE1	0.898		
EE	EE5	0.799	0.883273349	0.661105022
	EE4	0.787		
	EE3	0.744		
	EE2	0.791		
	EE1	0.758		
HB	HB4	0.825	0.900190886	0.730404417
	HB3	0.815		
	HB2	0.84		
	HB1	0.849		
FC	FC6	0.828	0.919164468	0.700828317
	FC5	0.815		
	FC4	0.794		
	FC3	0.79		
	FC2	0.814		
	FC1	0.813		
PV	PV5	0.824	0.921867791	0.737941871
	PV4	0.825		
	PV3	0.852		
	PV2	0.854		
	PV1	0.835		
HM	HM5	0.795	0.886705876	0.667137849
	HM4	0.756		
	HM3	0.810		
	HM2	0.774		
	HM1	0.770		
PIN	PIN4	0.855	0.913079336	0.755261872
	PIN3	0.842		
	PIN2	0.849		
	PIN1	0.858		
PN	PN1	0.819	0.879557008	0.694324314
	PN2	0.791		
	PN3	0.794		
	PN4	0.811		

Variables	Indicator	Standardize Factor Loading	Construct Reliability	AVE
SI	SI4	0.896	0.905582729	0.740680614
	SI3	0.846		
	SI2	0.814		
	SI1	0.802		
AR	AR1	0.777	0.892005307	0.676708801
	AR2	0.803		
	AR3	0.803		
	AR4	0.78		
	AR5	0.783		
air conditioning	AC1	0.89	0.909459984	0.792377282
	AC2	0.893		
	AC3	0.849		
PI	PI1	0.778	0.908625483	0.709322446
	PI2	0.823		
	PI3	0.830		
	PI4	0.882		
	PI5	0.762		

The results of the CFA analysis show that the indicator with the highest loading factor is PE7 (0.918), which strongly reflects the latent variable Performance Expectancy, while the lowest indicator is EE3 (0.744), which although still above the minimum limit, reflects a lower contribution to Effort Expectancy. A high loading factor on PE7 indicates that respondents feel the influence of performance expectations in decision making, while a lower EE3 value indicates doubt or lack of confidence in the effort required to use an electric car. Furthermore, the composite reliability value of each variable is > 0.70 and AVE > 0.5 so that it can be said that all indicators in the structural model used are reliable.

The results of the Structural Model Fit Test through the calculation of Goodness of Fit (GOF) on this model provide an overview of the model's suitability to the data obtained. The Chi-squares value of 4562.847 indicates that this model has a poor fit, because it exceeds the expected threshold (<793.9). However, other indicators show more positive results. The RMR (Root Mean Square Residual) of 0.028 is a value far below the 0.05 limit. The RMSEA (Root Mean Square Error of Approximation) of 0.048 indicates a good fit, because its value is below the 0.05 threshold. On the other hand, the NFI (Normed Fit Index) of 0.850 is also in the marginal fit category. Furthermore, the CFI (Comparative Fit Index) of 0.925 and the PNFI (Parsimony Normed Fit Index) of 0.800 indicate a good fit. Overall, the GOF results show that the proposed model has a good fit with the data, although there are some indicators that show poor and marginal results. This indicates that this model is worthy of further analysis and is reliable in representing the analyzed relationship.

1.11 Hypothesis Test Results

Table 2. Hypothesis Test Results

Hypothesis	Std. Estimate	T Statistics	P-Value	Information
TPB				
H1: Attitude→purchase intention	0.16	2,117	0.034	Accepted
H2: Subjective norm→purchase intention	-0.147	-2,300	0.021	Rejected
H3: Perceived Behavioral Control→purchase intention	0.148	2,089	0.037	Accepted
UTAUT-3				
H4: Performance Expectancy→purchase intention	0.03	0.808	0.419	Rejected
H5: Effort expectancy→purchase intention	0.013	0.163	0.871	Rejected
H6: Social Influence→purchase intention	0.336	3,239	0.001	Accepted
H7: Facilitating Conditions→purchase intention	0.443	4,505	0,000	Accepted
H8: Hedonic motivation→purchase intention	0.14	1,082	0.279	Rejected
H9: Price value→purchase intention	0.332	2,270	0.023	Accepted
H10: Habits→purchase intention	-0.139	-1,819	0.069	Rejected
H11: Personal innovativeness→purchase intention	-0.228	-1,647	0.099	Rejected
NAME				

H12: Awareness of Consequences→ascription of responsibility	0.947	17,566	0,000	Accepted
H13: Ascription of responsibility→Personal Norms	1,002	17,135	0,000	Accepted
H14: Personal Norms →purchase intention	-0.053	-0.801	0.423	Rejected

2. Discussion

2.1 The Influence of the Theory of Planned Behavior Model on Purchase Intention

The results of the hypothesis of the three TPB variables show that attitude and PBC have an effect on Purchase Intention, while subjective norm does not affect the purchase intention of electric battery car consumers in Jakarta. Attitude reflects an individual's positive or negative attitude towards the use of electric cars. The positive influence of attitude on purchase intention shows that the more positive the consumer's attitude towards electric cars, the more likely they are to consider making a purchase. Subjective norm does not affect purchase intention, this is logical because differences in individual perceptions allow for different responses to the same stimulus (Schiffman & Wisenblit, 2015). In situations where some consumers do not see electric cars as a common or desirable option in their community, subjective norms may not be strong enough to influence purchase decisions. This suggests that even if there is social influence, the strength of the influence depends on how consumers perceive the situation and the information available. This is supported by the fact that, although electric vehicles are considered a solution to decarbonizing the transportation sector, consumer intentions to buy them remain low in various countries, including Indonesia. Overseas, such as with Tesla products, price cuts have not increased sales, and in China, similar strategies have also failed to attract consumer interest. In Indonesia, government incentives such as VAT reductions have not been enough to increase demand, which is affected by limited models, high prices, and inadequate charging infrastructure. A report from the Institute for Essential Services Reform (IESR) shows that these factors contribute to low consumer interest (CNBC Indonesia, 2023), indicating that subjective norms do not have a significant effect on electric vehicle purchase intentions.

These findings partially strengthen the TPB theory. The results of this study indicate that in the context of TPB, attitudes and PBC play a more dominant role in shaping consumer purchase intentions for electric cars, while subjective norms do not have a significant influence. This underlines the importance of enhancing positive attitudes and PBC to encourage the adoption of electric cars, and suggests that social factors need to be addressed to be more relevant and effectively influence consumer decisions.The results of this study do not support the research Tuan et al. (2022) which states that subjective norms have a positive effect on the intention of Vietnamese people to buy electric cars. It also does not support the research Asadi et al. (2020) which states that subjective norms significantly and positively influence consumers' intention to purchase electric vehicles. It also does not support the research (Prakthayanon & Worasatepongsa, 2022) that the influence of close relationships with family and friends plays an important role in the intention to purchase electric vehicles among Thai consumers. However, the results of this study are supported by research Huang & Ge (2019) that only the impact of attitude and PBC on the intention to purchase electric vehicles. Also supported by research Xu et al. (2019) that attitude and PBC show a positive impact on electric vehicle purchase intention in China. Gunawan et al. (2022) also found that TPB constructs such as attitude and PBC have a positive influence on the intention to use electric vehicles in Indonesia. Jayasingh et al. (2021) also shows that attitude significantly influences consumer intention to purchase electric vehicles in India.

2.2 The Influence of UTAUT-3 Model on Purchase Intention

The results of the study using the UTAUT-3 model show that social influence, facilitating conditions, and price value have a significant and positive effect on the purchase intention of electric vehicles. However, factors such as performance expectancy, effort expectancy, hedonic motivation, habit, and personal innovativeness do not show a significant effect. Although performance expectancy and effort expectancy have a positive direction, their impact on purchase intention is not strong enough, indicating that expectations of performance and ease of use are not the main factors in purchasing decisions. In the UTAUT

framework, the variable effort expectancy is defined as the perceived ease of use by users when interacting with a technology. If the technology is easy to use, the effort required is minimal; conversely, if a system is difficult to use, it requires greater effort to operate. (Saktyadi & Tricahyono, 2024). In addition, although hedonic motivation shows a positive effect, its influence is also not significant, indicating that emotional motivation is not enough to drive consumers' intention to purchase electric vehicles. These findings highlight the importance of external factors, such as social influence and price value, in influencing purchase intention.Social influence shows that support from the social environment, such as family and friends, greatly influences purchasing decisions, while facilitating conditions emphasize the importance of adequate infrastructure to increase the convenience of using electric cars. In addition, price value highlights that the perception of economic value, including cost savings, is a major driver for price-sensitive consumers.

Although other factors such as performance expectancy and effort expectancy have a positive direction, they are not significant enough to influence purchase intentions, reflecting that consumers prioritize practical and social aspects in their intention to buy electric cars. Thus, UTAUT-3 provides important insights into the elements that must be considered in electric car marketing strategies to increase the adoption of this technology.The results of this study strengthen the UTAUT-3 theory that was developed Venkatesh et al. (2003). These results do not support the research Lee et al. (2021), Hoang et al. (2022), M. Zhou et al. (2021) social influence does not contribute significantly to EV adoption. However, the results of this study support research Manutworakit & Choocharukul (2022) that purchase intention is significantly and positively influenced by social influence. supports the research Bhat et al. (2022) using the UTAUT model reported that social influence is positively related to the intention to adopt electric vehicles in India. It also supports research Higueras-Castillo et al. (2023) that social influence has a positive influence on the intention to adopt electric cars.The results of this study are supported by research Hoang et al. (2022) using UTAUT found that facilitating conditions have an effect on BEV purchase intention in Vietnam. It also supports research Higueras-Castillo et al. (2023)that facilitating conditions have a positive influence on the intention to adopt electric cars. Also supports research Manutworakit & Choocharukul (2022), M. Zhou et al. (2021) found that facilitating conditions have a positive effect on the intention to buy electric cars. However, the results of this study do not support the research Lee et al. (2021) that facilitating conditions do not contribute significantly to EV adoption. It also does not support the research Ong et al. (2023) facilitating conditions do not significantly affect the intention to buy hybrid cars in the Philippines.

The results of this study support the research M. Zhou et al. (2021), Ong et al. (2023) by using UTAUT-2 found that price value influences the intention to use electric cars. However, it does not support the research Manutworakit & Choocharukul (2022) using UTAUT-2 found that the intention to purchase an electric car was not influenced by price value. This also does not support the research Bhat et al. (2022), Hoang et al. (2022), Higueras-Castillo et al. (2023), Manutworakit & Choocharukul (2022), M. Zhou et al. (2021), Ong et al. (2023) found that performance expectancy influences the intention to use electric cars.This is also supported by research Ong et al. (2023) that effort expectancy does not affect the intention to use electric cars. However, it does not support the research Bhat et al. (2022), Hoang et al. (2022), Higueras-Castillo et al. (2023), Manutworakit & Choocharukul (2022), M. Zhou et al. (2021), Ong et al. (2023) found that effort expectancy influences the intention to use electric cars. This result also does not support the research Bhat et al. (2022), Hoang et al. (2022), Higueras-Castillo et al. (2023), Manutworakit & Choocharukul (2022), M. Zhou et al. (2021), Ong et al. (2023) found that hedonic motivation influences the intention to use electric cars. However, it is supported by research Handopo & Prince (2024) that hedonic motivation does not influence the intention to use electric cars in Indonesia.These results do not support the research M. Zhou et al. (2021), found that habits influence the intention to use electric cars. However, it supports research Ong et al. (2023), habit does not affect the intention to use electric cars. The results of this study do not support the research Farooq et al. (2017) who found that personal innovativeness can contribute to purchase intention. However, it supports the research Gunasinghe et al. (2020) that personal innovativeness does not influence behavioral intentions.

2.3 The Influence of NAM Model on Purchase Intention

The results of the study using the Norm Activation Model (NAM) showed that awareness of consequences has a positive and significant effect on ascription of responsibility, which means that the more consumers are aware of environmental impacts, the more they feel responsible for acting sustainably, such as buying electric cars. Ascription of responsibility also has a positive effect on personal norms, encouraging individuals to internalize pro-environmental norms. However, although personal norms support sustainability, their effect on purchase intention is negative and insignificant. This shows that external factors, such as price and infrastructure, are more dominant in influencing purchasing decisions. Descriptive analysis shows that consumers' perceptions of moral obligation to use electric cars are still low, with the highest value of only 64.8% on the statement regarding the importance of limiting the use of fossil fuels. Overall, despite positive awareness and personal norms, external factors inhibit the intention to purchase electric vehicles.The Norm Activation Model (NAM) theory states that personal norms should arise from awareness of consequences and the establishment of responsibility (De Groot & Steg, 2009; Hoang, 2022; Kim, 2023). However, this study found that the low percentage of respondents who felt morally bound to adopt electric vehicles indicates that awareness and sense of responsibility are not strong enough to drive purchase decisions.

This suggests that external factors, such as price, infrastructure, and accessibility, are more dominant in influencing purchase intentions than personal norms. The finding that personal norms have no significant effect on purchase intentions indicates that the NAM may function more as a mediator model than explaining the direct relationship between personal norms and pro-environmental behavior. Therefore, to drive purchase intentions, it is important to overcome external barriers that prevent consumers from taking the desired action.The results of this analysis support the research Asadi et al. (2020), He & Zhan (2018) found that when customers are aware of the serious impact of traditional vehicles on the environment, they will show higher responsibility in using electric vehicles. Hoang et al. (2022), Kim (2023) strengthens the opinion that awareness of consequences has a positive influence on ascription of responsibility. Javid et al. (2021) also found a strong relationship between awareness of consequences and ascription of responsibility. However, the results of this study do not support the research He & Zhan (2018) which confirms that personal norms have a positive influence on consumer intentions to adopt electric vehicles, indicating that altruistic values play an important role in encouraging pro-environmental behavior. The results of this study also do not support the research Asadi et al. (2020), Hoang et al. (2022), Shalender & Sharma (2021) that personal norms have a positive influence on the intention to purchase electric cars.The differences in the results of this study are influenced by several factors.

First, the conservative social and cultural context in Jakarta can reduce the influence of personal norms on electric car purchasing decisions. Second, respondents' awareness and understanding of the benefits of electric cars may be inadequate. Third, methodological aspects, such as sample size and the relevance of measurement instruments, may affect the results. In addition, external and pragmatic factors are more dominant in decision making. Although the NAM model shows the potential of personal norms in supporting sustainability, it is important to consider practical factors in order to increase purchase intentions. A holistic approach that combines psychological factors with social and economic conditions is needed to encourage the adoption of environmentally friendly technologies.

VI.   CONCLUSIONS AND RECOMMENDATIONS

The results of the study show that the integration of TPB, UTAUT-3, and NAM theories provides in-depth insights into consumer intentions to purchase battery electric vehicles (BEVs) in Indonesia. Positive attitude and belief in ability (PBC) contribute significantly to purchase intention, by 16% and 14.8%, respectively, while subjective norms show a negative but significant influence. In the UTAUT-3 model, social influence and facilitating conditions contribute significantly, by 33.6% and 44.3%, respectively, emphasizing the importance of social support and infrastructure. Price value also contributes significantly by 33.2%, indicating that the perception of the economic value of electric vehicles greatly influences purchasing decisions. Although awareness of consequences and ascription of responsibility in the NAM model have a positive effect, personal norms do not show a significant influence on purchase intention. The implication of

these findings is that to increase purchase intention of electric vehicles, a marketing strategy is needed that includes education about the benefits, strengthening social norms, and improving infrastructure, as well as creating awareness of the economic and environmental value of electric vehicles.

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