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ANALYSIS OF FACTORS DRIVING PURCHASE INTENTION OF ELECTRIC CARS: PERSPECTIVE OF THEORY OF PLANNED BEHAVIOR, NORM ACTIVATION MODEL, AND TECHNOLOGY ACCEPTANCE MODEL

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Abstract

Objective: The purpose of this study is to empirically investigate the factors that drive the purchase intention of electric cars from the perspective of the Theory of Planned Behavior (TPB), Norm Activation Model (NAM), and Technology Acceptance Model (TAM). Design/Methods/Approach: This study used quantitative research methods with purposive sampling. The data collection method used in this research is the survey method, conducted using a questionnaire distributed online using Google Forms to 253 respondents who do not own an electric car, have a driver's license, belong to Socioeconomic Status A group, and have knowledge related to electric cars.. A 49-item questionnaire was developed, with a five-point Likert scale on each item. This study used partial least square structural equation modeling (PLS-SEM) for data analysis. Data were analyzed using Smart-PLS 3.2.9 application. Findings: Perceived Usefulness (PU) and Perceived Behavioral Control (PBC) positively and significantly impact the intention to purchase electric cars. Originality/Value: This study contributes to the existing literature on the purchase intention of electric cars by combining three theories namely TPB, NAM, and TAM. Practical/Policy implication: Given the results, government and manufacturers of electric cars in Indonesia should focus the strategies in the area of the usefulness of electric cars and consumers' perceived behavioral control to increase the purchase intention of electric cars.

Keywords: Electric Car, Norm Activation Model (NAM), dan Technology Acceptance Model (TAM), Theory of Planned Behavior (TPB), Purchase Intention

Introduction

Air pollution remains the world's biggest environmental health threat, accounting for more than six million deaths yearly (IQAir, 2022). In 2019, approximately 4.2 million premature deaths worldwide were linked to ambient air pollution, affecting both urban and rural areas (WHO, 2022). Several air pollutants reported by the World Health Organization are particle pollution, ground-level ozone, carbon monoxide, sulfur oxides, nitrogen oxides, and lead (Manisalidis et al., 2020). The significant rise in individual car ownership has positioned the transportation sector as a crucial contributor of greenhouse gas emissions, making it one of the foremost energy-consuming sectors globally (Xu et al., 2019), and substituting conventional vehicles with new energy vehicles is a potential solution to address environmental issues (Tu & Yang, 2019).

Over the last two decades, electric vehicles have emerged as a solution to mitigate emissions and reduce energy consumption in the transportation sector (Hassouna & Tubaleh, 2020). According to Subekti et al. (2014), electric cars utilize an electric motor to convert electrical energy into mechanical energy, drawing power from rechargeable batteries, which results in zero emissions and avoids environmental harm (Taghizad-

Tavana et al., 2023). Despite the need for durable batteries containing rare minerals extracted from the Earth, electric cars prove highly efficient in reducing pollution compared to conventional vehicles relying on fossil fuels (Malik et al., 2020).

It is necessary to analyze the factors influencing consumer purchase intentions to attract consumers to buy electric cars. Several studies have been conducted using the Theory of Planned Behavior. Adnan et al. (2018) used the Theory of Planned Behavior to predict Malaysian consumers' intention to adopt PHEVs or Plug-In Hybrid Electric Vehicles. Liao (2022) uses the Theory of Planned Behavior model combined with perceived risk variables and contextual factors in the form of financial and non-financial incentives, which are moderated by personality factors in the form of Consumer Innovativeness and Environmental Self-Identity for consumers in 3 major cities in China. Asadi et al. (2021) also used the Theory of Planned Behavior combined with the Norm Activation Model to identify factors influencing the intention to use electric vehicles in Malaysia.

Several studies have been conducted by developing the Technology Acceptance Model. Wolff and Madlener (2019) use the UTAM or Unified Technology Adoption Model, an adaptation of the Technology Acceptance Model with the Diffusion of Innovations theory, on the use of light electric vehicles in Germany. Wang et al. (2018)) also used the Technology Acceptance Model developed with additional variables in the form of knowledge, perceived risk, and financial incentive policy in influencing the intention to adopt electric vehicles in China. Jain et al. (2022) use the UTAUT model or the Unified Theory of Acceptance of Technology previously proposed by Venkatesh et al. (2003) and Sovacool (2017) to explore the factors that influence electric vehicle adoption intentions in India. Vafaei-Zadeh et al. (2022) use the C-TAM-TPB theory, which is a combination of the Technology Acceptance Model with the Theory of Planned Behavior with the addition of several variables, namely price value, perceived risk, environmental self-image, and infrastructure barriers in generation Y electric vehicle consumers in Malaysia.

x In the context of consumers' intention to purchase electric vehicles, previous studies mainly focused on individual theoretical models such as Theory of Planned Behavior (TPB), Norm Activation Model (NAM) or the technology acceptance model (TAM). Although these models have offered valuable insights into the factors that influence adoption, there is a notable gap in the literature regarding the integration of these theories into a unified framework. Existing research often fails to account for the complex interactions between psychological, behavioral, and contextual factors within a single comprehensive model. This study aims to fill this gap by combining TPB, NAM, and TAM, thereby providing a more comprehensive understanding of the multifaceted nature of consumer behavior in the context of electric car adoption. The objectives of this study are to investigate the impact of behavioral driving factors from each Theory of Planned Behavior (TPB), Norm Activation Model (NAM), and the technology acceptance model (TAM) on individuals' intentions to purchase electric cars.This study intends to adopt the model of Asadi et al. (2021), a combination of the Theory of

Planned Behavior and the Norm Activation Model. However, in their study, there are still limitations, which as using only TPB and NAM in describing the intention to adopt electric vehicles. Regarding this matter, Asadi et al. (2021) suggest that a different theory can be used for further research, such as TAM, or the Technology Acceptance Model, in which variables of perceived usefulness and perceived ease of use affect attitude, which then influences purchase intentions. In the research of Wang et al. (2018), perceived usefulness is shown to have a positive effect on attitudes toward buying electric vehicles and vehicle adoption intentions. Different things were found in the research of Vafaei-Zadeh et al. (2022), which found that perceived usefulness has a positive impact on attitudes to buy electric vehicles but not a significant impact on the intention to adopt electric vehicles. The same study found that perceived ease of use has the most substantial influence on consumer behavior. Therefore, this study analyses the factors that drive the purchase intention of electric cars using a model consisting of a combination of the Theory of Planned Behavior (TPB), Norm Activation Model (NAM), and Technology Acceptance Model (TAM).

Our research contributes significantly to the existing knowledge base in the field of consumer behavior and sustainability. By integrating the Theory of Planned Behavior (TPB), the Norm Activation Model (NAM), and the Technology Acceptance Model (TAM) into our research, we provide a comprehensive framework taking into account the various psychological and contextual factors that influence consumers' purchase intentions for electric cars. This multidimensional approach improves understanding of the complex decision-making processes involved in adopting environmentally friendly transportation options. Additionally, our study extends the applicability of these well-founded theories to the context of electric vehicle use, shedding light on how factors such as perceived usefulness and perceived Ease of use interacts with attitudes and intentions in that particular domain. These findings provide valuable insights for policymakers, businesses, and researchers interested in promoting sustainable transportation options and can guide the development of effective strategies to encourage the use of electric vehicles.

The method used in this research is the survey method. Partial least square structural equation modeling (PLS-SEM) were used to test the hypotheses. This article consists of 5 section. The first section, Introduction, describes the background of the problem. The second section, Literature Review, where all the theories used are summarized. The third section, Methods, explaining the research methods used. The fourth section, Result and Discussion, explains the results of data collection and processing, as well as the analysis carried out. The last section, Conclusion, gives conclusions from the results of the research and analysis.

Theory of Planned Behavior, or TPB, is a development of the Theory of Reasoned Action, or TRA. The main factor in the Theory of Planned Behavior is a person's intention to perform certain behaviors (Ajzen, 1991). According to the Theory of Planned Behavior (TPB), human behavior is influenced by three types of considerations: behavioral beliefs, which are beliefs about the expected outcomes of

actions; normative beliefs, which relate to the perceived social expectations of others; and control beliefs, which pertain to the belief in factors that can either support or hinder the execution of behaviors. (Bosnjak et al., 2020). In the Theory of Planned Behavior, the factors that determine meaning are Attitude toward the Behavior, Subjective Norm, and Perceived Behavioral Control, as identified by By the general rule, the more positive a person's attitude towards a behavior, the stronger the individual's intention to carry out the behavior. Subjective Norm is a social factor that refers to perceived social pressure to perform or not perform certain behaviors (Ajzen, 1991). As with attitude, the more someone feels the views of others who agree with the behavior are essential, the more likely the behavior will occur.

The Norm Activation Model, abbreviated as NAM, explains the altruistic aspects of environmentally friendly behavior (Schwartz, 1977). According to NAM, people act green when their standards reflect their moral obligation to be socially and environmentally responsible (Le & Nguyen, 2022). The three main components of NAM are the ascription of responsibility, awareness of consequences, and personal norms. . Asadi et al. (2021) explained that personal norms are among the most critical predictors of environmentally friendly behavior. Its activation is accompanied by the formation of an individual's moral commitment, which directs the individual towards environmentally friendly behavior.

The Technology Acceptance Model, or TAM, is the most popular theory for predicting and explaining technology acceptance among potential users (Wang et al., 2018). Davis (1986) uses this model to describe user acceptance of new computer technology and information systems at that time. As technology develops, this model is widely adapted and designed to see user acceptance of new technology. In TAM, two factors influence technology acceptance: perceived usefulness and ease of use. Perceived ease of use significantly affects perceived usefulness because an easy-to-use system will increase user job performance (Davis, 1986).

Several other factors that are also important in predicting the intention to buy an electric car, according to Asadi et al. (2021), are Perceived Consumer Effectiveness, Perceived Value, and Financial Incentives Policies. PCEs are considered consumer beliefs about their role in mitigating the undesirable effects of vehicle use and environmental improvements through introducing electric vehicles (Asadi et al., 2021). According to Moosa and Hassan (2015), consumer purchasing decisions are influenced by perceived value, as they will buy products with high perceived value. Referring to Asadi et al. (2021), various financial incentive policies are offered in the era of electric vehicles. Some of these, including direct purchase subsidies and preferential tax policies, are available to lower purchase prices and encourage more consumers to use electric cars.

Method

In this study, quantitative research methods were used. The sampling method used in this research was non-probability sampling with purposive sampling. The study

sought respondents based on specific criteria, which included:respondents do not yet own an electric car, indicating an intention to purchase one; respondents have a driver's license A,an aspect of driving legality in Indonesia; respondents fall into the Socioeconomic Status A group with a monthly family expenditure of over Rp 6,000,000, to ensure the purchasing power of respondents; respondents have knowledge related to electric cars, to obtain respondents who were relevant to the items on the questionnaire.

Indonesia faces significant environmental challenges, including air pollution and greenhouse gas emissions. Researching factors influencing electric car purchase intention in Indonesia is particularly relevant as the country seeks to address these concerns and transition towards cleaner transportation alternatives. Investigating the motivations and barriers to adopting electric vehicles can contribute to sustainable mobility solutions and align with the nation's environmental goals. The Indonesian government has shown a growing interest in promoting electric vehicles as part of its efforts to reduce emissions and dependence on fossil fuels. Researchers can examine the impact of government policies, incentives, and regulatory frameworks on the purchase intention of electric cars, providing valuable insights into the effectiveness of these measures in driving EV adoption. Indonesia's dynamic and diverse economy, coupled with a large population, presents a significant market potential for electric vehicle manufacturers. Understanding the economic factors that influence purchase intention is essential for both policymakers and industry stakeholders. Investigating these aspects in the Indonesian context can shed light on the country's readiness for electric vehicle market growth.

The method used in this research is the survey method. Surveys are used to obtain information by asking respondents questions about actions, intentions, attitudes, awareness, motivation, demographics, and lifestyles (Maholtra, 2016). The survey was conducted using a questionnaire distributed online using Google Forms. A 49-item questionnaire was adapted from previous TAM TPB and NAM research. Five-point Likert scale was used on each item (1 = “strongly disagree”; 5 = “strongly agree”).

The study used partial least square structural equation modeling (PLS-SEM) to test the hypotheses. PLS-SEM, a structural equation modeling method, has many applications in different social science field (Hair et al., 2022). Data were analyzed using Smart-PLS 3.2.9 application.

Table I. Definition of Operational Variables

Construct	**Definition**	**Item Code**	**Item**	**Source**
Personal Norms	Moral obligation to perform or refrain from certain actions	PN1	I have a moral obligation to purchase an electric car	Song et al. (2019) & Singh et al. (2023)
		PN2	I have a sense of guilt if I don't purchase an electric car	
		PN3	I am the type of person who wants to purchase an electric car to solve the	

Construct	Definition	Item Code	Item	Source
			problem of air pollution	
		PN4	I think it is important to travel as little as possible by conventional car	
Awareness of Consequences	An individual's awareness of the negative consequences for others when not performing a certain behavior	AC1	Purchasing an electric car can reduce fossil fuel consumption	Song et al. (2019) & Zhao et al. (2019)
		AC2	Purchasing an electric car can reduce harm to the environment	
		AC3	Purchasing an electric car can solve air pollution problems	
		AC4	Overall, purchasing an electric car can have several positive consequences	
Ascription of Responsibility	An individual's sense of responsibility for the adverse consequences caused by not performing a certain behavior	AR1	I feel responsible for the environmental damage caused by using conventional cars.	Song et al. (2019) & Singh et al. (2023)
		AR2	I feel responsible for air pollution problems caused by using conventional cars.	
		AR3	I think everyone is partly responsible for the environmental problems caused by conventional cars.	
		AR4	I have a responsibility to influence the automobile industry towards more environmentally friendly solutions.	
Perceived Consumer Effectiveness	The level of consumer confidence that their behavior can protect the environment	PCE1	Everyone can make a positive impact on the environment by buying an electric car	Song et al. (2019) & Matharu (2019)
		PCE2	I can help solve air pollution problems through my consumption behavior	
		PCE3	I can support environmental protection by buying an electric car	
		PCE4	When I buy an electric car, I try to understand how its use will impact the environment and other consumers	
Perceived Value	Functions of various benefits and tradeoffs	PV1	Buying an electric car provides benefits to me, which are worth the price I pay	Kim and Park (2019) & Deng et al. (2014)
		PV2	Buying an electric car provides benefits to the environment, which are worth the price I pay	
		PV3	Electric car technology (use of batteries as a source of driving energy) provides benefits that are worth the price.	
		PV4	Electric car technology (use of	

Construct	Definition	Item Code	Item	Source
			batteries as a source of driving energy) provides advantages over conventional car technology	
		PV5	Buying an electric car is more beneficial than buying a conventional car	
Attitude to Purchase Electric Car	A person's level of assessment of a particular behavior	ATT1	In general, I think it is a very good thing to buy an electric car.	Vafaei-Zadeh et al. (2022) & Joshi and Rahman (2019)
		ATT2	In general, I think buying an electric car is a very wise decision	
		ATT3	In general, I think buying an electric car is a very satisfying decision.	
		ATT4	I feel good about myself when I buy an electric car	
Perceived Behavioral Control	Behavioral control that describes a person's perception of their ability to perform certain behaviors	PBC1	I can decide for myself if I want to buy an electric car in the future	Vafaei-Zadeh et al. (2022) & Paul et al. (2016)
		PBC2	I feel confident that in the future I will be able to buy an electric car	
		PBC3	I feel confident that in the future I will have the money to buy an electric car	
		PBC4	There will likely be many opportunities for me to buy an electric car	
Subjective Norms	The social pressure felt as a result of doing or not doing a certain behavior	SN1	People who are important to me think that I should buy an electric car in the future	Vafaei-Zadeh et al. (2022) & Hasan (2021)
		SN2	People who are important to me want me to buy an electric car in the future	
		SN3	People who are important to me would prefer that I buy an electric car	
		SN4	People who are important to me think that electric cars support a sustainable transportation system	
Financial Incentive Policies	Strategies and programs implemented to encourage and incentivize individuals to purchase and use electric vehicles	FIP1	I feel that the subsidy policy for purchasing electric cars is adequate.	Wang et al. (2018) & Wang et al. (2017)
		FIP2	I understand the subsidy policy for purchasing electric cars.	
		FIP3	Subsidy policies and tax breaks are important to me in purchasing an electric car	
		FIP4	The purchase tax exemption is very helpful for me to buy an electric car	
Perceived Usefulness	The extent to which an	PU1	Electric cars are useful in reducing carbon emissions and overcoming the	Wang et al.

Construct	Definition	Item Code	Item	Source
	individual believes that using a particular system will improve his or her job performance		energy crisis	(2018)
		PU2	Electric cars are useful for reducing my family's transportation expenses	& Wu et al.
		PU3	Electric cars can increase my travel efficiency and improve my quality of life	(2019)
		PU4	I believe that using an electric car can make me healthier	
Perceived Ease of Use	The extent to which an individual believes that using a particular system requires no physical or mental effort	PEU1	I think electric car features (e.g. home charging) are easy to use.	Vafaei-Zadeh et al. (2022) & Park et al. (2015)
		PEU2	I think the electric car is easy to drive wherever I want to go	
		PEU3	My interactions with the electric car (maintenance, usage, charging, etc.) will be understandable.	
		PEU4	Using an electric car does not require much mental or physical effort on my part.	
Purchase Intention of Electric Car	A form of consumer behavior that has the desire to buy a product based on desire, usage experience, and desire for the product.	PIEC1	When I must or will buy a new car, I am willing to buy an electric car	Vafaei-Zadeh et al. (2022) & Park et al. (2015)
		PIEC2	When I must or will buy a new car, I plan to buy an electric car	
		PIEC3	When I have to or will buy a new car, I will buy an electric car	
		PIEC4	I expect to buy an electric car because of its positive contribution to the environment	

Results and Discussion

Demographic Analysis

The demographic analysis for the study shows in Table I. The total sample size is 253 which are 60.1% were males and 39.9% were females. This study divides the age range into four groups. Most respondents were 17-26 years old, with a proportion of 55.7%. Respondents who fall into the age group of 27-36 years, 37-46 years, and above 46 years are 24.5%, 11.5%, and 8.3%, respectively. Most respondents in this study lived in Jabodetabek, 77.9% or 197 respondents, followed by respondents who lived on Java Island outside Jabodetabek, 17%, and the rest lived outside Java Island. Regarding educational status, most respondents in this study had an undergraduate education background, with a portion of 78.3%. Only 11.1% and 10.3% of respondents have a high school and master's degree, respectively. The least amount, namely 0.3% of respondents, have a doctoral background. Regarding the range of respondents' monthly income, respondents who have income above Rp8,000,000 are 47% or 119 respondents,

who have income in the range of Rp6,000,001-Rp8,000,000 is 26.9%, Rp4,000,000-Rp6,000,000 is 14.6%, and below Rp4,000,000 is 11.5%.

Table I. Demographic Analysis

Items		**Frequency**	**Percentage**
Gender	Male	152	60.1%
	Female	101	39.9%
Age	17-26 years old	141	55.7%
	27-36 years old	62	24.5%
	37-46 years old	29	11.5%
	Above 46 years old	21	8.3%
Domicile	Jabodetabek	197	77.9%
	Java Island outside Jabodetabek	43	17.0%
	Outside Java Island	13	5.1%
Education	High School	28	11.1%
	Undergraduate	198	78.3%
	Master's Degree	26	10.3%
	Doctoral	1	0.3%
Income	<IDR4.000.000	29	11.5%
	IDR4.000.000-IDR6.000.000	37	14.6%
	IDR6.000.001-IDR8.000.000	68	26.9%
	>IDR8.000.000	119	47.0%

Outer Model

Before hypothesis testing, validity and reliability assessments of the variables and items were conducted. According to Table 2, all items were valid as the factor loadings of each item were higher than 0.50 (Hair et al., 2019), ranging from 0.791 to 0.896. This study used the Average Variance Extracted (AVE) approach to examine the construct validity. The AVE scores for all constructs ranged from 0.656 to 0.770, greater than 0.50, as proposed by Hair et al. (2019), indicating the suitability of convergent validity for the constructs. The Cronbach's alpha ranged from 0.826 to 0.921, while the composite reliability values ranged from 0.884 to 0.931. As a result, the reliability of each variable was acceptable because Cronbach's alpha and composite reliability were at least at a value of 0.70 (Hair et al., 2019).

Table II. Validity and Reliability Test Results

Variables	**Items**	**Factor Loading**	**Cronbach's Alpha**	**Composite Reliability**	**AVE**
Awareness of Consequences	AC1	0.817	0.866	0.909	0.715
	AC2	0.854			
	AC3	0.852			
	AC4	0.854			

Variables	Items	Factor Loading	Cronbach's Alpha	Composite Reliability	AVE
Ascription of Responsibility	AR1	0.865	0.867	0.909	0.762
	AR2	0.869			
	AR3	0.841			
	AR4	0.806			
Attitude	ATT1	0.863	0.896	0.928	0.713
	ATT2	0.874			
	ATT3	0.873			
	ATT4	0.882			
Financial Incentive Policies	FIP1	0.773	0.826	0.884	0.656
	FIP2	0.807			
	FIP3	0.798			
	FIP4	0.859			
Perceived Behavioral Control	PBC1	0.863	0.886	0.921	0.744
	PBC2	0.861			
	PBC3	0.867			
	PBC4	0.86			
Perceived Consumer Effectiveness	PCE1	0.831	0.847	0.897	0.685
	PCE2	0.838			
	PCE3	0.822			
	PCE4	0.82			
Perceived Ease of Use	PEU1	0.828	0.84	0.893	0.676
	PEU2	0.806			
	PEU3	0.828			
	PEU4	0.826			
Purchase Intention of Electric Cars	PIEC 1	0.838	0.87	0.912	0.721
	PIEC 2	0.887			
	PIEC 3	0.875			
	PIEC 4	0.794			
Personal Norms	PN1	0.859	0.841	0.894	0.678
	PN2	0.826			
	PN3	0.845			

Variables	Items	Factor Loading	Cronbach's Alpha	Composite Reliability	AVE
	PN4	0.761			
Perceived Usefulness	PU1	0.783	0.85	0.899	0.691
	PU2	0.844			
	PU3	0.844			
	PU4	0.853			
Perceived Value	PV1	0.836	0.896	0.923	0.706
	PV2	0.855			
	PV3	0.852			
	PV4	0.833			
	PV5	0.826			
Subjective Norm	SN1	0.896	0.901	0.931	0.77
	SN2	0.888			
	SN3	0.878			
	SN4	0.849			

Inner Model

The coefficient of determination R^2 of 0.731 for the purchase intention variable was obtained in this study. This can be interpreted that the exogenous variables used in this study could explain the purchase intention variable by 73.1%, which means that the remaining 26.9% is explained by other variables not examined in this study. The model in this study had a Predictive Relevance (Q^2) value of 0.510 which indicated to have strong predictive power. The NFI value in this research model was 0.763, so it can be said that the applicability of the model used in this study was 76.3%. The Standardised Root Mean Square Residual (SRMR) value in this research model was 0.084, indicating that the structural model in this study was defined according to standards and was feasible to use.

Through bootstrapping 5000 samples for hypothesis testing, this study yielded results (Table IV and Figure II) showing that among the 15 hypotheses proposed, eight were accepted while seven were rejected. H1 and H2 were not supported as personal norms and awareness of consequences didn't significantly impact electric car purchase intentions. H3 and H4 were confirmed, indicating that awareness of consequences influenced the ascription of responsibility, which, in turn, impacted personal norms significantly. H5 was supported, illustrating that perceived consumer effectiveness positively affected personal norms, but H6 was rejected as it had no significant effect on purchase intention. H7 was backed by a positive association between perceived value and attitudes. However, H8 was rejected as perceived value didn't significantly affect electric car purchase intentions. H9 was rejected, signifying that attitude did not significantly affect purchase intentions. H10 was supported, revealing that perceived behavioral control positively influenced purchase intentions. H11 and H12 were not accepted as subjective norms and financial incentive policies didn't significantly affect

purchase intentions. H14 and H15 was supported as perceived usefulness and ease of use both positively and significantly affected attitudes toward electric car purchase intentions. Lastly, H13 was supported, demonstrating that perceived usefulness significantly influenced consumers' purchase intentions regarding electric cars.

Table III. Hypothesises Results

Hypothesis	**Path**	**Hypothesis test**		**Result**
		Path coefficient	**p-value**	
H1	PN-PIEC	0.052	0.222	Not Supported
H2	AC-PN	0.057	0.238	Not Supported
H3	AC-AR	0.711	0.000	Supported
H4	AR-PN	0.408	0.000	Supported
H5	PCE-PN	0.335	0.000	Supported
H6	PCE-PIEC	0.101	0.099	Not Supported
H7	PV-ATT	0.257	0.003	Supported
H8	PV-PIEC	0.138	0.071	Not Supported
H9	ATT-PIEC	-0.025	0.402	Not Supported
H10	PBC-PIEC	0.305	0.000	Supported
H11	SN-PIEC	0.047	0.271	Not Supported
H12	FIP-PIEC	0.112	0.060	Not Supported
H13	PU-PIEC	0.376	0.000	Supported
H14	PU-ATT	0.232	0.002	Supported
H15	PEU-ATT	0.289	0.000	Supported

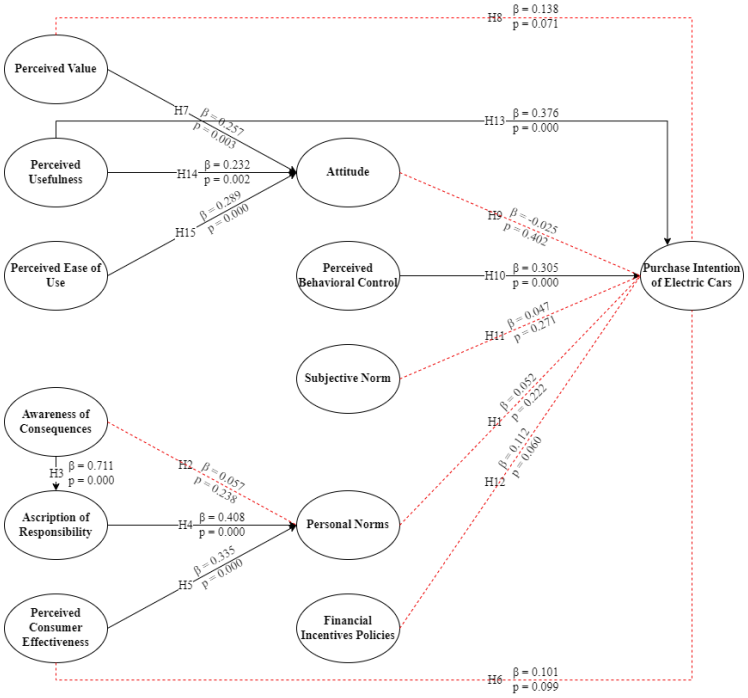

Figure II. Results of the Structural Model

Discussion

From the perspective of NAM, personal norms insignificantly influence the purchase intention of electric car consumers in Indonesia. This finding is different from what was explained by Asadi et al. (2021), namely that personal norms are the main predictor of intention to show environmentally friendly behavior. For consumers in Indonesia, the moral obligation to buy an electric car is not strong enough to encourage the intention to buy an electric car, which may be due to personal factors such as limited funds. It could be due to situational factors such as dependents and other interests that are considered more urgent than buying an electric car to improve the environment. For young adults aged 17-26 which is the majority of respondents, competing interests such as education expenses, career development, and social activities often take precedence over purchasing an electric car for environmental reasons. Awareness of consequences positively affects consumer personal norms in Indonesia but is not significant. This finding is not in accordance with previous studies, which found that awareness of consequences is significant in positively influencing personal norms (Asadi et al., 2021; Rezaei et al., 2019; Xiaojie Zhang et al., 2018). Although consumers know the positive consequences of buying an electric car, it does not encourage the emergence of moral obligations. On the other hand, awareness of consequences positively and significantly affects the ascription of responsibility for electric car consumers in Indonesia. This finding is in accordance with some previous studies that also found a significant association between these two variables (Asadi et al., 2021; He & Zhan, 2018; Song et al., 2019). De Groot and Steg (2009) also explained that individuals must be aware of the consequences of behavior before feeling responsible for it. So the higher the

awareness of the consequences associated with a particular behavior, the more individuals feel responsible for that behavior (Rezaei et al., 2019). Understanding the positive consequences of buying an electric car and the negative consequences of a conventional car gives rise to a sense of consumer responsibility for the environmental damage caused. Ascription of responsibility positively and significantly affects the personal norms of electric car consumers in Indonesia. An individual's sense of responsibility for the adverse consequences of ignoring environmentally friendly behavior gives individuals a sense of moral obligation to follow such behavior (López-Mosquera et al., 2014). Similarly, stated by Rezaei et al. (2019) that AR plays an important role in generating and strengthening personal norms, and only when these conditions are met, personal norms will be active. A sense of responsibility for environmental damage caused by conventional cars triggers the emergence of norms that oblige them to act according to the moral values they hold to be able to buy an electric car.

Perceived consumer effectiveness positively and significantly affects the personal norms of electric car consumers in Indonesia. This finding is consistent with previous research that perceived consumer effectiveness positively affects personal norms (Asadi et al., 2021; Song et al., 2019). Consumers who have the perception that they are able to create better air conditions from their consumption behavior create a moral obligation to buy an electric car. However, the relationship between perceived consumer effectiveness and purchase intention of electric cars did not prove significant. This finding contradicts previous studies, which found that perceived consumer effectiveness has a positive and significant effect on intention (Kabadayı et al., 2015; Vermeir & Verbeke, 2008). Even though consumers know that buying an electric car can solve the air pollution problem, it is not realized in a plan to buy an electric car. This can be caused by individual factors, namely limited funds, or it can be due to situational factors, such as the existence of needs that are considered more urgent than buying an electric car to solve air pollution problems.

Perceived value positively and significantly affects the attitude of electric car consumers in Indonesia. This finding is in accordance with previous research that perceived value positively affects attitude (Asadi et al., 2021; Kim & Park, 2019). In generating a positive attitude towards purchasing an electric car, a cognition process occurs that involves beliefs that buying an electric car provides benefits that are worth it when compared to the sacrifice of money spent. However, the relationship between perceived value and purchase intention of electric cars did not prove significant. This finding contradicts previous studies, which found that perceived value has a positive and significant effect on intention (Aini et al., 2019; Chen et al., 2012; Li & Shang, 2020). In the High Involvement Hierarchy of Effects, the process of attitude formation starts from cognition, affect, and behavior. Consumers do not feel affection for electric cars, so there is no intention to plan to buy an electric car.

From the perspective of TPB, the only factor positively and significantly affects the intention to purchase electric car is Perceived behavioral control. This finding is

consistent with previous research that perceived behavioral control positively influences the purchase intention of electric cars (Wang et al., 2016), and in line with the Theory of Planned Behavior that perceived behavioral control affects intention (Ajzen, 1991). The easier a person is or has control over buying an electric car, the stronger the intention to buy it. This proves that the availability of funds is very important in encouraging the realization of a plan to buy an electric car. On the other hands, attitude negatively but insignificantly affects the purchase intention of electric car consumers in Indonesia. This finding contradicts previous research, which found that attitude has a positive and significant effect on intention (Asadi et al., 2021; Shi et al., 2017; Xiang Zhang et al., 2018). This finding can be interpreted that even though a consumer has a positive attitude towards the intention to buy an electric car, it is not able to be realised into an intention to buy an electric car, even weaken it. Subjective norm positively affects the purchase intention of electric car consumers in Indonesia but is not significant. This finding contradicts the results of previous research, which found that subjective norm has a positive effect on the purchase intention of electric cars (Asadi et al., 2021). This marks that others' opnion does not influence the intention to buy an electric car. Even though the individual is important, it still cannot significantly influence the purchase intention of an electric car from consumers.

Financial incentive policies positively influence the purchase intention of electric car consumers in Indonesia but are not significant. This finding contradicts the results of previous research, which found that financial incentive policies negatively affect the purchase intention of electric cars (Asadi et al., 2021). This finding also contradicts the results of Lin and Wu (2018), that found the subsidies from the government for the purchase will have a strong impact to purchase intention. But this finding confirms Wang et al. (2018), that found the effect of financial incentive policy on consumer's intention to adopt EVs was not significant in China consumers. When looking at the form of incentives provided by the government to prospective electric car buyers, the amount that must be spent by consumers is still quite expensive. So that incentives are not significant in encouraging the intention to buy an electric car.

In the perspective of TAM, perceived usefulness positively and significantly affects the purchase intention of electric car consumers in Indonesia. This finding is consistent with previous research where perceived usefulness positively influences the purchase intention of electric cars (Wang et al., 2018; Wu et al., 2019). In this study, the perception held by consumers in Indonesia that electric cars are useful in improving their health is strong in influencing future electric car purchase plans. Perceived usefulness positively and significantly affects the attitude of electric car consumers in Indonesia. This finding is consistent with previous research where perceived usefulness positively affects attitude (Vafaei-Zadeh et al., 2022; Wang et al., 2018; Wu et al., 2019). The process of consumer cognition in Indonesia related to the positive impact of electric cars on health creates positive consumer feelings toward electric cars, which leads to a positive attitude toward purchasing electric cars. Perceived ease of use positively and significantly affects the attitude of electric car consumers in Indonesia.

This finding is consistent with previous research where perceived ease of use positively affects attitude (Vafaei-Zadeh et al., 2022; Wu et al., 2019). With the various conveniences offered by electric cars in their use, consumers in Indonesia believe that using electric cars can improve the quality of their health.

Conclusion

This study investigated how the factors that drive the intention from Theory of Planned Behavior (TPB), Norm Activation Model (NAM), and Technology Acceptance Model (TAM) affecting the purchase intention of electric cars. Other factors outside the three theories were obtained from previous research. Based on the results, perceived usefulness from TAM and perceived behavioral control from TPB were the two factors positively and significantly affect purchase intention of electric cars.

The research findings reveal significant departures from prior studies, highlighting crucial theoretical implications. Notably, two key drivers derived from the Theory of Planned Behavior, subjective norm and attitude, were found to be insignificant in shaping the intention to purchase electric cars in the Indonesian context. This suggests that even figures considered influential in society cannot stimulate the desire to buy electric cars, and attitudes do not readily translate into behavioral changes within this group of potential consumers. Furthermore, personal norms, as per the Norm Activation Model theory, were also deemed ineffective in influencing purchasing intentions, despite a moral inclination to buy electric cars. This disparity may be attributed to personal financial constraints hindering the realization of this obligation. In addition, the research indicated that financial incentive policies provided by the government failed to significantly impact purchase intentions, primarily due to the continued high cost of electric cars even with incentives. Moreover, perceived value was found to be a non-significant factor in shaping the intention to buy electric cars, suggesting that despite consumers' cognitive awareness of electric cars, they lack a genuine affinity for the technology, resulting in a lack of intent to purchase. These findings have far-reaching implications for the development of strategies to promote electric car adoption in Indonesia, emphasizing the need to consider distinct socio-cultural, economic, and attitudinal factors in policy and marketing initiatives.

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