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Understanding Consumer Purchase Intention for Electric Vehicles: The Role of Subsidy Types, Economic Benefits, and Facilitation Readiness

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ABSTRACT

The transportation sector significantly contributes to carbon emissions in Indonesia. To meet net zero emissions target by 2060, the government promotes a transition to electric vehicles (EVs). However, EV adoption remains below the 2030 target due to low consumer interest. Kompas survey revealed that 54.9% of respondents were unwilling to switch to EVs. This study investigates key factors influencing consumers' intention to purchase electric vehicles, focusing on electric cars in Indonesia. The research introduces a novel approach by separating financial subsidies into two categories: initial purchase subsidies (e.g., reductions in price, purchase tax, registration fee, loan interest rate) and long-term operational subsidies (e.g., reductions in annual tax, energy cost, maintenance expenses). It also considers perceived economic benefit and facilitation readiness as explanatory variables and examines the mediating role of economic benefit. Using Partial Least Squares Structural Equation Modeling (PLS-SEM), data were collected from respondents across numerous Indonesian regions. Results show all four variables significantly influence purchase intention, with long-term operational subsidies exert a stronger influence compared to initial purchase subsidies. Perceived economic benefit significantly mediates subsidy effects. These findings emphasize the need to strengthen subsidy schemes, improve infrastructure readiness, and enhance consumer education to boost EV adoption.

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1. INTRODUCTION

As reported in the Climate Transparency Report (2022), the transportation sector contributes around 25% of Indonesia's CO_2 emissions, ranking as the second-largest source of emissions after the energy sector. According to Santoso et al. (2020), the impact of the transportation sector is even more significant in major urban areas such as Jakarta, Surabaya, and Medan, where it contributes to nearly 50% of total air pollution.

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In response, the report from ESDM Report (2022) emphasized that replacing 140 million fossil fuel-powered vehicles with electric vehicles could potentially reduce CO_2 emissions by 100 million tons per year. This initiative aligns with Indonesia's goal to support net-zero emission target by 2060.

Despite this goal, the adoption of electric vehicles (EVs) in Indonesia remains limited. According to Nikel Media (2024), a Special Staff member of the Ministry of Energy and Mineral Resources (MEMR) reported that as of April 2024, only 109,576 electric two-wheelers and 23,238 electric four-wheelers had been registered. Furthermore, the Coordinating Ministry for Maritime Affairs and Investment emphasized that this figure remains far below the government's target of reaching 13 million electric two-wheelers and 2 million electric four-wheelers by 2030, as cited from Antara News (2024).

Further concern arises from public perception. According to Gaikindo Report (2024), a recent survey conducted by Kompas, one of Indonesia's leading national newspapers, revealed that 54.9% of 1,200 respondents across 38 provinces were reluctant to switch to electric vehicles. Various factors may contribute to the limited adoption of electric vehicles among Indonesian consumers. These include limited charging infrastructure, high operational costs, and relatively high purchase prices, all of which are considered significant barriers to electric vehicle adoption in Indonesia, as defined by Damayanti et al. (2020).

Due to the low interest and adoption of electric vehicles (EVs) in Indonesia and the numerous factors that influence consumer perceptions and decisions, it is essential to examine from the consumer perspective which factors affect the intention to purchase electric vehicles. Based on the observed phenomena juxtaposed with previous research, several studies have analyzed factors influencing consumers' purchase intention of EVs.

Previously, Samarasinghe et al. (2024) demonstrated that EV purchase intention in Sri Lanka was influenced by performance expectancy, social influence, and facilitating conditions. Subsequently, Butt and Singh (2023) showed that financial policies, environmental concerns, facilitating conditions, and perceived ease of use significantly affected purchase intention in Pakistan. Meanwhile, Hu et al. (2024) found that EV purchase intention in China was influenced by several perceived factors, including economic and psychological benefits, as well as financial, physical safety, and performance risks. Furthermore, Liu et al. (2021) concluded that economic compensation has a significant impact on perceived economic benefits, public trust, and perceived risks, which serve as mediating variables that ultimately influence the public acceptance of Waste-to-Energy Incineration Technology in China.

Referring to the Systematic Literature Review by Singh et al. (2020), the variation in financial subsidies varies significantly across countries, highlighting the need for further research to classify subsidy types (such as direct and indirect subsidies) for more accurate modeling of EV purchase intention in specific national contexts. Such bias is evident in Butt and Singh's (2023) research, where financial subsidies were treated as a single variable. This approach introduced limitations in identifying which type of subsidy has the most significant effect and in developing a clearer model.

Additionally, Huang et al. (2019) noted that existing research focuses on the direct relationships between factors and purchase intention, suggesting the need to explore mediating relationships among factors that influence purchase intention. Furthermore, the Systematic Literature Review by Ivanova and Moreira (2023) emphasized the importance of further research to identify variables that enhance perceived economic benefits in EVs, including examining how strongly financial subsidies influence perceived economic benefits.

Thus, the research questions are as follows::

(i) Q1: How do subsidies, perceived economic benefit, and facilitation readiness influence consumers' purchase intention of electric vehicles?

(ii) Q2: Which subsidy category (initial purchase subsidy or long-term operational subsidy) has a greater influence and contributes more to consumers' purchase intention of electric vehicles?

(iii) Q3: Does perceived economic benefit serve as a significant mediating variable bridging the influence of subsidies on consumers' purchase intention of electric vehicles?

This research is expected to assist policymakers in designing more effective subsidy schemes to increase EV adoption by considering the impact of initial and long-term subsidies experienced by consumers. Moreover, the study will provide insights into how economic benefits can serve as a driver to shift consumer behavior toward more environmentally friendly vehicle choices. Furthermore, the findings may provide valuable insights into the role of infrastructure readiness in influencing purchase intention, which may, in turn, support the planning of additional complementary infrastructure such as charging stations and after-sales services by relevant stakeholders.

Ultimately, this study successfully develops a model to explain the relationships between initial purchase subsidy, long-term operational subsidy, perceived economic benefit, and facility readiness in influencing EV purchase intention. The findings also indicate that long-term operational subsidies exert a more substantial impact than initial purchase subsidies on consumers' intention to purchase electric vehicles. Another key finding is that perceived economic benefit plays a significant mediating role in bridging the influence of subsidies on purchase intention.

2. LITERATURE REVIEW

2.1 Battery Electric Vehicles (BEVs)

Battery Electric Vehicles (BEVs) are vehicles that operate entirely using electric motors powered by energy stored in batteries. Unlike conventional vehicles, BEVs do not rely on internal combustion engines (ICE) or fossil fuels; instead, they depend solely on electrical energy to generate propulsion. In this system, the battery serves as the primary energy source and can be recharged through charging stations (Hawkins et al., 2013). The most commonly used batteries in BEVs are lithium-ion batteries, which offer high energy storage capacity and longer service life compared to other battery types (Tarascon & Armand, 2001).

2.2 Purchase Intention

According to Ajzen (1991), purchase intention is a form of behavioral intention that reflects an individual's readiness to perform a specific action, including purchasing a product. Chang and Wildt (1994) further define purchase intention as the likelihood that consumers will buy a product based on their evaluation and preferences. In the context of electric vehicles (EVs), purchase intention represents consumers' willingness to adopt EVs as an alternative to conventional vehicles (Hu et al., 2024).

Purchase intention is particularly important in the adoption of emerging technologies such as EVs, where consumers must evaluate not only functional attributes but also economic and infrastructural considerations. Ivanova and Moreira (2023) classify the determinants of EV purchase intention into three main categories: consumer-related, product-related, and policy-related factors. Among these, policy-related factors, especially financial incentives, play a crucial role in reducing adoption barriers and shaping consumer decisions in developing countries.

2.3 Initial Purchase Subsidy

Initial purchase subsidy refers to financial incentives provided at the point of purchase to reduce the upfront cost of acquiring an electric vehicle (Huang & Ge, 2019). These incentives typically include price

discounts, tax exemptions, reductions in registration fees, and preferential financing schemes. Such subsidies are particularly important in the early stage of EV market development, where high initial prices remain a primary barrier to adoption.

From a consumer behavior perspective, upfront cost plays a critical role in shaping perceived affordability and purchase decisions, especially for high-value products such as vehicles. High initial investment often discourages consumers from adopting new technologies, even when long-term benefits are evident. Therefore, initial purchase subsidies directly reduce financial barriers and enhance the attractiveness of EVs.

Previous studies, such as Butt and Singh (2023), have shown that financial incentives at the purchase stage significantly influence EV adoption in developing countries. However, most prior research treats financial subsidies as a single construct, which limits the ability to distinguish the specific impact of initial purchase incentives. By isolating initial purchase subsidy as a separate variable, this study provides a more precise understanding of its role in influencing consumer purchase intention.

2.4 Long-term Operational Subsidy

Long-term operational subsidy refers to financial support provided during the usage phase of electric vehicles, aimed at reducing ongoing ownership costs (Huang & Ge, 2019). These subsidies may include reductions in annual vehicle taxes, lower electricity tariffs for charging, maintenance cost incentives, and other operational benefits.

Unlike initial purchase subsidies, which primarily affect short-term affordability, long-term operational subsidies influence consumers' evaluation of total cost of ownership. Consumers often consider not only the purchase price but also the long-term financial implications of owning a vehicle. In this context, operational subsidies enhance the perceived economic value of EVs by ensuring sustained cost savings over time.

In price-sensitive markets such as Indonesia, long-term financial considerations play a significant role in shaping consumer decisions. Consumers tend to prefer solutions that offer continuous economic benefits rather than one-time incentives. Therefore, long-term operational subsidies are expected to have a strong influence on both perceived economic benefit and purchase intention.

Although previous studies, such as Butt and Singh (2023), have incorporated operational incentives within a broader financial subsidy construct, limited research has examined their distinct impact. By separating long-term operational subsidies from initial purchase subsidies, this study provides a more comprehensive understanding of how different types of financial incentives influence consumer behavior.

2.5 Perceived Economic Benefit

Perceived economic benefit refers to consumers' evaluation of the financial advantages associated with using a product, particularly in terms of cost savings and economic efficiency (He et al., 2018). In the context of electric vehicles (EVs), this includes lower fuel or energy costs, reduced maintenance expenses, and overall cost efficiency compared to conventional internal combustion engine vehicles (Hu et al., 2024).

From a consumer decision-making perspective, perceived economic benefit plays a critical role in shaping purchase intention, especially for high-involvement products such as vehicles. Consumers tend to evaluate not only the initial purchase price but also the long-term financial implications of ownership. When EVs are perceived as economically advantageous, consumers are more likely to develop a favorable attitude and intention to adopt the technology.

Furthermore, perceived economic benefit is not only a direct determinant of purchase intention but also a mechanism through which external factors influence consumer decisions. Government policies, particularly financial subsidies, can enhance consumers' perception of economic benefits by reducing both

initial and operational costs. Liu et al. (2021) demonstrated that economic incentives significantly influence perceived economic benefit, which subsequently affects public acceptance of new technologies.

Therefore, perceived economic benefit is expected to function as a mediating variable that bridges the relationship between subsidy policies and purchase intention. By strengthening consumers' perception of financial advantages, subsidies indirectly increase the likelihood of EV adoption.

2.6 Facilitation Readiness

Facilitation readiness refers to the extent to which consumers perceive that adequate infrastructure and supporting systems are available to enable the use of a particular technology (Venkatesh et al., 2012). In the context of electric vehicles (EVs), facilitation readiness includes the availability of charging stations, maintenance and service facilities, spare parts accessibility, and technical support systems (Manutworakit & Choocharukul, 2022).

From a technology adoption perspective, facilitation readiness plays a crucial role in reducing uncertainty and perceived risk associated with new technologies. Even when consumers have a positive attitude toward EVs, the lack of supporting infrastructure may discourage adoption. Consumers are more likely to develop purchase intention when they believe that sufficient facilities are available to support their usage needs.

In developing countries, infrastructure limitations remain a major barrier to EV adoption. Limited charging networks, inadequate after-sales services, and concerns about accessibility often reduce consumer confidence in adopting EVs. Samarasinghe et al. (2024) found that facilitation readiness significantly influences EV purchase intention, particularly in contexts where infrastructure development is still evolving.

Therefore, improving facilitation readiness is essential to enhance consumer confidence and reduce perceived barriers, ultimately increasing the likelihood of EV adoption.

2.7 Conceptual Model & Novelty

Following a comprehensive literature review, the researcher established the research positioning to address gaps identified in prior studies. The conceptual framework of this study was constructed based on previous models and literature reviews. The variables initial purchase subsidy and long-term operational subsidy were separated from the financial subsidy variable in Butt and Singh's (2023) study to provide a clearer picture of subsidy categories, previously combined as a single variable that influenced EV purchase intention in Pakistan. Perceived economic benefit, adopted from Hu et al. (2024), was included due to its proven impact on EV purchase intention in China. Facilitation readiness, as identified by Samarasinghe et al. (2024), was incorporated due to its significant influence on EV purchase intention in Sri Lanka. The perceived economic benefit variable was chosen based on Ivanova and Moreira (2023) who emphasized the importance of investigating perceived economic benefit as a meaningful mediating variable that bridges and reinforces the role of financial subsidy on purchase intention. Facilitation readiness was also selected, referring to Arief et al. (2023), who stressed that the availability of EV-supporting facilities is a critical issue in developing countries. Ultimately, these variables will be evaluated for their relationships with electric vehicle (EV) purchase intentions. Research positioning can be seen in Table 1 and conceptual model can be seen in Figure 1.

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Table 1. Research Positioning

	Authors													
Variable	Samarasinghe et al. (2024)	Wang et al. (2024)	Boo and Tan (2024)	Hu et al. (2024)	Huang and Ge (2019)	Zhao (2024)	Chatterjee et al. (2024)	Sun and Lee (2024)	Asati et al. (2024)	Zhao et al. (2024)	He et al. (2018)	Butt and Singh (2023)	Asadi et al. (2021)	This Research
Performance Value	✓	✓						✓	✓					
Facilitation Readiness	✓								✓			✓		✓
Environmental Concern	✓	✓		✓		✓		✓	✓	✓	✓	✓		
Social Influence	✓								✓			✓		
Attitude		✓			✓	✓	✓						✓	
Emotion Value		✓												
Subjective Norm		✓			✓	✓	✓						✓	
Perceived Behavioral Control		✓			✓	✓	✓						✓	
Perceived Economic Benefit				✓							✓			✓
Perceived Psychological Benefit				✓										
Financial Subsidy					✓		✓					✓	✓	
Perceived Risk	✓					✓					✓			
Perceived Ease of Use								✓				✓		
Perceived Usefulness								✓				✓		
Personal innovativeness											✓			
Perceived Green Value										✓				
Price Perception			✓						✓					
Green Purchasing Attitude			✓											
Hedonic Motivation									✓					
Social Value		✓												
Initial Purchase Subsidy														✓
Long-term Operational Subsidy														✓

Source: literatures

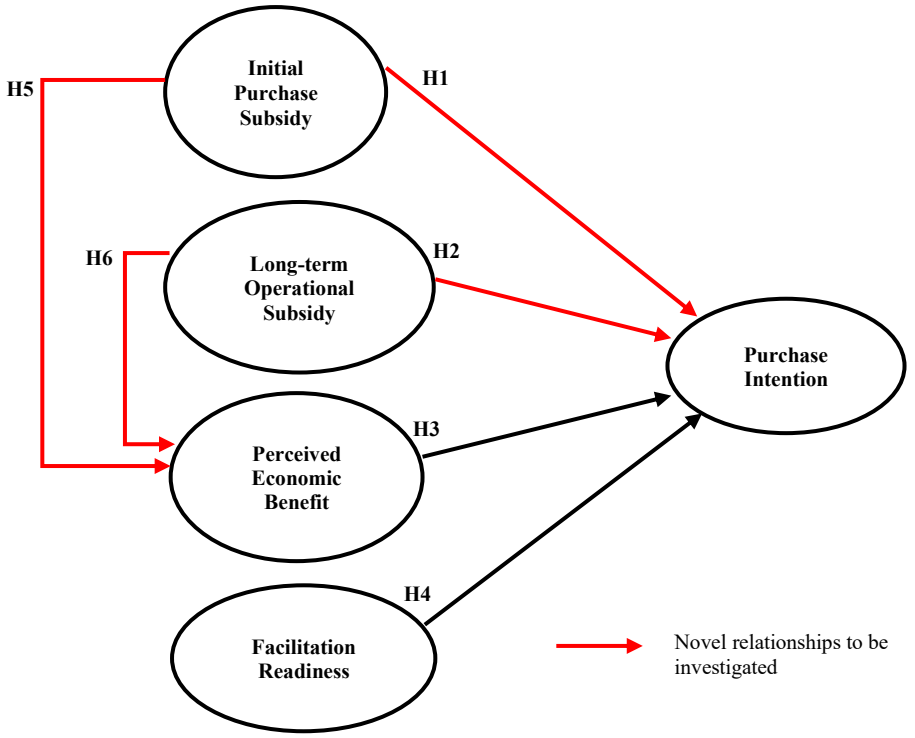

Fig. 1. Conceptual Model

Source: developed by the author

(i) Hypothesis 1 (H1): Initial Purchase Subsidy has a significant positive effect on Purchase Intention.

(ii) Hypothesis 2 (H2): Long-term Operational Subsidy has a significant positive effect on Purchase Intention.

(iii) Hypothesis 3 (H3): Perceived Economic Benefit has a significant positive effect on Purchase Intention.

(iv) Hypothesis 4 (H4): Facilitation Readiness has a significant positive effect on Purchase Intention.

(v) Hypothesis 5 (H5): Initial Purchase Subsidy has a significant positive effect on Perceived Economic Benefit.

(vi) Hypothesis 6 (H6): Long-term Operational Subsidy has a significant positive effect on Perceived Economic Benefit

Furthermore, perceived economic benefit is not only expected to directly influence purchase intention but also to act as a mediating mechanism that bridges the relationship between financial subsidies and

purchase intention. Both initial purchase subsidy and long-term operational subsidy are expected to enhance consumers' perception of economic benefits, which in turn increases their intention to adopt electric vehicles. Therefore, beyond the direct relationships, this study also examines the effect of mediation variable (perceived economic benefit) in the model to provide a more comprehensive understanding of the underlying mechanism.

3. METHODS

3.1 Data Analyis Method

This study employs a quantitative approach to test the causal relationships among latent variables formulated within the conceptual model framework. To achieve the research objectives, the researcher selected Partial Least Squares Structural Equation Modeling (PLS-SEM) as the analytical method. PLS-SEM is preferred due to its advantages in analyzing complex structural models with a relatively large number of indicators.

This study uses primary data obtained from questionnaires distributed to respondents who met predefined criteria. Variable indicators were carefully selected through a thorough literature review to ensure their validity and to enhance the clarity of questionnaire items, thereby preventing misinterpretation. A 5-point Likert scale was employed, where a score of one represents "strongly disagree" and a score of five represents "strongly agree." Hair et al. (2017) recommend using 5- or 7-point Likert scales in PLS-SEM due to their balance between interpretive clarity and analytical efficiency. This study adopted the 5-point Likert scale to provide respondents with a neutral option, thereby reducing response bias and ensuring both sensitivity and clarity without overwhelming participants with excessive choices.

To examine the mediating effect of perceived economic benefit, this study employed the bootstrapping procedure in Partial Least Squares Structural Equation Modeling (PLS-SEM), as recommended by Hair et al. (2017). The bootstrapping method allows for the assessment of the significance of indirect effects without assuming normal data distribution.

Mediation was evaluated by analyzing the direct, indirect, and total effects between variables. The indirect effect was calculated to determine whether perceived economic benefit significantly mediates the relationship between subsidies and purchase intention. A mediation effect is considered significant when the indirect path coefficient is statistically significant (t-value > 1.96 and p-value < 0.05).

This approach provides a comprehensive understanding of both the direct and indirect relationships within the proposed model.

3.2 Sampling Technique

According to Hair et al. (2017), an adequate sample size for PLS-SEM analysis should be at least ten times the total number of indicators used in the model. This approach ensures accurate estimation of relationships among latent variables and sufficient statistical power for hypothesis testing. With 20 indicators in this study, the ideal minimum sample size is 200. The sampling method used is non-probability purposive sampling, as referenced by Sugiyono (2013), which is applied when not all individuals in the population have an equal chance of selection, and samples are chosen based on specific characteristics of the target group. The sampling process considered the relevance of individuals to the research, ensuring only respondents who met the criteria and could provide relevant information were included. The questionnaire was distributed online via Google Forms.

3.3 Unit of Analysis

The unit of analysis in this study is the individual, specifically those who have purchased electric vehicles or those who have not but intend to purchase, aged 21 to 55 years, residing in the Jabodetabek

region (Jakarta, Bogor, Depok, Tangerang, and Bekasi). To ensure that respondents met the required criteria, a screening process was implemented at the beginning of the questionnaire. The screening questions were designed to verify whether respondents fulfilled the predefined characteristics, including age range (21–55 years), domicile in the Jabodetabek area, and relevance to electric vehicle purchase intention. Only respondents who met these criteria were allowed to proceed to the main questionnaire. In addition, data validation procedures were applied to ensure data quality. Responses were carefully reviewed to identify and remove incomplete, inconsistent, or duplicate entries. This process ensured that only valid and reliable responses were included in the final dataset used for analysis.

The age range of 21 to 55 years was selected to represent individuals who are within the economically active and decision-making age group. Individuals within this range are more likely to have independent financial capability and purchasing authority, making them more relevant for analyzing vehicle purchase intention. In addition, this age range aligns with the eligibility criteria for loan applications in most banks in Indonesia, where individuals within this range are considered financially eligible to access vehicle financing schemes. This consideration is particularly relevant, as vehicle purchases in Indonesia are often supported by credit or financing facilities.

Individuals below 21 years are generally not primary decision-makers in vehicle purchases, while individuals above 55 years may have different mobility preferences and a lower tendency to adopt new technologies such as electric vehicles. Therefore, this age range is considered appropriate to capture the most relevant consumer segment for this study.

4. RESULTS

4.1 Initial Validity & Reliability Test (Pilot Survey)

A pilot test involving 34 respondents was conducted to assess the validity and reliability of the research instrument before the main data collection. The results showed that nearly all indicators had outer loading values above 0.70, meeting the criteria set by Hair et al. (2017), indicating their validity in measuring the associated latent constructs. The analysis also demonstrated that all variables had Average Variance Extracted (AVE) values exceeding 0.50, ranging from 0.663 to 0.797, confirming good convergent validity according to Hair et al. (2017). Furthermore, Cronbach's Alpha values for all variables were above 0.80, indicating high reliability and suitability for further analysis. The adjusted model, derived from pilot survey results, was subsequently obtained. Pilot test result can be seen in Table 2 and adjustment model after pilot test can be seen in Figure 2.

Table 2. Pilot Test Result

Variable	Indicator	Outer Loading Value	Remark	Cronbach's alpha (after item adjustment)	AVE (after item adjustment)	Remark
Initial Purchase Subsidy	IPS1	0.845	Valid	0.850	0.689	Accepted
	IPS2	0.849	Valid			
	IPS3	0.790	Valid			
	IPS4	0.835	Valid			
Long-term Operational Subsidy	LOS1	0.836	Valid	0.839	0.675	Accepted
	LOS2	0.833	Valid			
	LOS3	0.759	Valid			
	LOS4	0.856	Valid			
Perceived Economic Benefit	PEB1	0.826	Valid	0.829	0.663	Accepted
	PEB2	0.849	Valid			
	PEB3	0.844	Valid			
	PEB4	0.733	Valid			
Facilitation Readiness	FR1	0.881	Valid	0.882	0.738	Accepted
	FR2	0.855	Valid			
	FR3	0.849	Valid			
	FR4	0.850	Valid			
Purchase Intention	PI1	0.918	Valid	0.873	0.797	Accepted
	PI2	0.891	Valid			
	PI3	0.864	Valid			
	PI4	0.178	Eliminated			

Source: author's own processing

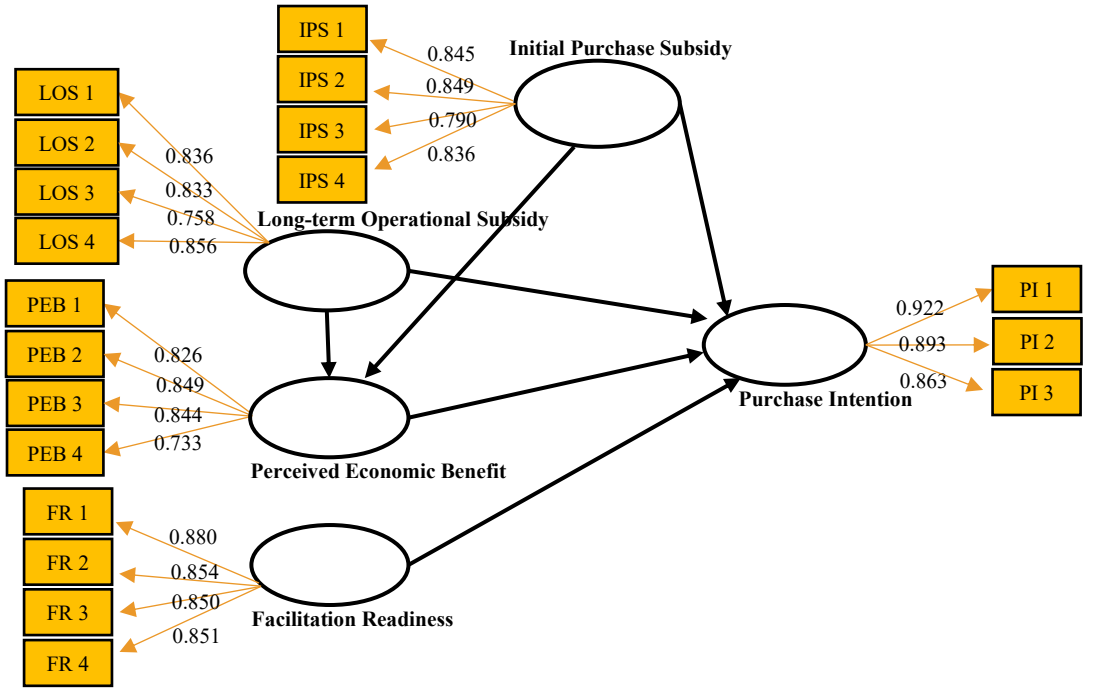

Fig. 2. Adjustment Model after Pilot Test

Source: author's own processing

4.2 Respondent Profile Analysis

Data from 391 respondents meeting the study criteria revealed interesting demographic distributions related to domicile, gender, age, and income that could influence EV purchase intention. Respondent profile can be seen in Table 3.

Table 3. Respondent Profile

Characteristic	Category	Frequency	Percentage
Domicile	Jakarta	237	60.6%
	Bogor	21	5.4%
	Depok	45	11.6%
	Tanggerang	37	9.5%
	Bekasi	51	13.0%
Gender	Male	212	54.2%
	Female	179	45.8%
Age	21 - 27	112	28.6%
	28 - 34	87	22.3%
	35 - 41	83	21.2%
	42 - 48	61	15.6%
	49 - 55	48	12.3%
Income per month (IDR)	< 5 million	169	43.2%
	6 - 15 million	132	33.8%
	16 - 25 million	52	13.3%
	26 - 35 million	26	6.6%
	> 35 million	12	3.0%

Source: author's own survey

4.3 Descriptive Analysis

The average questionnaire scores across all variables ranged from 3.61 to 3.73, indicating high level of agreement, with standard deviations between 1.025 and 1.312, showing reasonable variability. Negative skewness values across indicators suggest responses tended to cluster toward higher scores but remained within acceptable ranges (-1 to +1) except for PI4 and FR4 (< -1). According to Hair et al. (2017), excess kurtosis values also indicated a generally normal and stable distribution within the acceptable range of -1 to +1. Descriptive analysis can be seen in Table 4.

Table 4. Descriptive Analysis

Variable	Mean	Indicator	Mean	Standard deviation	Excess kurtosis	Skewness
Purchase Intention	3.73	PI1	3.60	1.271	-0.805	-0.560
		PI2	3.65	1.286	-0.702	-0.663
		PI3	3.64	1.261	-0.774	-0.598
		PI4	4.02	1.172	0.343	-1.137
Initial Purchase Subsidy	3.64	IPS1	3.58	1.312	-0.910	-0.547
		IPS2	3.63	1.284	-0.698	-0.654
		IPS3	3.70	1.259	-0.590	-0.708
		IPS4	3.64	1.283	-0.698	-0.664
Long-term Operational Subsidy	3.61	LOS1	3.63	1.225	-0.749	-0.581
		LOS2	3.62	1.207	-0.548	-0.641
		LOS3	3.58	1.263	-0.746	-0.590
		LOS4	3.60	1.283	-0.691	-0.636
Perceived Economic Benefit	3.63	PEB1	3.63	1.224	-0.699	-0.577
		PEB2	3.62	1.249	-0.742	-0.622
		PEB3	3.62	1.277	-0.713	-0.631
		PEB4	3.65	1.282	-0.849	-0.601
Facilitation Readiness	3.72	FR1	3.64	1.258	-0.781	-0.629
		FR2	3.62	1.228	-0.640	-0.642
		FR3	3.62	1.209	-0.629	-0.608
		FR4	3.99	1.025	1.029	-1.143

Source: author's own processing

4.4 Reliability & Convergent Validity Analysis

Almost all indicators showed outer loading values above 0.70, confirming validity per Hair et al. (2017). All variables showed AVE values above 0.50, ranging from 0.629 to 0.691, indicating good convergent validity. Cronbach's Alpha and Composite Reliability values for all constructs exceeded 0.70, with the highest reliability observed for Perceived Economic Benefit and the lowest for Purchase Intention, signifying that all constructs were reliable for further analysis. Reliability and convergent validity result can be seen in Table 5 and adjustment model after validity test can be seen in Figure 3.

Although Item PI4 was initially identified as having a low outer loading during the pilot test, its performance was further evaluated using the full dataset (n = 391). The results from the full sample analysis confirmed that PI4 continued to exhibit a significantly low loading value, indicating that the item did not adequately represent the Purchase Intention construct.

Interestingly, despite the relatively high mean value of PI4 (4.02), which indicates general agreement among respondents, the item demonstrated a low outer loading. This suggests that while respondents tended to respond positively to the statement, the item did not align well with the underlying construct compared to other indicators. One explanation is that the responses to PI4 were less variable and more concentrated, as indicated by its skewness value (-1.137), which exceeds the commonly accepted range of -1 to +1 (Hair et al., 2017). This indicates a strong negative skew, meaning that responses were heavily clustered toward the higher end of the scale.

Such distribution characteristics can reduce the covariance between the item and the latent construct, resulting in a low outer loading despite a high mean score. This implies that PI4 may capture a general positive attitude rather than a consistent reflection of the latent construct of purchase intention.

Therefore, the decision to remove PI4 was based on both pilot and full-sample validation results, as well as consideration of its distribution characteristics, in accordance with the recommended threshold for

outer loading (> 0.70) as suggested by Hair et al. (2017). This approach ensures the reliability and validity of the measurement model.

Table 5. Reliability and Convergent Validity Result

Variable	Indicator	Outer Loading Value	Remarks	Cronbach's alpha (after item adjustment)	Composite Reliability (after item adjustment)	AVE (after item adjustment)	Remarks
Initial Purchase Subsidy	IPS1	0.806	Valid	0.805	0.872	0.631	Accepted
	IPS2	0.797	Valid				
	IPS3	0.788	Valid				
	IPS4	0.785	Valid				
Long-term Operational Subsidy	LOS1	0.788	Valid	0.803	0.871	0.629	Accepted
	LOS2	0.815	Valid				
	LOS3	0.772	Valid				
	LOS4	0.797	Valid				
Perceived Economic Benefit	PEB1	0.798	Valid	0.813	0.877	0.641	Accepted
	PEB2	0.802	Valid				
	PEB3	0.788	Valid				
	PEB4	0.815	Valid				
Facilitation Readiness	FR1	0.829	Valid	0.777	0.870	0.691	Accepted
	FR2	0.825	Valid				
	FR3	0.833	Valid				
	FR4	0.204	Eliminated				
Purchase Intention	PI1	0.805	Valid	0.732	0.848	0.651	Accepted
	PI2	0.827	Valid				
	PI3	0.788	Valid				

Source: author's own processing

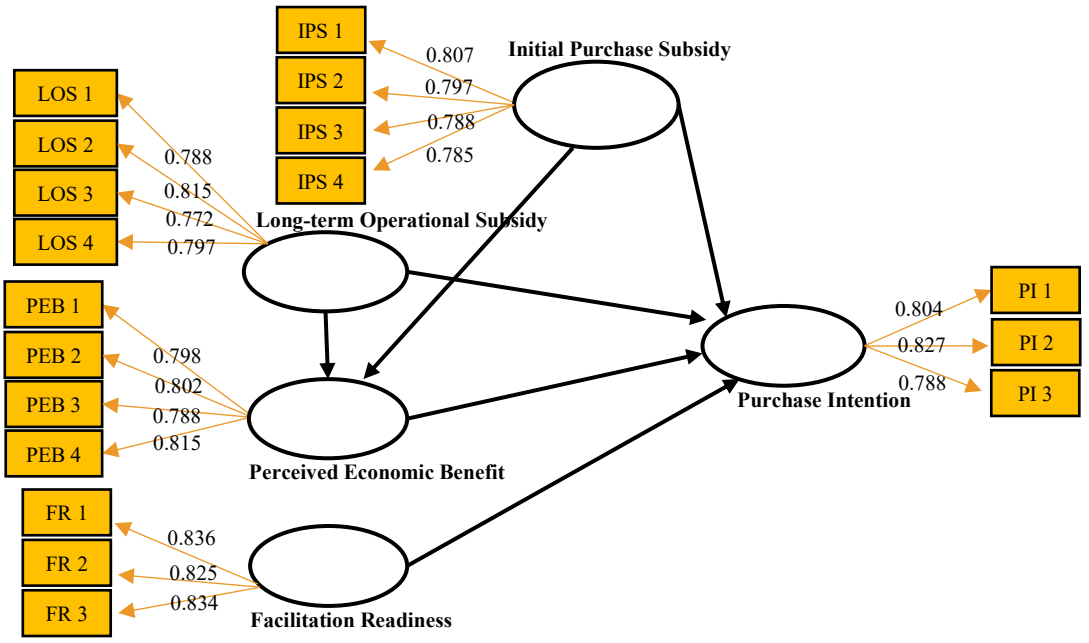

Fig. 3. Adjustment Model after Reliability and Validity Test

Source: author's own processing

4.5 Discriminant Validity Analysis

Using the Fornell-Larcker criterion, the square root of AVE (Average Variance Extracted) for each construct exceeded its correlations with other constructs, meeting Hair et al.'s (2017) standards. Discriminant validity result can be seen in Table 6.

Table 6. Fornell-Larcker Test Result

	Facilitation Readiness	Initial Purchase Subsidy	Long-term Operational Subsidy	Perceived Economic Benefit	Purchase Intention
Facilitation Readiness	0.832				
Initial Purchase Subsidy	0.650	0.794			
Long-term Operational Subsidy	0.708	0.650	0.793		
Perceived Economic Benefit	0.668	0.657	0.676	0.801	0.674
Purchase Intention	0.658	0.621	0.643	0.674	0.807

Source: author's own processing

In addition to the Fornell-Larcker criterion, discriminant validity was further assessed using the Heterotrait-Monotrait Ratio (HTMT), which is considered a more robust method for evaluating discriminant validity in PLS-SEM (Henseler et al., 2015).

The HTMT values for all constructs were found to be below the recommended threshold of 0.85, indicating that discriminant validity is established. This result confirms that each construct is empirically distinct from the others and supports the robustness of the measurement model.

Table 7. HTMT Test Result

	Facilitation Readiness	Initial Purchase Subsidy	Long-term Operational Subsidy	Perceived Economic Benefit	Purchase Intention
Facilitation Readiness					
Initial Purchase Subsidy	0.823				
Long-term Operational Subsidy	0.846	0.809			
Perceived Economic Benefit	0.839	0.812	0.835		
Purchase Intention	0.831	0.809	0.838	0.822	

Source: author's own processing

4.6 Collinearity Analysis

According to Hair et al. (2017), Variance Inflation Factor (VIF) values for predictor constructs affecting endogenous constructs (Purchase Intention and Perceived Economic Benefit) ranged from 1.733 to 2.498, all of which were below the recommended threshold of 5.00. The results indicate no

multicollinearity issues suitable for further hypothesis testing. Collinearity test result can be seen in Table 7.

Table 8. Discriminant Validity Result

	VIF
Initial Purchase Subsidy → Purchase Intention	2.176
Long-term Operational Subsidy → Purchase Intention	2.498
Perceived Economic Benefit → Purchase Intention	2.328
Facilitation Readiness → Purchase Intention	2.464
Initial Purchase Subsidy → Perceived Economic Benefit	1.733
Long-term Operational Subsidy → Perceived Economic Benefit	1.733

Source: author's own processing

4.7 Coefficient of Determination Analysis

The R^2 value for Purchase Intention and Perceived Economic Benefit was > 0.5, indicating that more than 50% of the variance is explained by the predictors. This level is considered moderate to substantial as defined by Hair et al. (2017). The result of determination coefficient analysis can be seen in Table 8.

Table 9. Coefficient of Determination Analysis

	R^2	R^2 adjusted
Purchase Intention	0.565	0.560
Perceived Economic Benefit	0.539	0.536

Source: author's own processing

4.8 Path Coefficient & Significance Analysis

The hypothesis testing of direct effects revealed that all paths between the constructs were positive and statistically significant. Specifically, Initial Purchase Subsidy, Long-term Operational Subsidy, Perceived Economic Benefit, and Facilitation Readiness had a significant influence on the intention to purchase electric vehicles (EVs). Additionally, the Initial Purchase Subsidy and Long-term Operational Subsidy had significantly positive effects on the Perceived Economic Benefit. Path coefficients (β) ranged from 0.164 to 0.430 with p-values < 0.05 and t-values > 1.96, meeting the significance criteria as defined by Hair et al. (2017). These results suggest that subsidy support, perceived economic benefits, and facility readiness are key factors influencing consumer purchase intention and perceptions. The result of direct effect analysis can be seen in Table 9 and model of path coefficient can be seen in Figure 4.

Table 10. Direct Effect Analysis

Hypothesis	Relationship	Path Coefficient (β)	T Statistics (>1.96)	P Values (<0.05)	Remarks
Direct Effect					
H1	Initial Purchase Subsidy → Purchase Intention	0.164	2.862	0.004	**Positive Impact, Significant**
H2	Long-term Operational Subsidy → Purchase Intention	0.174	2.970	0.003	**Positive Impact, Significant**
H3	Perceived Economic Benefit → Purchase Intention	0.295	5.134	0.000	**Positive Impact, Significant**
H4	Facilitation Readiness → Purchase Intention	0.231	4.443	0.000	**Positive Impact, Significant**
H5	Initial Purchase Subsidy → Perceived Economic Benefit	0.378	5.600	0.000	**Positive Impact, Significant**
H6	Long-term Operational Subsidy → Perceived Economic Benefit	0.430	6.587	0.000	**Positive Impact, Significant**

Source: author's own processing

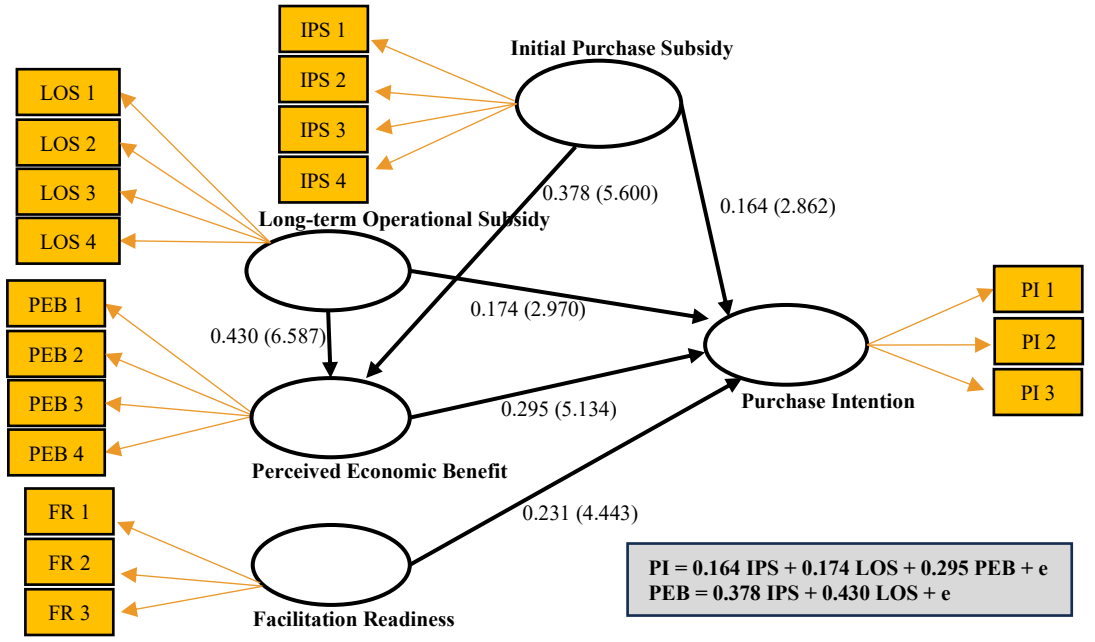

Fig. 4. Model of Path Coefficient, t-statistic, & R^2

Source: author's own processing

Mediation hypothesis testing revealed all mediated relationships were positive and significant. Initial Purchase Subsidy and Long-term Operational Subsidy indirectly affected Purchase Intention via Perceived Economic Benefit, with path coefficients (β) of 0.111 and 0.127, respectively, t-statistics > 1.96, and p-values < 0.05, confirming the mediating role of perceived economic benefit in bridging subsidies' influence on purchase intention. The result of indirect effect analysis can be seen in Table 10.

Total effect evaluation revealed all paths were positively and significantly related to their target variables. Path coefficients were positive with p-values < 0.05 and t-values > 1.96 across all analyzed paths. Total effects showed higher path coefficients than direct effects for Long-term Operational Subsidy and Initial Purchase Subsidy on Purchase Intention (0.301 and 0.275, respectively), indicating cumulative contributions of these factors in shaping consumer purchase intention. The result of total effect analysis can be seen in Table 11.

The results of this study confirm that perceived economic benefit plays a significant mediating role in the relationship between both initial purchase subsidy and long-term operational subsidy and purchase intention. This finding indicates that financial incentives do not only directly influence consumers' intention to adopt electric vehicles but also indirectly shape their decision through enhancing perceived economic benefits.

This result suggests that consumers do not solely respond to subsidies as immediate financial incentives but rather interpret them as indicators of long-term economic value. When subsidies reduce both initial and operational costs, they strengthen consumers' perception that electric vehicles are economically advantageous, which in turn increases their purchase intention.

This finding is consistent with Liu et al. (2021), who demonstrated that economic incentives significantly influence perceived economic benefit, which subsequently affects public acceptance of new

technologies. It also aligns with Hu et al. (2024), which highlights the critical role of perceived economic benefit in driving EV adoption.

Furthermore, the stronger indirect effects observed in this study indicate that perceived economic benefit serves as a key psychological mechanism that bridges policy instruments and consumer behavior. This highlights the importance of not only providing subsidies but also ensuring that these financial incentives are effectively perceived and understood by consumers.

Therefore, the effectiveness of subsidy policies in promoting EV adoption is highly dependent on their ability to enhance consumers' perception of long-term economic benefits.

Table 11. Indirect Effect Analysis (Mediation)

Relationship	Path Coefficient (β)	T Statistics (>1.96)	P Values (<0.05)	Remarks
Indirect Effect (Mediation)				
Initial Purchase Subsidy → Perceived Economic Benefit → Purchase Intention	0.111	3.595	0.000	**Positive Impact, Significant**
Long-term Operational Subsidy → Perceived Economic Benefit → Purchase Intention	0.127	3.728	0.000	**Positive Impact, Significant**

Source: author's own processing

Table 12. Total Effect Analysis

Relationship	Path Coefficient (β)	T Statistics (>1.96)	P Values (<0.05)	Remarks
Total Effect				
Initial Purchase Subsidy → Purchase Intention	0.275	4.387	0.000	**Positive Impact, Significant**
Long-term Operational Subsidy → Purchase Intention	0.301	4.556	0.000	**Positive Impact, Significant**

Source: author's own processing

5. DISCUSSION

The discussion revisits the research objectives, linking them with the collected data and previously established theoretical foundations. The final model can be seen in Figure 5.

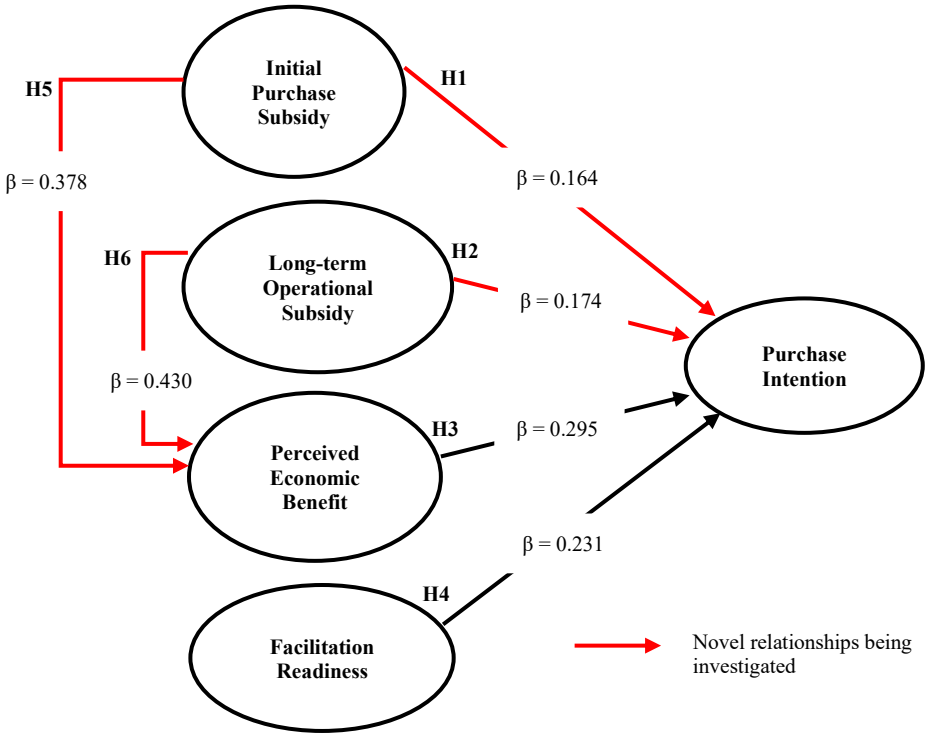

Fig. 5. Final Model

Source: author's own processing

H1 (Accepted): Initial Purchase Subsidy has a significant positive effect on Purchase Intention

The results show a positive path coefficient of 0.164, indicating that Initial Purchase Subsidy positively influences Purchase Intention by 16.4% in direct effect and contributes 27.5% when considering the total effect. The t-statistic value of 2.862 exceeds the threshold of 1.96, and the p-value of 0.004 is below 0.05, confirming the significance of this positive effect. Thus, hypothesis H1 is accepted. This finding aligns with Huang and Ge (2019), who reported that subsidies, including initial purchase subsidies, influence EV purchase intention in China. However, unlike previous studies that combined all subsidy types into one variable, this research identifies the distinct contribution of the initial purchase subsidy. Therefore, this study reinforces the role of perceived initial purchase subsidies in motivating consumers to purchase EVs within the studied context.

H2 (Accepted): Long-term Operational Subsidy has a significant positive effect on Purchase Intention

The path coefficient of 0.174 indicates a positive effect of Long-term Operational Subsidy on Purchase Intention, with a direct effect of 17.4% and a total effect of 30.1%. The t-statistic of 2.970 exceeds 1.96, and the p-value of 0.003 is less than 0.05, indicating a significant positive influence. Thus, hypothesis H2 is accepted. This result is consistent with Huang and Ge (2019), who identified long-term operational subsidies as a component of financial subsidies impacting EV purchase intention in China. Unlike previous studies that aggregated various subsidy types, this research distinguishes the individual contribution of long-term operational subsidy. This finding strengthens the understanding that subsidies provided during EV usage significantly promote consumer purchase intention in this study's context.

H3 (Accepted): Perceived Economic Benefit has a significant positive effect on Purchase Intention

With a positive path coefficient of 0.295, Perceived Economic Benefit influences Purchase Intention by 29.5%. The t-statistic value of 5.134 exceeds 1.96, and the p-value is 0.000, indicating a significant positive effect. Therefore, hypothesis H3 is accepted. This result aligns with Hu et al. (2024), whose study in China similarly concluded that perceived economic benefit significantly affects EV purchase intention. Hence, this research confirms that consumers' perception of economic benefits is crucial in motivating EV purchase intention in the study's setting.

H4 (Accepted): Facilitation Readiness has a significant positive effect on Purchase Intention

The positive path coefficient of 0.231 indicates that Facilitation Readiness increases Purchase Intention by 23.1%. The t-statistic of 4.443 is above 1.96, and the p-value is 0.000, confirming significance. Thus, hypothesis H4 is accepted. This finding is consistent with Samarasinghe et al. (2024), who found that facilitation readiness significantly affects EV purchase intention in Sri Lanka. Consequently, this study confirms that readiness and availability of EV-related facilities are essential factors that foster consumer purchase intention within this research context.

H5 (Accepted): Initial Purchase Subsidy has a significant positive effect on Perceived Economic Benefit

The path coefficient of 0.378 indicates a positive influence of Initial Purchase Subsidy on Perceived Economic Benefit, explaining 37.8% of the variance. The t-statistic value of 5.600 exceeds 1.96, and the p-value is 0.000, confirming significance. Thus, hypothesis H5 is accepted. This result aligns with the findings of Liu et al. (2021) in China, who reported that subsidies had a significant impact on perceived economic benefit. Therefore, this study reinforces that initial purchase subsidies enhance consumers' perception of economic benefits when purchasing EVs in the studied context.

H6 (Accepted): Long-term Operational Subsidy has a significant positive effect on Perceived Economic Benefit

With a path coefficient of 0.430, Long-term Operational Subsidy positively influences Perceived Economic Benefit by 43.0%. The t-statistic of 6.587 exceeds 1.96, and the p-value is 0.000, indicating significance. Therefore, hypothesis H6 is accepted. This finding is consistent with Liu et al. (2021), confirming the significant impact of subsidies on perceived economic benefit. This study supports the view that long-term operational subsidies contribute significantly to enhancing consumers' perceived economic benefits in EV purchases within the context studied.

6. PRACTICAL IMPLICATION

The findings emphasize the need for a strategic focus on long-term operational subsidies, which have a more substantial effect on purchase intention and perceived economic benefit than initial purchase subsidies. This result suggests that consumers place greater importance on sustained financial support during vehicle usage than on one-time purchase incentives. Consequently, effective implementation of

these subsidy policies, with particular emphasis on long-term operational subsidies, could stimulate greater EV adoption and accelerate the transition to environmentally friendly transportation.

Perceived economic benefit serves as a significant mediator between subsidies and purchase intention. Consumers' perception of the economic advantages of owning an EV positively influences their intention to purchase. Both initial purchase and long-term operational subsidies enhance the perceived economic benefit, which fosters purchase intention. Given the importance of economic benefit perception, the automotive industry and government must communicate subsidy policies and other economic benefits effectively to strengthen this perception.

Additionally, facilitation readiness related to EVs was found to significantly and positively affect purchase intention. This result highlights the importance of enhancing EV infrastructure (for example, by expanding charging stations and improving after-sales services), to encourage consumers to transition to electric vehicles. These findings can guide stakeholders (such as charging service providers and after-sales service companies) in the development of supportive facilities. Expanding charging station availability across various locations and improving the accessibility and quality of after-sales services will help reduce consumer uncertainty and enhance trust in choosing EVs as a preferred mode of transportation.

7. CONCLUSION

All six hypotheses were accepted, indicating that initial purchase subsidy, long-term operational subsidy, perceived economic benefit, and facilitation readiness have significant positive effects on purchase intention. Among these, perceived economic benefit showed the most significant direct effect on purchase intention. Additionally, initial purchase subsidy and long-term operational subsidy significantly influenced perceived economic benefit, with the long-term operational subsidy having a more substantial impact.

This study introduces a novel distinction between subsidy categories (initial purchase subsidy and long-term operational subsidy) and finds that the long-term operational subsidy exerts a greater influence than the initial purchase subsidy on both purchase intention and perceived economic benefit. This result suggests that strategic emphasis should be placed more on long-term operational subsidies without neglecting initial purchase subsidies, as consumers tend to value the sustainability of subsidies over the entire period of vehicle usage rather than subsidies only at the point of purchase.

Furthermore, perceived economic benefit functions as a crucial mediating variable bridging the influence of both subsidy types on purchase intention. The direct effects of the initial purchase subsidy and the long-term operational subsidy on purchase intention (0.164 and 0.174, respectively) substantially increase to 0.275 and 0.301 when total effects are considered, reflecting the mediation effect. Moreover, the more substantial direct impacts of these subsidies on perceived economic benefit (0.378 and 0.430, respectively) underscore their importance in enhancing perceived economic benefits, the most influential factor driving purchase intention in the proposed model.

8. LIMITATION

This study suggests that there is still room for model development by incorporating additional relevant variables. This result is evidenced by the coefficient of determination (R^2) values, which have not yet reached their maximum, suggesting that factors beyond the current model also influence purchase intention. Therefore, future research is recommended to include additional variables to enhance the overall predictive power of the proposed model.

Moreover, the finding that perceived economic benefit acts as both a mediator and the strongest direct predictor of purchase intention opens opportunities for further research to explore factors that could enhance

the perception of economic benefits. Such exploration is expected to provide valuable insights for stakeholders seeking to implement broader strategies for enhancing consumers' perception of economic benefits and subsequently increase EV purchase intention.

Finally, beyond deepening the study of the mediating variable perceived economic benefit, future research is also encouraged to investigate other potential mediating or moderating variables that may bridge or reinforce the primary outcome variables. Exploring these variables could reveal whether additional factors not only have direct relationships with the primary outcome variables but also play crucial roles as mediators or moderators in the model.

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10. CONFLICT OF INTEREST STATEMENT

The authors agree that this research was conducted in the absence of any self-benefits, commercial or financial conflicts and declare the absence of conflicting interests with the funders.

11. AUTHORS' CONTRIBUTIONS

Randy Raharja Barlian contributed to conceptualization, methodology, data collection, data analysis, and writing – original draft. **Djoko Sihono Gabriel** contributed to supervision, data analysis, and writing – review and editing. **Rahmat Nurcahyo** contributed to data analysis and validation. All authors have read and agreed to the published version of the manuscript.

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13. APPENDIX

Table 13. Measurement Items

Variable	Code	Questionnaire Descriptions	References
Purchase Intention	PI1	I will consider purchasing an electric car in the future.	Hu et al. (2024) Wang et al. (2024)
	PI2	If I were to buy a car, I would choose an electric car.	
	PI3	I am interested in buying an electric car in the future.	
	PI4	I will make an effort to be able to purchase an electric car.	
Initial Purchase Subsidy	IPS1	The current discount on electric car purchase prices encourages me to realize my purchase intention.	Huang and Ge (2019) Butt and Singh (2023)
	IPS2	The current exemption on electric car purchase tax encourages me to realize my purchase intention.	
	IPS3	The current reduction in electric car ownership registration fees encourages me to realize my purchase intention.	
	IPS4	The equalized loan interest rate for electric car purchases compared to conventional cars encourages me to realize my purchase intention.	
Long-term Operational Subsidy	LOS1	The current annual tax reductions offered for electric cars encourage me to realize my purchase intention.	Jain et al. (2022) Zhou et al. (2021) He et al. (2018)
	LOS2	The electricity tariffs currently applied for EV charging encourage me to realize my purchase intention.	
	LOS3	The current vehicle service and maintenance taxes being equalized with those of conventional cars encourage me to realize my intention to purchase an electric car.	
	LOS4	The exemption of electric cars from traffic restrictions applied to conventional cars (e.g., odd-even license plate rules) is very appealing to me.	
Perceived Economic Benefit	PEB1	Based on my understanding, the energy cost of an electric car is lower than that of a conventional car.	Hu et al. (2024) He et al. (2018)
	PEB2	Based on my understanding, the current subsidies and cost reductions for electric cars will provide significant financial savings.	
	PEB3	Based on my understanding, the maintenance and servicing costs of electric cars are lower than those of conventional cars.	
	PEB4	Based on my understanding, the annual expenses for owning an electric car are lower than those for a conventional car.	
Facilitation Readiness	FR1	The availability of public electric car charging stations currently encourages my intention to purchase an electric car.	Venkatesh et al. (2012) Digalwar and Rastogi (2023) Manutworakit and Choocharukul (2022)
	FR2	The availability of electric car service and maintenance facilities currently encourages my intention to purchase an electric car.	
	FR3	The ease of accessing available electric car spare parts currently encourages my intention to purchase an electric car.	
	FR4	With the various electric car facilities currently available, I feel I will easily find solutions to challenges I may face as an electric car user.	

Source: developed by author

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