

**POSSIBILITY OF ELECTRIC VEHICLE BUSINESSES IN
THAILAND**

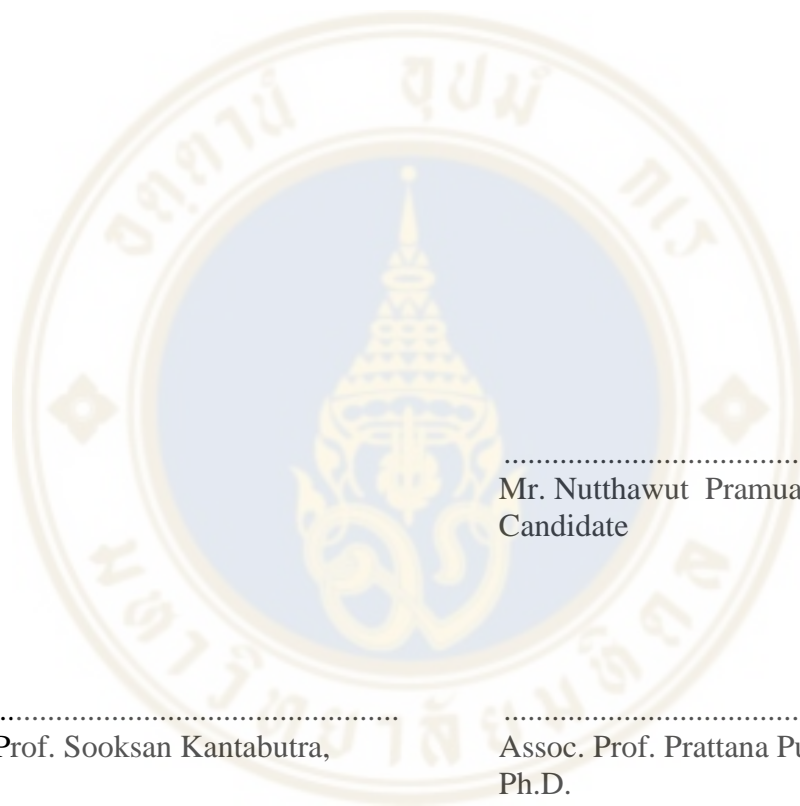


**A THEMATIC PAPER SUBMITTED IN PARTIAL
FULFILLMENT OF THE REQUIREMENTS FOR
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entitled
**POSSIBILITY OF ELECTRIC VEHICLE BUSINESSES IN
THAILAND**

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POSSIBILITY OF ELECTRIC VEHICLE BUSINESSES IN THAILAND

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ABSTRACT

This is due to the current environmental trend and the rapid increase in fuel costs, which have fluctuated over the past decade. Electric vehicles are becoming a viable and feasible idea in many countries. The responses came from a group of 185 people who intended to buy a car or rent a private vehicle in Thailand.

The study examined the intention to buy an electric car in the Thai market and the theory of external factors (PESTEL), i.e., political, economic, social, technological, environmental, and legal factors. The researchers sent out online surveys randomly to friends and work colleagues as well as others of all ages and economic classes. The data were compiled and analyzed using statistical computer programs (SPSS).

In addition, respondents are more likely to buy an electric car if it is available in Thailand (the probability in the purchase intention questions is 4.38 out of 5). It can be assumed that the market is interested in the product and willing to buy it in response to the environmental effect. However, they are still reluctant to buy it without first evaluating the willingness of supporting institutions or tax rates of the government and legislation.

KEY WORDS: Electric Vehicles / Green technology / Innovative concept /
Alternative energy / Pestel

46 pages

CONTENTS

	Page
ACKNOWLEDGEMENTS	ii
ABSTRACT	iii
LIST OF TABLES	vi
LIST OF FIGURES	vii
CHAPTER I INTRODUCTION	1
1.1 The Evolution of Electric Vehicles	1
1.2 Problem Statement	4
1.3 Research Question	5
1.4 Research Objective	5
CHAPTER II LITERATURE REVIEW	6
2.1 Electric Vehicle Industries – Literature Review	6
2.1.1 Electric Vehicle Industry Literature Review	7
Summary	
2.2 The Relevant Theory – Pestel	8
2.2.1 Political Factors	8
2.2.2 Economic Factors	9
2.2.3 Social Factors	9
2.2.4 Technological Factors	9
2.2.5 Environmental Factors	9
2.2.6 Legal Factors	10
2.3 General Knowledge of Electric Cars	10
2.3.1 A Hybrid Electric Vehicle (HEV)	10
2.3.2 A Plug-In Electric Vehicle (PHEV)	10
2.3.3 A Battery Electric Vehicle (BEV)	11
2.3.4 A Fuel Cell Electric Vehicle (FCEV)	11
2.4 Thailand 2021: Electric Vehicles	12

CONTENTS (cont.)

	Page
CHAPTER III RESEARCH METHODOLOGY	18
3.1 Conceptual Framework	18
3.2 Population Size	19
3.3 Research Instrument	19
3.3.1 Part I Personal Information	19
3.3.2 Part 2 Screening Question	19
3.3.3 Part 3 External Environment Factors (PESTEL)	19
3.3.4 Part 4 Intention to Purchase	20
3.4 Data Collection	20
3.5 Data Analysis	20
3.5.1 Factor analysis	20
3.5.2 Correlation Analysis	21
CHAPTER IV RESEARCH RESULTS	22
4.1 Respondent Profile	22
4.2 Factors Influencing the Thai Market's Intention to Purchase Electric Cars	25
4.3 Intention to Buy the Electric Cars in Thai Market	29
CHAPTER V CONCLUSIONS AND RECOMMENDATIONS	35
5.1 Conclusion	35
5.2 Recommendation for Promoting Electric Vehicle in Thailand	35
5.3 Benefit of the Research	36
5.4 Future Work	37
REFERENCES	38
APPENDICES	40
Appendix A	41
BIOGRAPHY	46

LIST OF TABLES

Table	Page
2.1 Thailand 2021: Electric Vehicles	12
4.1 Gender information of the respondents	23
4.2 Total age range of the respondents	23
4.3 Education background of the respondents	24
4.4 The marital status of the respondents	24
4.5 The average monthly income of the respondents	25
4.6 Rotated Component Matrix	26
4.7 Total Variance Explained	27
4.8 Correlation	28
4.9 Descriptive Statistics of intention to purchase	30
4.10 Descriptive Statistics of external factor questions	31
4.11 Cross-tabulation between income range and the intention to buy question	32
4.12 Cross-tabulation of age ranges and purchase intentions	33
4.13 Cross-tabulation of gender and purchase intentions	34

LIST OF FIGURES

Figure		Page
1.1	Henry Ford the Model T	2
2.1	Factors in the external environment (PESTEL)	8
2.2	MG EP EV	12
2.3	MG ZS EV	12
2.4	Nissan Leaf	13
2.5	FOMM ONE	13
2.6	Porsche Taycan	14
2.7	Audi e-tron	14
2.8	LEXUS UX 300e	15
2.9	Jaguar I-PACE	15
2.10	BYD E6	16
2.11	Hyundai Loniq Electric	16
2.12	Kia Soul EV	17
3.1	PESTEL Analysis (External factors Framework)	18
4.1	The response results of the screening question	22
4.2	Scree plot generated from SPSS	28

CHAPTER I

INTRODUCTION

1.1 The Evolution of Electric Vehicles

According to the report, electric car jobs will grow faster than those of companies working with traditional fuel vehicles. As a result, electric cars have the potential to increase economic growth by improving people's quality of life. They reduce energy prices and dependence on foreign oil, which is becoming increasingly scarce and has an impact on the environment, which is a major concern worldwide.

In the 1900s, as people in the West became more affluent and technology-savvy. As a result, they sought improvements in transportation, which at that time still relied primarily on the use of horses, including the steam system. The most popular method of propulsion is gasoline. Each model has its own advantages and disadvantages.

Steam has long been a reliable source of power for locomotives and factories. In the 1700s, some self-propelled automobiles, like steam locomotives, were powered by steam. However, this technology was not used in automobiles until 1870.

Gasoline cars came on the market in the 1800s at virtually the same time as electric cars, and they remain popular today. They are known for producing internal combustion engines that are faster and use less energy than steam and electric engines. Later, the technology was widely used for airplanes and ships where it was easy to use. At the same time, people who can drive a gasoline-powered car need to understand the systems, which are complex and require frequent maintenance. Starting an automobile was not always as simple as it is today. The engine must be started manually from the outside, not inside the cabin. However, the engine must be started, which creates a loud and horrible smell.

Inventors and companies promised electric cars in the early 1900s to overcome limitations and increase efficiency. Hartford Electric Light, for example, partnered with General Car (a manufacturer of electric vehicles) to offer a battery

replacement service. Customers can use this to replace depleted batteries with new, charged ones. Then, you can manually increase the charge depending on the distance traveled. In this way, the problem of lack of charging infrastructure can be successfully solved. Ferdinand Porsche, the creator of the legendary sports car company, developed an electric sports car with all-wheel drive that set many speed records. He also built the first electric-gasoline hybrid car in 1900, which he sold to England for a car race the following year. Also, Thomas Edison, the most famous scientist and inventor. In one universe, I believe that electrical technology is superior to other technologies produced to date. As a result, he worked with his close friend Henry Ford to develop and produce low-cost batteries that would lower the cost of electric cars.

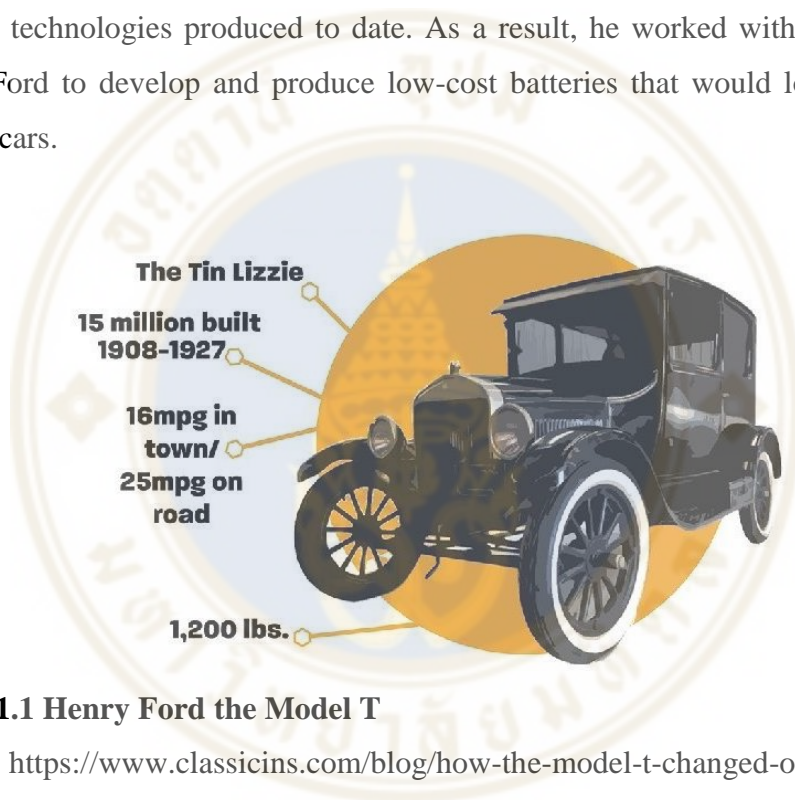


Figure 1.1 Henry Ford the Model T

Source: <https://www.classicins.com/blog/how-the-model-t-changed-our-world>

Then an unforeseen event occurred. Everything turned out to be negative, as Henry Ford's Model T supplanted battery electric automobiles from the Model T, which ran exclusively on gasoline. It was introduced and mass produced in 1908 for about a third of the cost of an electric car. At the same time, Charles Kettering invented an electric starter for gasoline engines. This made it easy to turn the old-fashioned crank. and expand the sales market Another important development was the discovery of significant petroleum deposits. Crude oil from Texas has meant that gasoline is now more competitive than other energy sources. As a result, countless gas stations have sprouted up in counties and across the country. In certain places, it is

easier to find a gas station than it is to find a remote house with electricity. Later, by 1935, electric cars were disappearing from the market.

Another significant incident occurred in 1973. When the world's energy supply issue intensifies, and oil prices rise. Countries that import a lot of crude oil, such the United States and the European Union. Begin exploring for other energy sources that are not dependent on the unstable oil market.

Another important incident occurred in 1973. as the problem of world energy supply worsens and oil prices rise. Countries that import a lot of crude oil such as the United States and the European Union. begin to look for other sources of energy that are not dependent on the volatile oil market. This was the time when the governments of each country realized the need for sustainable energy and resumed funding the development of electric and hybrid vehicles. Not only governments but also car manufacturers have become aware of this growing trend. General Motors, for example, has resumed the development of an electronic city car in line with the strategy of sustainable energy and environmental friendliness.

In modern times, however, an electric car could not compete with the excellent gasoline technology that had been developing for more than 30 years. It could not match the speed of a gasoline-powered car. Moreover, the longest distance it could travel before needing to be recharged was only 65 kilometers. This concept was kept under wraps until two events showed the world that there was a fully functional electric car.

In 1997, Toyota introduced the Prius, a tiny hybrid electric vehicle, in Japan. It was an immediate commercial success and was sold internationally in 2000. It established a reputation for energy conservation at a time when fuel costs were still rising. Despite all of Toyota's marketing techniques, the Prius quickly became one of the company's best-selling cars. The Prius was sold in more than 90 countries, with Japan and the United States being the two largest markets. This model also contributed to the developing trend of environmental friendliness, which increased its appeal in a developed country.

The second event that preceded the first was the debut of a premium electric sports car by Tesla Motors in 2006. The Tesla Roadster was the company's first car powered entirely by lithium-ion battery cells. It could travel 320 kilometers on

a single charge and accelerate from zero to one hundred kilometers per hour in less than four seconds. That was an incredible feat for an electric car. A one-hour charge is enough for a range of 8 kilometers, but a full charge takes 48 hours. The entry price for a base model was \$109,000 in the United States. Tesla's success was such that it sold out its entire inventory and became California's largest automaker. Tesla's decision shook up the entire industry. Their work influenced the development of electric vehicles by other major automakers.

Electric vehicles do not have the same problems as steam or gasoline vehicles. They make no or very little noise and emit no foul-smelling pollutants. Nevertheless, they do require occasional maintenance. However, not as frequently as gasoline or conventional fuel vehicles. As a result, electric vehicles have become increasingly popular among city dwellers in the United States. Especially among women who want to get around in crowded cities. Until recently, electric vehicles have been gaining popularity. More and more households are being equipped with electric hookups. It is moving from a middle market to a higher market as it is easy to charge and use. The interiors of electric vehicles tend to be more lavish. is causing future sales figures to skyrocket.

After the revival of the electric car, it became a new source of optimism for customers. However, the price of gasoline has fallen dramatically since 2015, dropping to half its previous level. Some attribute this to the discovery of shell gas. Others believe it is a political ploy. Whatever the cause, the intriguing question is whether the stream will collapse again or whether it is mature enough to persist. Some countries have spent considerable money on infrastructure. They may continue to support it. In Thailand, however, this is a new thought. Its future will be determined by how people anticipate the trend and what factors they consider when buying an electric car.

1.2 Problem Statement

As the price of crude oil skyrockets at the end of 2021 and fluctuates like never before this decade, the author wants to know what Thais think about alternative energy, whether it is important in Thailand, and what they think about future oil

prices. The author is optimistic that Thailand will eventually promote the use of renewable energy rather than relying on gasoline power for cars. Therefore, the aim of this study is to determine the preliminary level of acceptance of an electric car among Thai people, as well as the features they expect and those they do not expect.

1.3 Research Question

What are the factors that influencing the consumers to purchase electric vehicle in Thailand's Market?

1.4 Research Objective

- To investigate the elements that influence a person's decision to purchase an electric vehicle in the Thai market.
- To investigate the intention to purchase electric vehicles in the Thai market.
- To investigate Thai people's attitudes about green technologies and sustainable energy.
- To investigate the long-term viability of the Thai EV market.
- To recommend what is necessary for the promotion of electric vehicles in Thailand.

CHAPTER II

LITERATURE REVIEW

The purpose of the chapter two is a review of key literature on topics such as the electric car industry, the Thai electric vehicle market, customer perceptions, and important theories.

2.1 Electric Vehicle Industries – Literature Review

As governments seek to meet future energy needs in a changing and growing world, sustainable transportation has become an essential priority. Electric vehicles (EVs) are one of the most promising safety solutions. More Energy and Less Emissions of Greenhouse Gases and Other Pollutants the **Global EV Outlook- Understanding the Electric Vehicle Landscape** through 2020 report is the premier overview study of electric vehicles worldwide. The study includes up-to-date data collected from member countries of the Electric Vehicles Initiative (EVI) Electric Cars Initiative (EVI). A cross-government policy conference focused on increasing the global adoption of electric cars. by examining the goals, infrastructure, and legislation for electric vehicle adoption Initiatives and incentives to accelerate adoption All of this information will help us better understand global market trends and progress toward electric car adoption as we engage in research, development, and demonstration (RD &D), all of this information will help us better understand global market trends and developments in electric vehicle adoption. It also highlights the challenges in the adoption of electric cars and proposes solutions to overcome them. The report concludes with an assessment of areas where governments and businesses can drive the adoption of electric vehicles.

The International Economic Development Council's **Creating the Clean Energy Economy: Analysis of the Electric Vehicle Industry** study project is another major publication (2013). The study material focuses on the electric vehicle market in

the United States and introduces electric cars and the potential for job creation. In addition, the report recommends solutions for the electric vehicle industry, such as PEV (Plug-in Electric Vehicle) cost reduction and charging infrastructure expansion customer education given the near depletion of natural gas, the use of conventional gasoline-powered cars serves as a model for future electric vehicles. Alternative fuels, such as electricity, are more than just a good investment. However, for some, it is inevitable that they will be powered by gasoline. In addition, the transition to electric vehicles will increase demand for additional jobs as new businesses are created. According to the study, job growth in the electric car sector will be greater than job losses and revenue growth in the traditional gasoline-powered vehicle sectors. As a result, there may be an increase in net employment or a decrease in the management systems of various companies. Overall, electric cars have the potential to increase economic growth by greatly improving people's quality of life. Both for health and for the environment.

2.1.1 Electric Vehicle Industry Literature Review Summary

Understanding the electric vehicle landscape to 2020: Global EV Outlook (2013) The Difficulties and Opportunities for Government Programs and Incentives. An examination of developments and global market trends.

The Development of **Electric Vehicles in Europe: Are We About to Enter a New Phase? (McKinsey & Company, 2014)** A fact-based assessment of the state and ongoing progress of the European's electric mobility ecosystem, including the development of charging, battery technology, Technology infrastructure.

Developing a Clean Energy Economy: An Examination of EV Industry (IEDC, 2013) By increasing quality of life, lowering energy costs, and reducing dependence on foreign oil, electric cars are opening new economic growth potential. Solutions for electric car markets include lowering the cost of EV also expand the charging infrastructure and educate consumers about the benefits of electric vehicles.

Socioeconomic Aspects of Electric Vehicles: A Literature Review (Hanke, Huelsmann, and Fornahl, 2014) For a successful market introduction, the technical feasibility, environmental impact, and customer acceptance of the items must

be considered. Overview of the main issues and challenges about electric cars and focus on socio-economic difficulties.

Analysis of the **EV-car market from the point of business model dynamics (Debye, 2014)** The framework of the PESTEL model was used to study the market for electric cars, along with other elements such as demographics and legislation.

2.2 The Relevant Theory - Pestel (External Environmental Factors Analysis)

The researcher has focused on PESTEL analysis as an appropriate framework. External influences are examined using concepts such as politics, economics, society, technology, environment, and law. These are the elements that enable you to find business solutions. It is a technique for predicting market trends, and assess the company's prospects in light of changes in a set of external circumstances over which we have no control.



Figure 2.1 Factors in the external environment (PESTEL)

Source: <https://www.iebrain.com/pestle-analysis/>

2.2.1 Political Factors

All these variables relate to government factors that affect businesses and consumers. Political issues inevitably affect businesses and their operations. Businesses should be able to change their marketing strategy to respond to existing and anticipated future pressures. Examples include government policy, political stability or instability in foreign markets, foreign trade policy, tax policy, labor legislation, environmental law, trade restrictions, and other variables. (ACADEMY 2016)

2.2.2 Economic Factors

Economic elements have a significant impact on the management of a business and its success. Economic growth, interest rates, exchange rates, inflation, disposable income of consumers and businesses, and other variables play a role. These factors are further divided into macroeconomic and microeconomic factors. Macroeconomic factors in any economy are aimed at managing demand. The main tools used by governments for this objective are controlling interest rates, fiscal policy and government spending. Microeconomic factors deal with how people spend their money. This has a significant impact on B2C businesses. (ACADEMY 2016)

2.2.3 Social Factors

The common beliefs and attitudes of the population are examples of sociocultural aspects. Some of these influences include population growth, age distribution, health consciousness, and career expectations. These characteristics are particularly intriguing because they have a direct impact on how marketers view their customers and what motivates them. (ACADEMY 2016)

2.2.4 Technological Factors

The ever-changing innovations in technology are gradually affecting the way things are offered. They drive entrepreneurs to develop new methods of producing products and services. The three most important effects of technological elements on marketing and business management include new sales methods and new tools for communicating directly with target customers. (ACADEMY 2016)

2.2.5 Environmental Factors

People have paid attention to these elements because they have developed only recently. It is possible that they have become more important in the last 20 years due to the scarcity of resources worldwide. In addition, the government has set new targets for pollution. In terms of carbon footprint, these include ethical and sustainable business activities and goals. (Here are some examples of issues that can be described as both political and environmental). Here are just some of the issues marketers faces

when using this component. Consumers increasingly expect their purchases to be ethically sourced and, when possible, sustainable. (ACADEMY 2016)

2.2.6 Legal Factors

Health and safety concerns are among the legal considerations that must be considered. Advertising criteria Consumer laws and rights Include product labels to prove the safety of the product. Companies that want to acquire and sell efficiently need to know what is legal and what is not. When a company wants to do business around the world, it is especially difficult to understand each sector. This is because each country has its own set of rules. However, law is considered a critical and crucial aspect of doing business, including but not limited to consumer rights and freedoms. (ACADEMY 2016)

2.3 General Knowledge of Electric Cars

The term "EV", which stands for "Electric Vehicle", refers to a vehicle that is powered by electric motors rather than an internal combustion engine. The battery is used to store energy through the electrical system. Electric cars are known by a variety of names including electric car, electric vehicle, EV car and so on. Currently, electric vehicles are divided into four types:

2.3.1 A Hybrid Electric Vehicle (HEV)

is a vehicle that runs on both conventional gasoline and battery power. However, the primary fuel is still the ability to move the vehicle. However, electric energy is used in various activities. For example, when braking, the electric motor helps to bring the car to a smooth stop, or when accelerating, the battery emits electrical energy to assist in acceleration. more efficiency, resulting in lower fuel consumption than a car powered only by gasoline (Institute of Motor Vehicles, 2012).

2.3.2 A Plug-In Electric Vehicle (PHEV)

is a vehicle that has features and elements comparable to hybrid electric vehicles. In other words, this electric car uses the same gasoline and electric

technology as a hybrid electric vehicle. But there is a difference. This type of vehicle can feed an external charge to the electric motor, so the engine can run on electric power only. The high cost and the size of the battery are the biggest disadvantages of plug-in hybrid electric cars. This type of electric car is more expensive than a hybrid electric vehicle (Institute of Motor Vehicles, 2012).

2.3.3 A Battery Electric Vehicle (BEV)



is a vehicle that runs solely on electrical energy from the engine drive; therefore, the battery must be huge. Collect electrical energy to power automobiles. This vehicle does not have a gasoline powered engine. It has no impact on the environment, but it has the disadvantage of limited driving distance, which may depend on other factors such as the condition of the track, the environment, and the topography (Institute of Motor Vehicles, 2012).

2.3.4 A Fuel Cell Electric Vehicle (FCEV)

is an electric vehicle that runs on electricity only. The electricity in this type of electric vehicle is derived from hydrogen. It is stored in the form of a gas. The gas is used to generate electricity. The stored hydrogen interacts with the oxygen in the air. This type of electric vehicle is not. It has an impact on the environment as only water leaks from the body of the vehicle. Currently, fuel cell electric vehicles are still in the research and development phase. The production has been released commercially (Institute of Motor Vehicles, 2012).



2.4 Thailand 2021: Electric Vehicles

Table 2.1 Thailand 2021: Electric Vehicles

<p>1. MG EP EV</p>  <p>Figure 2.2 MG EP EV</p>	<p>NEW MG EP 2021 Station Wagon type car, open price 988,000 baht, 100% electric drive, new MG model, has everything, everything. Fulfill the aspiration to become the first electric car for everyone.</p> <p>In terms of power, the NEW MG EP is powered by a powerful permanent magnet synchronous motor, which combined with an electric transmission produces 163 horsepower and 260 Newton meters of torque. It accelerates from 0 to 100 km/h in 8.8 seconds and reaches a top speed of 185 km/h. It has three driving modes: Normal mode, Eco mode and Sport mode.</p> <p>NEW MG EP can charge electricity in two ways: Quick Charge (DC) via a CCS Combo 2 type charger, which charges from 0 to 80 percent in about 40 minutes, and Normal Charge (AC) via MG Home, which charges from 0 to 100 percent). The charger, which is a TYPE II charger, takes about 7 hours and 15 minutes to charge.</p>
<p>2. MG ZS EV</p>  <p>Figure 2.3 MG ZS EV</p>	<p>The MG ZS EV, which costs 1,190,000 baht, wakes up the electric current. The MG ZS EV features the distinctive design of a MG SUV. The case color "Copen Blue" is unique. The interior is in dark tones. It features an 8-inch color touch panel and digital air conditioning with an air filtration system that can filter out tiny PM 2.5 particles.</p> <p>With a maximum output of 110 kW (150 horsepower), a maximum torque of 350 Nm and a top speed of 50 km/h, it can accelerate from 0 to 50 km/h. With a charging time of just 3.1 seconds and a maximum range of 337 kilometers per full charge (according to the NEDC or European Standard for Fuel Efficiency and Emissions).</p>



Source: <https://www.autospinn.com/2020/11/ev-car-2021-in-thailand-80849>

Table 2.1 Thailand 2021: Electric Vehicles (cont.)

<p>3.Nissan Leaf</p>  <p>Figure 2.4 Nissan Leaf</p>	<p>The Nissan Leaf, a Japanese automobile, is the first stock to be included in official sales of the LEAF electric vehicle, which has become popular with people around the world. This could lead to total sales of more than 40,000 vehicles. Nissan LEAF is a car directly imported by Nissan Motor (Thailand) Co., Ltd. It is a second-generation electric car with a AC SYNCHRONOUS electric motor that produces 150 horsepower and high torque. A 40-kWh lithium-ion battery powers a 320 Nm laser. It can travel a maximum of 311 kilometers on a single charge. The retail price is set at 1.99 million baht (imported CBU); however, the total price of the imported car may be higher than the competition.</p>
<p>4. FOMM ONE</p>  <p>Figure 2.5 FOMM ONE</p>	<p>FOMM ONE is a small and compact electric vehicle that can seat up to four people. It is a small automobile. With a consumption of only 30 satang per kilometer, you can save money. It can travel up to 160 kilometers in about 6-8 hours with a charge from the home power grid.</p> <p>Size: 2,585 mm in length. Width: 1295 mm, Height: 1560 mm the drive system is equipped with electric motors in the front wheel hubs on both sides, delivering a maximum power of 13 hp and torque of up to 560 Nm. With a top speed of 80 km/h and a price tag of 664,000 baht.</p>



Source: <https://www.autospinn.com/2020/11/ev-car-2021-in-thailand-80849>

Table 2.1 Thailand 2021: Electric Vehicles (cont.)

<p>5. PORSCHE TAYCAN</p>  <p>Figure 2.6 Porsche Taycan</p>	<p>The Porsche Taycan is the world's first mass-produced sports car. It has an 800-volt high-voltage system instead of the typical system of other electric cars, which has only 400 volts of power. And that's the first significant benefit Taycan drivers will enjoy once they get this car on the road. The starting price is 6.99 million baht.</p>
<p>6. Audi e-tron</p>  <p>Figure 2.7 Audi e-tron</p>	<p>The Audi e-tron Sportback 55 quattro S line, a new high-performance, powerful SUV styled like a sports coupe and powered entirely by electricity, features intelligent electric quattro all-wheel drive and two electric motors for maximum performance. Maximum range of 463 kilometers per charge, with a maximum output of 300 kW (408 hp). With a 95-kWh lithium-ion battery, it accelerates from 0 to 100 km/h in 6.6 seconds and 5.7 seconds in boost mode. Its top speed is 200 km/h. The Tron's main feature is not its performance, but its usability. It can travel up to 417 kilometers on a single charge and has a retail price of only 5.299 million baht. It also comes with Audi Protection, a 5-year new car warranty or 150,000 km mileage and 24-hour national roadside assistance for 5 years.</p>



Source: <https://www.autospinn.com/2020/11/ev-car-2021-in-thailand-80849>

Table 2.1 Thailand 2021: Electric Vehicles (cont.)

<p>7. LEXUS UX 300e</p>  <p>Figure 2.8 LEXUS UX 300e</p>	<p>The LEXUS UX 300e is powered by an electric motor. The electric motor has a maximum output of 150 kW or 201 hp and enables rapid acceleration, powerful performance and a range of up to 360 kilometers per charge (NEDC standard) 0-80 percent Fast DC Charger The battery has a capacity of 54 kWh after 50 minutes of DC charging with a 50-kW charger at 125 amps.</p> <p>The Lexus UX 300e is priced at 3,490,000 baht.</p>
<p>8. Jaguar I-PACE</p>  <p>Figure 2.9 Jaguar I-PACE</p>	<p>The Jaguar I- PACE was launched by Inchcape (Thailand), the authorized Jaguar dealer. It has a capacity of 90kWh and is powered by two electric motors (2 front and rear dividers) and a bag-cell size lithium-ion battery. It is lightweight and requires minimal storage space.</p> <p>With a total output of 400hp, 696Nm of torque, a maximum range of 470km / 1 charge, a top speed of 200km/h and acceleration from 0 to 100 in 4.8 seconds with the AWD all-wheel drive system.</p> <p>Charging the battery from 0% to 80% takes about 20-40 minutes with a DC charger (fast charge) or about 10 hours with an AC charger imported to Thailand (home wall box) for all three versions.</p> <p>JAGUAR I- PACE ELECTRIC AWD S Sale price 5,499,000 baht.</p> <p>JAGUAR I- PACE ELECTRIC AWD SE Sale price 6,299,000 Baht.</p> <p>JAGUAR I- PACE ELECTRIC AWD HSE sale price 6,999,000 baht.</p>


Source: <https://www.autospinn.com/2020/11/ev-car-2021-in-thailand-80849>

Table 2.1 Thailand 2021: Electric Vehicles (cont.)

<p>9. BYD E6</p>  <p>Figure 2.10 BYD E6</p>	<p>Risen Energy Company Limited, a joint venture between Charish Holding Company Limited, a distributor of well-known motorcycle brands such as Ducati and Royal Enfield, and AJ Advance Technology Company Limited, has officially imported the BYD E6 into Thailand. (General Public) AJ is a manufacturer and distributor of entertainment products. The vehicle is powered by an electric motor with a maximum output of 121 hp, a maximum torque of 450 Nm and a top speed of 140 km/h. The BYD E6's iron phosphate or Fe battery can store 80 kWh of electricity, giving it a range of up to 300 kilometers on a single charge. A 40kW VTOG takes about 2 hours to charge, while a standard takes 8-9 hours. The BYD E6 is typically seen in a picture of a taxi VIP driving along Suvarnabhumi Airport. Still, importer Es is offering an opportunity for people looking to buy a home. It is available for order at a price of 1.89 million baht.</p>
<p>10. Hyundai Ioniq Electric</p>  <p>Figure 2.11 Hyundai Ioniq Electric</p>	<p>The Hyundai Ioniq Electric is powered by an electric motor with a maximum output of 120 hp, a maximum torque of 295 Newton meters and a lithium-ion polymer (LiPo) battery with a capacity of 28 kilowatt hours, which allows it to accelerate from 0 to 100 km/h in 9.9 seconds (Sport mode) and 10.2 seconds (Normal mode). According to NEDC regulations, it has a top speed of 165 km/h and a range of 280 km on a full charge.</p> <p>The charging system of the 2018 Ioniq Electric can be charged in three ways:</p>

Source: <https://www.autospinn.com/2020/11/ev-car-2021-in-thailand-80849>

Table 2.1 Thailand 2021: Electric Vehicles (cont.)

	<p>1. Trickle type takes 12 hours to fully charge a 2.3 kW electrical outlet.</p> <p>2. Normal takes 4 hours and 25 minutes to fully charge a normal (wall box) current of 6.6 kW.</p> <p>3. Fast charging (Quick Charging Station) with a maximum power of 100 kW and a charging time of 23 minutes to 80 percent.</p> <p>The price of the Hyundai Ioniq Electric (imported CBU) is 1,749,000 baht.</p>
<p>11. Kia Soul EV</p>  <p>Figure 2.12 Kia Soul EV</p>	<p>Kia Soul EV launches in Thailand ahead of all others, but with a higher price tag than rivals. The Kia Soul is a crossover-style car, a 5-seater box that may not be very familiar to the face because the regular Kia Soul gets very little mileage.</p> <p>Permanent magnet AC synchronous electric motor, maximum power 204 hp, maximum torque 395 Nm, lithium-ion polymer battery (LIPO), size 64 kWh, power 7.2 kW, voltage 356V, charging by plug</p> <p>Maximum mileage 452 km (WLTP standard) Top speed Top speed 167 km/h Acceleration 0-100 km/h: 7.9 seconds. 2,387,000 baht.</p>

Source: <https://www.autospinn.com/2020/11/ev-car-2021-in-thailand-80849>

CHAPTER III

RESEARCH METHODOLOGY

This investigation is a non-experimental investigation. (Non-experimental design) is the collection of field data from cross-sectional studies using questionnaires and data analysis using statistical methods.

3.1 Conceptual Framework

The PESTEL model is used by the researcher to find out what external variables influence a customer's decision to buy an electric car in Thailand. The factor can either be a good motivator or a constraint. This analysis step of researching could make the researcher come thoroughly understand the business potential in the Thai electric vehicle market by examining each of the following factors: PESTEL analysis (Political, Economic, Social, Technological, Environmental and Legal).

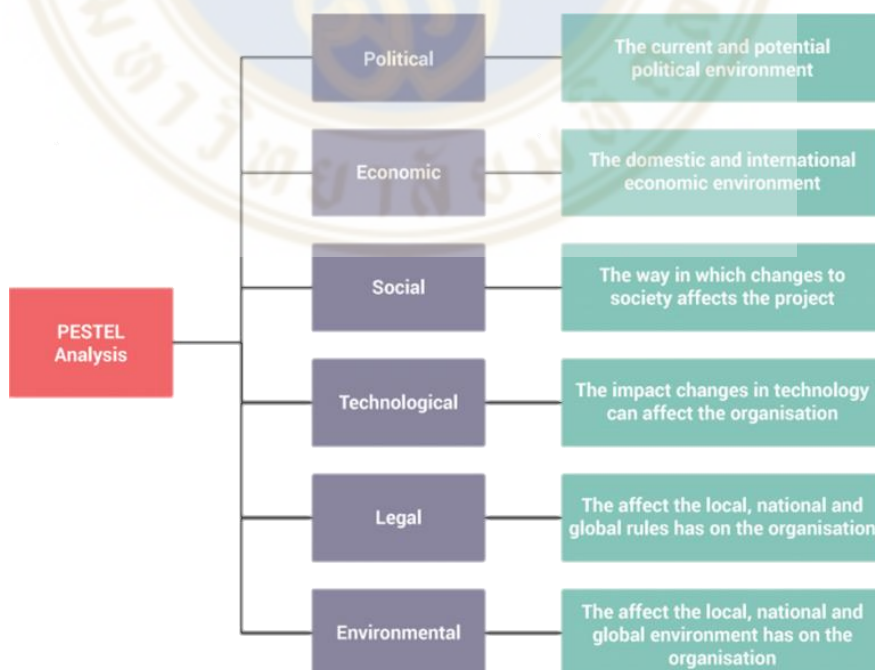


Figure 3.1 PESTEL Analysis (External factors Framework)

Source: <https://planiumpro.com/pestel/>

3.2 Population Size

Data analysis is conducted using a sample population or focus group, which is the primary source of information. The population in Thailand is the focus group of the study. The survey with 33 questionnaires was conducted to represent the opinion of Thai people and their intention to buy a new car. The population of this study consisted of workers from Bangkok. The sample size was calculated using the sample size technique. To calculate the sample size in the research, open the sample size table of Yamane (1973). Accordingly, the sample size was **185** people.

3.3 Research Instrument

Questionnaires were used to collect information from participants. The questions were divided into 4 sections.

3.3.1 Part I Personal Information

This section consisted of closed-ended questions concerning the respondents' details such as age, occupation, income, and so on.

3.3.2 Part 2 Screening Question

The screening question was "Do you currently own or planning to buy your own car?" The answers are only YES or NO.

3.3.3 Part 3 External Environment Factors (PESTEL)

This section contained Likert-style rating questions about respondents' attitudes toward external environmental factors.

5 - Strongly agree representative

4 - Agree representative

3 - Neutral representative

2 - Disagree representative

1 - Strongly representative

3.3.4 Part 4 Intention to Purchase

This section contained Likert-style evaluation questions about respondents' attitudes toward purchase intention.

5 - Strongly representative

4 - Agree representative

3 - Neutral representative

2 - Disagree representative

1 - Strongly representative

3.4 Data Collection

An online survey created in Google Forms received 241 responses. Therefore, the usable sample size is 185 responses after the screening question (76.8 percent). The screening question was "Do you currently own or planning to buy your own car?" which will help us focus only on our target audience and increase the reliability of the information.

3.5 Data Analysis

3.5.1 Factor analysis

Statistical Packages for Social Science (SPSS) version 24.0, one of the most sophisticated and widely used software packages for statistical analysis, was used to analyze the questionnaire data. Descriptive statistics such as mean, median, mode, standard deviation, frequencies, and percentages were used for the analysis. The research will primarily focus on exploratory factor analysis (EFA), which identifies items in a questionnaire that "stick together" and determines the most important characteristics. Unimportant items will be eliminated (Osborne, 2009). The main SPSS statistics examined in this article are the explained total variance, the scree plot, the rotated component matrix, the frequency table, the cross tabulation, and the correlation matrix.

3.5.2 Correlation Analysis

Correlation analysis is a method of determining the strength of a relationship between two variables. Variables that have a high correlation are strongly related, while variables with a low correlation are not related.



CHAPTER IV

RESEARCH RESULTS

4.1 Respondent Profile

According to Questionnaire survey, the research received 185 sample sizes from the total of 241 responses. The useable sample sizes were answer “Yes” through the screening question (76.8 percent of 241 people) which asked about “Do you currently own or planning to buy your own car?” (76.8 percent of 241 people). Therefore, the percentage of responses will show in the Figure 4.1.

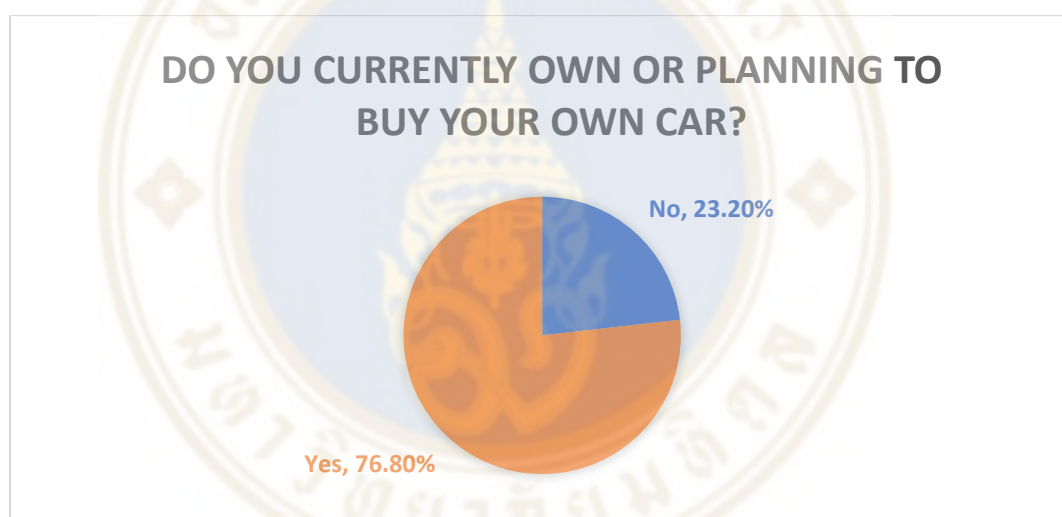


Figure 4.1 The response results of the screening question show that the participants are considering or planning to buy their own new car.

Table 4.1 Gender information of the respondents

	Gender	Frequency	Percentage	Valid Percent	Cumulative Percent
Valid	Female	102	55.1%	55.1%	55.1%
	Male	79	42.7%	42.7%	97.8%
	Others	4	2.2%	2.2%	100.0%
	Total	185	100.0%	100.0%	

Table 4.1 showed that most respondents (55.1 percent) were female, with 42.7 percent being male. Middle-aged respondents are the most participation (Table 4.2). There were 45.4 percent of '26-30 years old,' 37.8 percent of 'under 26 years old,' 16.2 percent of '31-40 years old,' and 0.5 percent of '41-50 years old.' If the number of people aged 26 to 40 were totaled, they would account for 61.6 percent of all respondents. This should cover most of the car driver market.

Table 4.2 Total Age range of the respondents

	Age	Frequency	Percentage	Valid Percent	Cumulative Percent
Valid	26-30 y	84	45.4%	45.4%	45.4%
	31-40 y	30	16.2%	16.2%	61.6%
	41-50 y	1	0.5%	0.5%	62.2%
	< 26 y	70	37.8%	37.8%	100.0%
	Total	185	100.0%	100.0%	

According to Table 4.3, 72.4 percent of respondents held a bachelor's degree. 17.8 percent had a master's degree. Doctoral degree recipients made up 1.1 percent of the total. 7.8 percent had completed high school. 1.1 percent of those polled graduated from a lower high school.

Table 4.3 Education background of the respondents

	Education	Frequency	Percentage	Valid Percent	Cumulative Percent
Valid	Bachelor's Degree	134	72.4%	72.4%	72.4%
	High School	14	7.6%	7.6%	80.0%
	Lower high school	2	1.1%	1.1%	81.1%
	Master's Degree	33	17.8%	17.8%	98.9%
	Ph.D.	2	1.1%	1.1%	100.0%
	Total	185	100.0%	100.0%	

According to Table 4.4, most respondents (94.6 percent) are single, while 5.4 percent are married.

Table 4.4 The marital status of the respondents

	Status	Frequency	Percentage	Valid Percent	Cumulative Percent
Valid	Married	10	5.4%	5.4%	5.4%
	Single	175	94.6%	94.6%	100.0%
	Total	185	100.0%	100.0%	

The income distribution was balanced. The fact that people from both the upper and lower classes responded to the questionnaire made it even more interesting to learn about their perspectives. According to Table 4.5, 37.8 percent earned between 15,001 and 25,000 baht per month. 23.2 percent earned between 25,004 and 50,000 baht per month. 8.1 percent earned between 45,001 and 80,000 baht per month. There were 24.9 percent of those earning less than 15,000 baht per month. Finally, 5.9 percent earned monthly income more than 80,000 baht.

Table 4.5 The average monthly income of the respondents

	Income	Frequency	Percentage	Valid Percent	Cumulative Percent
Valid	15,001-25,000 baht	70	37.8%	37.8%	37.8%
	25,001-45,000 baht	43	23.2%	23.2%	61.1%
	45,001-80,000 baht	15	8.1%	8.1%	69.2%
	Below 15,000 baht	46	24.9%	24.9%	94.1%
	> 80,000 baht	11	5.9%	5.9%	100.0%
	Total	185	100.0%	100.0%	

4.2 Factors Influencing the Thai Market's Intention to Purchase Electric Cars

Following the component analysis, there were six key elements that appear to be affecting customers' intentions to buy electric automobiles, which are the environmental effect, legal, political, technological, social, and economic. The strongest component, according to Table 4.6, is technological. Respondents who agreed with the statement 'EVs would be inconvenient to use because there will be many unforeseen difficulties' were more inclined to agree with the statement 'EVs will be difficult to solve when unexpected problems arise.' It illustrated how Thai people are still apprehensive about future product technologies and don't have much more service for assistance.

Table 4.6 Rotated Component Matrix

	Component				
	1	2	3	4	5
EV is consistent with the current environmental policy.	.650				
Own an electric vehicle will change my image.	.648				
The cost of maintenance EVs are cheaper than general engine vehicles.	.646				
Social trend can change my mind.	.616				
EVs can fully replace gas vehicles.	.505				
Technology infrastructures in Thailand are suitable for Electric vehicles.	.502				
I agree if legislation have policy requirement for charging station in every gas station, office building, and department store.		.754			
Providing clear policies and timeframes of the transformation are gain consumer' confidence.		.715			
I'm only interested in electric cars that are legal to protect and support safety.		.682			
Government should consider urging EV business and EV consumer in Thailand.		.627			
EVs will be inconvenient to use because there are many unexpected problems.			.846		
EVs will be difficult to solve when unexpected problems occur.			.822		
Thailand's vehicles import tax rates are reasonable for me.				.763	
Providing benefit to EV consumer from government is attractive.				.745	
I accept illegal electric vehicle but qualified safety.					.700
Environmental changing is impacting the Electric vehicle purchasing.					.679

Table 4.7 Total Variance Explained

Component	Initial Eigenvalues			Rotation Sums of Squared Loadings		
	Total	% Of Variance	Cumulative %	Total	% Of Variance	Cumulative %
1	2.846	17.787	17.787	2.309	14.429	14.429
2	2.266	14.163	31.950	2.203	13.771	28.200
3	1.642	10.264	42.214	1.750	10.940	39.140
4	1.258	7.864	50.078	1.469	9.183	48.323
5	1.123	7.017	57.095	1.404	8.772	57.095
6	.876	5.476	62.571			
7	.854	5.340	67.911			
8	.802	5.012	72.923			
9	.701	4.383	77.306			
10	.666	4.160	81.466			
11	.631	3.943	85.409			
12	.567	3.543	88.952			
13	.497	3.106	92.058			
14	.482	3.011	95.070			
15	.433	2.704	97.773			
16	.356	2.227	100.000			

Table 4.7 shows that the initial Eigenvalues were greater than one, and the cumulative percentage was in the positive range at 57.095. Furthermore, the scree plot in Figure 4.2 shows a clear separation.

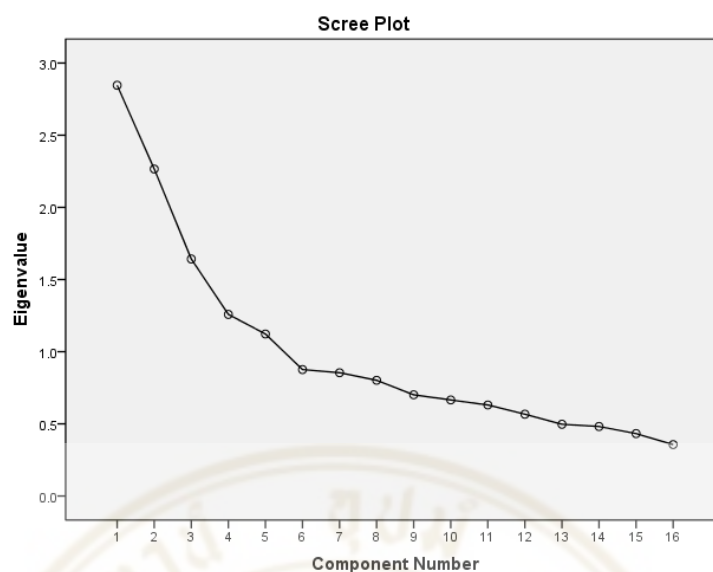


Figure 4.2 scree plot generated from SPSS

Table 4.8 Correlation

Factors	Questionnaire	I will buy if an efficient electric vehicle available in Thailand.	
Political	Providing benefit to EV consumer from government is attractive.	Pearson Correlation	.162*
		Sig. (2-tailed)	.028
	Government should consider urging EV business and EV consumer in Thailand.	Pearson Correlation	.351**
		Sig. (2-tailed)	.000
	I would like to buy Electric vehicle if the rate price equal to other country.	Pearson Correlation	.160*
		Sig. (2-tailed)	.029
Economic	I will buy Electric vehicle if oil price continuously increases.	Pearson Correlation	.292**
		Sig. (2-tailed)	.000
Social	Social trend can change my mind.	Pearson Correlation	.213**
		Sig. (2-tailed)	.004
	Own an electric vehicle will change my image.	Pearson Correlation	.179*
		Sig. (2-tailed)	.015
Technological	EVs can fully replace gas vehicles	Pearson Correlation	.300**
		Sig. (2-tailed)	.000
	I will buy Electric vehicle If it easy to maintenance.	Pearson Correlation	.182*
		Sig. (2-tailed)	.013
Environmental	EV is consistent with the current environmental policy.	Pearson Correlation	.236**
		Sig. (2-tailed)	.001
	I willing to buy Electric vehicle for environmental responsibility.	Pearson Correlation	.393**
		Sig. (2-tailed)	.000

Table 4.8 Correlation (cont.)

Factors	Questionnaire	I will buy if an efficient electric vehicle available in Thailand.	
Legal	I'm only interested in electric cars that are legal to protect and support safety	Pearson Correlation Sig. (2-tailed)	.193** .008
	Providing clear policies and timeframes of the transformation are gain consumer' confidence.	Pearson Correlation Sig. (2-tailed)	.316** .000
	I agree if legislation have policy requirement for charging station in every gas station, office building, and department store.	Pearson Correlation Sig. (2-tailed)	.337** .000
	I will buy Electric vehicle if charging station available in whole country.	Pearson Correlation Sig. (2-tailed)	.372** .000

Table 4.8 displays the Pearson correlation results. The most powerful factor is the legal one. People who agree with the questions about legal factors are more likely to agree with the question about purchase intention, according to the correlation value. However, because some of the results were not statistically significant, insignificant variables were eliminated using stepwise linear regression.

4.3 Intention to Buy the Electric Cars in Thai Market

Tables 4.9 and 4.10 show the results of our questions about the intention to buy an electric car and questions about external factors. The average score for questions with a 5 point scales (5 = Strongly Agree, 4 = Agree, 3 = Neutral, 2 = Disagree, 1 = Strongly Disagree).

Table 4.9 Descriptive Statistics of intention to purchase

Questions	N	Min	Max	Mean	Std. Deviation
I will buy Electric vehicle if charging station available in whole country.	185	1	5	4.60	.716
I willing to buy Electric vehicle for environmental responsibility.	185	1	5	4.34	.846
I would like to buy Electric vehicle if the rate price equal to other country.	185	1	5	4.51	.808
I will consider to buy if majority purchasing in EVs.	185	1	5	3.95	1.057
I will buy Electric vehicle If it easy to maintenance.	185	1	5	4.59	.702
I will buy Electric vehicle if oil price continuously increases.	185	1	5	4.41	.803
I will buy if an efficient electric vehicle available in Thailand.	185	1	5	4.29	.800

According to Table 4.9, the overall question is almost in the same range with an average of 4.29-4.60. Alternatively. The question of "I will consider buying if the majority of EVs are purchased." As a result, people will be unconcerned about social movements.

Table 4.10 Descriptive Statistics of External factor questions

Questions	N	Min	Max	Mean	Std. Deviation
Thailand's vehicles import tax rates are reasonable for me.	185	1	5	2.31	1.212
Providing benefit to EV consumer from government is attractive.	185	1	5	3.61	1.257
Government should consider urging EV business and EV consumer in Thailand.	185	1	5	4.65	.627
The cost of maintenance EVs are cheaper than general engine vehicles.	185	1	5	3.33	.950
Social trend can change my mind.	185	1	5	3.83	1.032
Own an electric vehicle will change my image.	185	1	5	3.43	1.174
Technology infrastructures in Thailand are suitable for Electric vehicles.	185	1	5	2.50	1.084
EVs can fully replace gas vehicles	185	1	5	3.61	1.021
EVs will be inconvenient to use because there are many unexpected problems.	185	1	5	3.19	.931
EVs will be difficult to solve when unexpected problems occur.	185	1	5	3.42	1.002
Environmental changing is impacting the Electric vehicle purchasing.	185	1	5	4.09	.906
EV is consistent with the current environmental policy.	185	1	5	4.02	.955
I accept illegal electric vehicle but qualified safety	185	1	5	2.38	1.286

Table 4.10 Descriptive Statistics of External factor questions (cont.)

Questions	N	Min	Max	Mean	Std. Deviation
I'm only interested in electric cars that are legal to protect and support safety.	185	1	5	4.57	.737
Providing clear policies and timeframes of the transformation are gain consumer' confidence.	185	1	5	4.52	.710
I agree if legislation have policy requirement for charging station in every gas station, office building, and department store.	185	1	5	4.76	.600

According to Table 4.10, most participants were mostly concerned about legal and government issues as a result of the government question "Government should consider encouraging EV business and EV consumers in Thailand." The overall mean score is 4.65 out of 5. On the other hand, the results of the legal questions are completely consistent, with all three questions receiving more than 4.5 out of 5 in total.

Table 4.11 Cross-tabulation between income range and the intention to buy question

Please tell me your average monthly income	If an efficient electric vehicle available in Thailand I will buy					Total
	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree	
15,001-25,000 baht	1	0	15	28	26	70
25,001-45,000 baht	0	1	2	17	23	43
45,001-80,000 baht	0	0	2	4	9	15
Below 15,000 baht	0	1	7	14	24	46
More than 80,000 baht	0	0	2	3	6	11
Total	1	2	28	66	88	185

Table 4.11 depicts a crosstabulation of the income rate and the intention to purchase question. The income rate of 15,001-25,000 baht is skewed to the agreeing side by 77.14 percent. The income rate of 25,001-45,000 baht is skewed to the agreeing side by 93.02 percent. For 45,001-80,000 baht, 86.67 percent is skewed in favor of the agreeing side. Under 15,000 baht, 82.61 percent is skewed to the agreeing side. Finally, more than 80,000 baht, or 81.82 percent, is skewed toward the agreeing side. Nonetheless, it should be safe to assume that the higher a person's income, the more likely they are to purchase an electric vehicle.

Table 4.12 Cross-tabulation of age ranges and purchase intentions

Please indicate which age group you belong to.	If an efficient electric vehicle available in Thailand I will buy					Total
	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree	
26-30 years	1	2	13	29	39	84
31-40 years	0	0	1	14	15	30
41-50 years	0	0	0	0	1	1
Under 26 years	0	0	14	23	33	70
Total	1	2	28	66	88	185

Table 4.12 shows a crosstabulation of the age range and the purchasing intention question. The age range of 26-30 is 80.95 percent tilted to the agreeing side. The age range of 31-40 is 96.67 percent biased to the agreeing side. The age range of 41-50 is completely skewed to the agreeing side. Under-26-year-olds are skewed to the agreeing side by 80%.

Table 4.13 Cross-tabulation of gender and purchase intentions

Could you please tell me what gender you are?	If an efficient electric vehicle available in Thailand I will buy					Total
	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree	
Female	1	1	23	32	45	102
Male	0	1	5	31	42	79
Other	0	0	0	3	1	4
Total	1	2	28	66	88	185

Table 4.13 shows a crosstabulation of the gender and purchasing intention questions. Female participants are 75.49 percent more likely to agree. Male participants are 92.40 percent more likely to agree. The other genders are completely skewed to the agreeing side. As a result, male customers may be more likely to purchase than female customers.

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusion

As a result of the research findings. Most of the participants are interested and willing to purchase an electric vehicle, but they are concerned about the external factors that the researcher had asked about, such as political, economic, social, technological, environmental, and legal factors. As a result, Thais are unsure whether Thailand is ready to promote the use of electric vehicles by consumers. The researcher's main finding from the results that influences consumer purchase intentions is that Thailand needs to have charging stations nationwide, if not more than before. On the other hand, many participants are concerned about government regulation, especially taxation policies. Therefore, many participants believe that the Thai government should provide and support the price of importing and selling electric vehicles in Thailand to encourage consumers to respond to environmental impacts such as carbon footprint and minimize their consumption of gasoline or diesel. As a result of the study using PESTEL analysis, the research findings are important for entrepreneurs to understand how electric vehicles will be in Thailand and what they need to do to make the market and access to customers clearer or build the business related to electric vehicles efficiently.

5.2 Recommendation for Promoting Electric Vehicle in Thailand

According to the research findings, the market for electric vehicles is well prepared. Thais are becoming more aware of the country's current environmental problems. Green technology is fast becoming an accepted, growing trend. Thailand is moving in the right direction when it comes to reducing pollution. There have been numerous government advertising campaigns asking people to reduce their carbon footprint, such as cars and household appliances. This movement needs continuous

support to gain consumer recognition. Electric vehicle manufacturers should also be able to gain consumer attention if they organize an advertising/marketing campaign that emphasizes the green component. TV Commercials and print ads that show the eco-friendliness of electric vehicles should be a good start.

In addition, manufacturers could consider supporting/sponsoring "green" activities to identify their brand with "nature" and "environmental friendliness". Other ideas for electric car manufacturers/sellers include targeting the middle to high income and middle-aged (30-50 years) markets, as they have purchasing power and are willing to trade the high purchase price for a long-term gain. However, to encourage the growth of electric cars, the government needs to take a supportive approach. Before local car manufacturers decide to produce e-vehicles in Thailand, the government should explore whether it can waive the import tax on e-vehicles or provide subsidies to increase the competitiveness of e-vehicles in the market. This should be a short-term measure to convince consumers to reconsider buying e-vehicles. At the same time, this legislation would send a signal to local automakers that the Thai government takes e-vehicles seriously. As for long-term plans, it is obvious that a full-fledged e-vehicle is still quite new in Thailand and there are not enough charging stations. A look back at the NGV case study shows that the main reason for the initial weakness of the NGV was the lack of charging stations. It took more than five years for the number of charging stations and sales of NGV vehicles to increase. Therefore, the author advises operators to look for business opportunities at this early stage. Commercial EV charging stations, EV repair services and building an EV supply chain are some areas to consider. Once EV enters uncharted territory, it has a great chance to break even soon.

5.3 Benefit of the Research

It was predicted that given the environmental and cost benefits, electric vehicles would enter the Thai market within 5-10 years, covering more than 30-50 percent of existing vehicles. This study could serve as a basis for a more in-depth study of the EV industry. This study may be useful for public and private stakeholders involved in the promotion of EVs, such as EV manufacturers and individuals/SMEs

looking for an opportunity to enter the EV business (commercial charging stations, EV maintenance services, EV parts vendors).

5.4 Future Work

Due to time and budget constraints, only a subset of the entire population was studied. It would be beneficial to retest the hypothesis with a larger sample to verify that the results are consistent with the initial findings. Moreover, from the current results, we only learned that some factors influenced the intention to purchase an electric vehicle in Thailand. However, all explanations for these responses are still based on the author's biases. To be honest, we still do not have specific explanations/motivations for the respondents' answers. To confirm these assumptions for future applications, a qualitative analysis such as an interview or focus group with potential consumers or traders should be conducted.

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APPENDIX A

PART I: Questionnaire Survey

Factors Affecting Employee's Satisfaction and Intention to leave for Company in Thailand

Please tick ✓ in the box in front of the right answer

Screening Question

Do you currently own or planning to buy your own car?

- No (Stop answering question)
- Yes (Continue answer the questions)

Part I: Personal Information

1. Gender

- Female
- Male
- Other

2. Age

- Under 26
- 26-30
- 31- 40
- 41-50
- Over 50

3. Education levels

- Lower high school
- High school
- Bachelor's Degree
- Master's Degree
- Ph.D.

4. Marital status

- Single
- Married

5. Monthly Income

- Below 15,000 THB
- 15,001- 25,000 THB
- 25,001- 45,000 THB
- 45,001- 80,000 THB
- More than 80,000 THB

Part II: PESTEL ANALYSIS

Please tick ✓ in the box that is consistent with your opinion. By which

5 - Represent Very Satisfied

4 - Represent Satisfied

3 - Represent Neutral

2 - Represent Dissatisfied

1 - Represent Very Dissatisfied

Political factor		Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1	Thailand's vehicles import tax rates are reasonable for me.					
2	Providing benefit to EV consumer from government is attractive.					
3	Government should consider urging EV business and EV consumer in Thailand.					
Economic factor		Strongly disagree	Disagree	Neutral	Agree	Strongly agree
4	Thailand's Economic impact consumer to purchase Electric vehicle.					
5	Electric vehicle can save a lot of money in long-term using energy.					
6	The cost of maintenance EVs are cheaper than general engine vehicles.					

Social factor		Strongly disagree	Disagree	Neutral	Agree	Strongly agree
7	Social trend can change my mind.					
8	EVs are too expensive for me.					
9	Own an electric vehicle will change my image.					
Technological factor		Strongly disagree	Disagree	Neutral	Agree	Strongly agree
10	Technology infrastructures in Thailand are suitable for Electric vehicles.					
11	EVs can fully replace gas vehicles					
12	EVs will be inconvenient to use because there are many unexpected problems.					
13	EVs will be difficult to solve when unexpected problems occur.					
Environmental factor		Strongly disagree	Disagree	Neutral	Agree	Strongly agree
14	Environmental changing is impacting the Electric vehicle purchasing.					
15	Electric cars can help reduce global warming.					
16	EV is consistent with the current environmental policy.					

Legal factor	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	
17	I accept illegal electric vehicle but qualified safety					
18	I'm only interested in electric cars that are legal to protect and support safety.					
19	Providing clear policies and timeframes of the transformation are gain consumer' confidence.					
20	I agree if legislation have policy requirement for charging station in every gas station, office building, and department store.					

Part III: INTENTION TO PURCHASE

Please tick ✓ in the box □ that is consistent with your opinion. By which

5 - Represent Very Satisfied

4 - Represent Satisfied

3 - Represent Neutral

2 - Represent Dissatisfied

1 - Represent Very Dissatisfied

Intention to purchase		Strongly disagree	Disagree	Neutral	Agree	Strongly agree
21	If an efficient electric vehicle available in Thailand, I will buy.					
22	I will buy Electric vehicle if charging station available in whole country.					
23	I willing to buy Electric vehicle for environmental responsibility.					
24	I would like to buy Electric vehicle if the rate price equal to other country.					
25	I will consider to buy if majority purchasing in EVs.					
26	I will buy Electric vehicle If it easy to maintenance.					
27	I will buy Electric vehicle if oil price continuously increases.					