



## Understanding Electric Vehicle Purchase Intentions Through the Technology Acceptance Model



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### Abstract

Electric vehicles represent a new technology and an environmentally friendly transportation option for the community. This study analyzes the application of the Technology Acceptance Model (TAM) to understand the purchase intention of electric vehicles among people in Denpasar City. The research involved 200 respondents who had never owned an electric vehicle, selected through purposive sampling. Data were collected via questionnaires and analyzed using SEM-PLS. The study indicates that perceived usefulness and perceived ease of use have a significant and positive impact on users' attitude toward using electric vehicles. In addition to this, both perceived usefulness, perceived ease of use, and attitude toward using electric vehicles also directly contribute to purchase intention. Moreover, attitude toward using electric vehicles serves as a partial mediator in the relationship between perceived usefulness, perceived ease of use, and purchase intention. Based on these findings, companies should highlight product advantages such as responsive acceleration, comfortable driving, extended travel range, and smart features. Expanding dealer and authorized workshop networks and increasing public awareness about the environmental benefits of electric vehicles are also important. Governments are encouraged to increase public charging infrastructure, implement carbon emission-based tax policies, and provide incentives for electric vehicle users.

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## 1 Introduction

Environmental damage has become a global issue that is no longer foreign to the world community in recent decades. Evidence of environmental damage has been shown by scientists and environmental observers, one of which is global warming (Sagiyanto & Qibtiyani, 2021). One of the causes of global warming is oil-fueled vehicles because they produce high greenhouse gases (Gultom et al., 2023). Allowing oil-powered vehicles to be used more and more will increase greenhouse gas emissions, making it important to limit their use (Ghaniyyu & Husnita, 2021). The Indonesian government's response to limiting the use of oil-fueled vehicles is to encourage the use of vehicles with energy-efficient and low-emission engines, namely electric vehicles.

Electric vehicles are an environmentally friendly means of mobility for the community, Electric vehicles are driven by electrical energy generated from various sources, including batteries and renewable energy (Bryła et al., 2022). The efforts made by the Indonesian government to encourage people's intention to buy electric vehicles are by issuing Presidential Regulation Number 79 of 2023 concerning Amendments to Presidential Regulation Number 55 of 2019 concerning Acceleration of the Battery-Based Electric Motor Vehicle Program for Electric Transportation. The Indonesian government also continues to strive to improve electric vehicle infrastructure nationally by continuing to build Public Electric Vehicle Charging Stations (Aprillia et al., 2024).

The government's efforts to encourage the public to switch to electric vehicles have not immediately resulted in people adopting electric vehicles. Revealed from the data from the Charta Politica survey on public interest in buying electric vehicles conducted on 1,220 respondents throughout Indonesia on September 6-13, 2022. Results showed that 61 percent of participants reported a lack of interest in buying electric vehicles (Kompas.com, 2023). The results of the Charta Politica survey are in line with data from a national survey conducted by Litbang Kompas in June 2024 in a discussion at the GAIKINDO Indonesia International Auto Show (GIAS) 2024 automotive exhibition arena regarding public interest in electric vehicles, which found that the majority of respondents, namely 54 percent, stated that they were not interested in buying electric vehicles (Kompas.com, 2024). The survey indicates that the interest of Indonesians in using electric vehicles is currently low.

A preliminary survey involving 50 people in Denpasar City, Bali, was conducted to confirm consumers' purchase intentions toward electric vehicles. Bali Province was chosen as the location for this research because of its historical connection to the use of electric vehicles at various international conferences, then Denpasar City was chosen as the survey location because based on data from the Bali Provincial Transportation Agency, Denpasar City is the location with the most electric vehicle dealers in Bali Province (Dinas Perhubungan Pemerintah Provinsi Bali, 2023) so it is one of the potential market areas for electric vehicle sales. The preliminary survey results reveal that just 14 out of 50 respondents expressed an intention to purchase an electric vehicle, even only 12 out of 50 people stated that they would plan to switch from fuel-powered vehicles to electric vehicles. The results of the preliminary survey show that the purchasing intention of the Denpasar City community towards electric vehicles is still low.

Purchase intention is how likely a customer is to buy a brand and service, or how likely a customer is to switch from one brand to another (Kotler & Keller, 2016). Purchase intention, as identified in the research conducted by Permana et al. (2023), is affected by perceived usefulness and perceived ease of use. These two factors are viewed as the core drivers of behavioral intention to use new technology within the framework of the Technology Acceptance Model (TAM).

The Technology Acceptance Model (TAM) is a theory first proposed by Davis that models how users accept and use new technology. TAM theory states that an individual's intention to adopt technology is influenced by perceived usefulness and perceived ease of use. Davis further explains that behavioral intention to use technology is influenced by one's attitude toward using it and the perceived usefulness. Perceived usefulness refers to the belief that using a system will enhance performance, while perceived ease of use refers to the expectation that the system will be easy to use. Attitude towards using is a person's positive or negative response based on these perceptions, which ultimately affects their intention to use the technology (Davis, 1989).

Perceived usefulness describes how much consumers believe that innovations such as electric vehicles can improve the efficiency of their travel (Shanmugavel & Micheal, 2022). If the individual assumes that technology is useful, then they will use it (Asmarina et al., 2022). Worasatepongsa & Prakhayanon (2022) study stated that perceived usefulness has a significant effect on the purchase intention of electric cars among Thai consumers. Previous research conducted by Jaiswal et al. (2022) and Bektaş & Alçura (2024) have shown consistent results with these findings. Different research results were found by Halim et al. (2020); Permana et al. (2023); and Mulyani et al. (2021), which indicated that perceived usefulness has no significant influence on the intention to purchase electric vehicles in Indonesia.

Research conducted by [Butt & Singh \(2023\)](#), stated that other factors besides perceived usefulness also influence individual purchase intention towards purchasing electric vehicles, namely perceived ease of use. [Syaharani & Yasa \(2022\)](#) state that perceived ease of use refers to how easy consumers perceive a system to be to use. Research by [Permana et al. \(2023\)](#) found that perceived ease of use is a strong factor in influencing drivers' intention to use electric vehicles. Similar research results were also found by research by [Xu et al. \(2020\)](#), [Sun & Lee \(2024\)](#), and [Bektaş & Alçura \(2024\)](#). Different results were found by research by [Fatmawati & Ali \(2021\)](#) and [Azizah & Andarini \(2023\)](#), which stated that perceived ease of use had no significant effect on intention to use.

Inconsistent results from earlier studies about how perceived usefulness and perceived ease of use affect purchase intention suggest that additional research is needed, with the attitude variable as a mediating factor. Attitude is the core of a person's feelings of liking or disliking a particular object ([Sangadji & Sopiah, 2014](#)). [Wang et al. \(2022\)](#), research states that attitude is the most important predictor of consumer intention to purchase electric vehicles. Based on the phenomena that occur in society and the existence of research gaps in previous studies, this research needs to be conducted.

This study aims to analyze the influence of perceived usefulness and perceived ease of use on purchase intention, and to analyze the role of attitude toward using electric vehicles as a mediating variable in the influence of perceived usefulness and perceived ease of use on the purchase intention of electric vehicles in society in Denpasar City. This study's results are expected to enrich insights related to the Technology Acceptance Model (TAM) framework. It is also expected to be a consideration and benchmark for electric vehicle business actors and the government in formulating policies and making decisions.

Thus, the research hypotheses can be developed as follows:

[Worasatepongsa & Prakthayanon \(2022\)](#) stated that the perceived usefulness factor has a positive effect on the intention to purchase electric cars among Thai consumers. This proves that user perceptions of the benefits received in using new technology have a fairly direct role in creating purchase intentions. Consistent with the studies by [Kamal et al. \(2020\)](#), [Kurniawan & Samryn \(2024\)](#), and [Belmonte et al. \(2024\)](#), perceived usefulness was found to have a significant and positive impact on purchase intention.

H1 : Perceived usefulness has a positive and significant effect on purchase intention

Research by [Permana et al. \(2023\)](#) found that perceived ease of use is a strong factor in influencing drivers' intention to use electric vehicles. This statement is supported by findings from [Xu et al. \(2020\)](#); [Nugraha et al. \(2021\)](#); [Lee et al. \(2021\)](#), and [Sun & Lee \(2024\)](#) showing that perceived ease of use positively influences South Koreans' future electric vehicle usage intentions.

H2 : Perceived ease of use has a positive and significant effect on purchase intention

Perceived usefulness encompasses awareness of the environmental benefits of electric vehicles, which in turn influences consumer attitudes. The greater the knowledge consumers have about the ecological benefits of electric vehicles, the stronger their positive attitude is likely to become ([Matubatuba & De Meyer-Heydenrych, 2022](#)). The results correspond with studies by [Gusni et al. \(2020\)](#); [Jaiswal et al. \(2022\)](#); [Bernando & Ramli \(2023\)](#); [Rodríguez-López et al. \(2024\)](#), and [Rahmayanti et al. \(2021\)](#), indicating that perceived usefulness positively affects attitude.

H3 : Perceived usefulness has a positive and significant effect on attitudes toward using electric vehicles.

[Kamajaya & Fachrodji \(2023\)](#) revealed a positive and significant correlation between perceived ease of use and attitudes toward pure electric vehicles among Indonesians, indicating that greater perceived ease of use strengthens individuals' attitudes toward these vehicles. This statement is in line with the research results of [Mulyono & Premananto \(2022\)](#); [Vafaei-Zadeh et al. \(2022\)](#), [Liesa-Orús et al. \(2023\)](#), and [Bernando & Ramli \(2023\)](#), who found that Attitudes toward using pure electric vehicles were positively and significantly affected by perceived ease of use.

H4 : Perceived ease of use has a positive and significant effect on attitudes toward using electric vehicles.

[Ong et al. \(2023\)](#) revealed that consumers' positive attitudes toward hybrid cars affect their buying intentions, meaning that if consumers view hybrid cars positively, they are more likely to intend to buy them. This finding aligns with the research outcomes of [Lestari et al. \(2020\)](#), [Rahmayanti et al. \(2021\)](#), [Riptiono \(2022\)](#), and [Naufal et al. \(2024\)](#) also stated that the attitude variable has a positive and significant effect on the intention to buy electric cars in the Jabodetabek community.

H5 : Attitude towards using electric vehicles has a positive and significant effect on purchase intention

Individuals are more likely to form a positive attitude towards technology and form an intention to accept it if the technology is proven to be a useful utility (Sinaga & Rofianto, 2024). A positive attitude formed through the benefits felt by consumers leads to purchase intentions (Khotimah et al., 2022). This finding aligns with the research outcomes of Khotimah et al. (2022) and Jaiswal et al. (2022), which stated that attitude partially mediates the influence of perceived usefulness on the intention to adopt electric cars.

H6 : Attitude toward using electric vehicles can mediate the influence of perceived usefulness on purchase intention.

Jaiswal et al. (2022) found evidence that perceived ease of use exerts a significant and positive effect on attitudes and the intention to purchase. Perceived ease of use is the individual's subjective judgment about the simplicity of using a technology, leading to favorable consumer attitudes and adoption intentions for electric vehicles.

H7 : Attitude toward using electric vehicles can mediate the influence of perceived ease of use on purchase intention.

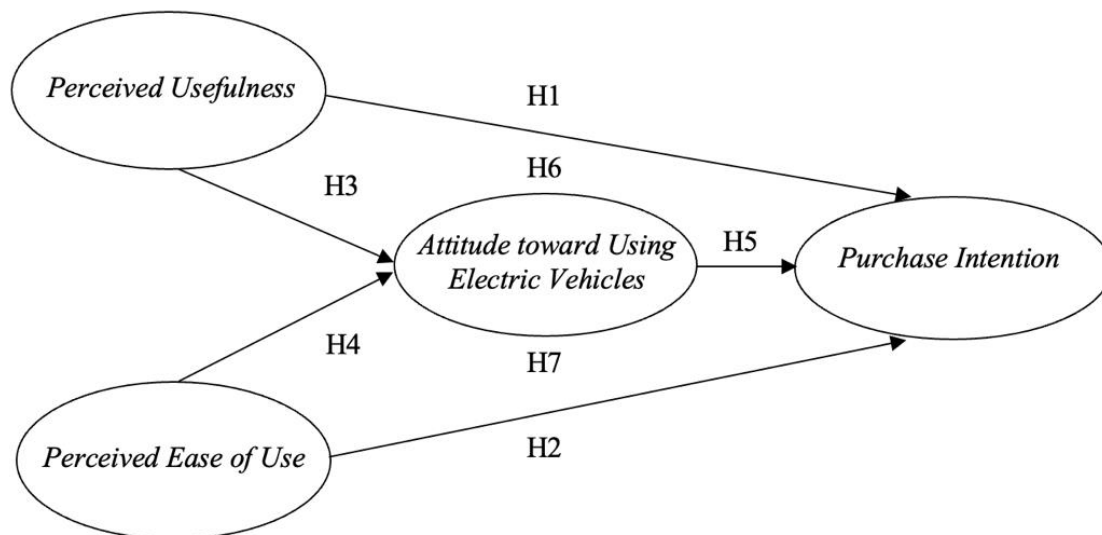


Figure 1. Framework Model

## 2 Materials and Methods

The study applies an associative quantitative approach carried out with the population of Denpasar City, Bali Province. The variables in this study consist of four variables, namely perceived usefulness and perceived ease of use as exogenous variables. Purchase intention as an endogenous variable and attitude toward using electric cars as a mediating variable. The population of this study includes all residents in Denpasar City who have never purchased an electric vehicle. The sample used was 200 respondents. The sampling method used was non-probability sampling purposive sampling technique with respondent criteria: 1) Domiciled in Denpasar City; 2) Minimum age 17 years; 3) Minimum have completed high school education; 4) Have income; 5) Have never purchased an electric vehicle. The method used to collect data is a questionnaire distributed online through social media in the form of a Google Form and offline to booths and electric vehicle dealers around the Denpasar City area. The collected data were analyzed using the Structural Equation Modeling (SEM) application with the Partial Least Square (PLS) approach.

Table 1  
Variables and Measurements

Variables	Indicator Code	Measurements	References
Purchase Intention	Y <sub>1</sub>	Willing to buy an electric vehicle in the future	Wang et al. (2023), and Bhutto et al. (2022)
	Y <sub>2</sub>	Will try to buy an electric vehicle in the future	
	Y <sub>3</sub>	Have the intention to buy an electric vehicle	
	Y <sub>4</sub>	Considering buying an electric vehicle as my transportation option	
	Y <sub>5</sub>	Planning to switch from fuel-powered vehicles to electric vehicles in the future	
Perceived Usefulness	X <sub>1.1</sub>	The use of electric vehicles contributes to reducing carbon emissions and energy consumption	Jaiswal et al. (2022) and Naufal et al. (2024)
	X <sub>1.2</sub>	Electric vehicles play a role in improving environmental health	
	X <sub>1.3</sub>	The use of electric vehicles can reduce household expenses	
	X <sub>1.4</sub>	Electric vehicles provide higher efficiency in daily travel and improve my quality of life	
	X <sub>1.5</sub>	Using electric vehicles could boost productivity	
	X <sub>1.6</sub>	Using electric vehicles could boost driving effectiveness	
Perceived Ease of Use	X <sub>2.1</sub>	Driving an electric vehicle is easy	Pamidimukkala et al. (2024)
	X <sub>2.2</sub>	Can easily drive an electric vehicle to various locations I want to	
	X <sub>2.3</sub>	The experience of using electric vehicles will be clear and easily understood	
Attitude Toward Using Electric Vehicles	M <sub>1</sub>	Assuming responsibility for environmental protection by opting for electric vehicles as a green alternative	Sun & Wang (2020) and Wang et al. (2023)
	M <sub>2</sub>	Encouraging the use of electric vehicles	
	M <sub>3</sub>	Dedicated to adopting electric vehicles as part of a commitment to environmentally friendly products	
	M <sub>4</sub>	Buying an electric vehicle is a good thing	
	M <sub>5</sub>	Buying an electric vehicle is a wise thing.	

(Source: Data Processed, 2025)

### 3 Results and Discussions

The number of respondents in this study was 200 people. The majority were male (52.5%) as men are generally more familiar with automotive products compared to women. Most respondents were aged 28–38 years (36.5%) because this age group typically enters a stable career phase with better income. The highest level of education was dominated by those with a Bachelor's degree (47%), as this level of education is considered more capable of understanding new technologies such as electric vehicles. The most common occupation was entrepreneur (35.5%), who tend to have higher incomes. In terms of income, most respondents earned between IDR 8,000,000 and IDR 13,000,000 (39.5%), which allows them to consider purchasing electric vehicles, which are relatively more expensive than fuel-powered vehicles.

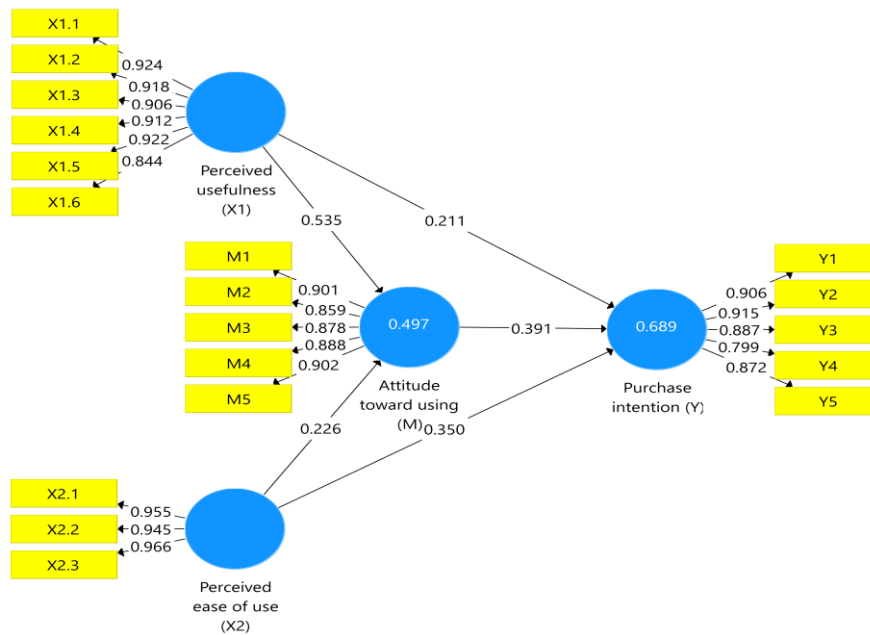


Figure 2. Structural Research Model

An outer model evaluation was performed to assess the validity and reliability of the measurement indicators. The outer loading test demonstrated that all loading factor values for the indicators are above the 0.70 threshold. This signifies that each indicator has a strong correlation with the construct it measures, making them valid in representing the research variables. Furthermore, the Average Variance Extracted (AVE) values for the variables of purchase intention, perceived usefulness, perceived ease of use, and attitude toward using electric vehicles are all above 0.50, indicating that the model is acceptable. All variables show Composite Reliability and Cronbach’s Alpha scores exceeding 0.70, indicating good reliability.

Table 2  
Construct Validity and Reliability

Variables	Indicator Code	Outer Loadings	AVE	Cronbach’s Alpha	Composite Reliability
Purchase Intention	Y <sub>1</sub>	0,906	0,769	0,924	0,943
	Y <sub>2</sub>	<b>0,915</b>			
	Y <sub>3</sub>	0,887			
	Y <sub>4</sub>	0,799			
	Y <sub>5</sub>	0,872			
Perceived Usefulness	X <sub>1.1</sub>	<b>0,924</b>	0,913	0,952	0,969
	X <sub>1.2</sub>	0,918			
	X <sub>1.3</sub>	0,906			
	X <sub>1.4</sub>	0,912			
	X <sub>1.5</sub>	0,922			
	X <sub>1.6</sub>	0,844			
Perceived Ease of Use	X <sub>2.1</sub>	0,955	0,819	0,956	0,964
	X <sub>2.2</sub>	0,945			
	X <sub>2.3</sub>	<b>0,966</b>			
Attitude Toward Using	M <sub>1</sub>	0,901	0,785	0,931	0,948
	M <sub>2</sub>	0,859			
	M <sub>3</sub>	0,878			

Variables	Indicator Code	Outer Loadings	AVE	Cronbach's Alpha	Composite Reliability
Electric Vehicles	M <sub>4</sub>	0,888			
	M <sub>5</sub>	<b>0,902</b>			

(Source: Data Processed, 2025)

Table 3 demonstrates that the correlation between each variable and its indicators is stronger than the correlation with the indicators of other variables. For example, purchase intention (Y) shows a stronger correlation with its indicators compared to the indicators of perceived usefulness (X1), perceived ease of use (X2), and attitude toward using electric vehicles (M). Similarly, the variables X1, X2, and M each demonstrate the highest correlation with their indicators compared to those of other variables. Thus, all indicators for each variable in this study meet the criteria for validity.

Table 3  
Cross-Loading Test Results

Indicator Code	Purchase intention	Perceived usefulness	Perceived ease of use	Attitude toward using
Y <sub>1</sub>	<b>0,906</b>	0,653	0,679	0,713
Y <sub>2</sub>	<b>0,915</b>	0,629	0,731	0,686
Y <sub>3</sub>	<b>0,887</b>	0,607	0,584	0,653
Y <sub>4</sub>	<b>0,799</b>	0,612	0,521	0,511
Y <sub>5</sub>	<b>0,872</b>	0,609	0,599	0,652
X <sub>1.1</sub>	0,703	<b>0,924</b>	0,596	0,657
X <sub>1.2</sub>	0,631	<b>0,918</b>	0,576	0,611
X <sub>1.3</sub>	0,680	<b>0,906</b>	0,654	0,642
X <sub>1.4</sub>	0,668	<b>0,912</b>	0,626	0,648
X <sub>1.5</sub>	0,559	<b>0,922</b>	0,537	0,570
X <sub>1.6</sub>	0,588	<b>0,844</b>	0,567	0,571
X <sub>2.1</sub>	0,680	0,630	<b>0,955</b>	0,550
X <sub>2.2</sub>	0,696	0,600	<b>0,945</b>	0,560
X <sub>2.3</sub>	0,673	0,655	<b>0,966</b>	0,547
M <sub>1</sub>	0,671	0,610	0,503	<b>0,901</b>
M <sub>2</sub>	0,711	0,644	0,605	<b>0,859</b>
M <sub>3</sub>	0,607	0,565	0,444	<b>0,878</b>
M <sub>4</sub>	0,640	0,605	0,500	<b>0,888</b>
M <sub>5</sub>	0,628	0,596	0,492	<b>0,902</b>

(Source: Data Processed, 2025)

The inner model assessment was carried out by examining the R-square and Q-square values to evaluate how well the model explains the endogenous variables. The attitude toward using electric vehicles has an R-square value of 0.497, which means that 49.7% of its variance is explained by perceived usefulness and perceived ease of use, with the remaining 50.3% attributed to factors outside this model. The purchase intention variable has an R-square value of 0.689, indicating that 68.9% of its variation is accounted for by perceived usefulness, perceived ease of use, and attitude toward using electric vehicles, while 31.1% is influenced by other external factors. Based on these R-square values, the Q-square value was calculated to be 0.843, indicating that the model has very strong predictive relevance, as it explains 84.3% of the information contained in the research data.

Table 4  
Hypothesis Testing

Hypothesis	Correlation Coefficient	<i>T-statistics p values</i>		Description
Direct Effect				
<i>Perceived usefulness -&gt; Purchase intention</i>	0,211	3.292	0,001	Signifikan
<i>Perceived ease of use -&gt; Purchase intention</i>	0,350	5.589	0,000	Signifikan
<i>Perceived usefulness -&gt; Attitude toward using</i>	0,535	7.717	0,000	Signifikan
<i>Perceived ease of use -&gt; Attitude toward using</i>	0,226	3.231	0,001	Signifikan
<i>Attitude toward using -&gt; Purchase intention</i>	0,391	6.433	0,000	Signifikan
Indirect Effect				
<i>Perceived usefulness -&gt; Attitude toward using -&gt; Purchase intention</i>	0,209	4.244	0,000	Signifikan
<i>Perceived ease of use -&gt; Attitude toward using -&gt; Purchase intention</i>	0,088	0.026	0,001	Signifikan

(Source: Data Processed, 2025)

Table 4 demonstrates acceptance of Hypothesis 1, showing that perceived usefulness positively and significantly affects electric vehicle purchase intention in Denpasar City, with a coefficient of 0.211 and a p-value of 0.001 (<0.05). This means that the better the perceived benefits of electric vehicles are felt by the community, the higher the purchase intention for electric vehicles. Hypothesis 2 is confirmed as perceived ease of use exerts a significant positive influence on purchase intention, with a coefficient value of 0.350 and a p-value of 0.000 (less than 0.05). The simpler people find it to operate electric vehicles, the stronger their intention to purchase.

The acceptance of Hypothesis 3 is indicated by the significant positive effect of perceived usefulness on attitudes toward electric vehicle use, shown by a coefficient of 0.535 and a p-value below 0.05. When benefits are perceived strongly, the community's attitude toward using electric vehicles becomes more positive. Hypothesis 4 is confirmed as perceived ease of use significantly and positively influences attitudes toward using electric vehicles, with a coefficient of 0.226 and a p-value of 0.001 (<0.05). Greater ease of use fosters a more positive attitude toward electric vehicles. The findings confirm Hypothesis 5, indicating that a positive attitude toward electric vehicle usage has a significant effect on purchase intention, demonstrated by a coefficient of 0.391 and a p-value below 0.05. Stronger positive attitudes correlate with higher intention to buy.

Hypothesis 6 is supported as attitude toward using electric vehicles serves as a mediator between perceived usefulness and purchase intention, with a mediation coefficient of 0.209 and a p-value of 0.000 (<0.05). Similarly, Hypothesis 7 is confirmed since attitude toward using electric vehicles mediates the relationship between perceived ease of use and purchase intention, reflected by a mediation coefficient of 0.088 and a p-value of 0.001 (<0.05).

Both mediations are considered partial complementary mediations based on the guidelines by Hair et al. (2017), meaning that the mediator (attitude toward using electric vehicles) only partly accounts for the connection between the independent variables (perceived usefulness and perceived ease of use) and purchase intention. It shows that both the direct and indirect effects are positive and statistically significant.

The results of this study confirm the Technology Acceptance Model (TAM) theory and are consistent with previous research findings. The significant positive effects of perceived usefulness and perceived ease of use on both attitude toward using and purchase intention support the core constructs of TAM. Additionally, the partial complementary mediation role of attitude toward using electric vehicles further strengthens the understanding of how these perceptions influence purchase intention, aligning well with established theoretical and empirical evidence in the field.

Based on the highest outer loading values for each variable, the practical implication of this study is that electric vehicle companies and the government should concentrate on the key factors that most strongly influence consumers' purchase intentions. Companies are expected to develop marketing strategies that encourage purchase planning through incentives and financing ease, highlight environmental benefits, and ensure the ease of use and understanding of the product. Additionally, communication should strengthen the belief that buying an electric vehicle is a wise decision. The government also needs to support this effort with pro-environment policies, educational programs, and fiscal incentives to accelerate the adoption of electric vehicles in society.

## 4 Conclusion

The research findings indicate that perceived usefulness positively and significantly impacts both the purchase intention and the attitude toward using electric vehicles in Denpasar. Similarly, perceived ease of use also positively and significantly influences these two variables. A positive attitude toward using electric vehicles significantly increases the public's purchase intention. Moreover, the attitude toward using electric vehicles functions as a complementary partial mediator, enhancing the influence of perceived usefulness and perceived ease of use on purchase intention, while the direct effects of these variables continue to be significant.

Electric vehicle companies and the government in Denpasar City need to enhance purchase intention by prioritizing perceived usefulness, perceived ease of use, and attitudes toward electric vehicle adoption. To improve perceived usefulness, companies need to emphasize benefits such as responsive acceleration and comfort, while the government can provide dedicated lanes and priority access. To enhance perceived ease of use, companies should increase vehicle range, expand dealer and service networks, and add smart features, while the government should improve charging infrastructure. For attitude, education on environmental benefits through campaigns and influencers should be strengthened, alongside government tax incentives for eco-friendly vehicles. These efforts aim to foster positive attitudes and increase the purchase intention of electric vehicles in Denpasar.

For future researchers, it is recommended to include additional variables influencing electric vehicle purchase intention and expand the study scope beyond Denpasar City. Conducting research in other locations or with a broader coverage can provide more comprehensive insights and enhance the relevance and generalizability of the findings.

### *Conflict of interest statement*

The authors declared that they have no competing interests.

### *Statement of authorship*

The authors have a responsibility for the conception and design of the study. The authors have approved the final article.

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