

# **The 4Ps of Marketing Mix and the Decision of Using Electrical Vehicles for Thai Consumer in Bangkok, Thailand**

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**ABSTRACT:** This research aimed to analyze the 4Ps (Product, Price, Place and Promotion) of marketing mix influencing decision to use electric vehicles (EV). The paper compares those who use electric vehicles with those who tend to use them soon. Primary data was obtained from questionnaire. The sample size was 415 comprising 224 of those who use EV and 191 of those who tend to use EV soon. The methodology employed the t statistics for hypotheses testing between these two groups. For Product, the result showed that two sample groups emphasized not significantly different in long-life electric motor, the effectiveness of electric motor power, safety system, design and modernity, multiple charging support, and driving mileage longer than fuel cars. For Price, the result showed that two sample groups emphasized not significantly different in reasonable price with high quality, maintenance cost, price of accessories, and lifetime battery. For Place, the result showed that two sample groups emphasized not significantly different in one-stop service center, many services center branches, and reserve new EV via online. For Promotion, the result showed that two sample groups emphasized not significantly different in car insurance, wall box, and quality assurance for the battery. According to the results, both sample groups were most concerned about price with high quality, and both emphasized not significantly different in reasonable price with high quality. The government should implement the reduction in import tax of EV.

**KEYWORDS:** marketing mix, EV

## **Statement of Problem**

In Thailand, both the private and government sector have been interested in the environmental problem. Most vehicles used fossil fuel engine. Internal Combustion Engine (ICE) is the main to drive the energy source and causes carbon dioxide; consequently, it leads to the global warming crisis. Government has launched new campaign to use Electric Vehicle (EV), the alternative energy substituted for fossil fuel. According to International Energy Agency (IEA), the government's promotion of electric vehicles in many countries has resulted in global car sales in 2012 reaching 113,000 and expects to increase around 20 million cars worldwide.

In Thailand, electric vehicles have been sold for more than nine years. Additionally, in 2009, the Energy Policy and Planning Office (EPPO) has promoted using Electrical Vehicle under the Energy Conservation Plan with the purpose of using plug-in hybrid electric vehicles (PHEV) and Battery Electric Vehicle (BEV) 1.2 million vehicles by the year 2036 (Department of alternative energy development and efficiency, 2017). Both the state enterprises and private sectors have begun to study and demonstrate using electrical cars, for instance, Petroleum Authority of Thailand (PTT), Electricity Generating Authority of Thailand (EGAT) and Bangchak Corporation Public Company (BCP) have used electric vehicles within the organization for transporting the document, shuttle bus, etc.

In 2019, the new registered electric vehicles were 27,074 nationwide consisted of 650 electric vehicles, 26,373 petrol-electric and 51 diesel-electric vehicles (Department of Land Transport, 2019). Thailand is in the beginning stage of development and the transition from

using fuel cars to electric vehicles. Therefore, the study of marketing mix factors influences buying electric vehicles is interesting.

### **Objective**

To analyze the 4Ps (Product, Price, Place and Promotion) of marketing mix influencing purchasing the electric vehicles in Bangkok, Thailand.

### **Benefit**

Manufacturers / dealers of EV can employ the result of this study for their marketing strategies.

### **Literature Review**

The objectives of this study were to analyze: 1) the marketing mix components affecting consumers' decision to buy battery electric vehicles; 2) the technology acceptance affecting the consumers' decision to buy battery electric vehicles; 3) the consumers' decision to buy battery electric vehicles in Bangkok and Metropolitan Area (Kumnerdpetch 2020).

The results showed that: 1) the marketing mix components affecting the consumers' decision to buy battery electric vehicles were found overall at a high level that product (after-sales service) was the most important component to buy battery electric vehicles; 2) the technology acceptance affecting the consumers' decision to buy battery electric vehicles were found overall at a high level; 3) the consumers' decision to buy battery electric vehicles in Bangkok and Metropolitan Area were found overall at a high level; 4) the analysis of the factors the affecting consumers' decision to buy battery electric vehicles revealed that product, technology acceptance in intention to use, attitude toward using and actual use all influenced the consumers' decision to buy battery electric vehicles in Bangkok and Metropolitan Area.

### **The Concept of Marketing Mix**

According to Kotler (1997), "Marketing Mix is the set of controllable variables that the firm can use to influence the buyer's response". The controllable variables in this context refer to the 4 Ps (product, price, place and promotion). Each firm strives to build up such a composition of 4Ps, which can create highest level of consumer satisfaction and at the same time meet its organizational objectives. Thus, this mix is assembled keeping in mind the needs of target customers, and it varies from one organization to another depending upon its available resources and marketing objectives.

**Product:** Product refers to the goods and services offered by the organization. All these are purchased because they satisfy one or more of our needs. We are paying not for the tangible product but for the benefit it will provide. Product can be described as a bundle of benefits which a marketer offers to the consumer for a price. Product can also take the form of a service like an air travel, telecommunication, etc. Thus, the term product refers to goods and services offered by the organization for sale.

**Price:** Price is the amount charged for a product or services. It is the second most important element in the marketing mix. Many factors like demand for a product, cost involved, consumer's ability to pay, prices charged by competitors for similar products, government restrictions etc., must be kept in mind while fixing the price. In fact, pricing is a very crucial decision area as it has its effect on demand for the product and on the profitability of the firm.

**Place:** Goods are produced to be sold to the consumers. They must be made available to the consumers at a place where they can conveniently make purchase. This involves a chain of individuals and institutions like distributors, wholesalers and retailers who constitute firm's distribution network (also called a channel of distribution).

Promotion: Promotion is an important element of marketing mix as it refers to a process of informing, persuading, and influencing a consumer to buy product. Promotion is done through means of personal selling, advertising, publicity, and sales promotion.

## Methodology

### *Data Collection*

This research collected the primary data by using questionnaire.

### *Population and Sample*

The population in this study was people live in Bangkok metropolis, including those who use electric vehicles and those who intend to use EV soon. Due to large and unknown number of populations, Cochran (1963) was employed to calculate the sample size.

$$n = \frac{z^2}{4e^2}$$

Where n is sample size

Z is equal to 1.96 at 95 percent confidence level

e is error

$$n = \frac{1.96^2}{4(0.05)^2} = 384.16 \approx 385$$

As a result, the sample size was 385. In this paper, the respondents were 415, comprising 224 of those who use EV and 191 of those who tend to use EV soon.

## Data Analysis

This study was conducted by employing the t statistic to test the average mean difference of two groups of samples. i.e., those who use EV and those who intend to use EV soon. The level of importance for marketing mix (4Ps) has 5 levels (5 for the most important, 4 for very important, 3 for moderate, 2 for less important, 1 for the least important, and 0 for undecided)

## Result

The average mean of the level of importance of marketing mix (product, price, place, and promotion) between the EV users and those who intend to use EV soon were shown in table 1 to table 4.

Table1 showed that EV users emphasized the safety system, the effectiveness of electric motor power, long life electric motor, fast electric charge, design and modernity, multiple charging support, driving mileage longer than fuel cars, cabin size, and luggage storage size, respectively. While the intended EV users emphasized long- life electric motor, long-life electric battery, fast electric charge, safety system, effectiveness of electric motor power, multiple charging support and driving mileage longer than fuel cars, design and modernity, cabin size, and luggage storage size, respectively.

For the hypothesis test between these two sample groups conducted by t statistic, the result showed that two sample groups emphasized significantly different in long life electric battery, cabin size, luggage storage size, and fast electric charge.

Table 1: The Level of Importance of Product

Product	EV users		Intended EV users		t-test
	$\bar{x}$	S.D.	$\bar{x}$	S.D.	
long life electric battery	4.17	0.72	4.42	1.04	-2.90***
long life electric motor	4.29	0.83	4.43	1.04	-1.50
effectiveness of electric motor power	4.33	0.77	4.27	1.15	0.69
cabin size	4.05	0.89	3.74	1.22	2.87***
luggage storage size	3.88	0.98	3.61	1.24	2.49**
safety system	4.35	0.77	4.34	1.05	0.13
design and modernity	4.10	0.86	3.93	1.23	1.57
fast electric charge	4.12	0.89	4.36	1.09	-2.44**
multiple charging support	4.09	1.00	4.26	1.16	-1.61
driving mileage longer than fuel cars	4.06	1.03	4.26	1.14	-1.85

**Note:**

\* significance at 10 percent level

\*\* significance at 5 percent level

\*\*\* significance at 1 percent level

Table 2: The level of Importance of Price

Price	EV users		Intended EV users		t-test
	$\bar{x}$	S.D.	$\bar{x}$	S.D.	
reasonable price with high quality	4.82	1.08	4.16	1.18	1.14
maintenance cost	4.25	0.97	4.08	1.20	1.63
car insurance fee	4.11	1.08	3.76	1.31	2.91***
cost of renew license plate	3.97	1.23	3.52	1.44	3.36***
price of accessories	3.76	1.24	3.62	1.38	1.08
lifetime of battery	4.11	0.98	4.14	1.28	-0.26
selling price of used EV	3.92	1.16	3.64	1.39	2.18**

**Note:**

\* significance at 10 percent level

\*\* significance at 5 percent level

\*\*\* significance at 1 percent level

Table 2 showed that EV users emphasized reasonable price with high quality, maintenance cost, car insurance fee and lifetime battery, cost of renew license plate, selling price of used EV, and price of accessories, respectively. While intended EV users emphasized reasonable price with high quality, lifetime of battery, maintenance cost, car insurance fee, price of accessories, and price of accessories, respectively. For the hypothesis test between these two sample groups conducted by t statistic, the result showed that two sample groups emphasized significantly different in car insurance fees, the cost of renewing license plates, and the selling price of used EV.

Table 3: The Level of Importance of Place

Place	EV users		Intended EV users		t-test
	$\bar{x}$	S.D.	$\bar{x}$	S.D.	
one-stop service center	4.09	0.88	4.15	1.10	-0.54
clean and well decorated service center	4.03	0.89	3.54	1.23	4.56***
large service center	4.02	0.93	3.73	1.22	2.72***
many services center branches	4.19	0.83	4.12	1.14	0.77
reserve new EV via online	2.26	1.26	2.49	1.68	-1.55
delivery service to doorstep	2.12	1.40	2.53	1.71	-2.69***

**Note:**

\* significance at 10 percent level

\*\* significance at 5 percent level

\*\*\* significance at 1 percent level

Table 3 showed that EV users emphasized many services center branches, one-stop service center, clean and well decorated service center, large service center, reserve new EV via online, and delivery service to doorstep, respectively. While intended EV users emphasized one-stop service center, many services center branches, large service center, clean and well decorated service center, delivery service to doorstep, and reserve new EV via online, respectively. For the hypothesis test between these two sample groups conducted by t statistic, the result showed that two sample groups emphasized significantly different in clean and well decorated service center, large service center, and delivery service to doorstep.

Table 4: The Level of Importance of Promotion

Promotion	EV users		Intended EV users		t-test
	$\bar{x}$	S.D.	$\bar{x}$	S.D.	
cash discount	2.75	1.55	4.09	1.28	-9.65***
free stuff	1.88	1.48	2.69	1.66	-5.25***
car insurance	4.14	0.92	3.99	1.25	1.36
glass coating	3.83	1.20	3.25	1.43	4.46***

wall box	4.16	1.01	4.06	1.22	0.88
quality assurance for the battery	4.34	0.76	4.37	1.11	-0.24

**Note:**

\* significance at 10 percent level

\*\* significance at 5 percent level

\*\*\* significance at 1 percent level

Table 4 showed that EV users emphasized quality assurance for the battery, wall box, car insurance, glass coating, cash discount, and free stuff, respectively. While intended EV users emphasized quality assurance for the battery, cash discount, wall box, car insurance, glass coating, and free stuff, respectively.

For the hypothesis test between these two sample groups conducted by t statistic, the result showed that two sample groups emphasized significantly different in cash discount, free stuff, and glass coating.

**Conclusion**

This paper analyzed the marketing mix factors (product, price, place, and promotion) influencing the decision of using EV in Bangkok, Thailand. There was two sample group, i.e., EV users and intended EV users (intend to use EV soon).

For Product, EV users emphasized the safety system while the intended EV users emphasized long- life electric motor and long-life electric battery. For the hypothesis test between these two sample groups, the result showed that two sample groups emphasized not significantly different in long life electric motor, effectiveness of electric motor power, safety system, design and modernity, multiple charging support, and driving mileage longer than fuel cars.

For Price, the result showed that both sample groups emphasized reasonable price with high quality. For the hypothesis test between these two sample groups, the result showed that two sample groups emphasized not significantly different in reasonable price with high quality, maintenance cost, price of accessories, and lifetime battery.

For Place, EV users emphasized many services center branches while intended EV users emphasized one-stop service center. For the hypothesis test between these two sample groups, the result showed that two sample groups emphasized not significantly different in one-stop service center, many services center branches, and reserve new EV via online.

For Promotion, both sample groups emphasized quality assurance for the battery.

For the hypothesis test between these two sample groups, the result showed that the two sample groups emphasized not significantly different in car insurance, wall box, and quality assurance for the battery.

**Policy Recommendation**

The results showed that both sample groups were most concerned about price with high quality, and both emphasized not significantly different in reasonable price with high quality. The government should implement the reduction in import tax of EV.

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