International Journal of Application on Economics and Business (IJAEB)
Volume 2, Issue 2, 2024. ISSN: 2987-1972

EXAMINING THE FACTORS INFLUENCING THE INTENTION TO BUY AN ELECTRIC VEHICLE

Hendra Noor Saleh[1*], Haris Maupa[2], Andi Muhammad Sadat[2]

[1] Postgraduate Management Science, Universitas Tarumanagara, Jakarta, Indonesia
[2] Faculty of Economics. Universitas Negeri Jakarta, Jakarta, Indonesia
Email: shiyandisan@gmail.com

*Corresponding Author

Submitted: 16-01-2024, Revised: 08-02-2024, Accepted: 27-04-2024

ABSTRACT

Even though electric vehicles have been introduced for a long time, demand for electric vehicles still needs to be improved. Therefore, research on consumer adoption of electric vehicles needs to be carried out to fill the existing research gaps. This research examines the relationship between Perceived usefulness, Perceived ease of use, and Customers' experience on Intention to buy an electric vehicle. A total of 269 respondents who live in DKI Jakarta were collected through an online survey using a purposive sampling technique. Data processing was carried out using a PLS-SEM approach using Smart PLS3 software. The results show that all of the five proposed hypotheses are significant. This means that Perceived usefulness, Perceived ease of use, and Customers' experience are essential variables that can significantly influence customers' Intention to buy an electric vehicle. This research contributes to providing information for companies and regulators regarding understanding consumer behavior in purchasing electric vehicles.

Keywords: *Perceived Usefulness, Perceived Ease of Use, Customer Experience, Intention to Buy an Electric Vehicle*

1. INTRODUCTION

Electric vehicle (EV) products have experienced rapid growth and innovation in recent years. Manufacturers are trying to offer environmentally friendly alternative products to traditional fossil fuel engine vehicles. As consumers increasingly consider switching to electric vehicles, many considerations must be taken into account. Therefore, it is essential to understand what factors influence the consumer purchasing decision-making process. This study will explore the complex interactions between Perceived Usefulness, Ease of Use, and Customer Experience and their impact on electric vehicle purchase intentions.

Perceived Usefulness and Ease of Use are critical factors in the Technology Acceptance Model (TAM). The theory was first put forward by Davis pada tahnun 1986 [1] and is widely used to understand user adoption of new technology. In general, there are several essential variables in the TAM model. In this research, two important variables will be explored, namely, Perceived Usefulness refers to an individual's belief in the usefulness and practicality of a technology, and Ease of Use relates to the perception of the technology's simplicity and ease of use. In the context of electric vehicle use, Perceived Usefulness can include environmental benefits, cost savings, and suitability for daily commuting. Meanwhile, ease of use can consist of ease of charging and understanding electric vehicle technology.

New technology, of course, offers a unique experience for potential users. In this context, Customer Experience plays a vital role in shaping perceptions and purchasing intentions. This covers all interactions that consumers undertake with a reasonably broad scope, from pre-purchase research to post-purchase support. In the electric vehicle space, a positive Customer

Experience can include factors such as the quality of information available during the purchase journey, ease of maintenance, and availability of charging infrastructure.

Meanwhile, the intention to purchase an electric vehicle is an important factor among interrelated factors, which is also the focus of this research. Intent reflects a consumer's willingness to make a significant financial and lifestyle commitment to use a more sustainable and innovative mode of transportation. This is also what is often offered with the existence of electric vehicles today. Understanding the relationship between Perceived Usefulness, Ease of Use, and Customer Experience is critical for automakers, policymakers, and other stakeholders in the electric vehicle industry to design effective strategies to drive electric vehicle adoption.

The implementation of this research attempts to fill this gap. Seeks to examine how Perceived Usefulness, Ease of Use, and Customer Experience collectively influence electric vehicle purchase intentions. By analyzing these variables in depth, this research will provide valuable insights that can guide the development of marketing strategies, government incentives, and product improvements to accelerate the adoption of electric vehicles, thereby contributing to a more sustainable and environmentally conscious future.

The Technology Acceptance Model (TAM) is a widely used theoretical framework for understanding user acceptance and adoption of new technologies. This theory is also used in this research. This theory was first introduced by Davis in 1989 and has since been applied to a variety of domains, including the study of consumer intentions to purchase electric vehicles (EV) [2]. The TAM model is a theory that explains that a user's intention to adopt a technology can be influenced by two main elements: perceived benefits and ease of use. Perceived Usefulness: This refers to the degree to which a person believes that using a particular technology will improve their performance or make their life easier. In the context of electric vehicles, perceived benefits can be linked to lower operational costs, reduced environmental impact, and access to incentives and subsidies.

Perceived Ease of Use refers to the extent to which a person believes that using a particular technology will be free of effort or hassle. In the context of electric vehicles, perceived ease of use can be linked to factors such as the availability of charging infrastructure, vehicle range, and ease of finding charging stations. Previous research also found that several other actors were found to influence consumers' intentions to purchase electric vehicles, including perceived risk, which refers to the potential negative consequences or uncertainty associated with using a particular technology. In the context of electric vehicles, perceived risk can be linked to concerns over vehicle reliability, the availability of charging infrastructure, and the potential for battery degradation over time [2].

In research conducted by [3], intention to purchase an electric vehicle (EV) can also be influenced by several factors, including perceived usefulness, ease of use, and customer experience. These factors have also been widely explored to explain the adoption of technology products in various contexts, thereby providing broad insight into their impact on consumer behavior. In the literature, there are also many studies that attempt to explain the relationship between perceived usefulness and ease of use on the intention to purchase an electric vehicle.
Furthermore, Zhang, Ali, and Kanesan (2022) explains that Perceived Usefulness refers to the extent to which users believe that a technology or product can improve performance. In the EV context, perceived usefulness was found to have a significant positive relationship with consumers' behavioral intentions, or Perceived Usefulness can also refer to the benefits provided

to consumers [4]. It means that consumers who find electric vehicles valuable will most likely have the intention to buy them.

Meanwhile, according to [5], perceived ease of use is an important part that cannot be ignored, influencing consumers' intention to buy electric vehicles. A study of domestic energy-efficient vehicles in China found that consumers who found electric vehicles easy to drive had a higher perception of the benefits of purchasing electric vehicles. In line with [3] perceived ease of use has been identified as a mediating factor in the relationship between perceived usefulness and consumer behavioral intentions for electric vehicles.

The two aspects above must be distinct from consumer experience, as it is known that customer experience includes various aspects of user interaction with the products or services offered by manufacturers. Their experiences may include their perceptions of enjoyment, beliefs, and values. In the context of electric vehicles, customer experience has been shown to impact users' usage intentions directly [4]. In other words, the positive and satisfying customer experience can contribute to a higher intention to purchase an electric vehicle. By understanding the influence of perceived usefulness, ease of use, and customer experience on EV purchase intentions, manufacturers and policymakers can develop strategies to improve these factors and encourage EV adoption.

2. RESEARCH METHOD

As previously described, this research framework is based on the two main variables of the TAM Model, which were expanded by adding customer experience variables. The addition of this variable was used based on a literature review regarding consumer adoption of electric vehicles, which needs to consider the experience aspect. This aspect is at least a research gap, as stated by [6] regarding the need for exploration regarding consumer experience-based evaluation of electric vehicles. Conceptually, the relationship between variables in this
research can be seen in the Figure 1 below.

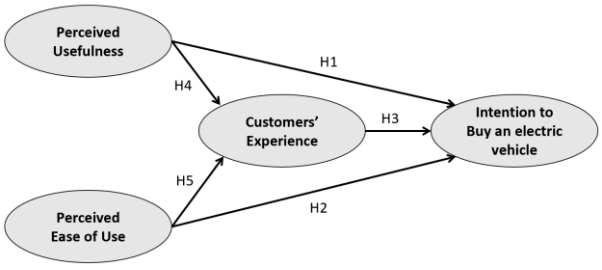

Figure 1. Conceptual model

Several researchers have previously studied the relationship between perceived usefulness and purchase intention of electric vehicles. [7] and [8] found that perceived usefulness significantly influences consumers' intention to purchase electric vehicles. This variable is one of the main drivers of perceived value and is positively related to consumer attitudes towards electric vehicles [9]. Furthermore, [8] explains that perceived usefulness has a positive relationship with consumer concern for the environment and perceived ease of use. These elements and perceived benefits contribute to consumers' intention to purchase an electric vehicle.

[10] found that environmental and economic perceptions regarding the use of electric vehicles proved to be the strongest predictors of consumers' intention to purchase electric vehicles.

Perceived usefulness, ease of use, and concern for the environment also have a positive relationship with consumers' intention to purchase an electric vehicle [8] . [11] findings show that the intention to adopt electric vehicles is directly and indirectly influenced by the predictor variables of attitude, perceived benefits, ease of use, and perceived risk, with financial incentive policies moderating.

However, the results of research conducted by [12] by combining the Acceptance Model-Theory of Planned Behavior (C-TAM-TPB) in Indonesia found that perceived usefulness does not directly influence the intention to purchase an electric vehicle but can influence it indirectly along with perceived ease of use. and price value. through attitude. In short, perceived usefulness is essential in shaping consumers' intention to purchase an electric vehicle. However, previous research still needs to include gaps in the form of contradictions regarding whether the perception of usefulness variable directly or indirectly influences the intention to buy an electric vehicle. This research will be tested again with the hypothesis that.
Hypotheses (H1): *Perceived Usefulness positively influences the consumers' intention to buy an electric vehicle.*

Perceived ease of use of a product has long been accepted as a variable that can influence behavioral intention. In the context of electric vehicles (EV), researchers also found that perceived convenience will influence consumer acquisition of intention to buy an electric vehicle. However, the relationship between these two variables tends to vary. As an example
The findings [11] show that the relationship between Perceived Ease of Use and intention to adopt electric vehicles has a direct and indirect relationship. Meanwhile, the results of research conducted by [13] on 692 respondents show that perceived ease of use positively affects consumers' intention to adopt electric vehicles. Likewise [14] found that the perceived ease of use factor was proven to positively impact people's intention to use electric vehicles in the future. Thus, perceived ease of use positively affects consumers' intention to purchase electric vehicles [15].

However, research conducted by [16] found that ease of use has an impact that hinders the adoption of electric vehicles. This research is relatively in line with [12], which shows that perceived usefulness does not directly influence the intention to purchase an electric vehicle. Perceived usefulness can influence EV purchase intentions indirectly through attitudes, perceived ease of use, and price value. Based on this gap, this research proposes a hypothesis:
Hypotheses (H2): *Perceived Ease of Use positively influences the consumers' intention to buy an electric vehicle.*

Consumers' intention to purchase electric vehicles is significantly influenced by their customer experience [17]. Various aspects of customer experience, such as behavioral experience, cognitive experience, affective experience, sensory experience, and social experience, all play a role in shaping consumers' tendencies to make purchases [18].
In short, by cultivating a pleasant experience for customers in the field of electric vehicles, companies can generate value and achieve a competitive advantage [10]. In addition, factors such as perceived support, benefits, and attitudes also influence consumer purchasing intentions [19]. However, concerns regarding the range of anxiety and perceived risk do not significantly impact purchase intention [20]. In short, a comprehensive understanding of customer experiences and efforts to improve perceived benefits and attitudes can increase consumers' intention to purchase electric vehicles. Departing from this explanation, the following hypothesis is formulated:

Hypotheses (H3): *Customers' experience positively influences consumers' intention to buy an electric vehicle.*

To find out how perceived usefulness impacts customer experience, researchers have investigated various aspects and components that influence customer experience, including feelings, emotions, and product characteristics [21] [22] [23]. However, few studies have focused on the relationship between perceived usefulness and customer experience, even though research has shown that providing a good customer experience is important. In the context of technology adoption, the relationship between Perceived Usefulness and customers' experience has long been an object of research. For example, research conducted by [24] on users of augmented reality (AR), perceived benefits were found to have a positive effect on customer satisfaction and repurchase intentions. This indicates that when customers see a technology or feature useful, it improves their overall experience, making them more likely to try it again.

In the context of online reviews, readers with a high level of construal perceive more usefulness in reviews, this shows that perceived usefulness is influenced by the reader's mindset [25]. while, the perceived benefits of augmented reality features on smartphones increase the convenience and experience of online shopping for cosmetic products [24]. However, in the context of m-health applications, perceived benefits were not found to significantly influence customer experience or intention to continue using the application [26]. Trust in the app was found to significantly influence customer experience and intent to continue using the app. This indicates the potential for another variable in the relationship between these two variables, namely the importance of perceived benefits in building trust so that it can improve the overall customer experience. Based on the arguments above, the following hypothesis is formulated:
Hypotheses (H4): *Perceived usefulness positively influences customers' experience of electric vehicles.*

The perceived ease of use of electric vehicles can positively influence customer experience. This influence can be observed in several aspects of electric vehicle ownership and travel in the literature. Research conducted by [27] found that customers who find electric vehicles ease to use tend to feel comfortable and familiar with the technology, resulting in a positive overall experience. Ease of use can also improve efficiency and comfort in owning and operating electric vehicles. For example, suppose customers find it easy to find and use charging stations, plan routes based on available charging infrastructure, and monitor vehicle battery status. In that case, they are more likely to have a positive experience [27].

Research conducted by [28] shows that perceived ease of use influences customer experience with electric vehicles. Experience using battery electric vehicles positively affects adoption willingness, which is influenced by subjective norms, perceived behavioral control, and attitudes. Actual user experiences with BEVs influence perceptions, attitudes, and adoption behavior, including brand image, self-identity, and innovation in the user interface [29]. Emotional concerns, product price, vehicle acceleration, and low engine noise levels considerably impact consumers' attitudes toward electric mobility (EM) options, which positively impact purchase intentions [30]. The suitability of an electric vehicle for personal needs is an important factor in the desire to purchase an electric vehicle [31]. The experience of electric vehicle owners shows that electric vehicles can replace internal combustion engine vehicles in many situations, and future purchasing decisions are influenced by more extended range, faster speed, and reasonable cost [32]. Based on this description, the following hypothesis is formulated:

Hypotheses (H5): *Perceived ease of use positively influences customers' experience of electric vehicles.*

Respondents were collected through an online survey by distributing questionnaires using Google-Forms via WhatsApp groups, Facebook, Instagram, and online to find out how three exogenous variables influence the intention to buy an electric vehicle. Sample requirements include being 17 years or older, having experience using electric vehicles, and residing in DKI Jakarta. The sampling procedure used in this research is a non-probability sampling method with a purposive sampling technique, because this technique makes it easier for researchers to collect data related to time and costs.

The research questionnaire was developed by adopting indicators from previous research. In general, the questionnaire is divided into two parts. The first part covers sample demographics, and the second part includes questions related to indicators of Perceived usefulness, Perceived ease of use, Customer experience, and Intention to buy an electric vehicle. The research scale performs a Likert scale where "strongly agree" is given a value of 1 and "strongly disagree" is given a value of 5. The sample size was determined based on suggestions from [33], namely at least five times the number of indicators used in research. Then, a minimum sample of 260 was obtained for this study. The data was processed using
SPSS v28 and Smart PLS 3.

The data analysis method applied in this research is Partial Least Squares Structural Equation Modeling (PLS-SEM) using Smart PLS3 software. This structural equation modeling method has been widely applied in social science research [34]. The analysis procedure was carried out in two steps as suggested by [35]. The first step evaluates the measurement model (outer model), and the second step assesses the inner model by testing the relationship between constructs using multiple regression. PLS-SEM focuses on predicting when estimating statistical models with structures that provide causal explanations [34]. This approach has been widely accepted and used in many social science disciplines and can be operated even with relatively small sample sizes.

3. RESULTS AND DISCUSSIONS

As stated, research data was collected through an online survey using a Google Form distributed via several social media platforms. Questionnaires were distributed over the period 05-28 September 2023, and a total of 269 respondents were collected. Table 1 describes the profile of respondents in this study.

The table 1 shows that the composition of men and women is 67% and 33%, respectively. The majority of respondents are aged in the range of 26 – 34 years (43%), and the most dominant job as a businessman is 38%. Meanwhile, the majority of respondents (58%) had undergraduate education.

Table 1. Respondent Profile

Characteristics of Sample		frequency	Percent
Sex	Male	180	67%
	Female	89	33%
Ages	17 – 25 years	75	28%
	26 – 34 years	116	43%
	35 – 43 years	51	19%
	> 44 years	27	10%
Occupation	Civil Servants	85	32%
	Businessman	103	38%
	Employees	53	20%
	Students	24	9%
	Others	4	1%
Education	Highschool or below	51	19%
	Undergraduate	157	58%
	Postgraduate	61	23%

Research analysis was carried out using the PLS-SEM approach following the two-step SEM implementation approach recommended by [36]. The first is the measurement model by conducting confirmatory factor analysis (CFA), which aims to examine the construct validity and reliability of the measurement model. The next step is structural model analysis by looking at the effects and significance of each construct.

Tabel 2. Result of validity and reliabilitas test

	Use	**Eou**	**Exp**	**Int**
Use1	0.777			
Use2	0.879			
Uno5	0.893			
Uno7	0.813			
Eou2		0.817		
Eou3		0.761		
Eou5		0.841		
Eou6		0.757		
Eou7		0.715		
Exp1			0.833	
Exp3			0.879	
Exp4			0.823	
Exp5			0.865	
Exp7			0.920	
Int1				0.781
Int2				0.881
Int3				0.763
Int4				0.790
Int5				0.801
AVE	0.733	0.721	0.745	0.893
AVE Square	0.856	0.85	0.863	0.945
CR	0.807	0.901	0.782	0.813
α	0.707	0.819	0.770	0.715

Convergent validity shows whether the relationship between the latent construct and its reflective indicators is valid. This value can also be directly observed from the loading factor value contained in the path diagram. According [37] a loading value of 0.5 - 0.6 is considered sufficient. However, according to [38], the loading factor value has high validity if it is > 0.70. In the research, the loading factor value used was > 0.70 for each indicator of the latent variable.

Construct validity was examined by testing the average variance extracted (AVE) and composite reliability (CR). Table 2 below shows the values and calculations of AVE and CR and is recommended above 0.7. Values below 0.7 should be excluded from the research model. It can also be seen that Cronbach's Alpha values are above the limit of 0.70, which shows that the latent construct with its reflective indicators has met the standards of validity and reliability [34].

The next step is to evaluate the structural model, which can be seen through the determination coefficient (R^2). This value shows how large a percentage of the dependent variable is influenced/explained by the independent variables.

The results of data analysis in this study show that the value of R^2 = 0.593, which means that 58.3% of the variation of Intention to buy electric vehicle data is influenced by the variables Perceived usefulness, Perceived ease of use and Customer experience, while the remainder is influenced by other variables that were not included in the research. The R^2 value ranges from 0.19 = weak, 0.33 = moderate, while 0.67 = strong. Thus, the R^2 value in this study is in the moderate category, tends to be strong. This indicates that the three constructs moderately explain 73.4% of the variance in the research model.

To examine the influence of dependent variabels on dependent variable as proposed in the hypotheses. The results can be seen in the p-values as presented in table 3 below. It can be concluded that all of the proposed hypotheses are significantly related. In other words, the three independent variables, namely Perceived usefulness, Perceived ease of use and Customer experience, significantly influence Intention to buy an electric vehicle. This result is indicated by a p-value <0.05 = significant.

Meanwhile, the value shown by the Original Sample (O) reflects the path coefficient, which indicates how strong the influence of a variable is on other variables. The greater the path coefficient value, the stronger the influence of that variable on other variables. Complete results are presented in Table 3 below.

Table 3. Hypothesis Test Results

Hypothesis	Path	Original Sample (O)	P-Values	Sig
H1	Use → Int	0.235	0.013	Significant
H2	Eou → Int	0.157	0.010	Significant
H3	Exp → Int	0.418	0.004	Significant
H4	Use→Exp	0.316	0.000	Significant
H5	Eou→Exp	0.219	0.009	Significant

Based on the data analysis above, several conclusions can be drawn as follows:
1) Perceived usefulness significantly influences the intention to buy an electric vehicle. This means that an electric vehicle's perceived usefulness can significantly influence someone's intention to buy it. Perceived usefulness refers to the extent to which a person believes that using

an electric vehicle will benefit him [39]. This perception of usefulness can directly influence the purchase intention of an electric vehicle and the perception of ease of use. So, it is important to understand the factors that influence consumers' intentions to adopt electric vehicles, considering the impact of perceived usefulness.

2) Perceived Ease of Use significantly influences the intention to buy an electric vehicle. Ease of Use refers to the customer's perception of the comfort or level of difficulty when using a particular product or technology. In the context of electric vehicles (EVs), how consumers view EVs in terms of operating, charging, and maintaining electric vehicles significantly influences their intention to purchase electric vehicles. In other words, the perceived ease of use has a major impact on consumers' decision-making when considering whether to purchase an electric vehicle. In other words, if potential buyers find it easy to use an electric vehicle, it can positively impact their buying decision.

In line with the Technology Acceptance Model (TAM) idea, consumers are more likely to consider buying an electric vehicle if they feel the vehicle is easy to use. In other words, consumers are more likely to adopt and use new technology if they find it easy to use and convenient, encouraging them to buy it.

3) Customers' Experience significantly influences the intention to buy an electric vehicle. These results show that the experience of using an electric vehicle can significantly influence customers' willingness to buy it. Because electric vehicles are a relatively new product category, many consumers need more experience using them, which can lead to misunderstandings and reluctance to purchase. Research conducted by (Chaudhary and Kate, 2023) shows that factors related to customer experience, such as customer value and perceived benefits, can positively influence customer attitudes and intentions to purchase electric vehicles.

Research conducted by [41] and [42] shows that customer experience significantly influences the intention to purchase electric vehicles. This means that direct experience with electric vehicles can change consumer evaluations. Other research suggests that practical experience with electric vehicles has been shown to positively influence predictors of acceptance, such as visibility and observability [43]. In addition, emotional and social experiences significantly positively impact purchase intentions [44]. Therefore, customer experience, including direct experience with electric vehicles as well as emotional and social experiences, plays an essential role in shaping electric vehicle purchase intentions.

4) Perceived Usefulness influences customers' experience significantly. Perceived usefulness refers to a customer's perception of how a product or service can meet their needs or help solve a problem. When customers find a product or helpful service, they believe it provides value and fulfills their life goals. These positive perceptions contribute to a more enjoyable customer experience because they feel they are getting the benefits and their needs are being met. In the context of electric vehicles, manufacturers must be able to offer the best products to customers in order to create the best experience.

5) Perceived ease of use significantly influences the customers' experience. Perceived ease of use plays an essential role in shaping the customer experience of electric vehicles. This influence can be observed in various aspects of the electric vehicle adoption process. Customers' perceptions of how easy electric vehicles are to use can influence their intention to adopt the technology.

4. CONCLUSIONS AND SUGGESTIONS

A study conducted by [13] that explored the determinants of consumers' intention to adopt electric vehicles found that perceived ease of use of EVs was an important factor in shaping consumer attitudes towards electric vehicles. It means. If potential customers find electric vehicles challenging to use, they likely won't consider them a viable option for their transportation needs. This means that customers will not do EV adoption. Therefore, manufacturers must be able to offer EV products that meet the ease-of-use aspect and provide a good driving experience to customers.

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