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Integrating Dealer Insights and Consumer Preferences in Electric Vehicle Purchase Decisions: An AHP-Based Study in Thailand

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Abstract

This study investigates the determinants of electric vehicle (EV) purchase decisions in Thailand by integrating dealer insights with a structured consumer preference model. Although Thailand's EV 3.0 (2022–2023) and EV 3.5 (2024–2027) policies substantially reduced battery electric vehicle (BEV) prices through subsidies and preferential excise taxation, limited research has examined how consumer priorities evolve beyond financial incentives and differ across age segments. To address this gap, a mixed-method design was adopted. Semi-structured interviews with authorized automobile dealers were conducted to capture market perspectives, and the Analytic Hierarchy Process (AHP) was applied to model and prioritize consumer decision criteria based on a survey of 27 respondents. The results show that Serviceability and Warranty (22.60%) is the most influential factor, followed by Vehicle Utility and Features (18.25%) and Real-World Range Reliability (16.24%). Purchase Price / Total Cost of Ownership (14.53%) and charging-related considerations receive moderate emphasis, indicating that post-purchase assurance and real-world performance remain salient alongside cost. Age-based analysis reveals distinct generational differences in EV purchase priorities. Consumers aged 35–54 prioritize warranty coverage and operational reliability; consumers aged 55+ emphasize functional value and service support; and younger consumers place relatively greater importance on usability and charging accessibility (with the respondent age composition skewed toward 18–25). These findings are exploratory and sample-composition dependent; the pooled priorities reflect the preferences of the participants in this study. Overall, the results suggest a market transition from subsidy-driven purchasing behavior toward risk-mitigation-oriented decision-making. Sustaining EV adoption in Thailand, therefore, requires strengthening after-sales service capacity, enhancing warranty transparency, and addressing long-term ownership concerns alongside continued policy support.

Keywords
Electric vehicle purchase decisions, Analytic Hierarchy Process, Consumer preferences, Dealer insights, Thailand.

1. Introduction

1.1 Background and Policy Context

The global automotive industry is undergoing a structural transformation driven by climate change mitigation, energy security concerns, and rapid technological innovation. Electric vehicles (EVs) have become a core element of national decarbonization strategies, supported by regulatory instruments such as emission standards, fiscal incentives, and public investment in charging infrastructure. While EV adoption has accelerated in advanced economies, adoption patterns in emerging markets remain uneven and context-specific.

Thailand has positioned itself as a regional hub for EV manufacturing and adoption in Southeast Asia. The policy trajectory began with the Board of Investment (BOI) EV promotion scheme in 2020, which provided investment incentives for EV-related manufacturing. This was followed by the EV 3.0 policy during 2022–2023, which offered purchase subsidies and excise tax reductions, and, subsequently, the EV 3.5 policy launched in 2024, which extended incentives while strengthening domestic production requirements. These measures contributed to a sharp increase in battery-electric vehicle (BEV) registrations between 2022 and 2024, elevating Thailand's position in the ASEAN EV market.

Despite these policy efforts, EV purchase decisions in Thailand are influenced by a complex interaction of economic, technical, infrastructural, and behavioral factors. Understanding these decision structures is essential to designing effective, targeted EV policies beyond broad subsidy schemes.

1.2 Research Gap

Existing studies on EV purchase decisions primarily focus on consumer attitudes, technological attributes, and policy incentives (Rezvani et al., 2015; Hardman et al., 2017). While informative, two critical gaps remain. First, limited empirical research integrates automobile dealers' perspectives with consumer decision-making models, even though dealers serve as key information intermediaries in the vehicle purchase process. This qualitative input is crucial for developing context-specific AHP criteria. Second, relatively few studies systematically compare EV decision-making structures across age groups using validated multi-criteria decision-making (MCDM) methods.

In the Thai context, most empirical studies rely on descriptive rankings of barriers (Lertpattararuk & Limmeechokchai, 2024) or single-method approaches, leaving a need for a structured framework that integrates quantitative preference modeling with qualitative market insights.

1.3 Research Objectives and Methods

This study aims to identify and prioritize the key factors influencing consumer electric vehicle (EV) purchase decisions in Thailand using the Analytic Hierarchy Process (AHP) developed by Saaty (1980). Specifically, the research seeks to examine how consumers evaluate criteria when selecting vehicle technologies and to compare decision-making processes across age groups to determine whether generational differences exist in EV preferences. A three-level hierarchical framework is constructed, comprising the overall goal, major criterion groups, and specific evaluation criteria derived from prior literature. Data are collected through structured pairwise comparison questionnaires, and priority weights are calculated using the AHP eigenvalue method, with consistency ratios tested to ensure reliability. The results are then compared across age groups to derive policy and managerial implications for Thailand's EV market.

1.4 Contributions and Relevance

This study contributes to the EV purchase decisions literature by integrating quantitative consumer-side analysis with qualitative dealer-based insights. Methodologically, it applies AHP to reveal age-specific decision structures in an emerging market context. From a policy perspective, the findings support the design of targeted incentives and infrastructure planning under Thailand's EV 3.5 framework (2024–2027). For industry stakeholders, the results offer guidance on dealer training, customer segmentation, and product positioning.

2. Literature Review

2.1 Determinants of EV Purchase Decisions

Prior research consistently identifies cost-related factors (e.g., purchase price and total cost of ownership), driving range, and charging infrastructure availability as key determinants of EV adoption and purchase decisions (Rezvani et al., 2015). Recent studies further confirm that affordability constraints and limited charging infrastructure remain

significant barriers to EV adoption (Pamidimukkala et al., 2024; Zaino et al., 2024). Beyond economic and technological considerations, EV adoption is also shaped by psychological and social factors, including environmental concern, consumer attitudes, and social influence (Singh et al., 2020).

2.2 EV Purchase Decisions in Emerging Economies and Thailand

EV purchase decisions in emerging economies are often shaped by the interaction of infrastructure readiness, affordability constraints, and consumer confidence in new technologies. Recent studies highlight that government incentives and policy support play a crucial role in accelerating EV purchase decisions in developing markets by reducing cost barriers and strengthening market confidence (Chonsalasin et al., 2024). In Thailand, evidence indicates that purchase incentives and supportive policy measures significantly influence consumer intentions and market demand (Phuthong et al., 2024). These policy packages include fiscal instruments such as excise tax reductions and subsidies for battery electric vehicles, demonstrating how policy design and timing can accelerate EV market uptake (KPMG Thailand, 2022).

2.3 Consumer Decision-Making and Demographic Differences

EV purchase decisions are multi-dimensional, involving economic, technical, and behavioral considerations (Egbue and Long, 2012). Demographic factors, particularly age, significantly influence preference structures, with younger consumers placing greater emphasis on environmental attributes and older consumers prioritizing cost and reliability.

2.4 Role of Automobile Dealers

Dealers play a crucial role in EV purchase decisions through information provision, test-drive experiences, and assurances of after-sales service (Hardman and Tal, 2021). In emerging markets, dealer credibility and service capability are especially important due to concerns about battery longevity and resale value.

2.5 Application of AHP in Vehicle Choice

The Analytic Hierarchy Process (AHP) is a well-established multi-criteria decision-making method for vehicle choice, enabling structured pairwise comparisons of competing attributes and an internal consistency check (Saaty, 1980). Its applicability to automobile purchase decisions has been demonstrated in prior studies that use AHP to evaluate and rank car alternatives based on multiple purchase-relevant criteria (Byun, 2001) (Table 1).

Table 1. Summary of prior studies on electric vehicle purchase decisions and identified research gaps

Author(s)	Country / Region	Methodology	Key Factors Identified	Limitations
Rezvani et al. (2015)	Global	Review	Cost, range, infrastructure	No quantitative modeling No MCDM
Egbue and Long (2012)	USA	Survey	Perceived risk, awareness	No MCDM No dealer perspective
Sang and Bekhet (2015)	Malaysia	Survey	Social influences, performance attributes, financial benefits, environmental concerns, demographics, infrastructure readiness, government interventions	No behavioral segmentation No MCDM No dealer perspective
This study	Thailand	Mixed-method (AHP + interviews)	Multi-dimensional, age-based	—

3. Methods

This study uses a purposive sample (n = 27 respondents) to obtain internally consistent AHP judgments. Data collection for the AHP survey commenced on 7 November 2025 and concluded on 14 February 2026. Given the limited sample size, the findings should be interpreted as exploratory and indicative rather than statistically

generalizable to the broader Thai population. The results are intended to reveal preliminary preference structures and to support hypothesis generation for subsequent large-scale validation. The questionnaire was distributed directly to participants, and follow-up phone calls were conducted when necessary to clarify the pairwise comparison process and ensure accurate completion of the AHP matrices. In addition, semi-structured interviews were conducted with four authorized vehicle dealers to obtain qualitative market insights. The interviews were held on 17 November 2025 (Dealer 4: Honda), 15 January 2026 (Dealer 3: Honda), 28 January 2026 (Dealer 1: Toyota), and 12 February 2026 (Dealer 2: Deepal). These interviews were completed within the same data collection timeframe as the AHP survey. All respondents evaluated the decision criteria using Saaty's 1–9 fundamental scale. To ensure the reliability of responses, consistency ratios (CR) were calculated for each individual comparison matrix. In accordance with standard AHP guidelines, responses with a CR greater than 0.10 were excluded from the final analysis. Only consistent responses were retained for aggregation using the geometric mean method to derive group-level priority weights. To reduce potential elicitation bias, the AHP questionnaire included clear criterion definitions (Table 3) and a standardized explanation of the pairwise comparison logic. Follow-up phone calls were used only to clarify the process (not to influence responses), and all judgments were recorded using the same scale and question wording across participants.

3.1 Research Design

A mixed-method research design is adopted, integrating qualitative dealer interviews with quantitative AHP analysis of consumer preferences. All research procedures strictly follow Institutional Review Board (IRB) guidelines. Informed consent was obtained from all participants prior to data collection, and their confidentiality and anonymity were fully protected throughout the research process.

3.2 Dealer Interviews

Semi-structured interviews were conducted with automobile dealers representing Toyota, Honda, and multi-brand dealer groups across the South, the Bangkok Metropolitan Area, and the West. The interviews focused on observed consumer motivations, perceived barriers, and policy impacts. Thematic analysis was used to extract recurring patterns, which were employed solely for triangulation (Table 2).

Table 2. Profile of interviewed automobile dealers

Dealer Group	**Brand(s)**	**Location**	**Role of Interviewee**
1. Authorized dealer	Toyota	South of Thailand	Owner / General Manager
2. Dealer group	Multiple (Toyota, Benz, GWM, etc.)	Bangkok Metropolitan Area	Owner / Senior executive
3. Authorized dealer	Honda	Bangkok Metropolitan Area	Owner / Director
4. Authorized dealer	Honda	West of Thailand	Owner / Manager

3.3 AHP Survey Design

Consumer survey data were collected from respondents segmented by age group. The purposive sampling strategy prioritized respondents' ability to complete consistent AHP pairwise comparisons, and age segmentation was used to explore preference heterogeneity rather than to mirror national demographic proportions. Consequently, cohort-level comparisons are emphasized over population-level generalization. Accordingly, pairwise comparisons were conducted using Saaty's 1–9 scale to evaluate the relative importance of decision criteria.

3.4 AHP Structure

The AHP hierarchy consists of three main criterion groups and six sub-criteria. The alternatives considered are BEV, HEV, ICE, and PHEV vehicles (Figure 1, Table 3).

Table 3. The Structure of EV Purchase Criteria and Definitions

Criteria	Sub-Criteria	Definition	References
1. Economic & Ownership Factors	1.1 Purchase Price / Total Cost of Ownership (TCO)	Refers to the total financial burden of owning an EV, including the upfront purchase price, scheduled maintenance, electricity costs, insurance, and expected depreciation over the vehicle's lifespan.	Suttakul et al. (2022)
	1.2 Serviceability and Warranty	Measures confidence in long-term support, including after-sales service quality, warranty coverage, availability of repair centers, and spare parts.	Shaharudin, M. R., et al. (2011)
2. Charging Infrastructure & Accessibility	2.1 Home Charging Feasibility	Measures how practical and convenient it is for the buyer to install and use a home charging system, based on parking availability, installation space, and household electrical capacity.	Ge et al. (2021, NREL)
	2.2 Public Charging Experience	Indicates the accessibility and usability of public charging stations, including station coverage, charging speed, queue/waiting time, payment convenience, and reliability.	Potoglou, D. (2023).
3. Vehicle Performance & Functional Value	3.1 Real-World Range Reliability	Represents how consistently the EV delivers its advertised driving range in real-world conditions, such as traffic, terrain, weather, and air-conditioning use.	Rezvani et al. (2015)
	3.2 Vehicle Utility and Features	Covers usability and comfort, including interior space, design, safety features, infotainment, driving experience, and how well the car fits the user's lifestyle.	Egbue & Long (2012)

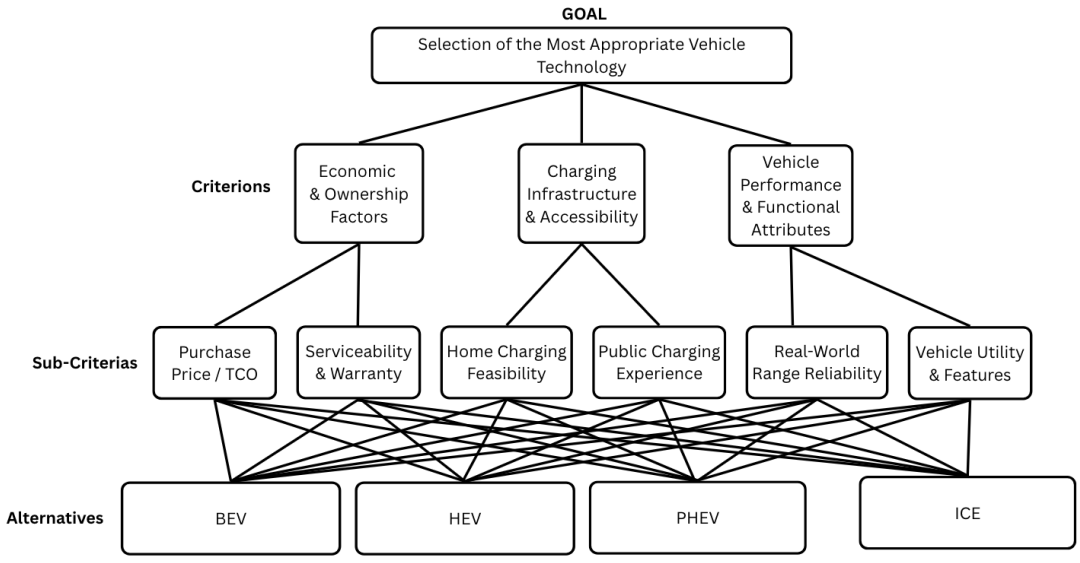

Figure 1. AHP Hierarchical Structure for Electric Vehicle Purchase Decision

3.5 Consistency and Aggregation

Consistency ratios (CR) were calculated for each pairwise comparison matrix to assess judgment reliability. Following standard AHP guidelines, responses with CR > 0.10 were excluded. The Consistency Ratio (CR) was computed using the eigenvalue method, where the Consistency Index is defined as $CI = (\lambda max - n)/(n-1)$ and $CR = CI/RI$, where n represents the matrix size and RI denotes Saaty's Random Index (Saaty, 1980). Group preferences were aggregated using the geometric mean method, also known as Aggregation of Individual Judgments (AIJ), to construct a reciprocal group comparison matrix. Priority weights were then derived using the AHP eigenvector method. The values of λmax, CI, and CR for each age-group matrix and the overall matrix are reported in Table 5, confirming that all matrices satisfy the acceptable consistency threshold of CR ≤ 0.10.

4. Data Analysis and Results

The aggregated AHP results indicate that service-related and functional factors are the most influential overall. Serviceability and Warranty emerged as the most influential criterion overall, followed by Vehicle Utility and Features and Real-World Range Reliability. Age-based analysis further reveals clear differences in decision priorities across respondent groups.

4.1 Descriptive Statistics

The sample comprises 27 respondents, with a clear majority aged 18–25 (63.0%). The remaining respondents are distributed across the 45–54 group (14.8%), and the 35–44 and 55+ groups (11.1% each). This age concentration reflects the study's purposive recruitment and the practical accessibility of younger respondents during the survey period. As a result, the overall ('pooled') AHP priorities should be understood as descriptive of the participant composition rather than a population-representative estimate. To address this, we report age-stratified results and interpret generational patterns as the primary analytical focus. In terms of monthly income, 44.4% report earning below 20,000 THB per month. The 20,000–30,000 THB and 30,000–50,000 THB brackets each account for 14.8% of the sample, while 7.4% fall within both the 50,000–70,000 THB and 70,000–90,000 THB ranges. A further 11.1% report earning above 90,000 THB per month. The sample is predominantly male (68.0%), followed by female respondents (24.0%) and those who preferred not to disclose their gender (8.0%). Regarding next vehicle purchase intentions, 26.5% of respondents intend to purchase a Battery Electric Vehicle (BEV), followed by Internal Combustion Engine (ICE) vehicles (23.5%), Plug-in Hybrid Electric Vehicles (PHEV) (17.6%), and Hybrid Electric Vehicles (HEV) (14.7%). Meanwhile, 17.6% report having no immediate purchase plans. In terms of current vehicle ownership, ICE vehicles represent the largest share (37.5%), followed by HEVs (30.0%), BEVs (17.5%), and PHEVs (10.0%). Additionally, 5.0% of respondents currently do not own a vehicle. Overall, the sample reflects a predominantly young and male demographic, with diverse income representation and a balanced distribution of current vehicle types, alongside a notable interest in electrified vehicle adoption (Table 4).

Table 4. Demographic Profile and Vehicle Ownership Characteristics of Respondents

Demographics			
Number of Respondents	27		Frequency
Age	18-25	17	63.0%
	35-44	3	11.1%
	45-54	4	14.8%
	55+	3	11.1%
	<20,000	12	44.4%

Monthly Income (THB/month)	20,000-30,000	4	14.8%
	30,000-50,000	4	14.8%
	50,000-70,000	2	7.4%
	70,000-90,000	2	7.4%
	>90000	3	11.1%
Gender	Male	17	68.0%
	Female	7	24.0%
	Prefer not to say	3	8.0%
Next Vehicle Purchase	BEV	9	26.5%
	HEV	5	14.7%
	PHEV	6	17.6%
	ICE	8	23.5%
	No plans yet	4	17.6%
Current Vehicle Ownership	BEV	7	17.5%
	HEV	12	30.0%
	PHEV	4	10.0%
	ICE	15	37.5%
	None	2	5.0%
	Others	0	0.0%

4.2 Overall Criteria Weights and Age-Group Comparison

Table 5 compares the AHP criteria weights across age groups and highlights both overall priorities and generational differences. Across all respondents, **Serviceability and Warranty** receive the highest overall weight (22.60%),

indicating that after-sales support and warranty coverage are the most influential factors in EV purchase decisions. This is followed by **Vehicle Utility and Features** (18.25%) and **Real-World Range Reliability** (16.24%), suggesting that functional usability and actual driving performance are also key considerations. **Public Charging Experience** (14.90%) and **Purchase Price/Total Cost of Ownership (TCO) (14.53%) are moderately important, while Home Charging Feasibility has** the lowest overall weight (13.48%).

Age-group analysis reveals distinct preference patterns. Respondents aged 18–25 place greater emphasis on usability and charging convenience, with the highest weights on Vehicle Utility and Features (18.96%) and Public Charging Experience (17.73%). In contrast, the 35–44 group shows a strong reliability orientation, assigning the greatest importance to Serviceability and Warranty (35.86%) and Real-World Range Reliability (19.20%). A similar pattern appears among respondents aged 45–54, who prioritize warranty and reliability concerns. Meanwhile, the 55+ group places exceptionally high importance on Vehicle Utility and Features (39.06%) and Serviceability and Warranty (33.30%), while showing minimal sensitivity to price (3.20%). All consistency ratios (CR) are below the acceptable threshold of 0.10, confirming that the pairwise comparisons are internally consistent and that the AHP results are reliable.

Table 5. Comparison of AHP criteria weights across age groups

Criterion	Age 18-25	Age 35–44	Age 45-54	Age 55+	Overall	AHP Criterion Group Weight
Purchase Price / Total Cost of Ownership (TCO)	14.68%	14.88%	15.94%	3.20%	14.53%	37.13%
Serviceability and Warranty	17.89%	35.86%	25.91%	33.30%	22.60%	
Home Charging Feasibility	14.17%	10.83%	13.86%	9.42%	13.48%	28.38%
Public Charging Experience	17.73%	14.41%	8.73%	7.53%	14.90%	
Real-World Range Reliability	16.58%	19.20%	17.63%	7.50%	16.24%	34.49%
Vehicle Utility and Features	18.96%	4.83%	17.94%	39.06%	18.25%	
Lambda Max	6.0815	6.0844	6.093	6.1750	6.0568	
CI	0.0163	0.01689	0.0185	0.0350	0.0114	
CR	0.0131	0.0136	0.0149	0.0282	0.0090	

4.3 Thematic Analysis of Dealer Interviews

The thematic analysis of four dealer interviews identified four key themes influencing EV adoption: *Price & Subsidies*, *Modern Identity*, *Fuel Economy*, and *New Experience*. Dealers consistently emphasized that government incentives and tax reductions significantly narrow the price gap between EVs and ICE vehicles, accelerating purchasing decisions. The perception of EVs as symbols of innovation and modern lifestyle—particularly among younger consumers—also plays a major role, with design and premium aesthetics often prioritized over traditional brand heritage. Fuel economy emerged as a strong rational driver, as electricity is widely viewed as a cheaper alternative to

gasoline, especially during periods of high oil prices. Finally, dealers highlighted the experiential advantages of EVs, including quiet operation, instant torque, smart features, and OTA updates, which strongly appeal to tech-oriented buyers. Overall, the qualitative findings indicate that EV purchase decisions are shaped by a combination of financial incentives, cost efficiency, lifestyle symbolism, and technological innovation (Table 6).

Table 6. Theme and Supporting Evidence from Dealer Interviews

Theme	Dealer 1: Toyota	Dealer 2: Multiple	Dealer 3: Honda	Dealer 4: Honda
Price & Subsidies Refers to how price levels and government financial incentives influence EV purchase decisions.	Excise Tax Parity: Progressive tax cuts (2%–7%) effectively narrow the price gap between EVs and traditional ICE vehicles.	Subsidy-Driven Momentum: The EV 3.0/3.5 packages remain the single most powerful "trigger" for mass-market growth.	Market Disruption: 0% tax benefits enable Chinese OEMs to enter the market with highly competitive price–value offerings.	Policy-Induced Urgency: Specific subsidy windows (2022–2023) created a "buy now" mentality, accelerating adoption cycles.
Modern Identity Refers to EVs being perceived as symbols of modern lifestyle, innovation, and status.	Infrastructure Adaptation: Rising Tesla adoption is forcing legacy Japanese service centers to pivot toward high-tech body/paint repairs.	Premium Democratization: Chinese brands offer "European Luxury" aesthetics at the price point of a Japanese pickup or sedan.	Visual-First Decision Making: Younger buyers prioritize "Futuristic Design" over brand heritage; design is the primary filter.	Status Symbolism: Modern interior/exterior aesthetics attract buyers seeking to differentiate themselves from "Traditional" car owners.
Fuel Economy Refers to the cost savings from lower energy expenses compared to gasoline vehicles.	Comparative Utility: Consumers now actively use "Cost-per-KM" calculations to justify the switch, especially during periods of fuel price volatility.	Extreme Cost Advantage: Electricity is often perceived as significantly cheaper than gasoline, with gasoline costing 50%–70% more.	Oil Price Sensitivity: High global oil prices act as a constant "push factor" driving customers toward more economical BEV options.	Calculated Savings: The utility of a BEV is no longer an "opinion" but a verified mathematical preference for budget-conscious buyers.
New Experience Refers to the unique driving feel and advanced technology features that differentiate EVs from traditional cars.	Experiential Superiority: The quietness and instant torque of EV/Hydrogen drivetrains provide a "Superior Driving Feel" that ICE cannot match.	The "Smartphone" Model: Customers treat Chinese EVs like electronics, expecting constant over-the-air (OTA) software updates to keep the car "new."	Early Adopter Enthusiasm: Tech-savvy generations (Gen Z) view cars as innovations, showing little loyalty to legacy brands.	Novelty Attraction: The "New Experience" of smart features and AI-driven infotainment acts as a primary magnet for innovation seekers.

5. Discussion and Validation

The findings illustrate how Thailand's EV 3.0 (2022–2023) and EV 3.5 (2024–2027) policies have influenced consumer decision-making. Under EV 3.0, purchase subsidies and excise tax reductions lowered the upfront cost of battery electric vehicles (BEVs), and dealer interviews indicate that subsidy deadlines encouraged urgency-driven purchases. This aligns with the AHP results, where Purchase Price / Total Cost of Ownership (14.53%) remains relevant but not dominant, suggesting that financial incentives helped reduce cost barriers but were not the dominant determinant of purchase decisions. Under EV 3.5, the continued preferential tax structure sustains BEV affordability,

but consumer priorities appear to shift toward long-term reliability. Serviceability and Warranty emerged as the highest-weighted criterion (22.60%), indicating increased attention to after-sales support, reliability, and risk mitigation as the EV market matures.

5.1 Interpretation of Results

The integration of AHP results with dealer interviews reveals clear age-related differences in EV decision-making. Respondents aged 18–25 show relatively balanced preferences, with slightly higher emphasis on Vehicle Utility and Features (18.96%) and Public Charging Experience (17.73%), reflecting concerns about usability and accessibility. In contrast, consumers aged 35–54 place greater importance on Serviceability and Warranty and Real-World Range Reliability, indicating stronger concern for long-term reliability. The 55+ group prioritizes Vehicle Utility and Features (39.06%) and Serviceability and Warranty (33.30%), while assigning minimal importance to price (3.20%), consistent with dealer observations that older consumers value functional performance and dependable after-sales support. Across all groups, the overall importance of Serviceability and Warranty (22.60%) highlights the central role of risk reduction in EV purchase decisions.

5.2 Triangulation with Dealer Insights

The qualitative dealer interviews strongly support the quantitative AHP results. Dealers emphasized that subsidies and fuel savings influence purchase decisions, consistent with the moderate weights assigned to Purchase Price/TCO (14.53%) and Public Charging Experience (14.90%). They also observed that older consumers prioritize warranty coverage and reliability, which aligns with the high weight assigned to Serviceability and Warranty (22.60%), particularly among ages 35–44 and 55+. In addition, EVs are increasingly perceived as symbols of innovation and modern lifestyle, reflected in the relatively high importance of Vehicle Utility and Features (18.25%). Overall, the consistency between qualitative and quantitative findings strengthens the validity of the results (Table 7).

Table 7. Alignment between dealer insights and AHP results

Theme	Dealer Observation	AHP Evidence
Economic Rationality & Cost Sensitivity	Subsidies and fuel savings trigger purchase decisions.	Moderate weight on Purchase Price/TCO (14.53%) and Public Charging Experience (14.90%) indicates cost-efficiency considerations in EV decisions.
Functional Reliability & Risk Reduction	Older buyers seek strong warranty and proven reliability.	Serviceability & Warranty receives the highest overall weight (22.60%), with particularly strong emphasis among ages 35–44 (35.86%) and 55+ (33.30%), confirming reliability-driven preferences among older buyers.
Lifestyle Identity & Modern Symbolism	EV design signals modern status and differentiation.	A strong emphasis on Vehicle Utility & Features (18.25%), especially among ages 18–25 (18.96%) and 55+ (39.06%), supports the symbolic and experiential appeal of EV design.

6. Policy and Managerial Implications

Thailand's EV 3.0 (2022–2023) and EV 3.5 (2024–2027) policies have lowered BEV prices through purchase subsidies and a preferential 2% excise tax rate, reducing upfront cost barriers and accelerating early EV adoption. However, long-term market growth cannot rely solely on financial incentives. Structural cost factors, particularly battery systems and electronic components, continue to play a critical role in improving EV affordability and competitiveness.

Battery replacement costs in Thailand remain relatively high due to reliance on imported cells and advanced technologies, highlighting the importance of strengthening domestic battery production and assembly to reduce lifecycle ownership costs. Improving semiconductor supply conditions since 2023 has also helped ease production pressures.

Consistent with the AHP results, Serviceability and Warranty emerged as the most influential factor in EV purchase decisions, indicating strong concern about reliability and after-sales support. Policymakers and industry stakeholders should therefore prioritize expanding service networks, improving warranty transparency, and addressing battery lifecycle costs to support sustainable EV adoption in Thailand.

7. Conclusion

This study examines the determinants of electric vehicle (EV) purchase decisions in Thailand under the EV 3.0 (2022–2023) and EV 3.5 (2024–2027) policy frameworks, which significantly reduced battery electric vehicle (BEV) prices through purchase subsidies and preferential excise taxation. Although these fiscal measures successfully stimulated early-stage purchase decisions, limited empirical research has examined how consumer priorities evolve beyond financial incentives and how decision structures differ across demographic segments. Furthermore, previous studies rarely integrate dealer perspectives—despite their role as key intermediaries in the vehicle purchasing process—with structured multi-criteria decision models. This study, therefore, aimed to identify and prioritize the determinants of EV purchase decisions in Thailand by combining qualitative dealer insights with a quantitative Analytic Hierarchy Process (AHP) framework and examining age-based heterogeneity.

The findings show that Serviceability and Warranty (22.60%) is the most important factor in EV purchase decisions, followed by Vehicle Utility and Features (18.25%) and Real-World Range Reliability (16.24%). In comparison, Purchase Price / Total Cost of Ownership (14.53%) and charging-related factors receive moderate emphasis. Age-based analysis reveals clear differences in consumer priorities. Respondents aged 35–54 focus strongly on reliability and warranty coverage, while the 55+ group places greater importance on functional value and service support and shows lower sensitivity to price. Younger consumers place relatively greater emphasis on usability and charging accessibility. The consistency between AHP results and dealer insights suggests that EV purchasing behavior in Thailand is gradually shifting from subsidy-driven decisions toward greater attention to reliability, after-sales support, and long-term ownership risk.

From a policy perspective, sustaining EV purchase decisions in Thailand requires more than financial incentives. Strengthening after-sales service networks, improving warranty transparency, and supporting domestic battery production can help reduce long-term ownership uncertainty and increase consumer confidence. For industry stakeholders, the findings highlight the importance of service readiness, clear communication of reliability assurances, and demographic-based market positioning strategies.

This study has several limitations. The sample size is relatively small and the respondent distribution is skewed toward the 18–25 age group due to purposive sampling. As a result, the findings should be interpreted as exploratory rather than fully generalizable. Future research should expand the sample size and demographic diversity to improve external validity. Additional methods such as t-tests, ANOVA, or discrete choice experiments may further examine differences in consumer preferences and better link stated preferences with actual purchase behavior. Future studies may also apply sensitivity analysis to examine the robustness of the AHP criteria weights under different preference assumptions.

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