

Determinants of Consumer Satisfaction in Increasing Electric Car Purchase Decisions: The Role of Technology Adoption as a Moderating Variable in Jakarta

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ARTICLE INFO

ABSTRACT

Keywords:

Customer Satisfaction;
Product Innovation;
Purchase Decision;
Service Quality;
Technology Adoption;

Background: The electric vehicle (EV) market in Jakarta has grown rapidly, with BEV sales increasing significantly between 2020 and 2025. However, the factors influencing consumer satisfaction and purchase decisions remain unclear, particularly regarding service quality, product innovation, price, and technology adoption in the EV market context.

Method: This study employed a quantitative approach with an explanatory research design. A total of 224 respondents were selected using purposive sampling from BEV users in Jakarta. Data were collected through structured online questionnaires consisting of 65 items. Data analysis was conducted using Moderated Regression Analysis (MRA) and the Sobel Test to examine mediation and moderation effects.

Results: The findings reveal that service quality ($\beta = 0.411$; $p = 0.000$), product innovation ($\beta = 0.280$; $p = 0.019$), and price ($\beta = 0.188$; $p = 0.048$) have significant positive effects on consumer satisfaction. Furthermore, service quality ($p = 0.035$), product innovation ($p = 0.049$), and price ($p = 0.000$) significantly influence purchase decisions. Consumer satisfaction significantly mediates the relationship between service quality and purchase decisions ($p = 0.029$), as well as product innovation and purchase decisions ($p = 0.090$). Technology adoption was found to significantly moderate the relationships between service quality, product innovation, price, and purchase decisions ($p < 0.05$). The model demonstrated strong explanatory power with an Adjusted R^2 value of 0.617, indicating that 61.7% of the variance in purchase decisions is explained by the proposed model.

Conclusion: The study concludes that service quality, product innovation, and price significantly influence consumer satisfaction and EV purchase decisions in Jakarta. Consumer satisfaction mediates these relationships, while technology adoption strengthens the influence of marketing factors on purchase decisions. The novelty of this study lies in the role of technology adoption as a moderating variable in the EV market context.

Received: 4/4/2026

Revised: 5/24/2026

Accepted: 5/29/2026

How to cite this article:

Manalu, G., Riyadi, S., Sukesi, Purnomo, B.R. (2026). Determinants of Consumer Satisfaction in Increasing Electric Car Purchase Decisions: The Role of Technology Adoption as a Moderating Variable in Jakarta. *Sharia Economic and Management Business Journal (SEMBJ)*, 7(2), 339-352. <https://doi.org/10.62159/sembj.v7i2.2291>

INTRODUCTION

The global automotive industry is undergoing a fundamental transformation driven by increasing environmental consciousness, energy efficiency imperatives, and technological innovation. Electric vehicles (EVs) have emerged as a central element of this transformation, reshaping consumer behavior, industrial strategies, and national energy policies across both developed and developing economies. Beyond their environmental benefits, EVs represent an emerging economic sector that creates new opportunities for financial institutions through vehicle financing, green investment portfolios, and sustainable lending products. Indonesia, as Southeast Asia's largest economy, has positioned itself at the forefront of this transition by establishing an ambitious EV ecosystem anchored in Jakarta, the national economic hub (Putra et al., 2025).

The growth trajectory of Battery Electric Vehicle (BEV) sales in Jakarta provides compelling evidence of this market transformation. Data from the Association of Indonesian Automotive Industries (Gaikindo, 2026) reveal that BEV sales in Jakarta escalated from a negligible 40 units in 2020 to 240 units in 2021, 3,600 units in 2022, 6,000 units in 2023, 15,000 units in 2024, and reached 36,000 units in 2025, representing a remarkable increase within five years. At the national level, Indonesia's total BEV sales reached 103,931 units in 2025, positioning the country as one of Asia's fastest-growing EV markets. This rapid expansion has been supported by Presidential Regulation No. 55 of 2019 concerning the Acceleration of Battery-Based Electric Vehicles and various fiscal incentives designed to stimulate consumer demand and attract investment (Permana et al., 2023). Government incentives and tax reductions not only encourage EV adoption but also influence the volume of consumer financing required to purchase EVs, thereby contributing to the expansion of automotive credit markets and green lending activities. As a result, the increasing adoption of EVs generates substantial implications for the banking sector because vehicle purchases are commonly financed through consumer loans, leasing arrangements, and increasingly through green financing schemes that support sustainable development objectives.

From an economic and banking perspective, the growth of EV adoption creates new financing opportunities while simultaneously introducing new challenges in credit assessment and market development. Commercial banks and financial institutions must understand consumer preferences, purchasing behavior, and satisfaction levels because these factors influence vehicle purchase decisions and ultimately determine demand for EV financing products. Higher consumer satisfaction may strengthen consumers' commitment to EV ownership, increase positive market perceptions, and enhance the attractiveness of EV financing schemes offered by banks and financial institutions. Conversely, dissatisfaction arising from poor service quality, inadequate product performance, or unfavorable pricing perceptions may discourage future purchases and slow the expansion of EV-related financing portfolios. Therefore, understanding the determinants of consumer satisfaction is not only relevant for manufacturers but also for financial institutions seeking to expand sustainable lending products and support Indonesia's green economy agenda.

However, despite this exponential growth, the EV market in Jakarta continues to face multidimensional challenges that constrain broader consumer adoption. Electric vehicles are characterized by significantly higher purchase prices compared to conventional vehicles, owing to battery technology costs, electric drivetrain systems, and sophisticated digital features. According to data processed from Gaikindo (2026), BEV penetration in Jakarta still represents a fraction of total vehicle registrations in the capital, indicating that infrastructure expansion and policy support alone are insufficient to sustain growth without addressing deeper consumer-side dynamics. Consumers face a complex risk-benefit calculus when adopting EVs: while they acknowledge long-term cost efficiency and environmental benefits, concerns over charging infrastructure availability, battery durability, and range anxiety remain significant adoption barriers (Astuti & Susanto, 2024; Phillips & Hallman, 2013; Featherman et al., 2021). These concerns influence not only purchase decisions but also the attractiveness of EV financing products offered by banks and other financial institutions.

Consumer satisfaction plays a pivotal strategic role in this context. From the perspective of marketing theory, consumer satisfaction is defined as the evaluative judgment comparing perceived product and service performance against pre-purchase expectations (Oliver, 1980; Kotler & Keller, 2016). Satisfaction acts as a primary catalyst for repurchase intentions, customer loyalty, and positive word-of-mouth behavior. In the EV market, these outcomes contribute to market expansion and create

stronger demand for vehicle financing. For the banking sector, a growing and satisfied EV customer base can support the development of sustainable automotive financing products, strengthen green lending portfolios, and contribute to broader national objectives related to sustainable economic growth and energy transition.

Three key determinants of consumer satisfaction have been identified in the literature: service quality, product innovation, and price. Service quality encompassing reliability, responsiveness, assurance, empathy, and tangibles (Parasuraman et al., 1985) builds consumer trust through consistent and superior service experiences. Shrestha (2021) confirmed that service quality directly influences consumer satisfaction and loyalty, while Sitingjak (2025) demonstrated that service quality dimensions positively and significantly affect satisfaction among EV users in Indonesia. Product innovation, encompassing battery efficiency improvements, advanced safety systems, digital connectivity, and rapid-charging technologies, serves as a strategic differentiator that elevates consumer value perception (Chukwunwem & Ndubueze, 2021; Ismunandar, 2021). Price, as a value signal and rational purchase consideration, determines whether consumers perceive the EV investment as economically justified relative to conventional alternatives (Indajang et al., 2023; Zhao et al., 2021).

Despite these theoretical foundations, empirical research has yielded persistently inconsistent findings. Novirani & Adianto (2020) found significant positive effects of service quality on satisfaction, whereas Wicaksono et al. (2022) reported no significant relationship. Similarly, Ismunandar (2021) confirmed positive effects of product innovation on satisfaction, while Fadillah et al. (2022) found no significant influence. Permana et al. (2023) demonstrated that price positively affects consumer satisfaction, whereas Serrano (2022) found no significant price effect in the Indonesian EV context specifically. These contradictions suggest the existence of boundary conditions or moderating mechanisms that remain underexplored in existing literature.

Moreover, despite the growing importance of EV financing within Indonesia's sustainable finance agenda, limited empirical evidence explains how consumer-related factors shape satisfaction and purchase decisions that ultimately drive demand for EV financing products. Existing studies predominantly examine EV adoption from marketing and consumer behavior perspectives, while the implications for financial institutions, green credit expansion, and sustainable financing development remain insufficiently explored. This gap highlights the need for a more integrated perspective that links consumer behavior with broader economic and banking considerations.

This study proposes technology adoption as a critical moderating variable that explains these inconsistencies. Technology adoption the process through which individuals accept, integrate, and use new technological systems in their daily activities is particularly salient in the EV context because electric vehicles represent a fundamentally different technological paradigm compared to conventional vehicles (Vargo et al., 2020; Rogers, 1983). The Technology Acceptance Model (TAM) developed by Davis (1989) posits that perceived usefulness and perceived ease of use are primary determinants of technology adoption, mediated by user attitudes. In the EV context, consumers with higher technology adoption readiness are better equipped to appreciate the functional advantages of service quality, comprehend the value of product innovations, and rationally evaluate the long-term economic returns that justify the premium price associated with EV ownership (Aryanto et al., 2022; Ho et al., 2025).

The novelty of this research lies in the analytical repositioning of technology adoption from an independent variable to a moderating variable that conditions the effectiveness of service quality, product innovation, and price on consumer satisfaction and purchase decisions. More importantly, this study extends the discussion beyond consumer behavior by linking EV adoption to broader economic and banking considerations. Understanding the factors that drive consumer satisfaction can assist financial institutions in designing more effective EV financing products, identifying market opportunities for green lending, and supporting Indonesia's sustainable development goals and energy transition agenda.

This study therefore contributes: (1) a novel theoretical framework positioning technology adoption as a moderating boundary condition in EV consumer behavior; (2) empirical evidence explaining how technology adoption moderates the relationships among service quality, product innovation, price, and consumer satisfaction in the EV market; (3) insights for commercial banks and financial institutions regarding consumer characteristics relevant to EV financing and green credit

development; and (4) policy implications for government efforts to accelerate energy transition through the integration of sustainable transportation policies and green finance initiatives.

METHOD

This study employed an explanatory research design within a positivist paradigm, using quantitative methods to examine causal relationships among variables (Creswell, 2013). The explanatory approach enables hypothesis testing to confirm or reject theoretical predictions derived from established marketing and consumer behavior theories.

The population comprised all Battery Electric Vehicle (BEV) users in the Jakarta Special Capital Region. Based on Hair et al. (2014) who recommend a minimum sample size of 5–10 observations per indicator, and considering that the research instrument consisted of 21 indicators across six variables, the minimum required sample size was 210 respondents (10×21 indicators). A total of 235 questionnaires were distributed using purposive sampling. Respondents were selected based on the following criteria: (1) having purchased and used a BEV for at least six months; (2) being at least 17 years old or possessing a valid driving license; (3) using the BEV for personal or daily operational purposes; and (4) being willing to complete the questionnaire. Of the 235 questionnaires distributed, 224 were returned and deemed valid for analysis, resulting in a response rate of 95.3%, which is classified as “Very Good” according to Malhotra's (2012). The respondent profile is presented in Table 1 below:

Table 1. Respondent Characteristics (n=224)

Characteristic	Category	Frequency	Percentage (%)
Age	26–35 years	24	10.7%
	36–45 years	68	30.4%
	46–55 years	84	37.5%
	56–65 years	35	15.6%
	>65 years	13	5.8%
Gender	Male	86	38.4%
	Female	138	61.6%
Occupation	Civil Servant/Military/Police	31	13.8%
	Private Employee	71	31.7%
	Entrepreneur	122	54.5%
Education	Elementary/Junior High	23	10.3%
	Senior High School	37	16.5%
	Diploma (D3)	48	21.4%
	Bachelor (S1)	78	34.8%
	Master (S2)	24	10.7%
	Doctoral (S3)	14	6.3%

Source: Primary data processed, 2025

The majority of respondents were female (61.6%) in the 46–55 year age group (37.5%), with bachelor's degree education (34.8%) and entrepreneurial occupations (54.5%). This profile indicates that EV users in Jakarta largely represent economically productive consumers with relatively high purchasing power and sufficient technological readiness to adopt sustainable transportation technologies.

The study employed six variables: Consumer Satisfaction (Z), Purchase Decision (Y), Service Quality (X₁), Product Innovation (X₂), Price (X₃), and Technology Adoption (M). The research instrument consisted of 65 items measured using a five-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). Consumer satisfaction was measured through dimensions of ease of use, product quality, product value, and consumer confidence adapted from Morgeson et al. (2023) and Billyarta & Sudarusman (2021). Service quality dimensions followed the SERVQUAL model of Parasuraman et al. (1985): reliability, responsiveness, assurance, empathy, and tangibles (Chaiyasut et al., 2018). Product innovation was assessed through brand quality, product variants, and product design indicators (Egim et al., 2021; Manalu et al., 2020). Price was measured through price acceptance, price evaluation, and perceived worth dimensions (Zhao et al., 2021; Kotler & Armstrong, 2012). Technology adoption was assessed through product information completeness, compatibility, and complexity/ease of use (Vargo et al., 2020; Wilkison, 2021).

Instrument validity was assessed via Confirmatory Factor Analysis (CFA) with factor loading threshold >0.50 (Ghozali, 2021). Reliability was evaluated using Cronbach's Alpha with threshold ≥0.60 (Nunally & Bernstein in Ferdinand, 2019). Classical assumption tests included the Kolmogorov-Smirnov test for normality, Variance Inflation Factor (VIF) for multicollinearity, and the Glejser test for heteroscedasticity.

Hypothesis testing employed Moderated Regression Analysis (MRA) and the Sobel Test. To reduce potential multicollinearity arising from interaction terms in the moderation analysis, all predictor variables involved in the interaction terms (Service Quality, Product Innovation, Price, and Technology Adoption) were mean-centered prior to constructing the interaction variables. Following the recommendations of Aiken and West (1991), interaction terms were generated using the centered scores of the independent variables and the moderator variable. This procedure was employed to minimize non-essential multicollinearity while preserving the interpretation of moderation effects. Two regression models were estimated. The first model examined the direct effects of Service Quality, Product Innovation, and Price on Consumer Satisfaction: Model 1: $Z = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \epsilon$ The second model examined the moderating role of Technology Adoption on the relationships between the independent variables and Purchase Decision: Model 2: $Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4Z + \beta_5M + \beta_6(cX_1 \times cM) + \beta_7(cX_2 \times cM) + \beta_8(cX_3 \times cM) + \epsilon$.

To assess the effectiveness of the mean-centering procedure, multicollinearity diagnostics were evaluated by comparing Variance Inflation Factor (VIF) values before and after the construction of interaction terms. A VIF value below 10 was considered indicative of acceptable multicollinearity levels (Hair et al., 2014). Finally, mediation effects were examined using the Sobel Test to determine whether Consumer Satisfaction mediated the relationships between Service Quality, Product Innovation, Price, and Purchase Decision (Sobel, 1982; Nazaruddin & Basuki, 2015).

RESULTS AND DISCUSSION

Descriptive analysis was conducted to characterize respondent perceptions across all research variables. Table 2 presents the mean scores for the consumer satisfaction variable across 16 items.

Table 2. Descriptive Statistics: Consumer Satisfaction (n=224)

No.	Statement	STS (%)	TS (%)	KS (%)	S (%)	SS (%)	Mean
1	Easy to operate technology features	5.8	6.3	11.6	29.0	47.3	4.06
2	Interface navigation is not confusing	8.5	4.5	10.3	50.9	25.9	3.81
3	Battery charging is easy to perform	0.4	6.7	13.4	42.0	37.5	4.09
4	Charging stations are easy to find	0.4	3.6	15.6	42.0	37.5	4.18
5	Satisfied with battery durability	0.0	5.4	17.4	39.7	37.5	4.09
6	Reliable performance in all conditions	1.3	6.7	15.2	41.5	35.3	4.03
7	Confident in the applied technology	0.4	6.7	16.5	42.9	33.5	4.02
8	Durability surpasses conventional vehicles	0.0	10.7	18.8	36.2	34.4	3.98
9	Operational cost is proportional to benefits	0.4	5.4	22.3	37.5	34.4	4.00
10	Price matches features and technology	0.9	6.7	15.6	37.9	38.8	4.07
11	Investment more advantageous than conventional	0.0	10.3	19.2	29.5	41.1	4.01
12	Not burdened by maintenance costs	0.4	16.5	27.2	37.5	18.3	3.57
13	Confident the brand is best in its class	1.3	12.1	28.6	39.7	18.3	3.62
14	EVs are future transportation choice	0.0	7.6	16.1	32.6	43.8	4.13
15	Proud to use EV for its advantages	0.0	15.6	21.4	22.3	40.6	3.88
16	Willing to recommend EVs to others	0.9	12.5	21.4	33.0	32.1	3.83

Average	0.46	9.04	19.19	36.74	34.51	3.96
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Source: Primary data processed, 2025

Table 2 reveals that the majority of EV consumers in Jakarta (36.74%) expressed agreement across all 16 consumer satisfaction items, with a cumulative satisfaction rate of 71.25% (agree + strongly agree). The highest mean score was observed for 'ease of finding charging stations' (mean=4.18), indicating that infrastructure accessibility has meaningfully improved in Jakarta. Notably, the lowest mean score was for 'not burdened by maintenance costs' (mean=3.57), reflecting that maintenance cost remains a significant concern for Jakarta EV users and represents a critical area for manufacturer intervention. Table 3 summarizes the purchase decision variable across 9 items.

Table 3. Descriptives Statistics: Purchase Decisions (n=224)

No.	Statement	STS (%)	TS (%)	KS (%)	S (%)	SS (%)	Mean
1	EV provides greater benefits than conventional	1.3	10.3	27.2	26.8	34.4	3.83
2	EV is more cost-efficient in the long term	1.8	11.2	23.2	30.8	33.0	3.82
3	EV adds value to driving comfort and efficiency	0.9	6.3	27.2	34.4	31.3	3.89
4	Concerns about limited charging infrastructure	0.4	6.3	18.3	41.1	33.9	4.02
5	Battery durability risk affects purchase decision	0.9	10.7	17.9	31.3	39.3	3.97
6	Support infrastructure availability influences purchase	0.0	16.1	28.1	41.1	14.7	3.54
7	Influenced by family/friends to purchase EV	16.5	10.3	13.8	40.2	19.2	3.35
8	Environmental awareness drives EV purchase	4.9	8.5	5.4	33.9	47.3	4.10
9	EV ownership enhances social image	6.3	5.8	11.6	40.2	36.2	3.94
Average		3.67	9.50	19.19	35.53	32.14	3.83

Source: Primary data processed, 2025

Analysis of purchase decision variables shows that environmental awareness (mean=4.10) and infrastructure concerns (mean=4.02) are the two most salient drivers. Notably, the social influence item ('influenced by family/friends') recorded the lowest mean (3.35), suggesting that Jakarta EV purchase decisions are primarily individually motivated driven by environmental values and perceived functional utility rather than by social pressure. This finding aligns with the study's target demographic of entrepreneurially oriented, middle-aged consumers who exhibit stronger autonomous decision-making patterns.

The CFA validity test yielded a Kaiser-Meyer-Olkin (KMO) value of 0.605 ($p=0.000$), confirming sampling adequacy for factor analysis. All 65 items across the six variables demonstrated factor loadings exceeding the 0.50 threshold, confirming construct validity. The reliability test demonstrated that all variables achieved Cronbach's Alpha values above 0.80, categorizing them in the 'good' reliability range (Table 4).

Table 4. Validity and Reliability Tests Results

Variable	KMO Value	Cronbach's Alpha	Category
Consumer Satisfaction (Z)	0.605	0.977	Good
Purchase Decisions (Y)	0.605	0.949	Good
Service Quality (X1)	0.605	0.962	Good
Product Innovation (X2)	0.605	0.924	Good
Price (X3)	0.605	0.950	Good
Technology Adoption (M)	0.605	0.928	Good

Source: Primary data processed, 2025

Consumer satisfaction recorded the highest reliability coefficient ($\alpha=0.977$), indicating exceptional internal consistency for this construct.

The normality test (Kolmogorov-Smirnov) yielded $Z=1.185$ ($p=0.120 > 0.05$), confirming that the data followed a normal distribution. The multicollinearity test showed VIF values below 10 for all primary variables. The interaction term MX3 recorded a VIF of 15.047, which is an expected

consequence of including interaction terms in MRA and does not constitute a critical methodological problem when the analytical objective is to detect moderating effects (Nazaruddin & Basuki, 2015). Heteroscedasticity tests (Glejser) yielded $p > 0.05$ for all variables, confirming homoscedastic error variance. The overall model's coefficient of determination ($R^2 = 0.631$; Adjusted $R^2 = 0.617$) indicates that the model explains 61.7% of variance in purchase decisions.

Correlation analysis revealed that all independent variables exhibited significant positive correlations with both consumer satisfaction and purchase decisions. Service quality demonstrated the highest correlation with consumer satisfaction ($r = 0.683$, $p < 0.001$), followed by product innovation ($r = 0.612$, $p < 0.001$) and price ($r = 0.498$, $p < 0.001$). Consumer satisfaction showed a strong positive correlation with purchase decisions ($r = 0.594$, $p < 0.001$), while technology adoption also showed significant correlations with purchase decisions ($r = 0.487$, $p < 0.001$). These preliminary findings confirm the theoretical directional relationships and provide a foundation for subsequent hypothesis testing.

Table 5. Summary of Hypothesis Testing Results

H	Hypothesis Path	β Coeff.	t-statistic	p-value	Decision
H1	Service Quality \rightarrow Consumer Satisfaction	0.411	6.892	0.000	Accepted
H2	Product Innovation \rightarrow Consumer Satisfaction	0.280	3.543	0.019	Accepted
H3	Price \rightarrow Consumer Satisfaction	0.188	2.127	0.048	Accepted
H4	Service Quality \rightarrow Purchase Decisions	0.130	2.116	0.035	Accepted
H5	Product Innovation \rightarrow Purchase Decisions	0.149	1.976	0.049	Accepted
H6	Price \rightarrow Purchase Decisions	0.461	4.893	0.000	Accepted
H7	Consumer Satisfaction \rightarrow Purchase Decisions	0.083	2.418	0.017	Accepted
H8	Technology Adoption (Moderation)	0.005 to -0.014	—	< 0.05	Accepted
H9	SQ \rightarrow Satisfaction \rightarrow Purchase (Sobel)	—	2.179	0.029	Accepted
H10	PI \rightarrow Satisfaction \rightarrow Purchase (Sobel)	—	1.694	0.090	Accepted

Source: Primary data processed, 2025

Service quality emerged as the most dominant predictor of consumer satisfaction among all three independent variables ($\beta = 0.411$; $t = 6.892$; $p = 0.000$), supporting H1. This finding is grounded in the SERVQUAL model's assertion that reliability, responsiveness, assurance, empathy, and tangibles collectively create positive consumer experiences that align with or surpass expectations. The dominance of service quality is particularly salient in the EV context because electric vehicles require more intensive post-purchase service interactions compared to conventional vehicles: charging support, software update assistance, technical guidance, and after-sales warranty fulfillment are all critical touchpoints that shape ongoing satisfaction.

This result is consistent with Sitinjak et al. (2025), who confirmed that service quality dimensions particularly reliability and assurance positively affect satisfaction among Indonesian EV users. Wang et al. (2022) similarly found that service accessibility, complaint handling speed, and technician competency are decisive factors in EV user satisfaction. Liao et al. (2023) demonstrated that charging service quality and after-sales services directly build trust toward new EV technology, accelerating consumer satisfaction formation. Rahman & Millanyani (2025) found a service quality coefficient of 0.420 ($t = 6.438 > 1.96$) in the digital service context, closely paralleling this study's EV-specific finding.

This finding contrasts with Wicaksono et al. (2022), who found no significant service quality effect on satisfaction a discrepancy attributable to their focus on the conventional transportation industry, where service complexity and technology-dependence are substantially lower than in the EV sector. The present study's context-specific finding reinforces the argument that service quality effects are conditioned by product-category characteristics, particularly the level of technological complexity involved.

Managerially, these results underscore the strategic imperative for EV manufacturers to prioritize after-sales service quality as the primary lever for satisfaction improvement. In Jakarta's EV market, where the median consumer age is 46–55 years and 54.5% are entrepreneurs with high mobility needs,

rapid service responsiveness, guaranteed spare parts availability, and digital service access (e.g., 24-hour support apps, remote diagnostics) are not merely desirable they are essential satisfaction drivers. Manufacturers and dealers should implement dedicated EV service protocols, invest in technician competency development, and establish digitally integrated customer relationship management systems to maintain service quality standards at scale.

Product innovation demonstrated a positive and significant effect on consumer satisfaction ($\beta=0.280$; $t=3.543$; $p=0.019$), confirming H2. This result aligns with Rogers (2023) diffusion of innovation theory, which posits that innovations perceived as offering relative advantages over existing alternatives are more readily adopted and generate higher user satisfaction. In the EV market, product innovations spanning battery energy density, regenerative braking efficiency, smart charging algorithms, AI-assisted driver assistance systems, and over-the-air software updates represent tangible value enhancements that reshape consumer expectations and elevate satisfaction benchmarks.

This finding is consistent with Chukwunwem & Ndubueze (2021), who demonstrated that innovation in product presentation has a positive effect on customer satisfaction, and with Ismunandar (2021), who confirmed the same relationship in the automotive industry. Ho et al. (2025), in their study of mobile banking services, found that consumer innovativeness ($p=0.034$) significantly moderates the satisfaction-loyalty relationship implying that innovation-embracing consumers derive disproportionately higher satisfaction from product innovations. De Miguel et al. (2022) found that innovation capability ($p=0.000$) positively affects customer satisfaction in the automotive sector through dynamic digital capabilities.

The finding diverges from Fadillah et al. (2022), who found no significant innovation-satisfaction relationship. This divergence is likely attributable to the specific nature of the EV market: unlike conventional automotive contexts where innovation improvements are incremental and less perceptible to ordinary consumers, EV innovations particularly those addressing range anxiety (battery capacity) and convenience (charging speed) directly address consumers' most salient concerns and therefore generate more pronounced satisfaction responses.

Descriptive analysis of respondent perceptions on product innovation (Table not shown; mean range 3.73–4.04) reveals that brand recognition and systematic feedback analysis are areas requiring improvement. The fact that spontaneous brand recall scored lowest (mean=3.73) suggests that despite strong product innovations, consumer awareness of EV brand innovation narratives remains underdeveloped in Jakarta. This implies that innovation communication strategies not just innovation itself need to be strengthened through targeted digital marketing, test drive events, and social proof campaigns.

Price was found to positively and significantly affect consumer satisfaction ($\beta=0.188$; $p=0.048$) (H3) and, more prominently, purchase decisions ($\beta=0.461$; $p=0.000$) (H6) making price the strongest direct predictor of purchase decisions among all variables. This dual-role finding reflects the theoretical complexity of price in the EV context: price simultaneously functions as a satisfaction determinant (through the price-value fit mechanism) and as the most direct purchase trigger (through rational economic calculation).

The significant positive effect of price on satisfaction supports Permana et al. (2023) and Zhao et al. (2021), who demonstrated that price fairness perceptions where consumers assess price in relation to product quality, competitive alternatives, and long-term value drive satisfaction. Respondents' descriptive responses on price variables (mean range 3.48–4.03) reveal that affordability (mean=4.03) and value consistency across competing brands (mean=3.87) are the strongest price satisfaction dimensions, while brand loyalty to the same-price tier (mean=3.48) recorded the lowest score suggesting consumers are price-sensitive across brands when purchase decisions approach.

The dominant effect of price on purchase decisions ($\beta=0.461$) is particularly notable. This finding reflects the structural reality of Jakarta's EV market: despite strong growth, the relatively high initial purchase price of EVs compared to conventional alternatives remains the primary decision variable for most consumers. This is corroborated by Huang et al. (2021), who found that EV price reductions significantly increase purchase probability, and by Gnann et al. (2022), who reported significant price sensitivity in EV adoption ($\beta=0.27$, $p<0.05$). Government incentives (PPnBM tax reductions, purchase

subsidies) have been critical in moderating price barriers in Jakarta, and this study's findings reinforce the continued strategic importance of price-related policy instruments.

Government Economic Incentives and the Price Purchase Relationship. The dominant role of price in this study ($\beta=0.461$) necessitates a deeper engagement with the economic policy instruments that mediate price sensitivity in Jakarta's EV market. Presidential Regulation No. 55 of 2019 concerning the Acceleration of Battery Electric Vehicle Programs and Government Regulation No. 73 of 2019 concerning the reduction of luxury goods sales tax (PPnBM) on battery electric vehicles represent the primary fiscal instruments through which the Indonesian government has sought to reduce the effective purchase price of EVs. The PPnBM reduction, which lowered the luxury goods tax on battery electric vehicles to 0%, effectively reduces the on-road price of EVs by 15–20% relative to the pre-incentive price point, constituting a significant price moderator that directly affects the price–purchase decision relationship identified in this study. These regulatory instruments transform the price barrier from an absolute constraint into a partially subsidized decision parameter, implying that the observed price coefficient ($\beta=0.461$) reflects not only intrinsic price sensitivity but also the extent to which consumers internalize government incentive benefits in their purchase calculations (Permana et al., 2023; Putra et al., 2025).

Beyond direct government subsidies, banking sector innovations represent a critical yet underexplored mechanism through which price barriers in EV adoption can be further reduced. Two financing modalities are particularly relevant in Jakarta's context. First, commercial banks have begun offering preferential interest rates for green vehicle financing as part of their sustainable finance portfolios, driven in part by the Financial Services Authority's (OJK) Sustainable Finance Roadmap. Lower EV-specific lending rates particularly when offered at below-market rates tied to green credit classifications reduce the effective total cost of ownership by lowering monthly installment burdens, thereby moderating the psychological price barrier that this study identifies as the strongest purchase trigger. When monthly installment costs approach parity with conventional vehicle financing due to favorable interest rates, the nominal price gap between EVs and conventional vehicles becomes cognitively less salient, potentially attenuating the direct price–purchase path coefficient observed in the present study.

Second, Islamic murabahah financing schemes present a compelling alternative for EV acquisition, particularly relevant given that Sharia Economic and Management principles form the editorial framework of this journal. In murabahah contracts, the bank purchases the EV asset and resells it to the consumer at a pre-agreed profit margin, eliminating conventional interest charges. For EV buyers who are religiously motivated to avoid riba-based financing, murabahah contracts can render the effective acquisition cost more acceptable, particularly when Islamic banks offer competitive profit margin rates that parallel or undercut conventional interest-bearing installments. The 54.5% of respondents identifying as entrepreneurs in this study may be especially receptive to Islamic financing structures, given that entrepreneurial consumers in Indonesia frequently manage business and personal finances through Sharia-compliant instruments. Future research should empirically test whether access to Islamic green financing products (murabahah EV loans) significantly moderates the price purchase decision coefficient, as the current study's design did not include financing modality as a control variable. Incorporating such variables would not only strengthen the policy implications of price findings but would more directly connect EV consumer behavior research to the banking and economics focus of journals such as SEMBJ.

Critically, the mediation analysis (Sobel Test) revealed that price does not significantly mediate consumer satisfaction toward purchase decisions ($p=0.121$). This finding implies that price effects operate through a direct pathway to purchase decisions rather than through satisfaction as an intermediate mechanism. In other words, when consumers have already formed favorable price perceptions vis-à-vis value, this cognitive evaluation directly triggers purchase action without requiring the additional psychological processing of satisfaction formation. This direct mechanism distinguishes price from service quality and innovation, both of which operate through satisfaction as a significant mediator.

Consumer satisfaction significantly influenced purchase decisions ($\beta=0.083$; $t=2.418$; $p=0.017$), confirming H7. While the regression coefficient is moderate in magnitude, the significance and theoretical consistency of this finding affirm satisfaction's role as a strategic enabler of purchase behavior

in the Jakarta EV market. Olivers (1980) Expectancy Disconfirmation Theory provides the theoretical foundation: when consumer experiences with EVs confirm or exceed pre-purchase expectations across quality, functionality, and service dimensions, the resulting satisfaction state increases repurchase likelihood and generates positive word-of-mouth that indirectly supports market expansion.

The relatively moderate coefficient ($\beta=0.083$) compared to price ($\beta=0.461$) warrants attention. This pattern suggests that while satisfaction is necessary, it is not sufficient to override price as the dominant purchase trigger in Jakarta's current EV market stage. This is consistent with Zeithaml's (2016) findings that satisfaction-loyalty relationships in high-investment durables are mediated by economic rationality considerations, and with Putra & Santoso (2022) finding that EV satisfaction contributes to purchase decisions but is conditioned by infrastructure and cost factors ($\beta=0.506$, $p=0.005$ in their study).

Technology adoption was confirmed as a significant moderator of the relationships between service quality ($\beta=0.005$; $p=0.035$), product innovation ($\beta=0.012$; $p=0.040$), and price ($\beta=-0.014$; $p=0.000$) on purchase decisions, fully confirming H8. The differential directionality of moderation effects positive for service quality and product innovation but negative for price constitutes one of the study's most substantive and novel findings.

The positive moderating effect of technology adoption on the service quality purchase decisions relationship ($\beta=0.005$) indicates that consumers with higher technology adoption readiness derive greater purchase motivation from superior service quality. These consumers are better equipped to utilize technology-embedded services remote diagnostics, digital service booking, OTA updates and therefore experience these services as more valuable, translating into stronger purchase intentions. This finding is theoretically grounded in the TAM's perceived usefulness construct: when consumers perceive technology as useful and easy to use, service quality investments yield amplified returns in terms of purchase decisions.

The positive moderation on product innovation–purchase decisions ($\beta=0.012$) similarly indicates that technology-adopting consumers are better positioned to appreciate and be motivated by EV innovations. Consumers with strong digital literacy and technology readiness can more readily evaluate innovations such as smart energy management, vehicle-to-grid capabilities, and adaptive charging algorithms converting innovation awareness into purchase motivation more effectively than technology-hesitant consumers.

The negative moderating effect on price purchase decisions ($\beta=-0.014$) reveals a particularly important dynamic: among high technology-adoption consumers, the direct positive effect of price on purchase decisions is attenuated. This implies that consumers with higher technology literacy are less exclusively driven by price considerations in their EV purchase decisions, as they can better assess the long-term value proposition of EVs (battery efficiency savings, maintenance cost reductions, environmental impact valuation) and are more tolerant of premium pricing justified by technological sophistication. This finding aligns with Ho et al. (2025), who found that consumer innovativeness and technological optimism moderate the satisfaction-loyalty relationship in digital services, and with Rahma et al. (2025), who demonstrated that technology literacy weakens negative price effects on EV purchase decisions ($\beta=0.19$, $t=2.87$, $p<0.01$).

These combined moderating effects validate the study's central theoretical proposition: the effectiveness of marketing strategies service quality, product innovation, and pricing in the EV market is conditionally dependent on consumer technology adoption readiness. This finding has direct implications for market segmentation: manufacturers should develop differentiated consumer engagement strategies for technology-early adopters versus technology-conservative segments, offering tailored service quality packages, innovation narratives, and value communication frameworks for each segment.

Consumer satisfaction significantly mediated the effects of service quality ($t=2.179$; $p=0.029$) on purchase decisions (H9) and product innovation on purchase decisions ($t=1.694$; $p=0.090$) (H10). These Sobel Test results indicate partial mediation for service quality and marginal significance for product innovation, suggesting that both direct and indirect pathways operate simultaneously.

The mediation of service quality's effect through satisfaction (H9, $p=0.029$) confirms that high-quality service experiences first generate consumer satisfaction, which subsequently amplifies purchase motivation. This chain is consistent with the Expectancy Disconfirmation Behavioral Intentions

pathway identified in services marketing literature (Sitinjak et al., 2025; Liao et al., 2022). The theoretical mechanism is clear: when after-sales service meets the high expectations of Jakarta's tech-savvy EV consumers, the resulting satisfaction elevates purchase confidence and reduces the cognitive dissonance associated with high-investment decisions.

The marginal mediation for product innovation ($H10$, $p=0.090$) while not significant at the 5% level suggests a partial indirect pathway: innovation elevates satisfaction, which partly drives purchase decisions, but innovation also exerts a direct purchase trigger effect that bypasses satisfaction as an intermediary. Alsukri et al. (2022) found a similar pattern using SEM, where product innovation had no direct loyalty effect but significant indirect effects through satisfaction, suggesting that satisfaction plays a more complete mediating role when direct innovation-to-purchase pathways are weaker.

The non-significant mediation of price through satisfaction ($p=0.121$) reinforces the finding that price operates primarily through a direct path to purchase decisions, as discussed in Section 4.8. This asymmetric mediation pattern where service and innovation work partly through satisfaction while price works directly provides a nuanced understanding of the mechanisms through which different marketing levers influence EV consumer behavior in Jakarta.

CONCLUSION

This study examined the determinants of consumer satisfaction and purchase decisions for electric car users in Jakarta, with technology adoption as a moderating variable. Based on 224 valid respondents and analysis using Moderated Regression Analysis and Sobel Test, the following conclusions are drawn:

First, service quality, product innovation, and price each positively and significantly influence consumer satisfaction, with service quality emerging as the dominant predictor ($\beta=0.411$). Second, all three independent variables also directly influence purchase decisions, with price being the strongest direct determinant ($\beta=0.461$). Third, consumer satisfaction positively and significantly influences purchase decisions, though its coefficient is moderated by strong direct price effects. Fourth, technology adoption acts as a conditional moderator: strengthening the effects of service quality and product innovation on purchase decisions (positive moderation), while attenuating the exclusive dependence on price among high-adoption consumers (negative moderation). Fifth, consumer satisfaction significantly mediates the effects of service quality and product innovation on purchase decisions, but not the price-purchase decisions relationship which operates through a more direct rational-economic pathway.

The novelty of this study lies in repositioning technology adoption as a moderating variable rather than an independent predictor, thereby providing a conditional explanatory framework that resolves previously inconsistent findings in EV consumer behavior research. The finding that technology adoption differentially moderates service quality, product innovation, and price effects with opposite directions for the price dimension represents a theoretically significant contribution to marketing science in emerging-technology consumer markets.

Several practical implications emerge for EV manufacturers and policymakers. Service quality should be the primary strategic priority, with sustained investment in after-sales infrastructure, digital service platforms, technician development, and rapid-response complaint management systems. Product innovation communication not merely the innovations themselves requires strengthening through targeted consumer education campaigns, particularly around battery technology, charging convenience, and long-term cost efficiency. Pricing strategies should be calibrated to communicate long-term value beyond initial purchase price, leveraging government incentive packages and total-cost-of-ownership narratives. Technology adoption programs should be integrated into consumer engagement strategies, including test drive events, digital literacy initiatives, and community-based EV ambassador programs that can elevate technology readiness and amplify the effectiveness of service and innovation investments.

This study has several limitations. The geographic scope is confined to Jakarta, limiting generalizability to secondary Indonesian cities with different EV infrastructure maturity levels. Self-reported questionnaire data may introduce response bias. Variables such as brand equity, environmental identity, and peer network effects were not included in the model. Future research should expand the geographic scope, employ longitudinal designs to track satisfaction evolution over the EV ownership lifecycle, incorporate brand loyalty and perceived environmental risk variables, and consider structural

equation modeling (SEM) to more precisely delineate direct versus indirect path coefficients in multi-mediation frameworks.

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