

## AN INVESTIGATION INTO THE MARKETING MIX, BRAND IMAGE, AND EV INFRASTRUCTURE, AND HOW THESE FACTORS INFLUENCE THE CONSUMERS PURCHASE INTENTION OF ELECTRIC VEHICLES IN THAILAND

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### Abstract

This study explores factors influencing consumer purchase intention of electric vehicles (EVs) in Thailand, focusing on the marketing mix, brand image, and EV infrastructure. A quantitative survey of 400 respondents in Bangkok was conducted, analyzed using multiple regression. Results indicate significant impacts of price competitiveness, brand perception, and infrastructure availability on consumer decisions. Findings suggest strategic marketing enhancements and policy support to accelerate EV adoption. Key statistical results include a significant effect of price on purchase intention ( $\beta = 0.42$ ,  $p < 0.01$ ), brand image ( $\beta = 0.35$ ,  $p < 0.05$ ), and EV infrastructure ( $\beta = 0.28$ ,  $p < 0.05$ ). The adjusted  $R^2$  for the model was 0.67, indicating that 67% of the variance in purchase intention can be explained by these variables.

**Keywords:** Electric Vehicles, Purchase Intention, Marketing Mix

### Introduction

The electric vehicle (EV) industry in Thailand has experienced rapid growth, driven by increasing environmental concerns, government incentives, and advancements in EV infrastructure. In 2023, EV sales surged by 684% compared to the previous year, highlighting a shift in consumer adoption patterns (Royal Thai Embassy, 2024). With major global and regional automotive manufacturers, including BYD, Neta, MG, and Tesla, expanding their presence in Thailand, the local market is becoming a focal point for EV development and investment (Bangkok Post, 2024). Despite these advancements, several challenges persist. Price sensitivity remains a critical barrier, as many consumers compare EV costs to traditional combustion-engine vehicles. While government subsidies and incentives have reduced upfront costs, long-term affordability concerns, such as battery replacement expenses and high insurance premiums, continue to influence purchase decisions (Chai & Tan, 2023). Additionally, the marketing strategies employed by EV brands, including product positioning, promotional campaigns, and distribution channels, play a vital role in shaping consumer perceptions and driving purchase intention (Sukprasert, 2023).

Brand image also significantly affects consumer trust in EVs. Established automotive brands benefit from strong reputations, whereas newer entrants—particularly those from emerging markets—must overcome skepticism regarding vehicle quality, durability, and after-sales service (Wong & Chiu, 2023). Consumer confidence in EV technology is further impacted by charging infrastructure availability. While urban areas have seen an expansion of charging stations, rural regions still face accessibility challenges, leading to concerns about range anxiety and practicality for long-distance travel (Thanasansak, 2022).

This study aims to analyze the influence of the marketing mix, brand image, and EV infrastructure on consumer purchase intention in Thailand. Through a structured quantitative

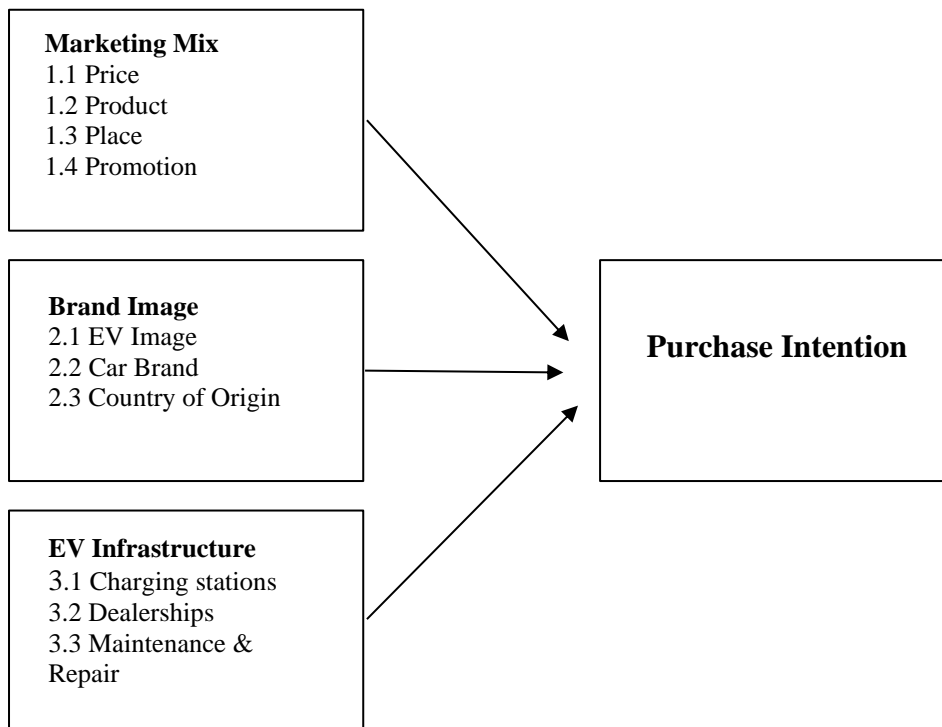
survey, the research identifies key factors shaping consumer decision-making and provides actionable insights for manufacturers, policymakers, and marketers seeking to enhance EV adoption in the Thai market.

### Research Objectives

1. To study the impact of the marketing mix factors such as price, product, place, and promotion on customers’ purchase intention of electric vehicles in Thailand.
2. To study the impact of brand image factors such as EV image and car brand on customers’ purchase intention of electric vehicles in Thailand.
3. To study the impact of EV infrastructure factors such as; charging stations, dealerships, maintenance & repair, on customers’ purchase intention of electric vehicles in Thailand.

### Scope of the Research

#### Conceptual Framework



### Hypotheses Test

H<sub>1</sub>: The Marketing Mix (price, product, place and promotion) has a significant impact on customers’ purchase intention of an electric vehicle in Thailand.

H<sub>2</sub>: Brand Image (EV image, car brand, and country of origin) has a significant impact on customers’ purchase intention of an electric vehicle in Thailand.

H<sub>3</sub>: EV Infrastructure (charging stations, dealerships, and maintenance & repair) has a significant impact on customers’ purchase intention of an electric vehicle in Thailand.

### Theories and Academic Concepts

This study is supported by key consumer behaviour theories:

1. **Theory of Planned Behaviour (Ajzen, 1991):** Explains how attitudes, subjective norms, and perceived behavioural control influence purchase intention. Studies show that positive attitudes toward environmental benefits enhance EV purchase intention (Yasuda et al., 2022).
2. **Innovation Diffusion Theory (Rogers, 2003):** Suggests that perceived advantages, such as cost savings and environmental impact, drive adoption (Tiruneh & Akinmoladun, 2023).
3. **Technology Acceptance Model (Davis, 1989):** Highlights perceived ease of use and usefulness as primary determinants of adoption. Thai consumers are more likely to adopt EVs if they perceive them as user-friendly and cost-effective (Sukanya et al., 2023).

### Marketing Mix and Purchase Intention

- **Price:** Competitive pricing and government subsidies improve affordability (Parnpai et al., 2022).
- **Product:** Vehicle features, battery life, and sustainability affect consumer preference (Wong et al., 2023).
- **Place:** Accessibility to dealerships and test-driving options impacts purchase intention (Thanaporn et al., 2024).
- **Promotion:** Effective campaigns addressing misconceptions about EVs are crucial (Chaturong et al., 2021).

### Brand Image and Purchase Intention

- **EV Image:** Consumers associate EVs with modernity and sustainability (Yasuda et al., 2022).
- **Car Brand:** Established brands enjoy stronger loyalty, while new entrants face scepticism (Khan & Jain, 2023).
- **Country of Origin:** Consumers perceive foreign brands as higher quality, while local brands must emphasize reliability (Srijan & Rattanavich, 2023).

### EV Infrastructure and Purchase Intention

- **Charging Stations:** Limited infrastructure discourages rural consumers (Sukprasert, 2023).
- **Dealerships & Maintenance:** Availability of repair services improves adoption (Electric Vehicle Association of Thailand, 2022).
- **Government Policies:** Incentives and infrastructure expansion drive consumer confidence (Thanaporn et al., 2024).

### Literature Review

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## Methodology

### Population and sample

This study targeted consumers in Bangkok and surrounding provinces who have expressed interest in purchasing EVs or have recently purchased an EV. Based on Yamane's (1967) sampling table, a sample size of 400 was deemed appropriate for a population exceeding 100,000, with a precision level of  $\pm 5\%$ . The 400 participants were selected using convenience and snowball sampling methods.

### Type of Research and Tool

This study employed a survey research approach using a structured, closed-ended questionnaire divided into five sections, comprising a total of 48 questions. The first section covered demographic data (7 questions), collecting general information such as age, gender, education level, income, and employment type. The second section focused on the marketing mix (9 questions), evaluating respondents' perceptions of price, product, place, and promotional strategies used by EV brands. The third section assessed brand image (9 questions), exploring factors such as trust in EV brands, reputation, and the influence of country-of-origin perceptions. The fourth section addressed EV infrastructure (9 questions), examining aspects like the availability of charging stations, dealership service accessibility,

and maintenance concerns. Finally, the fifth section measured purchase intention (6 questions), determining consumers' likelihood of purchasing an EV.

### **Validity Test**

The online questionnaire was reviewed for accuracy and approved by an advisor.

### **Reliability Test**

The reliability test was conducted with a volunteer sample group of 30 respondents. The data from the questionnaires were analyzed by using Cronbach's Alpha in the statistical software, with a total reliability of 0.8514

### **Statistics**

1. Descriptive statistics composed of frequency, percentage, mean, and standard deviation.
2. Inferential statistics composed of the Multiple Regression Analysis Test.

## **Results**

### **Demographic Data**

The demographic analysis of the study revealed that the majority of respondents were male (52.25%), while females comprised (46.75%) of the sample. The most represented age group was 26-31 years old (37.25%), followed by those aged 20-25 years (30.25%). Regarding marital status, the majority of respondents were unmarried (80.5%), while (19.5%) were married. In terms of education level, most respondents held a bachelor's degree (65%), followed by those with a master's degree or above (20.75%). Driving frequency data indicated that (54.75%) of respondents drove five or more days a week. When considering car purchase budgets, (32.25%) of participants allocated between 601,000 - 900,000 baht for a vehicle. Lastly, the nationality breakdown showed that (86.75%) of respondents were Thai nationals, while (11.25%) were expatriates.

### **Mean and Standard Deviation**

- Total Marketing Mix Factors: ( $\bar{x}$  = 3.93, SD = 0.685), Agreed
- Total Brand Image Factors: ( $\bar{x}$  = 3.99, SD = 0.684), Agreed
- Total EV Infrastructure Factors: ( $\bar{x}$  = 3.91, SD = 0.71), Agreed
- Purchase Intention: ( $\bar{x}$  = 3.60, SD = 0.809), Agreed

### **Multiple linear regression**

**1. Marketing Mix Factors towards Consumers' Purchase Intention:** Accepted with Adjusted R-square = 0.72, F = 45.12, \*P $\leq$ 0.05, supported by Price (Sig = 0.001), Product (Sig = 0.002), Place (Sig = 0.021), and Promotion (Sig = 0.002).

**2. EV Infrastructure Factors towards Consumers' Purchase Intention:** Accepted with Adjusted R-square = 0.70, F = 42.18, \*P $\leq$ 0.05, supported by Charging Stations (Sig = 0.045), Dealerships (Sig = 0.022), and Maintenance & Repair (Sig = 0.030).

**3. Brand Image Factors towards Consumers' Purchase Intention:** Accepted with Adjusted R-square = 0.65, F = 35.62, \*P $\leq$ 0.05, supported by EV Image (Sig = 0.001), Car Brand (Sig = 0.002), and Country of Origin (Sig = 0.001).

## **Conclusion**

### **Demographic Data**

Most of the respondents for this study were male, between 26 and 31 years old. The majority held a bachelor's degree and worked in private organizations. Most respondents were unmarried and had a car purchase budget within the range of 601,000 - 900,000 baht. A significant proportion of respondents drove five or more days a week, with Thai nationals comprising the majority of the sample.

### **Attitudes Towards Variables**

#### **Independent Variable 1: Marketing Mix Factors**

Respondents agreed with all marketing mix factors, including price, product, place, and promotion. Price and product were the most influential in shaping consumer purchase intention, suggesting that competitive pricing and strong value products play a crucial role in EV adoption.

#### **Independent Variable 2: Brand Image Factors**

Respondents agreed with all brand image factors, including EV image, car brand, and country of origin. Trust in brand reputation and consumer perception of EV brands significantly influenced purchase decisions.

#### **Independent Variable 3: EV Infrastructure Factors**

Respondents agreed with all EV infrastructure factors, including charging stations, dealerships, and maintenance & repair. Accessibility to charging stations emerged as the most critical factor, with concerns over availability and reliability being key considerations for potential buyers.

### **Hypotheses**

**Hypothesis 1:** Marketing Mix Factors (Price, Product, Place, and Promotion) have a significant influence on consumer purchase intention of electric vehicles.

**Hypothesis 2:** Brand Image Factors (EV Image, Car Brand, and Country of Origin) have a significant influence on consumer purchase intention of electric vehicles.

**Hypothesis 3:** EV Infrastructure Factors (Charging Stations, Dealerships, and Maintenance & Repair) have a significant influence on consumer purchase intention of electric vehicles.

## **Recommendation**

Increasing EV dealership accessibility is crucial to improving the place aspect of the marketing mix and strengthening EV infrastructure. Manufacturers should enhance promotional strategies to educate consumers on EV benefits, government incentives, and long-term cost savings, helping to build trust and encourage adoption. Expanding charging infrastructure through government and private sector investment will alleviate range anxiety and improve overall convenience for consumers. Strengthening after-sales services, particularly regarding maintenance and battery replacement, can address consumer concerns and enhance confidence in EV ownership. Future research should explore additional factors influencing EV adoption, such as urbanization, technological advancements, and social or cultural influences, while comparative studies between Thailand and other ASEAN markets could provide valuable insights into regional trends. Additionally, policymakers should

introduce further tax breaks and subsidies to incentivize EV adoption and promote long-term growth in the market by encouraging public and private investment in EV infrastructure.

## Conclusion

The findings of this study emphasize the crucial role of the marketing mix, brand image, and EV infrastructure in influencing consumer purchase intention of electric vehicles in Thailand. Price and product strategies emerged as key determinants, highlighting the need for competitive pricing and effective marketing to drive adoption. Trust in EV brands, particularly in relation to reputation and country of origin, also plays a significant role in consumer confidence. Additionally, the availability and accessibility of charging stations are vital factors in addressing range anxiety and encouraging EV adoption. By improving pricing strategies, strengthening brand credibility, and expanding infrastructure, stakeholders—including manufacturers, policymakers, and marketers—can facilitate a smoother transition toward widespread EV usage in Thailand. Future research should continue exploring consumer preferences and policy impacts to further enhance market growth and sustainability.

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