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Examining Drivers of Electric Vehicle Purchase Intention in Indonesia's Mebidang Metropolitan Area

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Abstract. The manuscript investigates how the perception of government regulations in Indonesia impacts the relationship between price perception, brand image perception, and the purchase intention of electric cars. It aims to explore the moderating role of regulatory perceptions in the Indonesian automotive market, particularly focusing on consumer attitudes towards electric vehicles. This study analyzed factors shaping electric vehicle purchase intention among 384 car owners in Indonesia's Mebidang metropolitan area. A questionnaire measured price perception, facilities perception, brand image perception, government regulation perception and purchase intention. PLS-SEM analysis revealed significant positive effects of price, facilities and brand image on purchase intention. However, government regulation did not moderate the relationships as hypothesized. While providing initial evidence on drivers of electric vehicle uptake in Indonesia, the research is limited by its narrow geographic scope. Additional investigation across diverse consumer segments and locales will support manufacturers and policymakers to boost adoption

Keywords: Examining Drivers, Electric Vehicle, Purchase Intention

1. Introduction

Fossil fuels persist as the primary energy source in Indonesia, a matter of substantial significance given its implications for natural resource availability and its significant contribution to the acceleration of global warming. The prevalence of vehicles, especially automobiles, in daily community activities emphasizes the centrality of this issue. An examination of the progression of motorized vehicles, particularly cars, reveals their indispensable role in facilitating a diverse range of activities.

As per data from the Indonesian Central Bureau of Statistics (2020), the production of passenger cars experienced a noteworthy increase of 761,721 units between 2018 and 2019, followed by an additional uptick of 205,327 units between 2019 and 2020. The upswing in motor vehicle usage has been accompanied by a corresponding rise in petrol fuel consumption, thereby amplifying greenhouse gas emissions and detrimental effects on natural resources and global warming. Tirtayasa et al. (2021) argue that policymakers across ASEAN economies should prioritize the implementation of effective policies to promote renewable energy generation. Within the transportation sector, there has been a consistent annual increase of 8.6% in fossil fuel consumption (Ajanovic & Haas, 2018), with more than 17,000 vehicles consuming fossil fuels every minute. The incapacity of Indonesia to meet its fossil fuel needs before 2004 led to the government importing fossil fuels (Akhmad & Amir, 2018), resulting in a financial burden on the Indonesian Ministry of Finance, which allocated fuel subsidies amounting to 10.67% in 2020 (Bank of Indonesia, 2021).

The sales trend of battery electric vehicles (BEVs) in Indonesia in 2020-2022 is only 495 units. In fact, it has issued Indonesian Presidential Regulation No. 55 of 2019, This initiative incentives the transition to electric motorbikes and cars by providing a 75% discount to owners of fossil fuel motorbikes who make the switch. By 2023, there were already 5,849 BEV units that had been distributed from factory to dealers (wholesales). However, this is still far from the sales target set by the government of 200,000 units per year.

The growth of BEV sales in the country in 2023 cannot be separated from the increasing number of products offered to the public, which in the previous year there were only 7 models, but in 2023 there were 15 models. Starting in May 2023, the government also provides an incentive for pure electric cars that have been produced domestically with a 40% Domestic Component Level (TKDN) through a 10 per cent reduction in VAT (Tax Organization, 2023). The policy, making the price of electric cars even cheaper because consumers are only subject to a 1 per cent Value Added Tax (VAT) rate. Based on the latest regulation, the sales of Hyundai Ioniq 5 and Wuling Air EV soared high, beating other BEV products. This policy may stimulate consumers to buy electric cars, but the market share is still small. (Indonesian Automotive Industry Association; 2023)

Some researches of electric vehicles have been done in Indonesia, such as: (Gunawan et al., 2022) Consumers evaluate electric vehicles based on four critical factors: price, maintenance, durability, and supporting infrastructure, as discerned in the realm of Battery Electric Vehicles (BEVs) for road transport in Indonesia in 2019. (Alanazi, 2023) the Indonesian electric vehicle program is encumbered by persistent uncertainties, primarily emanating from apprehensions related to the restricted range of batteries, the scarcity of public electric charging stations (SPLU), production costs, and prolonged charging times relative to conventional oil-fueled vehicles. McKinsey's research indicates that the adoption rate of electric vehicles in Indonesia remains at a meager 0.1%, trailing behind other Asian countries such as Thailand and India, where adoption rates stand at 0.7% and 0.5%, respectively (Suehiro & Purwanto, 2019). (Sari, 2023) a survey conducted by Charta Politic in 2022, as reported by Kompas.com, reveals that 61% of respondents express disinterest in transitioning to electric vehicles, with only 28% showing interest. Furthermore, research by the Institute for Essential Services Reform (IESR) underscores the lack of purchase intention for electric vehicles in Indonesia, with 71.2% attributing it to the difficulty in finding Public Electric Vehicle Charging Stations and 62% citing the relatively high price and maintenance costs of electric vehicles (Candra, 2022). Moreover, Shinta A.P

(2022) have studied about the influence of life style future design, technology, confidence with Consumer Interest of electric car in Indonesia with using Multiple Regression linier Method. This research found that positive significant relationship between green life style, future design, technology, and confidence with Purchase Interest. Anggoro F.G and Luh, P.M (2022) have investigated the factors influence of purchase interest of electric vehicles for Gen-Y with using multiple regression linier method, this research found that perceive easy to use has not significant with purchase interest, perceive usefulness has significant with purchase interest, perceive price value has significant relationship with purchase interest, environment concern has positive and significant relationship with purchase interest. Meanwhile, Gunawan Indra et all., (2022) have studied determinant of consumer intention to use electric vehicle in Indonesia: an interested model analysis with using SEM Method, it's found that Attitude Toward Use (ATU), Perceived Behavior Control, Subjective Norm have positive affect with an interest in using electric. Furthermore, Sasmita & Madiawati (2021) found that brand image and facility has significant effect on purchase intention of Toyota hybrid cars. Meanwhile, Aprili et all, (2023) have researched what factors influence the interest in buying electric cars in gen-Z in the Jabotabek Metropolitan City (Jakarta-Bogor-Tangerang-Bekasi) with using multiple regression linier method, the research found that price and advertising factors affect consumer buying interest.

Based on research problems and research state of arts above, the research purpose are follows:

1. To investigates how the perception of government regulations in Indonesia impacts the relationship between price perception, brand image perception, and the purchase intention of electric cars.
2. To explore the moderating role of regulatory perceptions in the Indonesian automotive market, particularly focusing on consumer attitudes towards electric vehicles

2. Literature Review

2.1. Purchase Interest

Kotler and Armstrong (2010) argue that interest refers to a consumer's preference, where they have the full right to purchase or prefer a product based on their experience in choosing, using, or consuming it, or simply because they desire it. Purchase interest involves five stages of the consumer purchasing process: The information obtained will be evaluated by the consumer. 1. Introduction, Information Search, Alternative Evaluation, Purchase Decision, Post-Purchase Behaviour

2.2. Government Regulation

According to Kotler & Keller (2012), regulation refers to detailed rules that are designed to oversee and control groups, institutions, communities, and companies to ensure orderly and smooth operation. In the investigation conducted by (Tuan et al., 2022) in Vietnam, it is evident that government support, pricing perception, and infrastructure attributes wield a positive and statistically significant influence on the inclination to acquire electric vehicles. This stands in contrast to observations in India, where Michael et al. (2022) and (Bennett & Vijaygopal, 2018) establish a direct impact of financial support on consumer purchasing interest. This is notable, given the limited enthusiasm among consumers for electric cars, even in the presence of government stimuli.

2.3. Price Perception

Kotler and Armstrong (2010) define price as the amount of money charged for a product or service, or the value that consumers exchange for the benefit of owning or using a product or service. It is the sacrifice made by consumers or buyers for the desired product.

In analyzing the impact of price on consumer interest in electric cars within EUA countries, (Bhutto et al., 2022) discerned that price sensitivity plays a pivotal role in positively and significantly shaping

consumer purchasing behavior. Klabi & Binzafrah (2023), in their study in Saudi Arabia, identify a positive impact of price on purchase intention. Sasmita & Madiawati (2021) found that price have significant effect on the purchase intention of Toyota hybrid cars. (Gunawan et al., 2022) report that Price Value (PV) positively influences attitudes toward the use (ATU) of electric vehicles in Indonesia. Research by Nidal Ismail Abu and Jordan Aman (2020) in Saudi Arabia establishes a positive impact of Price on Purchase Intention. Moreover, Aprili et all, (2023) found that price and advertising factors affect consumer buying interest.

Based on the explanation, the hypotheses are follows :

H1 : There is positive and significant impact of Price Perception on the purchase intention

H2 : The relationship between Price Perception and the purchase intention of electric cars moderate by government regulations.

2.4. Facilities Perception

Schulz and Rode (2022) research study identifies that public charging infrastructure served as an impetus for improving the sales of battery electric vehicles in Norway. Research by Nidal Ismail Abu and Jordan Aman (2020) in Saudi Arabia establishes a positive impact of, Reputation of Manufacturer, and Fuel economy on Purchase Intention. Miranda & Delgado (2020) further illustrate that alterations in location and perceptions of battery lifetime contribute to increased costs. Tirtayasa & Rahmadana (2022) find that product innovation positively and significantly influences marketing performance. Moreover, research conducted in Portugal by Miranda & Delgado (2020) indicates a negative and significant relationship between optional product features and consumer purchasing interest.Bhalla et al.'s (2018) research in India underscores the need for government investment in electric cars to concentrate on infrastructure creation and technology implementation. Based on the explanation, the hypotheses are follows :

H3 : There is a positive and significant influence of perceived facilities on the purchase intention of electric cars.

H4 : The relationship between perceive Facility and the purchase intention of electric cars moderate by government regulations.

2.5. Brand Image Perception

Brand image refers to the external characteristics of a product or service that can be observed or evaluated before a consumer uses it. This includes how the brand can meet consumers' social and psychological needs. (Kotler & Keller, 2012). Zhang et al., (2019) establish a positive impact of environmental awareness on purchase intention. Additionally, research by (Li & Setiowati, 2023) reveals that the brand image of electric vehicles exerts a positive and significant effect on consumer purchasing interest. Okada et al., (2019) found that brand image significantly affect purchase intention. Sasmita & Madiawati (2021) found that brand image has significant effect on purchase intention of Toyota hybrid cars. Meanwhile, Jalilvad M.R. & Samiei Neda (2012) found that brand image has significant effect on purchase intention in the automobile industry in Iran. Based on the explanation, the hypotheses are follows :

H5 : Brand Image Perception significantly and positively influences the purchase intention of electric cars.

H6 :The relationship between Brand Image Perception and the purchase intention of electric cars moderate by government regulations

Based of the hypothesis above, the conceptual study can be showed of Figure 1 as follows :

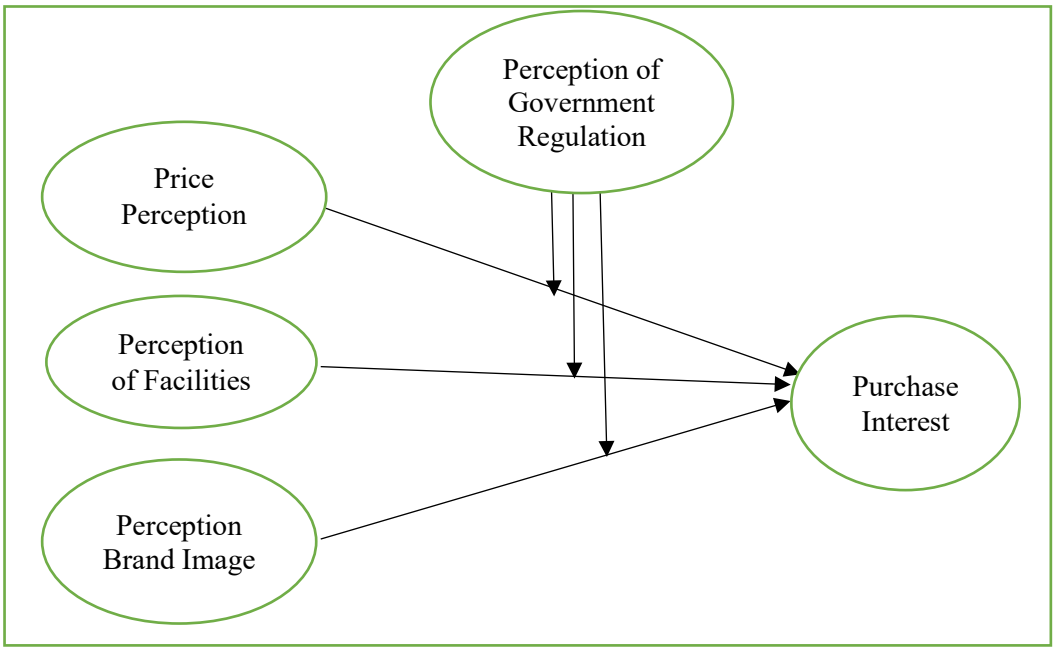

Fig.1 : Conceptual Study

3. Research Design

3.1. Sample and Sample Technique

This research employs an Associative Causality research approach, focusing on car owners in Medan City who express an interest in acquiring electric vehicles. The exact number of such individuals remains undetermined. The sampling strategy utilizes purposive sampling, selecting sample units based on specific criteria: car owners in Mebesar Metropolitan City, Indonesia, with incomes exceeding Rp. 10 million. Employing the Lemeshow method to determine the sample size at a 5% error rate, the study identifies 384 potential consumers in Mebidang Metropolitan Area. Questionnaires are distributed proportionally, with 192 respondents (50%) from Medan City, 96 respondents (25%) from Binjai City, and 96 respondents (25%) from Deli Serdang City. Data collection involves direct interviews, and respondents provide their answers through a questionnaire presented in Google form. The analytical methodology employed is SEM analysis with PLS, an alternative technique for SEM analysis that does not require the data to conform to a multivariate normal distribution (Dash & Paul, 2021).

3.2. Questionnaire Design

The questionnaire model is divided into three parts. The first consist of identity of respondents and gathered their demographic data. The third is the question instrument regarding the study variable price perception has seven question indicators. Variable Facilities Perception has six question indicators, variable Brand awareness perception has seven question indicators, variable Government Regulation perception has nine question indicators, and Purchase intention has six question indicators. A Likert scale of 1–5 was used in this study, where a score of 1 and 5 denotes the opinion of "strongly disagree" and "strongly agree." Numerous questions on construct indicators were reconstructed from the original sources in order that Indonesian respondents could understand them easily.

4. Results

4.1. Measurement Model Results

In SEM testing, the measurement model must be able to meet the minimum standards set theoretically. The measurement model was used to test the study's validation instrument using a loading factor (λ) assessment ranging from 0.4–0.7 Hair et al., (2014), while still considering the adequacy of the question instrument. The next step is to analyze the suitability of CR and AVE standards to determine the reliability of the study data.

1) Item Reliability

The evaluation of reliability items, also known as indicator validity, entails scrutiny of item reliable through the examination of loading factor values, specifically standardized loading. The loading factor denotes the degree of correlation between individual indicators and their respective constructs. An ideal loading factor value surpassing 0.7 signifies the suitability of the indicator for proficiently gauging the construct. However, loading factor values above 0.5 are considered acceptable. Conversely, values below 0.5 may be considered unsuitable for inclusion (Chin, 1998). The ensuing presentation delineates the item reliability values observable in the standardized loading column:

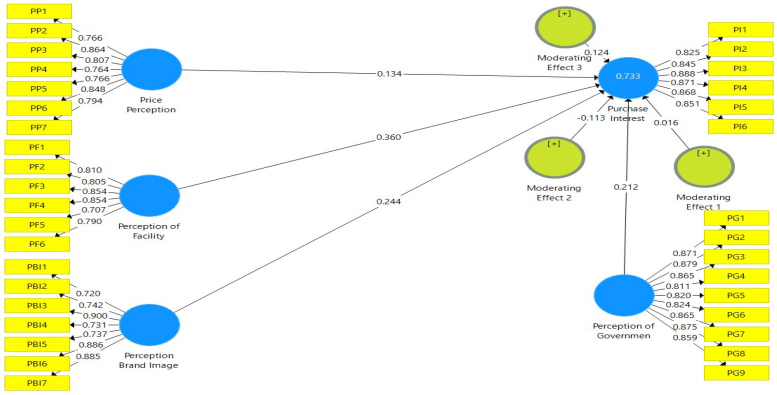

Fig.2: Standardized Loading Factor Inner and Outer Model

The presented visual representation demonstrates that the collective loading exceeds the established threshold of 0.7, obviating the need for any exclusionary measures. Subsequently, each distinct indicator attests to its validity in explicating the respective latent variable, encompassing Perception, Perception of Facilities, Perception of Brand Image, Perception of Government, and Purchase Intention. The subsequent exposition expounds upon the item reliability values evident in the outer loading column:

Table 3. Outer Loading Results

	Brand Image Perception	Perception of Facilities	Perception of Government	Price Perception	Purchase Intention
PBI1	0.720				
PBI2	0.742				
PBI3	0.900				
PBI4	0.731				
PBI5	0.737				
PBI6	0.886				
PBI7	0.885				
PF1		0.810			
PF2		0.805			
PF3		0.854			

PF4		0.854			
PF5		0.707			
PF6		0.790			
PG1			0.871		
PG2			0.879		
PG3			0.865		
PG4			0.811		
PG5			0.820		
PG6			0.824		
PG7			0.865		
PG8			0.875		
PG9			0.859		
PI1					0.825
PI2					0.845
PI3					0.888
PI4					0.871
PI5					0.868
PI6					0.851
PP1				0.766	
PP2				0.864	
PP3				0.807	
PP4				0.764	
PP5				0.766	
PP6				0.848	
PP7				0.794	

Inferred from the information conveyed in Table 2, it is evident that the outer loading values surpass the designated threshold of 0.70 for each indicator. As a result, a deduction can be made that the variables and indicators utilized in the research demonstrate validity.

2) Composite Reliability

The evaluation of composite or construct reliability involves the utilization of metrics such as Cronbach's alpha and DG rho (PCA). Cronbach's alpha is employed to establish the lower limit of reliability for a construct, whereas composite reliability offers the specific reliability value for the construct. A widely accepted guideline suggests that both composite reliability and Cronbach's alpha values should surpass 0.6. Therefore, achieving a measurement exceeding the 0.60 threshold indicates a high level of reliability for the respective construct.

Table 4. Composite Reliability Results

	Cronbach's Alpha	rho_A	Composite Reliability
Brand Image Perception	0.907	0.913	0.927
Perception of Facilities	0.896	0.923	0.917
Perception of Government	0.953	0.955	0.960
Price Perception	0.907	0.911	0.927
Purchase Intention	0.929	0.930	0.944

Table 4 provides a presentation of the composite reliability values for the specified constructs, denoting values of 0.927 for Brand Image Perception, 0.917 for Perception of Facilities, 0.960 for Perception of Government, 0.927 for Price Perception, and 0.944 for Purchase Intention. Correspondingly, the constructs exhibit Cronbach's alpha values of 0.907, 0.896, 0.953, 0.907, and 0.929, respectively. It is noteworthy that all five variables demonstrate both Cronbach's alpha and

composite reliability values surpassing the 0.6 threshold, indicating robust reliability as instruments of measurement.

The Average Variance Extracted (AVE) serves as a metric to assess the extent to which items can explicate variance relative to that attributed to measurement error. A criterion for establishing good convergent validity is predicated on an AVE value exceeding 0.5. This implies that, on average, the latent variable can to elucidate more than fifty percent of the variance inherent in the indicators, thereby affirming a state of sound convergent validity for the constructs.

Table 5. Results of Average Variance Extracted (AVE)

	Average Variance Extracted (AVE)
Brand Image Perception	0.646
Perception of Facilities	0.648
Perception of Government	0.727
Price Perception	0.644
Purchase Intention	0.737

As delineated in Table 5 above, the Average Variance Extracted (AVE) values corresponding to the constructs are specified: Brand Image Perception (0.646), Perception of Facilities (0.648), Perception of Government (0.727), Price Perception (0.644), and Purchase Intention (0.737). Notably, the AVE values for all variables exceed the established threshold of 0.5, it mean that the construct'' substantial convergent validity. This denotes that, on average, the latent variables possess the capacity to explicate more than fifty percent of the variance inherent in their respective indicators.

3) Discriminant Validity

The assessment of discriminant validity within the reflective measurement model involves a thorough examination, incorporating cross-loading analysis and a juxtaposition of Average Variance Extracted (AVE) values with the squared correlation between constructs. Cross-loading involves evaluating the correlation of indicators with their corresponding constructs and those from other blocks. Adequate discriminant validity is established when the explanatory efficacy of an indicator variable exceeds that of other construct indicators. The ensuing presentation furnishes the discriminant validity values for each indicator.

Table 6. Discriminant Validity

	Brand Image Perception	Perception of Facilities	Perception of Government	Price Perception	Purchase Intention
PBI1	**0.720**	0.628	0.549	0.589	0.560
PBI2	**0.742**	0.541	0.487	0.549	0.522
PBI3	**0.900**	0.591	0.518	0.617	0.664
PBI4	**0.731**	0.601	0.600	0.536	0.575
PBI5	**0.737**	0.571	0.482	0.530	0.506
PBI6	**0.886**	0.576	0.479	0.575	0.609
PBI7	**0.885**	0.561	0.467	0.568	0.600
PF1	0.619	**0.810**	0.648	0.606	0.817
PF2	0.612	**0.805**	0.655	0.614	0.837
PF3	0.555	**0.854**	0.604	0.542	0.527
PF4	0.554	**0.854**	0.605	0.540	0.524
PF5	0.570	**0.707**	0.611	0.460	0.484
PF6	0.533	**0.790**	0.527	0.430	0.433
PG1	0.538	0.685	**0.871**	0.542	0.616
PG2	0.566	0.657	**0.879**	0.553	0.678
PG3	0.556	0.673	**0.865**	0.584	0.675
PG4	0.503	0.635	**0.811**	0.447	0.515

PG5	0.532	0.603	**0.820**	0.466	0.586
PG6	0.540	0.643	**0.824**	0.514	0.612
PG7	0.528	0.678	**0.865**	0.532	0.596
PG8	0.558	0.646	**0.875**	0.548	0.668
PG9	0.548	0.664	**0.859**	0.579	0.669
PI1	0.625	0.793	0.650	0.608	**0.825**
PI2	0.614	0.789	0.657	0.617	**0.845**
PI3	0.616	0.646	0.604	0.592	**0.888**
PI4	0.635	0.627	0.640	0.561	**0.871**
PI5	0.600	0.635	0.597	0.577	**0.868**
PI6	0.618	0.613	0.631	0.547	**0.851**
PP1	0.523	0.512	0.444	**0.766**	0.514
PP2	0.610	0.559	0.509	**0.864**	0.600
PP3	0.540	0.552	0.536	**0.807**	0.549
PP4	0.630	0.599	0.548	**0.764**	0.608
PP5	0.504	0.504	0.427	**0.766**	0.451
PP6	0.596	0.538	0.490	**0.848**	0.563
PP7	0.535	0.548	0.533	**0.794**	0.520

As illustrated in Table 6, the discriminant validity or loading factor values for each variable demonstrate stronger correlations with the respective variable than with other variables, encompassing the indicators for each variable. This finding underscores the precision of the placement of indicators within each variable. Another metric for evaluation is the Heterotrait-Monotrait Ratio (HTMT) value. A construct is adjudged to possess robust discriminant validity if its HTMT value falls below 0.90 (Juliandi, 2018).

Table 7. Heretroit-Monotoroit Ratio (HTMT)

	Brand Image Perception	Perception of Facilities	Perception of Government	Price Perception
Brand Image Perception				
Perception of Facilities	0.790			
Perception of Government	0.687	0.813		
Price Perception	0.775	0.726	0.665	
Purchase Intention	0.783	0.811	0.776	0.736

Table 7 delineates that the discriminant validity values or HTMT for each variable and its indicators exhibit correlations lower than 0.90, validating the accuracy of the placement of indicators within each variable.

Table 8. Fornell-Larcker criteria

	Brand Image Perception	Perception of Facilities	Perception of Government	Price Perception	Purchase Intention
Brand Image Perception	0.804				
Perception of Facilities	0.722	0.805			
Perception of Government	0.635	0.767	0.852		
Price Perception	0.705	0.681	0.624	0.802	
Purchase Intention	0.721	0.803	0.736	0.683	0.858

Table 8 accentuates that the discriminant validity values, appraised through the Franklin-Larcker criteria, for each variable and its indicators manifest stronger correlations with the respective variable than with other variables. This underscores the correctness of the placement of indicators within each variable.

4) Test the Inner Model

A. Model Goodness Test (Goodness of Fit)

The assessment of the overall structural model is validated through the Goodness of Fit (GoF) metric. The GoF index serves as a singular measure to assess the collective performance of both the measurement and structural models. This GoF value is derived from the square root of the average value of the Average Variance Extracted (AVE) multiplied by the R2 value of the model. The GoF value is confined within the range of 0 to 1, with interpretations corresponding to values of 0.1 (indicating a small GoF), 0.25 (indicating a moderate GoF), and 0.36 (indicating a large GoF) (Hair et al., 2014). A higher GoF value corresponds to a more favorable fit of the model to the data. The subsequent section presents the outcomes of the calculation for the goodness-of-fit model:

Table 9. Average Communalities Index results

Variable	AVE	R Square
Brand Image Perception	0.646	
Perception of Facilities	0.648	
Perception of Government	0.727	
Price Perception	0.644	
Purchase Intention	0.737	0.733
Average	0.680	0.733
GOF	0.706	

According to the information outlined in Table 9, the calculated above-average communalities yield a result of 0.680. This computed value is then multiplied by R2 and subjected to a square root operation. The resultant Goodness of Fit (GoF) value, as determined to be 0.706, surpasses the established threshold of 0.36, classifying it as a large GoF. This categorization underscores the model's adeptness in explicating empirical data.

B. Coefficient of Determination Test (R-Square)

R-square functions as a metric to assess the proportion of variance in endogenous variables that can be accounted for by influencing exogenous variables. An R-square value of 0.75 for the endogenous latent variable denotes a substantial (good) model, while values of 0.50 and 0.25 indicate a moderate (medium) and weak (bad) model (Juliandi, 2018).

Through the utilization of the smartPLS 4.0 program for data processing, the obtained R-Square values are displayed in Table 10.

Table 10. R-Square Test Results

	R Square	**R Square Adjusted**
Purchase Intention	0.733	0.728

The analysis discloses that the R-Square value of 0.733 of the influence of Price Perception, Perception of Facility, Perception of Brand Image, and Perception of Government on Purchase Intention signifies that 73.3% of the variation in Purchase Intention can be elucidated by variations in these factors, characterizing the model as substantial (good), with the remaining 26.7% influenced by other variables.

C. F2 Test (Size Effect / F-Square)

The F-Square metric is applied to assess the relative impact of exogenous variables on endogenous variables. Interpretation criteria dictate that F2 values of 0.02 indicate a small (weak) effect, 0.15 indicate a moderate (medium) effect, and 0.35 indicate a large (good) effect (Juliandi, 2018). The F-Square values derived from data processing using the smartPLS 4.0 program, as presented in Table 11, suggest small (weak) effects for the influence of Price Perception, Perception of Facility, and Perception of Brand Image. Additionally, moderated effects are observed when Perception of Government acts as a moderator.

Table 11. F-Square Value

	Purchase Intention
Moderating Effect 1	**0.001**
Moderating Effect 2	0.041
Moderating Effect 3	0.043
Brand Image Perception	0.081
Perception of Facilities	0.142
Perception of Government	0.057
Price Perception	0.026
Purchase Intention	

Table 11 provides a comprehensive overview of the F2 values, shedding light on the impact of various factors on Purchase Intention. Specifically, the F2 value of 0.026 for Price Perception indicates a small (weak) effect, while the F2 value of 0.142 for Perception of Facility suggests a similar small (weak) effect. Similarly, the influence of Brand Image Perception on Purchase Intention is characterized by an F2 value of 0.081, denoting a small (weak) effect. Additionally, the moderating effects of Perception of Government on the relationships between Price Perception and Purchase Intention, Perception of Facility and Purchase Intention, and Brand Image Perception and Purchase Intention are discerned through F2 values of 0.001, 0.041, and 0.043, respectively, all indicating small (weak) effects.

4.2. Descriptive Analysis

According to the findings from the survey, the individuals who actively participated in completing the questionnaire were primarily potential consumers falling within the age range of 46 to 50, comprising a total of 118 respondents, accounting for 30.72%. Conversely, the age group with the fewest respondents was 25-30 years old, constituting 15 individuals or 3.9%. Moreover, there was a notable gender disparity among the respondents, with a predominant 87.2% being male, while only 12.8% were female, totaling 53 respondents. Additionally, in terms of educational background, a significant majority, specifically 62.7%, held an S1- Graduate degree (241 persons), while a smaller proportion, 10.8%, possessed a Diploma-3, involving 41 individuals. Furthermore, the survey delved into the marital status of the respondents, revealing that 94.1% of them, amounting to 361 persons, provided information about their marital status. (See Table 1).

Table 1. General description of respondents' ages

Age Characteristics of Respondents	Frequency	Percentage (%)
Age: 25 – 30 Years	15	3.9
31 – 35 Years	32	8.3
36 – 40 Years	86	22.39
41 – 45 Years	41	10.67
46 – 50 Years	118	30.72
>= 50 Years	94	24.47

Total	384	100
Gender: - Man	235	87,2
- Woman	53	12,8
Total	384	100
Education: - Diploma-3	41	10,8
- S1-Graduate	241	62,7
- Master Graduate	102	26,5
Total	384	
Marital Status: Not Married	23	5,9
Married	361	94,1
Total	384	100

Source: Survey results

4.3. Hypothesis test Results' Predictors Brand Image Perception of Purchase Intention

The influence of Brand Image Perception on Electric Car Purchase Intention is also significant, supported by a path coefficient of 0.244 and a probability value of 0.000 ($p < 0.05$), (see figure 3 and table 12). This finding means that the higher the brand image perception of the Electric car product brand, it can have an impact on increasing Purchase Intension. It is evident that the electric car brands with high sales are those that are already widely used by consumers who have experience using fossil car brands in Indonesia, such as Hyundai, Wulling, BMW, and Toyota.

4.4. Hypothesis test Results' Predictors Facility Perception of Purchase Intention

The Perception of Facility significantly influences Purchase Intention, as indicated by a path coefficient of 0.360 and a probability value of 0.000 ($p < 0.05$), (see figure 3 and table 12). This finding means that the higher perception consumer of Facility electric car that provided by the Company such as the durability of the battery, duration of electric car battery charging, the ease of location of charging the electric car battery, and the safety of the battery can affect consumers' purchase intention to buy an electric car in Mebidang City area.

4.5. Hypothesis test Results' Predictors Price Perception of Purchase Intention

The influence of Price Perception on Purchase Intention is supported by a path coefficient of 0.134. The associated probability value (p-value) of 0.046 ($p < 0.05$) it means that a significant impact of Price Perception on Electric Car Purchase Intention in Indonesia (see figure 3 and table 12). This finding means that the higher price perception of consumer, the greater purchase intention of consumer. This illustrates that the price of electric cars is a very high concern for consumers so that it has an impact on purchase intention. If the price of an electric car is perceived as expensive but in accordance with the benefits obtained for consumers, it can lead to purchase intention to make transaction to buy an electric car.

4.6. Hypothesis test Results' The relationship of brand image Perception with Purchase Intention Moderate by Government Regulation

The hypothesized moderation effects Government Perception with the relationship between brand image Perception and Purchase Intention found that not significant, supported by a path coefficient of 0.016 and a probability value of 0.76 6($p < 0.05$), (see figure 3 and table 12). This finding means that the more government regulations, the less the relationship between the brand image of electric cars and consumer purchase intention. The provision of tax relief for the purchase of electric cars provided by the government does not have an impact on increasing consumer the brand image perception of electric cars, so that purchase intention increases. This is evident that sales of electric cars for well-known car

brands, such as Toyota in Indonesia, are still minimum.

4.7. Hypothesis test Results' The relationship of facility Perception with Purchase Intention Moderate by Government Regulation

The hypothesized moderation effects Government Perception with the relationships between Facility Perception and Purchase Intention, supported by a path coefficient of - 0.113 and a probability value of 0.06 ($p < 0.05$), (see figure 3 and table 12). This finding means that the more government regulations, make negative impact of the relationship between the facility perception of electric cars on consumer purchase intention. It is evident that with the tax relief on the purchase of electric cars, the battery facilities electric car that provided by the Company such as the durability of the battery, duration of electric car battery charging, the ease of location of charging the electric car battery, and the safety of the battery cannot have an impact on consumers purchase intention to buy an electric car in Mebidang City area.

4.8. Hypothesis test Results' The relationship of Price Image Perception with Purchase Intention Moderate by Government Regulation

Government regulation can moderate the relationship of Brand Image Perception with Purchase Intention, as evidenced path coefficient of 0.124 and a probability value of 0.05, respectively ($p > 0.05$), (see figure 3 and table 12). Hence, in the context of Electric Car Purchase Intention in Indonesia, the government's regulation has significant moderate the relationship Price Image Perception with Purchase Intention. This finding means that the more government regulations, the less the relationship between the brand image of electric cars and consumer purchase intention. This can be seen that the previous probability value of 0.046 changes to 0.052. The provision of tax relief for the purchase of electric cars provided by the government does not have an impact on the relationship between consumer the price perception with purchase intention. This is evident that sale of electric cars increased only for electric cars produced by Korea and China due to the import duty relief of 0% for imports of knock down (IKD) and completely knocked down (CKD) electric cars. This was done by the government due to the cooperation of trade agreements such as FTA and CEPA, including with South Korea and China.

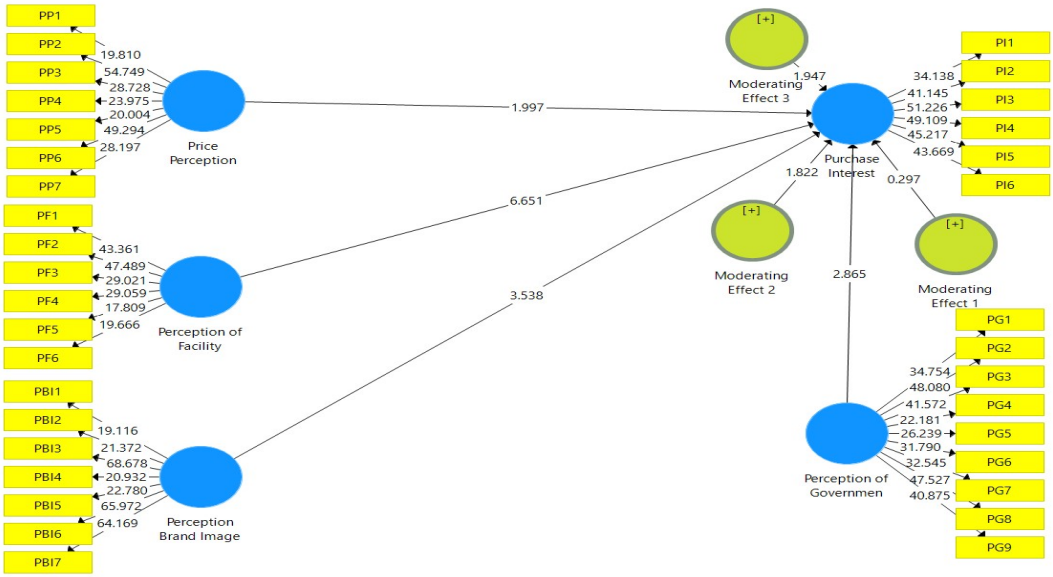

Fig.3: Path Coefficient

The results of the direct influence hypothesis test can be seen in the following path coefficient table:

Table 12. Path Coefficient

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
Moderating Effect 1 -> Purchase Intention	0.016	0.012	0.055	0.297	0.766
Moderating Effect 2 -> Purchase Intention	-0.113	-0.097	0.062	1,822	0.069
Moderating Effect 3 -> Purchase Intention	0.124	0.112	0.064	1,947	0.052
Perception Brand Image -> Purchase Intention	0.244	0.245	0.069	3,538	0,000
Perception of Facility -> Purchase Intention	0.360	0.365	0.054	6,651	0,000
Price Perception -> Purchase Intention	0.134	0.134	0.067	1,997	0.046

5. Discussion

5.1. The influence of Price Perception on Electric Car Purchase Intention

The Influence of Price Perception on the Purchase Intention of Electric Cars Based on the results obtained, it can be concluded that the variable of price perception has a significant effect on purchase intention. This research is consistent with the study conducted by Herlina and Putu (2021), where they found that price has a significant effect on the purchase intention of hybrid cars. This research similar with others research by (Bhutto et al., 2022) found that t price sensitivity positive and significant on consumer purchasing behavior. Klabi & Binzafrah (2023) revealed that positive impact price with purchase intention. Sasmita & Madiawati (2021) found that price have significant effect on the purchase intention of Toyota hybrid cars. (Gunawan et al., 2022) found that Price Value (PV) positive influences attitudes toward the use (ATU) of electric vehicles in Indonesia. And the research by Nidal Ismail Abu and Jordan Aman (2020) showed that positive impact of Price on Purchase Intention. Aprili et all, (2023) found that price affect on consumer buying interest in Jobodetabek metropolitan area-Indonesia.

In terms of electric car companies, there is a difference in the price of electric cars in the market perceived by consumers, where consumers still perceive the price of electric cars made in Japan and made in Europe is still expensive compared to electric cars made in Korea and China. This is evidenced that car sales in 2023 are still dominated by Hyundai and Wulling brand electric cars. Furthermore, Electric car companies made in Japan (Toyota) still focus on producing hybrid (dual function; fossil fuel and battery) cars that successfully win the market with sales in 2023 of 28,575 units in Indonesia,. (Kompas.com, 2023).

5.2. The Influence of Facility Perception on Electric Car Purchase Intention

Research has found a significant positive correlation between facility perception and electric car purchase intention. This study is consistent with the findings of Sasmita & Madiawati (2021) found that the facility variable has a positive effect on purchase intention. This is also supported by the results of the regression test, which has a significance value smaller than the alpha value (0.05). This research

relevant with others research by Schulz and Rode (2022) identifies that public charging infrastructure served as an impetus for improving the sales of battery electric vehicles in Norway. T. Research by Nidal Ismail Abu and Jordan Aman (2020) revealed that a positive impact of, Reputation of Manufacturer, and Fuel economy on Purchase Intention. Miranda & Delgado (2020) found that perceptions of battery lifetime contribute to increased costs. Tirtayasa & Rahmadana (2022) found that product innovation positively and significantly influences on marketing performance. Moreover, research conducted in Portugal by Miranda & Delgado (2020) indicated that a negative and significant relationship between optional product features and consumer purchasing interest.Bhalla et al.'s (2018) research in India underscores the need for government investment in electric cars to concentrate on infrastructure creation and technology implementation. The descriptive analysis of the facility variable with the highest percentage shows that 'The durability of electric car batteries, including the facilities provided by the company' has a response rate of 19% out of the six statements. It can be concluded that consumers consider the durability of electric car batteries, where the durability of electric car batteries have provided by company. Electric car consumers still perceive electric car battery facilities, in the form of Facility electric car that provided by the Company such as the durability of the battery, duration of electric car battery charging, the ease of location of charging the electric car battery, the safety of the battery, and Service and mechanical support give problems in consumer perception (suara.com,2021). With these problems with electric cars, consumers perceive that there will be an impact on the low resale price of electric cars. The provision of electric car battery charging stations is still limited in urban areas, so the purchase of electric cars is still limited and only used for consumer activity in urban areas. Furthermore, consumer only choose electric cars whose companies have guaranteed battery quality facilities and services for consumers.

5.3. The Influence of Brand Image Perception on Electric Car Purchase Intention

The study examines the impact of brand image perception on the interest in purchasing electric cars in Mebidang area. The findings reveal that significant positive correlation between brand image and the interest in purchasing electric cars. This result is consistent with the study conducted by Prasetyo et al. (2022), which also found that the brand image variable has a positive impact on the interest in purchasing. This research similar with others research by Zhang et al., (2019) found that a positive impact of environmental image on purchase intention. (Li & Setiowati, 2023) revealed that the brand image of electric vehicles were positive and significant effect on consumer purchasing interest. Okada et al., (2019) found that brand image significantly affect on purchase intention. In addition, Sasmita & Madiawati (2021) found that brand image has significant effect on purchase intention of Toyota hybrid cars (dual function; fossil fuel and battrey). It is evident that the electric car brands with high sales are those that are already widely used by consumers who have experience using fossil car brands in Indonesia, such as Hyundai, Wulling, BMW, and Toyota. Brand of Toyota and BMW lost in terms of sales because the Indonesian government only subsidy import taxes in 2019 for Electric cars made in Korea and made in China, resulting in low product prices. Due to this, Toyota, which is the market leader in fossil car in Indonesia, has shifted its production to hybrid cars that have 2 functions, namely fossil-fuel car and batteries whose sales in Indonesia in 2023 are relatively high, namely 28,575 units. Meanwhile, the Toyota brand of electric cars received sales in 2023 of 4852 units, this means that the brand image of Toyota electric cars is still high, where in 2023 only 482 units have been sold.

5.4. Regulation Moderate the Relationship Price Perception on Electric Car Purchase Intention

Furthermore, the results of this research found that regulation cannot strengthen the effect of price on interest in buying an electric car. The results of this study are in line with the results of research submitted (Tirtayasa & Daulay 2021) where government regulations cannot moderate the price relationship with marketing performance. (Tuan et al., 2022) in Vietnam, found that price perception

a positive and significant influence on the inclination to acquire electric vehicles.
The results of this study are in accordance with the results of Electric car sales which are still minimal even though the government has exempted imported product taxes in 2019 and value added tax (VAT) to zero per cent in 2023 so that the selling price of Electric cars becomes cheap. Based on data on electric car sales in 2023, the highest electric car sales were obtained by the Hyundai Ioniq 5 electric car (made in Korea) with 3,543 units and Wuling (made in China) with 1,654 units (detkoto.com, 2023). This means that the tax relief policy provided by the government starting from 2019 to 2023 has not had a significant impact on the sales of electric cars in Indonesia.

5.5. Regulation Moderate the Relationship Facility Perception on Electric Car Purchase Intention

The results found that Government Regulations cannot moderate the relationship between facility perception of consumers and consumer purchase intention. In addition, equivocal research conducted by (Tuan et al., 2022) in Vietnam, it is evident that government support, and infrastructure attributes revealed that positive and significant influence of electric vehicles purchase intention.. Meanwhile, Michael et al. (2022) and (Bennett & Vijaygopal, 2018) found that a direct impact of Government financial support on consumer purchasing interest in India.

The results of this study illustrate that the tax relief provided by the government in 2019 in the form of tax exemption of import fees and in 2023 the exemption of zero per cent value-added tax (PPN) on goods cannot improve the relationship of negative consumer perceptions of battery condition facilities, such as : durability of the battery, duration of electric car battery charging, the ease of location of charging the electric car battery, the safety of the battery, and Service and mechanical support. Although consumer perceptions of battery facilities are still negative, electric car products that guarantee no battery problems can increase purchase intention, this is evidenced by the increase in electric car sales from 2020-2022 of 495 units to 5,849 BEV units in 2023.

5.6. Regulation Moderate the Relationship Brand Image Perception on Electric Car Purchase Intention

The analysis results revealed that the relationship of brand image perception on the purchase interest variable has been moderated by government regulation. This findings similar with the investigation conducted by (Tuan et al., 2022) in Vietnam, showed that government support a positive and significant influence on the inclination to acquire electric vehicles. This stands in contrast to observations in India, where Michael et al. (2022) and (Bennett & Vijaygopal, 2018) establish a direct impact of financial support on consumer purchasing interest. This is notable, given the limited enthusiasm among consumers for electric cars, even in the presence of government stimuli. This research is consistent with the findings presented by Tirtayasa and Mukmin (2017). The research results indicated that there is a government program positive and significant influence brand image relationship on marketing performance in small and medium enterprises at Indonesia. The results of this study illustrate that the tax relief provided by the government in 2019 in the form of a tax exemption for import fees and in 2023 a zero per cent exemption from goods value added tax (PPN) can affect the relationship between consumer perceptions of the electric car brand image and consumer purchase intention. This is evidenced by the case of Toyota Electric cars which still have high sales in 2023, which is 482 units. Furthermore, Toyota also issued a hybrid electric car (dual function; fossil fuel and battery) that received sales in 2023 of 4,852 units, this means that the Toyota electric car brand image is still high for consumers in influencing consumer purchase intention.

6. Conclusion

The analytical findings support Hypothesis 1, indicating a positive and statistically significant impact of price perception on purchase intention. This aligns with the conclusions drawn by Sasmita &

Madiawati (2021) study, emphasizing the influential role of price in shaping purchase intentions, particularly in the domain of hybrid cars. Descriptive analysis further underscores that 64% of consumers firmly associate the pricing of electric cars with the brand and design features of the vehicle. In contrast, Hypothesis 2 is refuted based on the evidence, suggesting that regulatory perceptions do not amplify the influence of price perceptions on the purchase intention of electric cars. This diverges from the findings of (Tirtayasa & Daulay, 2021), who did not observe any moderating effect of government regulations on the relationship between price and marketing performance. Hypothesis 3 is validated as regulatory perceptions are identified as a reinforcing factor in the influence of facilities on the purchase intention of electric cars. This finding aligns with the research by Agustini et al. (2022), emphasizing the positive impact of facilities on purchase intention. Notably, the highest respondent endorsement (19%) in the descriptive analysis emphasizes the significance of electric car battery life and associated facilities provided by the company.

However, Hypothesis 4 is contradicted, indicating that regulatory perceptions do not amplify the impact of facility perceptions on the purchase intention of electric cars. This contradicts the findings of (Tanjung et al., 2022) who suggested that government regulations, including subsidies, do not significantly influence consumer purchase intention due to concerns about battery charging infrastructure and the durability of electric car batteries.

In addition, Hypothesis 5 is supported, highlighting the positive influence of Brand Image perception on the Purchase Intention of electric cars. This aligns with the research conducted by (Prasetyo et al., 2022), emphasizing the affirmative impact of Brand Image on Purchase Intention. The descriptive analysis emphasizes model/design, shape, and color as predominant factors influencing respondents' preferences.

Hypothesis 6 is affirmed, establishing that regulatory perceptions can enhance the influence of Brand Image perceptions on the purchase intention of electric cars. This resonates with the research by (Tirtayasa & Mukmin, 2017). suggesting that government programs act as moderators in the marketing performance of small and medium industries. The descriptive analysis underscores the role of government subsidies in attracting consumers to purchase electric cars, contingent upon the perceived Brand Image of products available in the market.

The limitation of this research such as:

1. The study offers valuable survey-based insights into purchase intention dynamics, but has constraints in terms of sample representativeness. Prioritizing diverse samples across Indonesia in future inquiries will aid stronger generalizations.
2. The incorporation of qualitative inputs can enhance understanding of nuanced, context-specific decision-making considerations around electric vehicles.

For future research the author suggests to other researchers to add some variables such as consumer satisfaction, product differentiation, consumer lifestyle, and innovation. Furthermore, this research can also be used to test other research objects, such as electric motorbikes that are also subsidies by the Indonesian government.

7. Implication

Based on the conclusions above, the research implication are follows:

1. The government must prepare infrastructure for free battery charging and provide certainty that using electric car batteries is safe, cheap, and environmentally friendly.
2. Electric car companies should guarantee the convenience, efficiency, safety, and comfort of electric cars compared to fossil fuel cars, thereby creating a positive brand image for consumers.
3. The government should provide the same subsidies as Japanese-made electric cars because Japanese-made cars have a very strong brand image to Indonesian consumers compared to electric cars

made in China and Korea. Evidently, the relatively cheaper price of electric cars made in China and Korea has not reached the sales target set by the Indonesian government.

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