https://doi.org/10.58195/emi.v3i1.99

Global Science Publishing

EMI

Economics & Management Information

https://ojs.sgsci.org/journals/emi

Article

# David vs Goliath: How Electric Vehicle Penetrate the Conventional Automotive Market in ASEAN

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**Abstract:** Electric Vehicle is an automotive industry that is predicted to be the future. In particular, in ASEAN, which has two car assembly centers, one of the largest in the world, namely Indonesia and Thailand. But is this industry able to take the market from the fossil fuel car industry? which has been a giant for decades. This study uses an exploratory qualitative approach to process the data found from secondary data and mixed them with deep literature review. The final analysis is also equipped with digital analytical analysis to determine consumer interest in ASEAN. This study finds several strategies for the electric car industry to develop, first the crucial role of government, second is the technological innovation that makes the cost and selling price of electric vehicles become affordable and third, the collaboration of manufacturers in developing this industry in Southeast Asia is mandatory.

**Keywords:** electric vehicle; automotive market; ASEAN market

## 1. Introduction

The rapid growth of the electric vehicle (EV) market has significantly impacted the conventional automotive market in the ASEAN region. This paper explores the factors contributing to the rise of EVs, the challenges faced by the industry, and the role of governments in promoting EV adoption. The article concludes with a discussion of the potential benefits and implications of a growing EV market for ASEAN countries. The Association of Southeast Asian Nations (ASEAN) comprises ten countries, each with its distinct economic landscape and automotive industry. In recent years, the adoption of electric vehicles (EVs) has seen significant growth in the region, posing a challenge to the conventional automotive market [1]. This paper aims to analyze the factors driving the EV penetration, the obstacles faced, and the role of government policies in promoting the shift to EVs in ASEAN.

Covid-19 has impacted many areas of our lives, including automotive sales across ASEAN. Indonesia itself in 2021 gave an economics impuls to increase the car sales by giving 0% of taxes for each car sales. It was actually drove the industry in positive level after a long minor sales since pandemic arose all around the world.

Government in various country in the world, including ASEAN have a strong vision to shifting the automotive market from fuel-based car to electric vehicle (EV) in order to achieve environment sustainability and economic efficiency [2]. Especially in Southeast Asia, just like in other countries, making changes in the traditional car industry to technology that relies on electricity is a policy that favors proactive action in fulfilling obligations related to climate change that are currently undergoing changes, reducing pollution in urban areas,

Received: 4 September 2023; Accepted: 19 September 2023.

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and of course maintaining sustainability of energy availability. Broadly in Asia there are several countries that already have developed vehicle manufacturing industries such as Indonesia, Thailand, Korea, and of course Japan.

On the one hand, Thailand is a country in ASEAN that is very productive and focuses on developing policies on the growth of electric vehicles, even providing special incentives for investment in this regard [3]. They already have an integrated roadmap, in 2019 Thailand plans to develop production capacity 1,000 electric buses per year, also in terms of battery distribution. By 2036, they have a target of 1.2 million passenger EVs integrated with national electric charging stations in hundreds of locations.

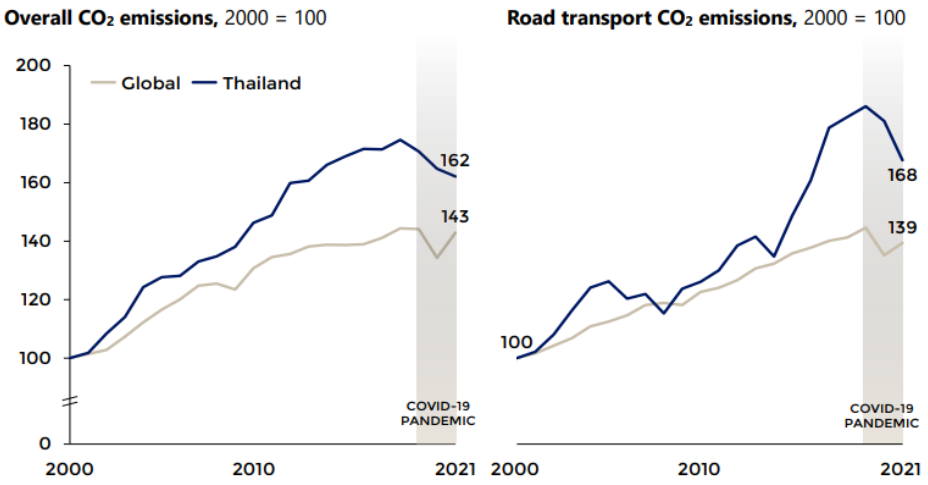


**Figure 1.** Thailand's CO2 emissions.

Based on Figure 1, developing countries have a fairly high contribution in increasing CO2 emissions than developed countries. One example is Thailand where the increase in their emission levels grew higher than the global average. The biggest emitter CO2 is light passenger and commercial cars vehicles, especially pick-ups. Looking further, road transport vehicles can account for almost 20% of all energy related CO2 emissions [4].

In terms of economic contribution, the automotive industry has a significant impact on global economic growth. The International Labor Organization (ILO) says that the annual turnover of the automotive industry is equal to that of the sixth largest economy in the world. ASEAN countries such as Indonesia, Malaysia, Thailand and the Philippines have imposed partial lockdowns and travel restrictions to contain the spread of the virus. As a result of the pandemic the automotive industry is facing a sharp decline in demand as well as investment.

Vietnam had the worst growth during the last pandemic with sales expected to fall by around 32% to only around 50, 000 units. The Vietnamese government, as in Indonesia, provided an economic stimulus for this industry by making a policy of reducing the cost of purchasing vehicles by 50% until the end of 2020 to stimulate automotive demand. In Thailand, car production in the country fell to its lowest level in 30 years. Car sales fell 65% due to the decline in people's purchasing power. Car exports also decreased by 67.7%.

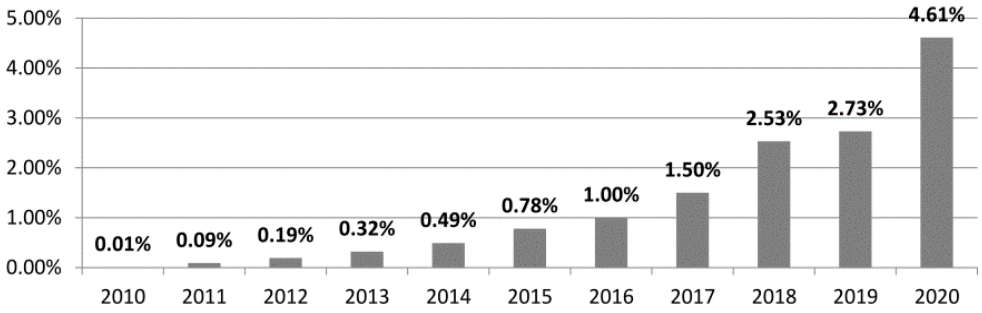


**Figure 2.** EV sales' share among cars worldwide.

In contrast to the decline obtained in the conventional automotive industry. Based on Figure 2, electric vehicle sales reached approximately three million units in 2020. China contributed 40.5% of the global sales. By the end of 2020, there were more than 10 million EVs worldwide, on the other hand, global conventional car sales fell by 16% [5].

This article intends to provide analysis and proposals on how the EV industry can develop in the Southeast Asia region, including aspects of opportunities that can be used by related industries in developing their strategies. As obtained from the data above, the aspect of the opportunity for the development of the EV industry in the Southeast Asian market will have many interesting considerations, not only the economy but also the culture, policies and marketing strategies of these automotive companies.

## 2. Analytical Framework

### *2.1. Innovation Drives Development of Electric Vehicle Industry*

The development of an innovation will be greatly influenced by the characteristics of the innovation in question, the momentum used, the communication channel used and closely related to the surrounding social culture. EV in terms of innovation from a customer satisfaction point of view focuses on product features and services [6].

The most important factor of why EVs are becoming an increasingly popular choice today is not only in terms of using energy that is environmentally friendly and cheaper, but the convenience, quality and practicality of features affect consumers' purchase intentions [7].

There are five types of innovation that can help us to see what the main considerations for consumers in seeing the differentiating elements in their purchase intentions. Namely: new products, improved production methods, alternative sources of supply, market development, and methods of management. In the complexity of the initial idea, the innovation must be able to be translated into a simplification that is better understood by the market [8].

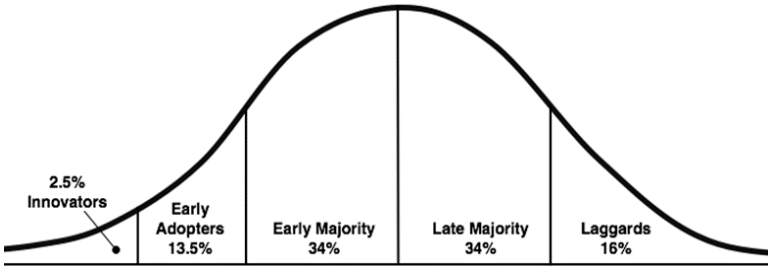


**Figure 3.** Diffusion of Innovation.

The diffusion of innovations depends on the type of adopters and the decision process taken by them. Adopters as shown in Figure 3, contains of Innovators, Early Adopters, Early Majority, Late Majority, and Laggards.

Based on previous studies, there are five main factors that influence the adoption of an innovation in an organization. First is related to relative advantage, namely the extent to which the proposed innovation is better than the previously used idea. Second, compatibility, which implies how consistent the idea for the initiation of the innovation is with the values required by the organization. Third, related to complexity, which takes the point of view of the level of difficulty in adapting the innovation in the organization. Fourth, triability, this provides a view of the extent to which innovations can be tested on a limited scale first before being released to the public wider market. Finally, observability, an analysis of the extent to which the innovation to be implemented has tangible measurable results.

Regarding innovation in EV products, it was found in Thailand, around 75% of consumers chose to buy EV innovations in the energy source used, namely electric power. This includes considerations of novelty and cost efficiency [9].

Market that already purchased EV have five important factors why they bought EV. Better safety become

the first thing inside their need, this factor is equally the same with conventional auto market, which put the safety the first place. Ability to charge at work and home will become massive innovation that produces take in the near future, because consumers will demand more charging availability and access in many locations. Along those five factors, government incentive is the only non technical reason why consumers buying EV. According to that, some country in South East Asia has provide incentive for any kind of EV, in order to increase the demand.

### *2.2. ASEAN Countries' Awareness of EV Industry Development is Increasing*

There are some factors driving the growth of EVs in ASEAN, first is the increasing awareness of climate change and air pollution has prompted ASEAN governments to set ambitious targets for reducing carbon emissions [10]. As transportation contributes significantly to greenhouse gas emissions, the adoption of EVs is seen as a means to combat environmental concerns [10], second is about technological advancements, continuous improvements in EV technologies, such as battery performance, charging infrastructure, and driving range, have made EVs more appealing to consumers. Lower battery costs and innovations in battery chemistry have made EVs more cost-competitive with conventional vehicles. Third is consumer preferences, changing consumer preferences and increased environmental awareness have driven the demand for EVs in ASEAN countries [9]. Additionally, the availability of a wider range of EV models with various price points has attracted more consumers to the market.

Countries in ASEAN are currently working with legal, economic and social policies to be able to decrease the need for non-renewable energy, given the decreasing supply and rising fuel prices around the world. Not to mention the pollution it produces. The use of fossil energy in the future will decrease and will begin to replace with renewable energy sources, such as electricity. The future use of fossil fuels and coal will be reduced. The use of renewable energy such as wind power, geothermal is predicted to increase.

In the future the transportation, manufacturing and building industries will use renewable energy in their production processes. The use of electric power in transportation is predicted to increase but there is still a large amount of conventional fuel used. This is the focus of ASEAN countries in accelerating the adaptation of these technologies.

Each country has high attention on the implementation of electric vehicles in their respective countries. However, market demand is also a factor that determines the development of the industry. As Figure 4 shows, we can see that the contribution of GDP in ASEAN is still dominated by six countries. Indonesia is the country with the largest GDP in ASEAN at 35% of the total ASEAN GDP, followed by Thailand at 16%, then the Philippines, Malaysia, Singapore and Vietnam at 11-12%. However, if we compare it in terms of per capita income, then the order of magnitude of GDP in these countries becomes irrelevant. There is a sizeable income gap. Indonesia, which has the largest GDP in ASEAN, has a per capita income below the ASEAN average. Singapore ranks first as the country with the largest per capita income in ASEAN with 1322% of the average, followed by Brunei at 683%, Malaysia at 239% and Thailand at 159%. It's no wonder why EV growth is ultimately centered on these four countries.

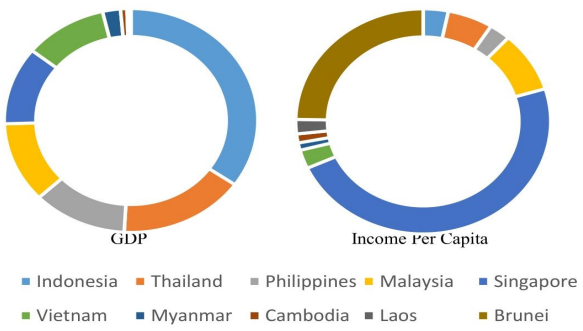


**Figure 4.** GDP and Income Per Capita of ASEAN Countries (Various Sources)

As shown in Figure 4, Per capita income will greatly affect the sale of products such as EVs, because the prices are still relatively expensive at this time. No wonder oil-fueled vehicles are still very dominant in countries like Indonesia, Myanmar or Cambodia. Like Indonesia, which has the largest GDP in Southeast Asia but with a per capita income below the regional average, the government will focus on improving welfare first before trying to increase the absorption of technology such as EV. Although it is not impossible that absorption can occur in the upper class segment, which is quite a lot when calculated and compared to other countries in ASEAN.

**Table 1.** ASEAN EV's Stock Target (Various Sources).

| Country | 2025 | 2030 | 2035 |
|---|---|---|---|
| Indonesia | 2200 | | |
| Malaysia | | 100.000 | |
| Thailand | | | 1.200.000 |

Based on data collected from various sources, which is illustrated in Table 1. By 2035, ASEAN is targeted to have around 1.3 million EVs sold and on the market. In Southeast Asia, it is Malaysia and Thailand that have high targets in EV adaptation in their countries. By 2030, Malaysia targets 100,000 vehicle sales to be EVs. Thailand itself in 2036 targets sales of 1.2 million EVs. Both countries have strong economic fundamentals, so the author is optimistic that this target can be achieved, although there are still considerations of various variables that are not covered in this article.

Where even countries outside ASEAN such as Sri Lanka are targeting by 2040, the use of electric vehicles has touched 100%. However, with their economy in mid-2022 experiencing high inflation and failing to pay foreign debts, the author does not believe this can be realized. Not much different, a country like Pakistan itself targets that by 2040 vehicle sales will be 90% controlled by electric vehicles. However, with the unstable social, economic and defense conditions, it will be difficult for this country to achieve these targets.

### *2.3. ASEAN Automotive Industry Competition Enters New Landscape*

ASEAN is a region that has very close economic ties. Quite a lot of strategic economic cooperation that exists between member countries. For example, the manufacturing and raw material industries between Vietnam, Cambodia and Indonesia are very influential. The state of economic and political stability tends to be important for market participants in determining where they will produce.

Because of this when analyzing the state of the electric automotive industry in ASEAN, we must look at it broadly and related. One tool that is widely used is the Five Forces Tool [11] This model explains how with existing resources an organization can create a long-term competitive advantage in an industry [12].

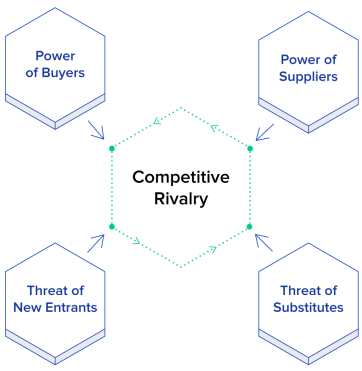


**Figure 5.** Five Forces Model.

There are five main variables in this tool to help us analyze industry competition. As shown in Figure 5, the first is the Power of Buyer, how is the bargaining power of consumers in Southeast Asia towards EV products that have emerged in the market, whether there are options for them to determine which product suits their needs and purchasing power. The higher the need for EVs and the more providers of electric car brands, the bargaining power of consumers will be higher. When consumers do not have many choices of products available in the market, it will increase the position of a related company [13].

Power of Supplier explains how the bargaining power of raw material suppliers who work with the company or organization. The more varied the suppliers owned, the higher the bargaining power of the company [14]. Threat of new entrant helps to analyze how high is the limit for competitors to enter the same industry as. The higher the difficulty encountered to enter a similar type of business in the industry, the higher our position will be to keep competition low. Threat of substitute talks about how big the threat of substitute products are that consumers are likely to buy in addition to the products we offer them. In relation to EVs is the existence of fossil fuel vehicles that can still be found in the market. In relation to Evs sales is the existence of fossil fuel vehicles that can still be found in the market.

At the end of the analysis is Competitive Rivalry, how the competition in the industry is. Does ASEAN have tight competition in the electric automotive industry, or is it still very open to penetrate the market. Analysis with the existence of the conventional fossil fuel automotive market will still be a direct competition that needs attention.

There are three major challenges faced by the EV Industry in ASEAN. First Limited Charging Infrastructure, the inadequate charging infrastructure in ASEAN countries poses a significant barrier to EV adoption. Expanding and improving the charging network will require significant investments from both public and private sectors. Second is high upfront costs, despite decreasing battery costs, EVs remain relatively expensive compared to conventional vehicles in ASEAN countries. This cost disparity hinders the widespread adoption of EVs in the region. Third is regulatory barriers, in some ASEAN countries, import tariffs, taxes, and local content requirements create additional barriers for EV adoption. Streamlining regulations and offering incentives can help promote EVs in the region.

### *2.4. ASEAN Market Acceptance is Rising*

The development of electric vehicle sales in ASEAN is expected to grow to USD 3.54 billion in 2028, with a Compound Annual Growth Rate (CAGR) of 32.73%. The COVID-19 pandemic has caused manufacturing activities to stop in the first half of 2020. On the other hand, limited chip supply in 2021 will hinder market growth.

Several countries in the ASEAN region have announced their commitment to electrify some of their new vehicle sales in the next few years. ASEAN governments have encouraged growth with several measurable stimuli, such as use and purchase incentives that can reduce prices and increase consumer purchasing power

Electric vehicles becoming popular in Indonesia is also driven by the use of electric public vehicles in several large cities, and also technology companies such as Grab which announced collaboration with PLN to expand its fleet charging infrastructure. In the next few years, the public transport operator Transjakarta will increase its electric bus fleet by up to 10,000 units. This will of course increase demand quite significantly in the ASEAN region, considering that Indonesia is one of the countries with the largest economic turnover in the world.

Also playing an important role in the growth transition in Southeast Asia are battery manufacturers, which are an important part of the development and success of automotive electric vehicle providers. Having continuity and supply of battery manufacturers around the region will have many positive consequences, such as reduced costs and sustainability of the local supply chain. Eve Energy, a company from China, is reportedly currently building an electric vehicle battery factory in Malaysia worth 422 million USD.

With large nickel reserves, Indonesia is a major electric vehicle battery manufacturing center in the ASEAN region. The Philippines is also researched to have 5% nickel reserves and 4% cobalt, these two metals are the main raw materials for making batteries.

A significant thing that accelerates growth in Southeast Asia is the strong commitment of all countries in the region to reduce fuel emissions. Apart from that, there is also support from government regulations which make it easier to invest in this industry.

Thailand has reduced the income tax rate from 35% to 17% to attract experts in this field, not only that, the Thai government has further reduced the excise tax on imports of electric vehicles to 2%. By 2030, Thailand has a target to produce electric vehicles up to 30% of the total vehicles produced annually. Malaysia provides tax exemptions for electric vehicle users. The Philippines offers tax exemptions for electric vehicle companies for a specified period.

## 3. Analytical Concept

The researcher has a conceptual approach as depicted in Figure 6. That increased adaptation to electric vehicles will be largely determined by government regulations, market access, lower production costs and more affordable prices for consumers.

Governments in the ASEAN region will play a very important role in improving the EV industry, because this industry is a business that requires a very large investment, so that stakeholders and shareholders will feel the need to get legal protection, political certainty and domestic and regional stability. A thing that cannot be realized by a country alone, requires commitment and agreement from countries in the ASEAN region.

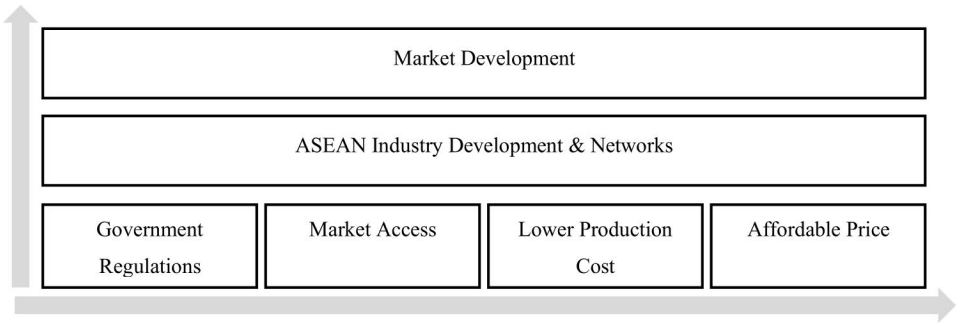


**Figure 6.** Analytical Concept.

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Broad market access within a country will give confidence to companies and consumers who buy. The character of people in developing countries such as Indonesia, sees that access to sales and after-sales is an important consideration in buying a vehicle, it will also affect the resale value in the future.

One of the main obstacles in the penetration of EV products in ASEAN is the very high price. So it is quite difficult for middle class people to buy electric vehicles. Increasingly sophisticated technology must also be able to produce more efficient manufacturing production. A thing that is currently still under development in various parts of the world. An efficient production system can of course lead to lower selling prices. This will be very necessary in increasing consumer buying desires in the Southeast Asian region.

## 4. Research Method

This research is based on qualitative explorative research, by using analysis of secondary data obtained from various automotive organizations in ASEAN, Thailand and Indonesia. In developing this research, the author divides it into three stages of analysis. First, the analytical approach is based on a theoretical approach that was collected through the deepening of the research literature that has been done previously.

Second step, the author takes an economic perspective in analyzing the policies, growth and development challenges of the electric car industry in ASEAN. The quantitative secondary data obtained are combined with policy analysis, market growth and strategic management theory approaches. In order to get a sharper analysis,

the author uses several management tools approaches.

Third, further in-depth analysis of market indications obtained from previous processing will be analyzed with the strategic objectives of ASEAN member countries related to the development of the electric automotive industry and the perspective of competitive advantage that can be proposed.

## 5. Analysis and Findings

### *5.1. Conventional Vehicle Sales Declines*

The growth of the conventional automotive industry after the last pandemic seems to have experienced a sharp downward contraction. From Figure 7, it can be seen that the conventional automotive industry reached its peak in 2019, before the Covid-19 pandemic hit the whole world.

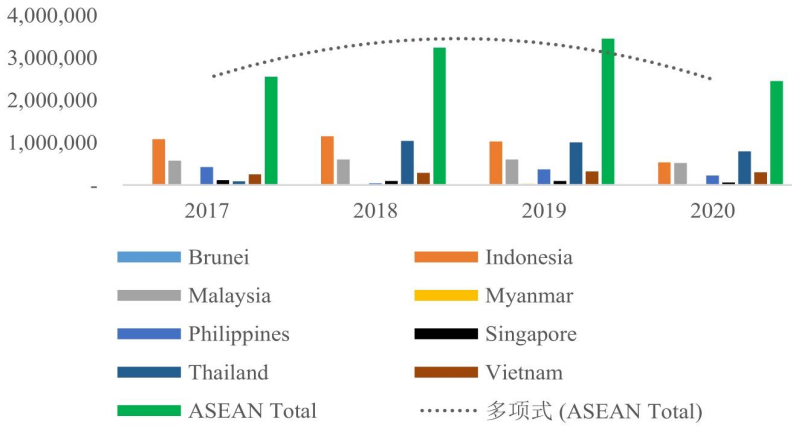


**Figure 7.** Conventional Automotive Market Sales in ASEAN (Various Sources).

Based on the polynomial trend line, it can be seen that in aggregate there is a significant periodic decline. The market previously experienced a decline in 2017 and rose in 2018 to 2019, but in 2020 the industry was unable to grow positively again. This was made possible by two main aspects, namely the reduced demand from domestic and regional as well as limited raw material production and distribution in all parts of the world at that time. One of the problems in supply until the third quarter of 2022 is the difficulty of supplying semiconductor chips. The automotive industry in the ASEAN region is highly dependent on the following four countries: Indonesia, Thailand, Malaysia and the Philippines. In particular, Indonesia and Thailand alone contribute to more than 50% of car sales in ASEAN. Not surprisingly, because the largest car assembly centers in Southeast Asia are located in these two countries. More interesting to be developed. Did the decline occur solely because the market was holding back on buying?

### *5.2. Electric Vehicle Sales Increase*

In contrast to the declining sales of conventional cars, EVs actually experienced a significant increase in sales from 2019 to 2020, as illustrated in Figure 8. In 2020, EV sales increased by approximately 170%, while ASEAN GDP decreased by 4.7% and conventional car sales decreased by 29%.

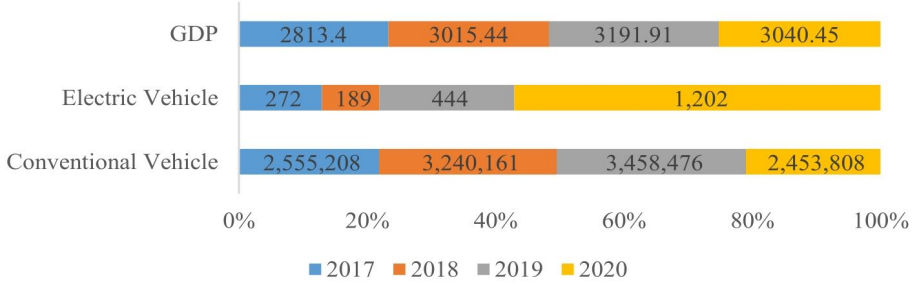


**Figure 8.** EV and Conventional Sales in ASEAN.

Although the quantity of electric and conventional car sales differs greatly, just like David's analogy against Goliath, the electric vehicle industry is David who trying to take the throne of the conventional car industry that has been Goliath for decades. the percentage growth and decline is an important indicator in seeing the aggregate market contraction in the Southeast Asia region.

Based on the data, GDP growth and decline will more or less have the same impact on sales of conventional vehicles, but not on sales of electric cars. From these facts, an initial analysis can be drawn that there is a growth in consumer interest in Southeast Asia towards electric vehicles, and the consumer segment that makes purchases is people with considerable purchasing power, or even not economically affected during the last pandemic.

### *5.3. Search Interest of Electric Vehicle is Rising*

One effective way to analyze consumer interest in a segment is through digital analytics [3]. Here, the author analyzes the search keywords on Google related to "Electric Vehicle" in the three largest electric vehicle adopters in Southeast Asia, namely Thailand, Malaysia and Indonesia. The data collected is analytic from 2017 to 2021.

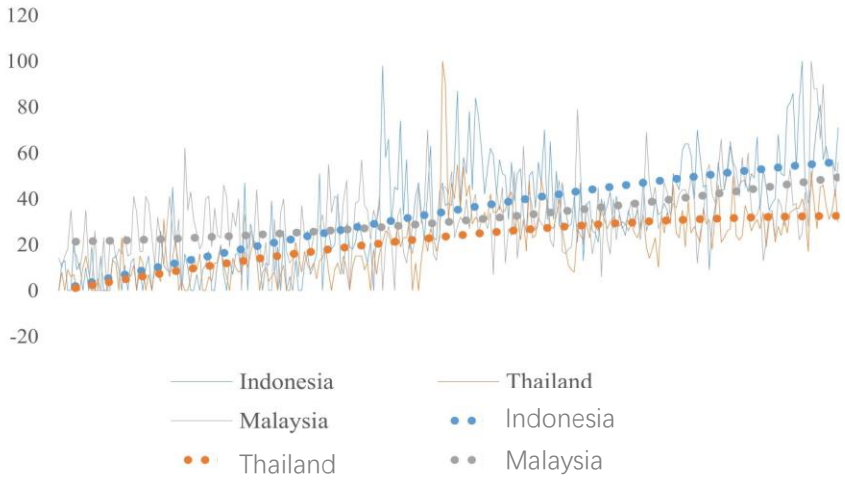


**Figure 9.** Digital Search Trend of Electric Vehicle.

The analytical data obtained is then carried out by cross comparison at the same time period and keywords. To provide more visible aggregate indicators across the three countries, the authors use a trend polynomial approach. This can be seen in Figure 9. The three trend lines can be seen in the blue line which represents the movement of interest in Indonesia, then orange for Thailand, and gray for Malaysia.

Trend lines in analytical data analysis can make it easier for us to see market movements empirically, predict future levels that may become new references [2]. From the three trend lines, it can be seen that interest in electric vehicles in Indonesia has experienced the highest increase, followed by Malaysia. Although in terms of purchases, Indonesia is the lowest compared to the two countries. On the other hand, Thailand as the country with the highest motor vehicle producer in Southeast Asia, in 2021 it will experience a decline in interest in electric vehicles.

When viewed simultaneously with fluctuations in the data in Figure 10, it can be seen how the spectrum of the three countries is getting bigger and more intense. This indicates that the level of market knowledge and curiosity is increasing. The three countries, at least can reflect the changing consumer interest in ASEAN, because they have contributed more than 50% of the total automotive market in Southeast Asia.

Furthermore, as shown in Figure 10, the author tries to analyze the interest in EV in the three countries by looking at the spectrum of conversations that occur in digital media. From this spectrum, it can be seen the intensity and volume of aggregate market interest at one time. This analysis converts existing analytical quantitative data into a scatter graph, which will visually describe the intensity that occurs more easily.

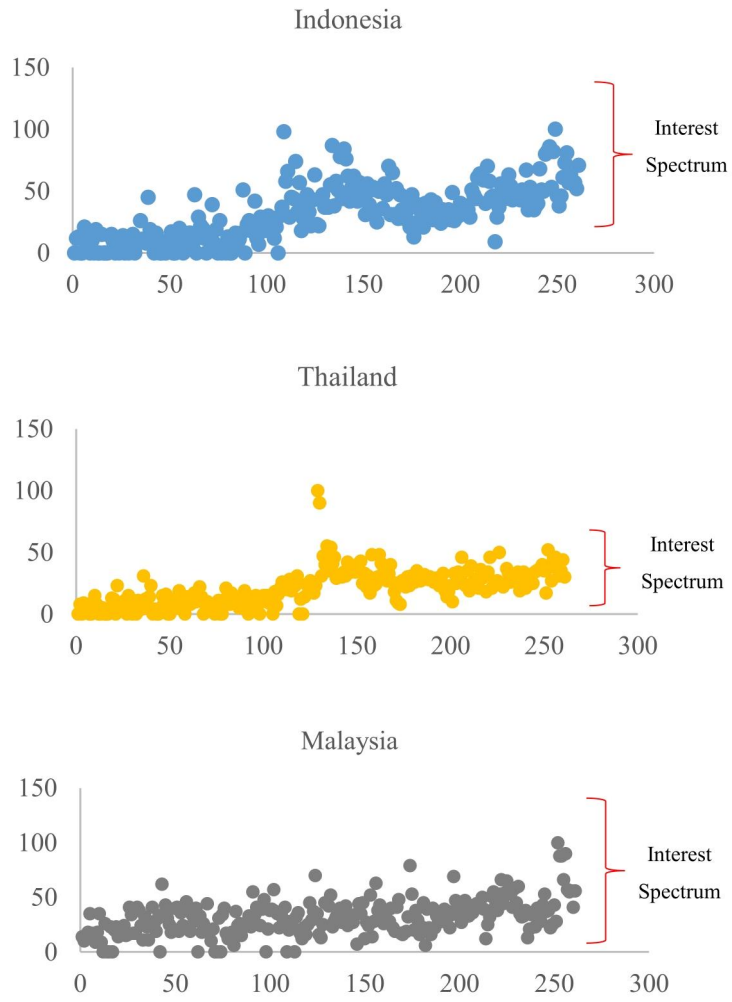


**Figure 10.** EV Interest Spectrum.

It can be seen how the interest spectrum in Indonesia and Malaysia is very significant in volume and intensity. The data describes the movement of interest in electric vehicles from 2017 to 2021. Indonesia can be said to have an increasing interest which is quite dynamic and impulsive. This can be seen from the width of the highest point and the lowest point that occurred in the near future. This was possible because of the effects of media and government policies that were increasing at that time, not to mention the news when the President of the Republic of Indonesia, Joko Widodo who visited the Tesla factory in America met Elon Musk, this happened in 2022 and was high enough to give impulses to this interest on thfige side. Indonesian consumers.

The market in ASEAN will be one of the most pursued markets by almost all electric vehicle manufacturers in the future. As reported in the newspaper, Tesla has agreed with Indonesia to invest in a sizable car battery factory. Not to mention conventional manufacturers who are starting to shift towards hybrid and full electric, such as Hyundai, Toyota and Suzuki.

The author uses a five forces tool approach to see industrial competition that will occur in ASEAN. In terms of consumer bargaining power, ASEAN countries will still need to be patient in providing education on the benefits offered by electric vehicles. This is also greatly influenced by the price of electric vehicles which are still relatively expensive. So that the bargaining side of consumers will be greater, they will tend to switch to substitute products such as fossil fuel vehicles which are still very common and widely sold in this region.

From the supply side of supporting raw materials from this industry, the certainty of battery supply has become a concern for electric vehicle manufacturers. It can be said that countries that have reserves of cobalt and nickel (the main ingredients of electric car batteries) will have high bargaining power for this industry. The barrier of entry in this industry will be high, because in addition to requiring a very large investment, it will also

require political, legal and network support from related countries.

It is very difficult for new manufacturers to get later. Therefore, it is estimated that the market model that will be formed later is an oligopoly. An industry of the future controlled by big manufacturers who already have experience and big capital. For example; Tesla, Toyota, Hyundai, Nissan, Honda and others.

### *5.4. Government Policy Will Play a Great Role*

The electric vehicle industry is not expected to grow without assistance from the government. The assistance in question is fiscal policy, licensing and even promotion. The following as shown in Table 2, are some developments in government policies that have been implemented in several ASEAN member countries

**Table 2.** Government Policy Across ASEAN.

| Country | Policy | Source |
|---|---|---|
| Indonesia | Indonesia provides legal certainty and tax adjustments for EV buyers, some examples of which are the reduction in value-added taxes, luxury vehicle taxes or import duties. | [15] |
| Thailand | Thailand provides tax incentives for electric vehicle users. Where the tax is not based on the size of the motor but on the resulting CO2 emissions. Also, Thailand has removed import duties EVs. | [16] |
| Brunei | Brunei has conducted outreach to their communities about electric vehicles as part of their future Land Transport Master Plan. This is a vision in 2035, and currently, the government's policy in transportation is to increase the share of electric cars to 60% of the total number of vehicles. | [17] |
| Malaysia | Malaysia provides policies to support EV purchases. It is part of the National Green Technology Policy. There are four pillars that underlie this, namely energy, environment, economy, and social. | |
| Philippines | EV's have been supported by public policy since 2006. The early regulations allowed duty-free import of EV components to encourage local manufacturing. | [18] |
| Singapore | In 2021, Singapore has provided a financial incentive policy. | |

Government policies may change from time to time, including in the event of a shift in political power. Of course, for the EV industry to grow rapidly, countries must make long-term and cross-governmental agreements to ensure that growth occurs.

## 6. Conclusions

Although the conventional vehicle industry still holds the majority of the market today, in the future, sales of electric vehicles can dominate if the following points are taken into account by the government and related companies.

In terms of innovation, it will require the development of technology that produces cheap and affordable electric vehicle products. Because the price aspect is an important consideration for consumers in ASEAN. A more affordable price will allow wider market access. Indonesia, for example, is a country that considers the availability of dealers in many locations as a consideration for their car purchases.

The government needs to increase the impulse of consumer interest in purchasing electric vehicles in the future. Tax-cutting policies have proven successful in Thailand and Indonesia. Other non-fiscal policies will be needed to stimulate market demand. Alignments to manufacturers will also be crucial. In addition to economic stability, politics and security that are part of the government in every country. In order for the industry to be

more efficient, the government's role is also needed in facilitating investment and production permits for manufacturers who wish to enter the country. If you want to improve quality and lower prices, you will need more players in the industry.

The market potential in ASEAN is huge, and consumer interest in electric vehicles is increasing. Specifically in Indonesia, Thailand and Malaysia. This can be seen in the significant increase in sales of electric vehicles in 2020 and the high interest spectrum. The electric vehicle industry cannot grow alone if its manufacturers try to win the game alone. They must collaborate with each other to create an increasingly efficient and quality supply chain and knowledge.

The author believes that the electric vehicle industry will find its momentum in the next 10 years, this is supported by historical sales data and the intensity of consumer interest in ASEAN which is getting stronger, as well as government commitments in each country.

So will David come back to beat Goliath? Based on the data, analysis and developments it is possible to happen. EV is the future of modern public transportation that considers efficiency and environmental protection.

**Funding**

Not applicable.

**Institutional Review Board Statement**

Not applicable.

**Informed Consent Statement**

Not applicable.

**Data Availability Statement**

Not applicable.

**Conflicts of Interest**

The author declares no conflict of interest.

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