The Market Interest of Electric Vehicle in ASEAN Through Digital Analytics and Industry Performance

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Abstract

The electric vehicle industry is considered the next generation of the automotive sector. ASEAN, specifically, comprises three major electric vehicle markets: Indonesia, Thailand, and Malaysia. However, can this sector displace the fossil fuel automotive, which has dominated for many years? Changes in technology and policies across countries have pushed the automotive industry further towards environmental concerns. Growing businesses must be in line with environmental sustainability. Indonesia may be described as having a burgeoning and constantly changing curiosity that tends to be dynamic and impulsive. From 2020 to 2023, Malaysia saw a notable increase in interest in Electric Vehicle (EV), comparable to Indonesia. The examination of interest in Malaysia yields an overall index of 25.65. It is below Indonesia's rate of 32.76 but above Thailand's rate of 11.87. By analyzing the three trend graphs, it is clear that the interest in electric automobiles in Indonesia have experienced the most substantial increase, while Malaysia has shown the second highest level of interest. Indonesia encounters the lowest level of buying power in comparison to the remaining two countries. Thailand, being the foremost motor vehicle producer in Southeast Asia, is anticipated to see a decline in customer demand for EV. However, the growth and decline of market interest in the future will be driven by industry players and policy makers in each country, broadly in the ASEAN region.

Keywords: market interest, Electric Vehicle (EV), ASEAN, digital marketing, industry performance

Introduction

Technological development is an important part of human life. It also encourages humans to use certain technologies in development in the education and health sectors (Coban, 2022), further in the automotive sector.

As a regional organization, ASEAN has strengthened its standing in recent years by broadening the discussion of equal and pivotal status to include its external partners and the relationships among its member nations (Tahalele et al., 2022). A discussion of the prospective benefits and repercussions of an expanding EV market in ASEAN nations is the focus of the research.

There is a significant global commitment among governments, including those in ASEAN, to transition the automotive sector from fuel-powered vehicles to EV with the dual objectives of promoting economic efficiency and environmental sustainability (Wen et al., 2021). Particularly in Southeast Asia, as in other nations, a policy encouraging proactive decisions in meeting obligations associated with climate change that are now experiencing changes, minimizing pollution within urban areas, and, of course, ensuring the sustainability of energy accessibility is the transition from traditional to electric vehicle technology. In general, a number of Asian nations, including Japan, Indonesia, Thailand, and Korea, have established robust domestic automobile manufacturing sectors.

Indonesia has a distinct perspective on its position within the strategically significant Indo-Pacific region. Since Marty Natalegawa's speech at the Centre for Strategic and International Strategies (CSIS) in May 2013, the term "Indo-Pacific" has been included in Indonesian foreign policy discussions. The word is also a component of President Jokowi's Global Maritime Fulcrum (GMF) policy (Riyanto et al., 2023).

Meanwhile, Thailand, one of the most productive nations in ASEAN, is actively formulating policies to promote the expansion of EV. In fact, it offers special investment incentives to encourage such development (Frost & Sullivan, 2018). Thailand, which had already established an integrated road map, intended to increase annual production capacity by 1,000 electric buses and battery distribution systems by 2019. It aims to have 1.2 million occupant EV equipped with nationwide electric charging infrastructure in numerous locations by 2036. The contribution of developing countries to rising CO2 emissions is comparatively greater than developed countries. An instance that exemplifies this phenomenon is Thailand, whose emission levels escalated at a rate surpassing the global average. Particularly, pickup trucks, light passengers, and commercial vehicles are the largest emitters of CO2. In the future, road transport vehicles may contribute to approximately 20% of the total CO2 emissions associated with energy (Abeam Consulting, 2022).

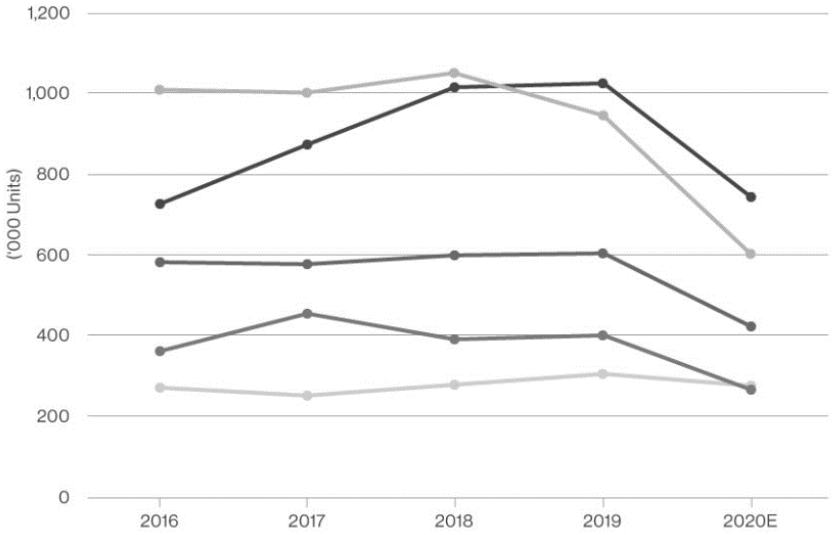

Figure 1. ASEAN Automotive Sales in 2016-2020
Source: GAIKINDO (2020)

As illustrated in Figure 1, Vietnam experienced the least favorable growth during the previous pandemic, sales declining by approximately 32% to approximately 50,000 units. To stimulate automotive demand, the Vietnamese government, similar to that of Indonesia, implemented a fiscal stimulus for this sector by instituting a policy mandating a 50% reduction in vehicle acquisition costs through the conclusion of 2020. Automobile production in Thailand declined to its most minimal level in three decades. As a result of the decline in the purchasing power of individuals, automobile sales dropped 65%. Similarly, automobile exports fell by 67.7%.

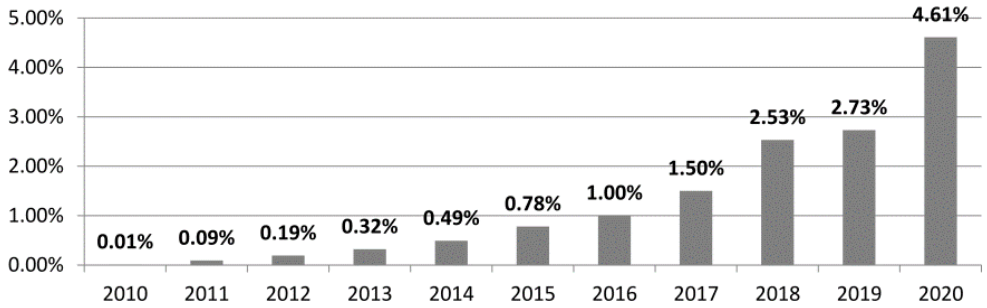

Figure 2. Electric Vehicle (EV) Sales Among Conventional Cars Worldwide
Source: GAIKINDO (2020)

As opposed to the decline observed in the traditional automotive sector, the sales of electric vehicles in 2020 amounted to an estimated three million units, as shown in Figure 2.

China constituted the source of 40.5% of the total worldwide sales. Global conventional automobile sales decreased by 16% by the end of 2020, whereas the number of EV exceeded 10 million.

The purpose of the research is to formulate recommendations and analysis regarding the potential growth of EV industry in ASEAN, taking three countries as objects. They are the biggest EV market in ASEAN (Indonesia, Thailand, and Malaysia). The research also highlights opportunities that are pertinent to the development of strategies in related sectors. The researcher tries to learn how regulations developed by countries in ASEAN and the increasingly efficient EV industry from upstream to downstream can have an impact on the development of consumer interest in the region. Figure 3 shows the research framework used.

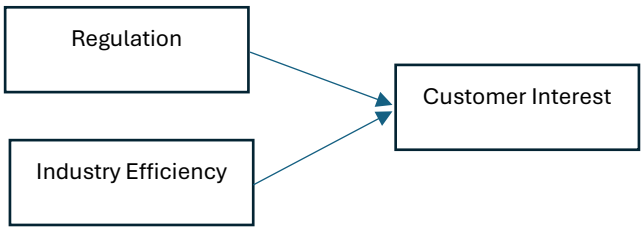

Figure 3. Research Framework

Literature Review

Car ownership encompasses several aspects, such as transportation, social status, environmental consciousness, and driving enjoyment (Chu et al., 2019). When considering customer satisfaction-oriented innovation, EV places emphasis on the attributes and provisions of its products and services (Zhang, 2021). Purchasing of an EV is determined by both cognitive and emotional connection between the prospective consumer and the brand. The relationship arises from the interplay of various factors, such as the marketing strategies employed by car manufacturers, the level of interest and cognitive effort exerted by clients, as well as the informational campaigns on environmentally friendly transportation conducted by legislators at both the national and local levels (Giansoldati et al., 2020). Upon the introduction of EV onto the market, the primary barrier hindering their widespread acceptance is the lack of familiarity among customers with these novel vehicles. Thus, it is imperative to promptly initiate a series of demonstration initiatives that offer customers the chance to experience EV firsthand to heighten their knowledge of EVs.

The promotion of public vehicles is given priority among other policy tools (Liu et al., 2021). Introducing financial incentives into the lease business model may significantly enhance the market share of electric vehicles compared to when they are solely offered for purchase. In light of this understanding, governments have the opportunity to expand their current or proposed incentives for EV purchases and also include them for leasing purposes (Liao et al., 2019). Interesting insight finds that renting an EV is correlated with more favorable

views towards EV, greater knowledge about EV, and a heightened sense of security when driving an EV (Langbroek et al., 2019). Furthermore, currently many companies are adapting green marketing strategies for the long-term growth of their business, this is in line with products such as EVs (Barus, 2024).

The growing popularity of EV today can be attributed not only to the cost-effectiveness and environmentally favorable operation but also to the practicality, quality, and convenience of the features, which influence consumers' intentions to purchase (Xiao & Zhang, 2021). Five distinct categories of innovation can provide insights into the primary determinants that consumers take into account when establishing distinctions in their intentions to make a purchase. Specifically, there are novel products, enhanced manufacturing processes, supplementary supply chains, expansion into untapped markets, and implementation of effective management strategies. The innovation has to be capable of being reduced to a market-comprehensible simplification despite the initial concept's complexity (Schumpeter, 1934). Concerning advancement in EV products, previous research conducted in Thailand reveals that approximately 75% of consumers have opted to purchase EV with electric power as the preferred energy source. This result encompasses factors such as cost effectiveness and novelty (Frost & Sullivan, 2018).

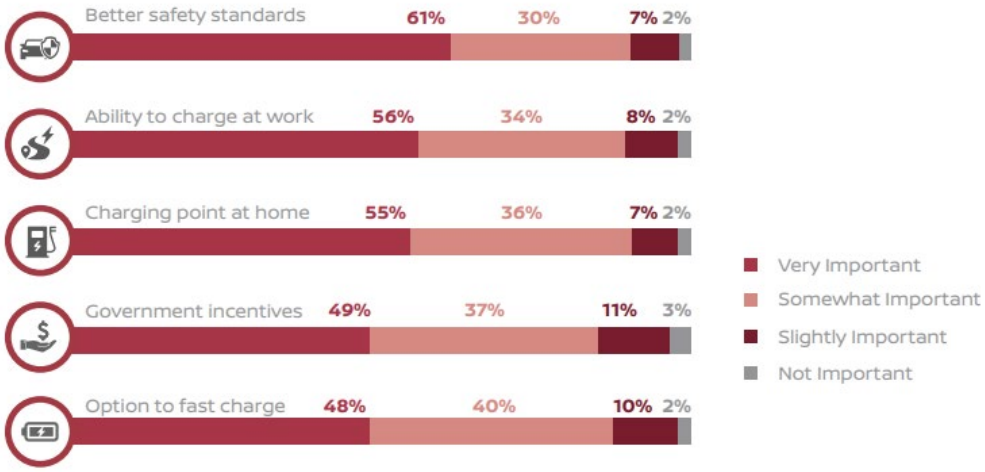

Figure 4. Consumers' Motivation Factors to Buy Electric Vehicle (EV)
Source: Frost & Sullivan (2018)

There are several main considerations for a consumer in making an EV purchase. As explained in Figure 4, the most important thing is the safety aspect of the vehicle, whether it has complied with the standards or not (61%). The next thing is the availability of charging stations at home or at work (55-56%). Charging speed is also a significant consideration for a consumer (48%), and the last is the tax incentives provided by regulators/governments in their country (49%).

Several causes are fueling the expansion of EV in ASEAN. The primary driver is the growing recognition of global warming and air pollution, which has compelled ASEAN

countries to establish aggressive goals for carbon emission reduction. EV is considered a solution to address environmental concerns. The utilization of electrical energy in transportation is expected to rise, but a significant quantity of traditional fuel is still utilized. ASEAN nations are also prioritizing the acceleration of technology adaption.

The significant and concerning growth in the number of ICEVs and the resulting increase in pollution levels in major cities compelled governments to prioritize the promotion of EV via the implementation of EV-specific laws (Krishnan & Koshy, 2021).

Every nation places significant emphasis on the adoption of electric cars inside their borders. Nevertheless, the growth of the sector is equally contingent upon market demand. The Gross Domestic Product (GDP) contribution in ASEAN is mostly controlled by six nations. Indonesia has the highest GDP among ASEAN countries, accounting for 35% of the overall ASEAN GDP. Thailand comes next with a share of 16%, followed by the Vietnam, Malaysia, Philippines, and Singapore each contributing about 11−12%. However, when considering income per capita, the relative GDP size among these nations becomes insignificant. A significant disparity in income exists. For example, Indonesia, is the highest GDP among ASEAN countries, but has a per capita income lower than the average income of other members of ASEAN. Singapore holds the top position in ASEAN for having the highest per capita income, with a value of 1322% over the norm. Followed by Brunei (683%), Malaysia (239%), and Thailand (159%). The reason behind EV's growth is mostly focused on these four nations is not surprising (World Economic Outlook, 2021).

The per capita income will significantly impact the sales of items like EV due to the relatively high pricing now. It is hardly surprising that oil-powered cars continue to be quite prevalent in nations such as Indonesia, Myanmar, and Cambodia. Similar to Indonesia, whose economy has the highest GDP in Southeast Asia yet possesses a per capita income that falls beneath the average for the region, the government's first objective will be to prioritize enhancing welfare before embarking on efforts to augment the adoption of technological advancements such as EV. While absorption in the upper socioeconomic group is not feasible, it is much higher compared to other nations in ASEAN when computed and compared.

Table 1. Stock of Electric Vehicle (EV)

Country	2025	2030	2035
Indonesia	2,200		
Malaysia		100,000	
Thailand			1,200,000

Source: GAIKINDO (2020)

Based on Table 1, it can be seen that Thailand is still a key player in the production of 1.2 million EVs in ASEAN. Following second and third, Malaysia and Indonesia have a total of 122,000 vehicles. Of course, it will logically be a third-country target when assessed by the preparedness of the industrial and infrastructure aspects.

The EV industry across ASEAN has major significant obstacles. One challenge is the significant initial expenses associated with EV, despite the declining prices of batteries. In ASEAN nations, EV continues to be significantly costly compared to traditional vehicles. The difference in cost prevents the widespread use of electric vehicles in the area. Another obstacle to the adoption of EV in some ASEAN nations is the presence of regulatory hurdles. These barriers include import duties, levies, and local content requirements, which further hinder the widespread use of EV. Implementing regulatory simplification and providing incentives may effectively encourage using EV in the area. It is necessary to create promotional strategies that effectively convey EV advantages, specs, and availability to franchise dealerships (Sovacool et al., 2019).

In examining the condition of the electric car sector in ASEAN, it is essential to take a comprehensive and interconnected approach. One approach to viewing the conditions of industrial competition is the Five Forces concept (Porter, 1979). This tool encompasses five primary factors that aid in the analysis of industry rivalry. The first factor to consider is buyer power, which refers to the ability of buyers in Southeast Asia to negotiate and influence the market for EV goods. It is important to assess whether customers have sufficient alternatives and whether they can make informed decisions based on their specific demands and buying capacity. As the demand for EV increases and more companies offer electric car brands, buyers will have more negotiating power. Limited product options in the market may enhance the market position of a connected firm (Rajasekar & Al Raee, 2013). The concept of supplier power refers to the influence and leverage that raw material suppliers have on a firm or organization. According to Dobbs (2014), the more diversity of suppliers is controlled by a corporation, the stronger its ability is to negotiate favorable terms. The threat of new entrants is a useful tool for assessing the level of difficulty for rivals to join the same business. Brand position in the industry will be stronger if it faces more difficulties in entering a comparable sort of firm. It will help the brand maintain competition at a low level. The concept of the danger of substitutes refers to the extent to which customers are inclined to purchase other items in conjunction with the ones provided. Regarding EV, it is worth noting that fossil fuel vehicles are still available on the market. The presence of fossil fuel cars that are still available on the market is relevant to the sales of electric automobiles. The last aspect of the examination is competitive rivalry. It examines the level of rivalry within the industry. The presence of the traditional fossil fuel automobile industry will continue to provide a direct competitive challenge that requires careful consideration.

The governments in the ASEAN region will have a crucial role in enhancing the EV industry. The industry demands substantial investments, which necessitates stakeholders and shareholders to seek political certainty, legal protection, and domestic stability. An endeavor that is beyond the capacity of a single country needs dedication and consensus from nations within the ASEAN area. Widespread market accessibility throughout a nation will instill trust

in enterprises and customers to make purchases. Acquiring electric cars is a significant challenge for those belonging to the middle class. Advanced technology must have the capability to enhance manufacturing efficiency. A highly effective manufacturing system may naturally result in reduced selling prices. It will be crucial in enhancing consumer purchasing aspirations across Southeast Asia. There is a significant amount of strategic economic collaboration among member nations. For instance, the industrial and raw material sectors in Vietnam, Cambodia, and Indonesia exert significant influence. Market players often consider the level of political and economic stability when deciding where to manufacture.

Market is Evolving in Digital Media

Today, consumers are experiencing an evolution in the information age. Everything is digital, information is quickly obtained and distributed. Companies can no longer use the old way to win the competition, but they must further collaborate with media. This evolution drives changes in how companies communicate comprehensively to their target market. One framework that can describe the complexity of digital communication that must be carried out is through the RACE framework developed by Smart Insights, a start-up that focuses on creating online learning content in the fields of management and business. The framework describes four (4) stages that must be carried out in communicating with the current target market, namely through Reach, Act, Convert, and Engage. In the first stage in Reach, the company's focus is to reach as many people as possible to get communication about the offers they make.

The media used also tends to be paid media (advertising) in order to reach consumers widely in a short time. Entering the second stage, namely Act, at this level consumers have received information or initial knowledge about the offers given, then they will start to find out, compare through digital media that they can easily access and target to make purchases. The media used will focus on limited offers and product knowledge that provides a stimulus to consumers to make purchases in the near future. In the third stage, namely Convert. Companies begin to target consumers to make repeat purchases, of course the concept of content on the media used will also change, concepts such as remarketing and testimonials from influencers will be used to maintain consumer trust. In the final stage, Engage. Companies target consumers to be loyal to them through offers such as membership programs, prizes, and points.

These four stages will repeat in each cycle, meaning that consumers who are already loyal still need to be targeted at the Reach stage so that your brand remains Top of Mind, or at least remembered by consumers. On the other hand, consumer interaction will peak at the Convert stage, so that new intense and personal communication is needed to loyal consumers so that they will remain loyal to your brand in the long term. At least the framework above can describe how intense digital communication is today, because that is indeed the state of market competition today. The more information technology develops, the more strategic and tactical approaches are developed in targeting consumers.

Google in 2021 released research results on market characteristics in Southeast Asia, the results were three (3) interesting findings to note. It was found that consumers in Southeast Asia are quite influenced by the advertisements they find in digital media. The advertisement succeeded in creating initial perception and brand awareness which triggered them to enter the stage of interest in a product. So far, we think that recommendations from friends, family, or our community have the most important role, but from this research, digital advertising actually takes the most important portion in the initial stages of consumers considering a product. Second, it was found that consumers are highly influenced by reviews on websites and 54% said they would make a purchase when there is a promo given, such as a discount, points, and other loyalty programs. Third, most consumers (76%) agree that online shopping saves time and 65% say they get a more economical price (Google, 2021).

Digital Interest Become The Mental Model of Marketing

There are 88% of consumers doing personal research from around 10.4 different sources through their gadgets before they make a purchase on a particular product? Today's consumers are critical consumers, this is possible because of how easy it is to get information today, with one click on Google in a split second you will get thousands of search results related to it. The sophisticated internet technology today has changed consumer purchasing behavior. There is one concept of the consumer buying journey called the Mental Model of Marketing, consisting of 3 (three) main parts, namely: Stimulus, First Moment of Truth (FMOT), and Second Moment of Truth (SMOT). (Google, 2021).

This Mental Model describes how the consumer journey process from getting information to making a purchase and being loyal to a product. First is Stimulus; At this stage, marketers try to get attention from consumers by advertising that has a wide reach, such as television advertisements, news media, Google Ads, or Facebook Ads. Marketers try to provide stimulus to consumers so that their products/brands are known to consumers.

FMOT; The second stage, after consumers get information about the product at the Stimulus stage, then they come to the store/e-commerce that provides the product, here it is called the First Moment of Truth, the first moment consumers see the advertised product directly. If in an offline store, consumers will find the product in the display case or in e-commerce they see the web page that offers the product. Marketers at this stage will use media such as in-store marketing to entice consumers to make purchases immediately (promotion programs, bundling, rewards, and so on).

SMOT; After consumers make a purchase, consumers use the product. Here will be the Second Moment of Truth, the second momentum where consumers interact with the product. Consumers feel directly, whether they are satisfied or dissatisfied with the product. If they are satisfied, the brand will get positive reviews, recommendations from consumers. However, on the contrary, if they are not satisfied with the product, the brand will get complaints. Here marketers try to provide marketing materials in the form of member programs, good customer service to feedback on consumer experiences to be followed up so that consumers

become loyal. For decades, marketers have focused on these three variables, how a brand should be optimal at these three levels. However, changes in consumer behavior have changed the Mental Model. Based on research conducted by Google in 2011, it was found that there is one level before FMOT that plays an important role in influencing consumer decisions in purchasing, which they call Zero Moment of Truth (ZMOT).

The development of the ZMOT mental model also has an influence on consumer literacy related to the EV industry further in each country. Digital information will provide wider and more efficient access for the industry in increasing market interest to future potential.

Research Method

The research is grounded on a literature review and quantitative method, using a study of secondary data collected from various automotive businesses in ASEAN. It contains Indonesia, Thailand, and Malaysia. The researcher categorizes the study into two distinct levels of analysis. In the first stage, the analytical method relies on a theoretical framework derived from an extensive review of existing research and market release material. In the second stage, the research adopts an economic viewpoint to examine the policy, growth, and development obstacles faced by the EV sector in ASEAN. The acquired secondary data are quantitatively collected from Google Trends Analytic (weekly: 2020 until 2023). The data obtained from Google Analytics is data that shows the level of digital user interest volume on topics related to "Electrical Vehicle" in each country studied, each data obtained is an index that is in the range of 0-100 (the higher the more popular the topic is at a certain time). From the data obtained, the author describes it in the form of scattered graphics, it will help in seeing the volume of interest that occurs. The data does not show actual production/industry data, but helps to read and research public interest.

A comprehensive examination of market indicators derived from prior processing is conducted, focusing on the goals of ASEAN member nations in relation to the growth of the electric automobile sector and the potential for competitive advantage. There are 627 weekly data obtained from Google Analytics related to the level of interest of EV in Indonesia, Malaysia and Thailand. All of the data is then processed into quarterly, semester and annual data which is accumulated in a scattered graph. From the graph, a trend line is drawn which is used as a basis for seeing the decline or increase in the trend that occurs. All Google Trend analytics data obtained and processed can be seen in the Appendix.

Analysis

The traditional car sector seems to have had a significant decline in growth after the recent epidemic. Figure 4 illustrates that the traditional automobile sector reached its highest point in 2019, before to the global impact of the Covid-19 epidemic. According to the

polynomial trend graph, there is a noticeable recurring decrease in the whole data. Between 2017 and 2019 there was a significant increase in sales, but that does not continue in 2020 This is due to two major factors, namely, the disruption of semiconductor supplies and the Covid-19 pandemic that has hit the world.

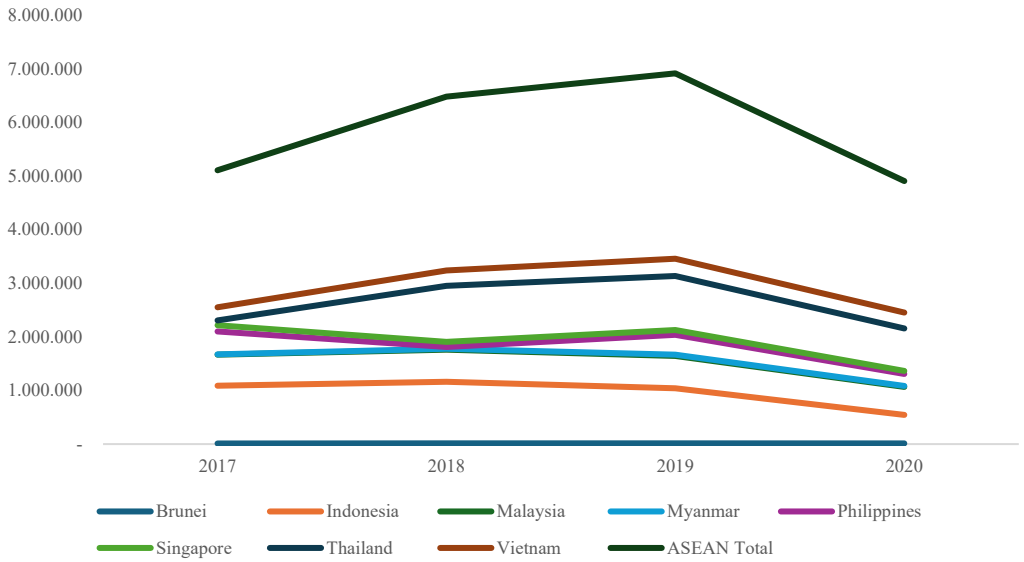

Figure 5. Conventional Automotive Market Sales in ASEAN
Source: GAIKINDO (2020)

Electric Vehicle Sales Are on the Rise

While conventional automobile sales decreased, EV saw a substantial rise in sales between 2019 and 2020, as seen in Figure 5. There was a significant rise in sales by about 170% (2020). In contrast, the GDP of the ASEAN had a decline of 4.7%, and sales of conventional cars declined by 29%. Indirectly, there is continuity in the decline in GDP and sales, which indicates that purchasing power related to conventional automotive is still quite dependent on GDP.

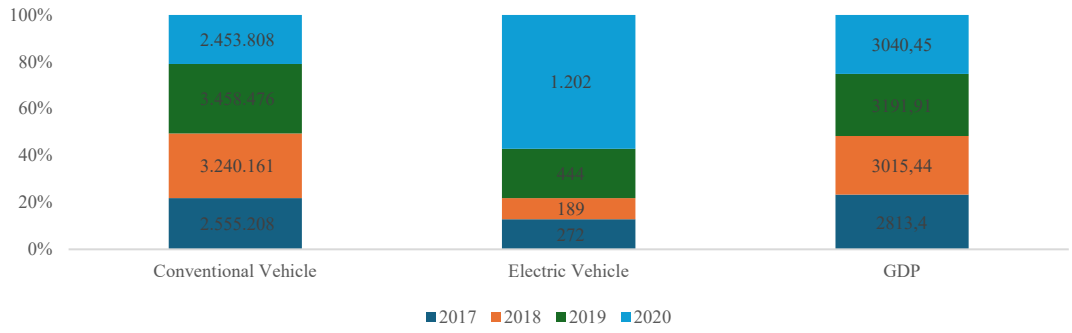

Figure 6. Electric Vehicle (EV) and Conventional Sales in ASEAN
Source: GAIKINDO (2020)

While there is a significant disparity in the number of electric versus conventional automobile sales, the increase or decrease in percentage is a crucial metric for assessing the overall market shrinkage across the Southeast Asia area. According to the Figure 6, changes in GDP, whether positive or negative, will have a similar effect on the sales of conventional automobiles. However, the impact on the sales of electric cars will be different. There is increasing customer interest in electric cars in Southeast Asia. This is the consumers segment that have not been negatively impacted by the recent epidemic.

Analysis using digital data will help in researching the interests that occur in a particular country in a certain period of time. Furthermore, digital analytics is a marketing tool that describes current market potential (Barus, 2022). The researcher examines the search phrases on Google that are associated with "Electric Vehicle" in each of the three primary Southeast Asian countries that have adopted EV: Indonesia, Malaysia, and Thailand. Where these three countries are the highest EV producers in ASEAN currently, and have interesting demographic potential in the future. The acquired data is analytical and spans from 2020 to 2023.

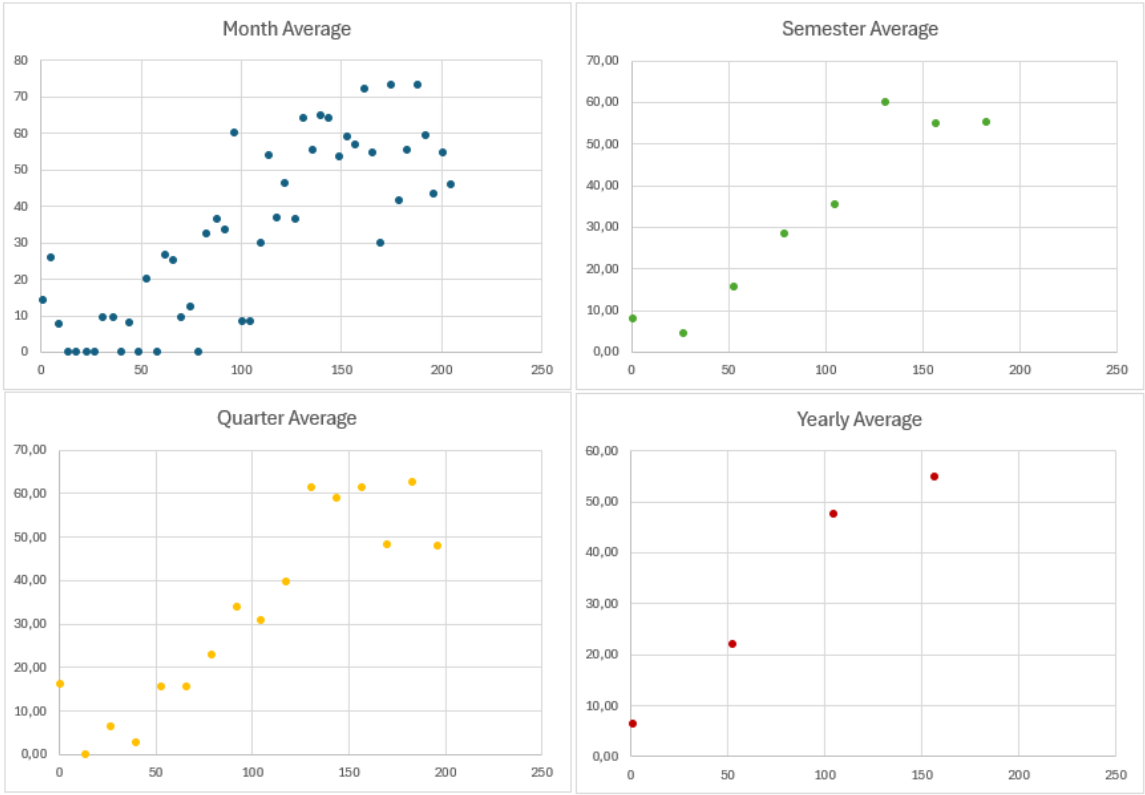

Figure 7. Indonesia EV Interest Spectrum 2020-2023 (Google Analytic)

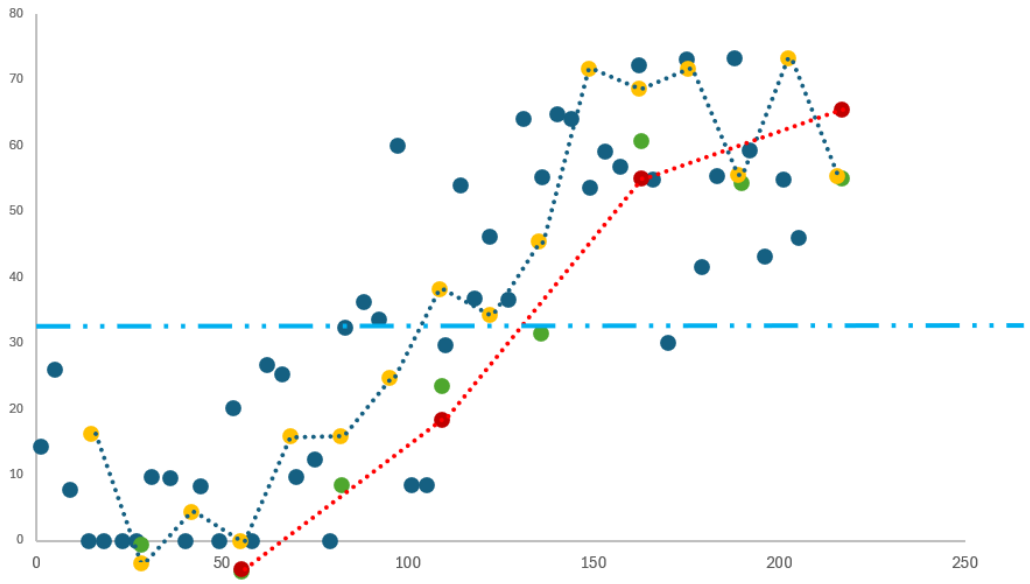

Figure 8. Indonesia Crossed EV Interest Spectrum 2020-2023 (Google Analytic)

Through Figures 7 and 8 it can be seen that interest in Indonesia related to EV between 2020 and 2023 experienced a significant increase, both from the monthly to annual data side. The trend line tends to rise, specifically from 2022 to 2023. From cross-analysis, the average index is 32.76 (blue line). After 2021, the average interest index has been above average. This result indicates a very high volume of interest related to EV. From the analysis, it can be seen that the past pandemic does not have a significant impact on the interest in EVs in Indonesia, it is quite the opposite.

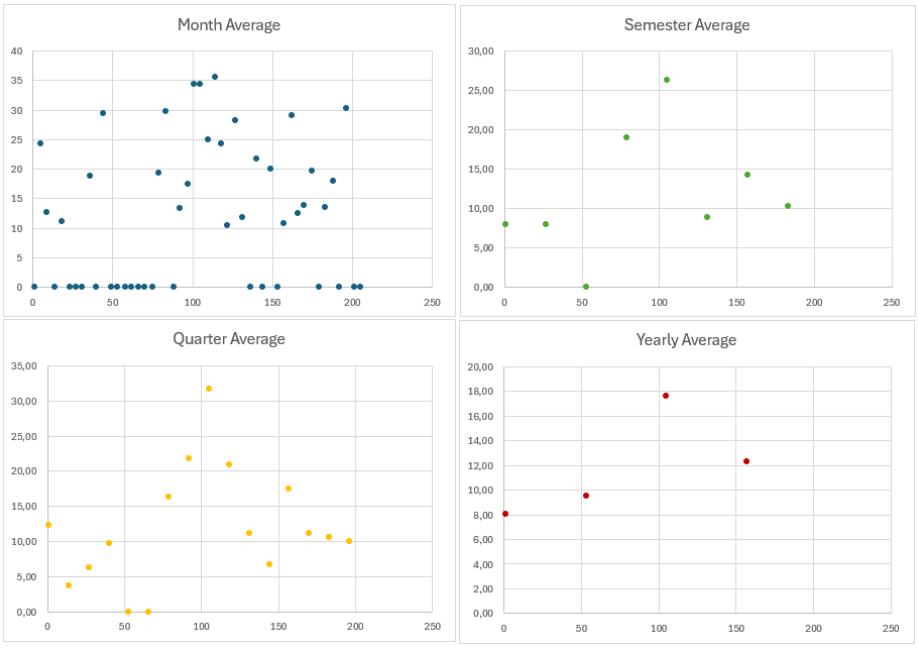

Figure 9. Thailand EV Interest Spectrum 2020-2023 (Google Analytic)

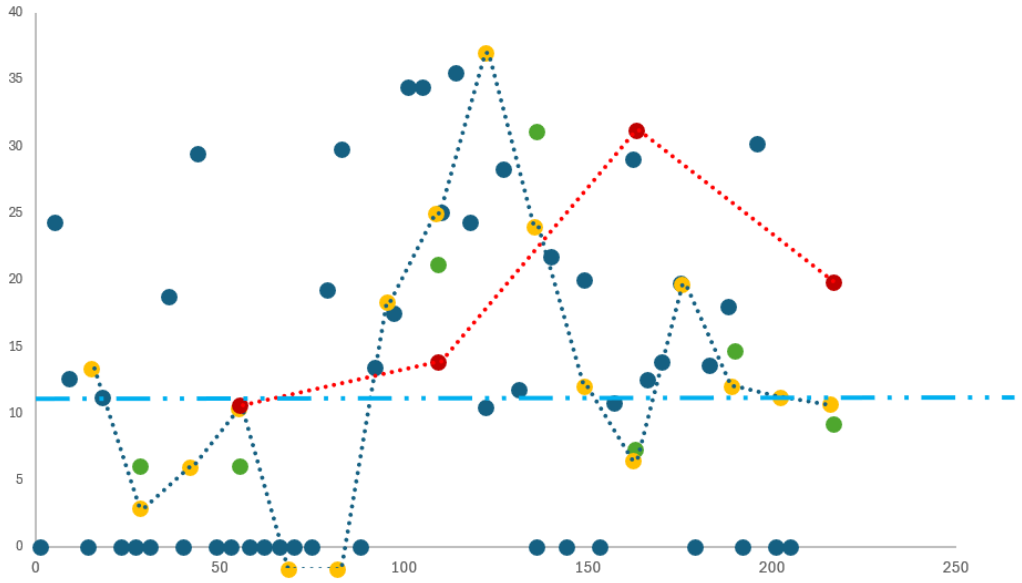

Figure 10. Thailand Crossed EV Interest Spectrum 2020-2023 (Google Analytic)

On the analysis as depicted in Figures 9 and 10, the average index of Thailand is 11.87, which is lower than the index in Indonesia. Like Indonesia, the interest index in EV inThailand eached its peak in 2022, but it had a unique decline in 2023. The decline in 2023 was possible due to lower volumes of interest. Despite a decline, on average, the index in Thailand is still well positioned as it has remained above the average for the last four years.

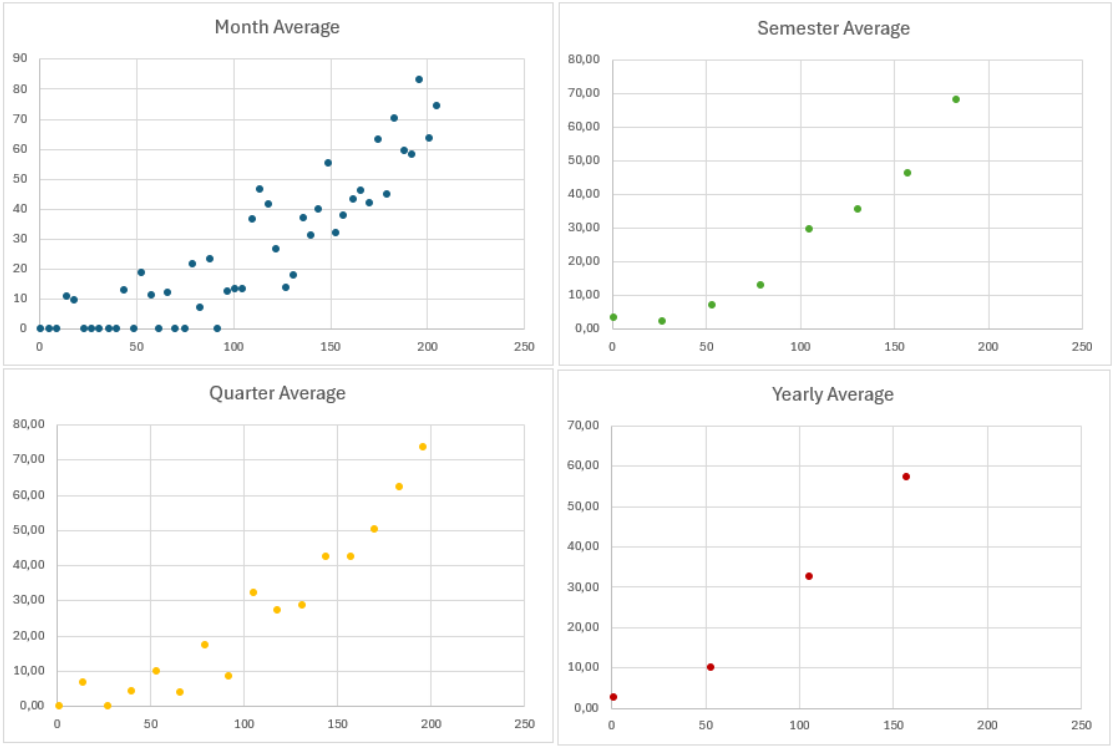

Figure 11. Malaysia EV Interest Spectrum 2020-2023

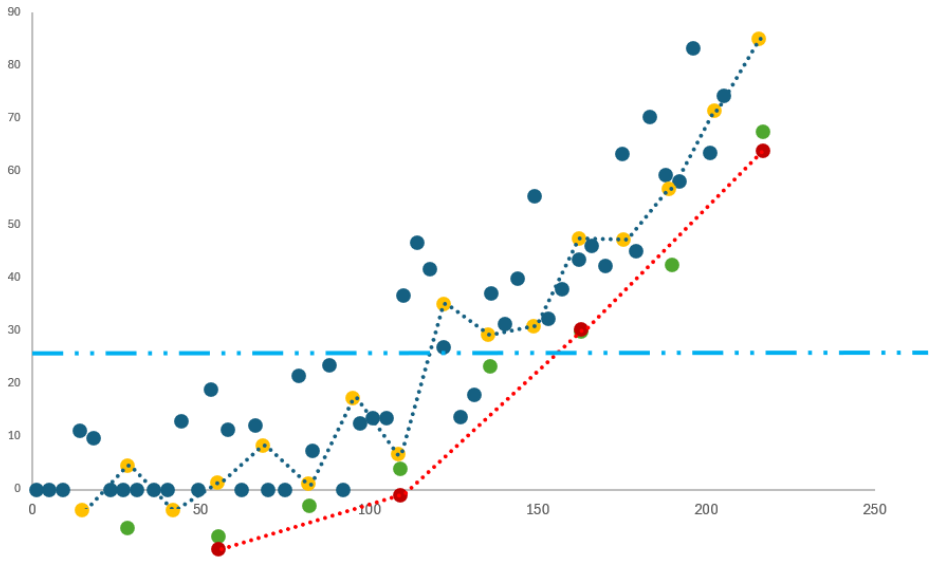

Figure 12. Malaysia Crossed EV Interest Spectrum 2020-2023

From Figures 11 and 12, Malaysia has been similar to Indonesia by experiencing a significant rise in interest in EV over the last four years (2020–2023). The analysis of interest in Malaysia obtains an average index of 25.65. The result is lower than Indonesia (32.76) but higher than Thailand (11.87). From 2021 to 2023, Malaysia experienced a fairly high-interest rate rise, peaking in 2023 due to the growing awareness of the need for environmentally friendly vehicles in Malaysia. In contrast, in Indonesia, the COVID-19 pandemic does not diminish public interest in EV.

Trend lines within analytical data analysis facilitate the empirical observation of market movements and enable the prediction of future levels that may serve as new benchmarks (Barus, 2022). Based on all three trend lines, it becomes evident that the level of interest in electric cars in Indonesia has seen the most significant surge, with Malaysia coming in second. However, Indonesia has the lowest purchasing power compared to the other two nations. Then, Thailand, as the leading motor vehicle manufacturer in Southeast Asia, is expected to see a decrease in the demand for electric cars. This increase in interest is due to news about the growing EV industry in Indonesia, and is supported by the incentives provided.

The Needs of Government Support

The electric car sector is projected to lack growth in the absence of government intervention. The specific forms of aid referred to include fiscal policy, licensing, and promotional efforts. Table 2 shows some government policy innovations that have been enacted in many ASEAN member nations.

Table 2. Government Policy Across ASEAN

Country	Policy	Source
Indonesia	Indonesia offers legal assurance and tax modifications for EV purchasers, such as a decrease in taxes, import tariffs.	Rodyanto (2019)
Brunei	Brunei has engaged in community outreach efforts to raise awareness of electric cars as a component of the forthcoming Land Transport Master Plan. In 2035, the government's transportation strategy is to raise the proportion of electric automobiles to 60% of all vehicles.	MTIC (2014)
Thailand	Thailand offers tax benefits to electric vehicle users. The tax is determined by the CO2 emissions. They have eliminated import tariffs on EV.	Natsuda & Thoburn (2013)
Philippines	EV has received governmental policy backing since 2006. The first legislation permitted the tax-free importation of EV components to promote domestic production.	Gomółka & Kasprzak (2021)
Malaysia	Malaysia has measures to facilitate the purchase of EV. It is a component of the National Green Technology Policy. There are four fundamental principles that form the basis of this policy: energy, environment, economics, and social aspects.	Ministry of Energy, Green Technology and Water Malaysia (2019)
Singapore	Singapore has implemented a financial incentive scheme.	Land Transport & Authority Singapore (2024)

Government policies are subject to periodic changes, which may occur in response to a transfer of political power. In order for the EV sector to experience fast expansion, it is imperative that governments establish long-term and interdepartmental agreements to guarantee such development.

Conclusion

Conducting an analysis of the development of market interest in the ASEAN region using digital analytical data such as Google Trends that has been done by the Author is one way to see the market spectrum from a more measurable marketing perspective. Specifically in the development and penetration of EVs in the ASEAN region. Indonesia, Thailand, Malaysia are the main forces in the ASEAN region in the future in terms of production and demand in the region, especially Indonesia which has the largest demographic situation supported by a very large middle class. Although Thailand cannot be left behind, which still stands as the largest automotive production center in ASEAN.

The interest spectrum throughout Indonesia and Malaysia has a substantial volume and intensity. The data depict the trajectory of public interest in electric cars from 2020 to 2023. Indonesia may be characterized as having a growing and ever-changing interest that is very

dynamic and impulsive. It may be seen by examining the disparity between the maximum and minimum values that are expected to occur in the coming years. It is made possible due to the influence of media and government policies, growing during that period. This increase in interest is possible due to the improved public perception and literacy regarding the benefits of electric vehicles.

Government policies and in the ASEAN region are the main limitations of the potential that will emerge in the future, considering that the EV industry is still in its early stages of development, so that regulatory factors, taxes, and incentives will be the drivers of the development of this industry. This can be seen in how countries in the ASEAN region are starting to open their respective countries to leading manufacturers in EV technology by providing attractive tax incentives and for prospective consumers are also directed to start being sensitive and following the country's plan in converting the use of energy from fossil to renewable, such as electricity. Regarding consumers' purchasing power, ASEAN nations will need to continue being patient in educating consumers about the advantages of electric automobiles. The cost of electric cars, which remains relatively high, has a significant impact on this. To enhance the bargaining power of customers, they are likely to transition to alternative goods, especially fossil fuel automobiles, which remain prevalent and extensively available in this area.

Countries with substantial supplies of cobalt and nickel, which are the primary constituents of EV batteries, are likely to wield significant leverage in the electric car sector. The entrance barrier in this market will be substantial due to the need for a significant financial commitment, as well as political, legal, and network backing from relevant nations. New manufacturers have significant challenges in establishing themselves in the industry. An emerging sector is dominated by established manufacturers with high tech knowledge and strong financials. While the conventional car sector now maintains a significant market share, the overall sales of electric cars have the potential to dominate in the future, provided the government and relevant industries consider the following factors.

To foster innovation, it is necessary to create technologies that can manufacture electric car goods at a low cost and make them accessible to a wide range of consumers. Due to the significance of pricing for customers in ASEAN, it is a crucial factor to consider. Reducing the price will also enable a broader range of consumers to enter the market. Indonesia, for instance, prioritizes the presence of dealers in various areas when making automobile purchasing decisions. The government should enhance the stimulus of consumer demand for electric automobiles in the future. The implementation of tax reduction programs has shown positive results in both Thailand and Indonesia. Additional non-monetary measures will be necessary to boost market demand. Establishing alignments with manufacturers is going to be essential. Every country's administration encompasses not only economic stability but also politics and security. To enhance industrial efficiency, the government plays a crucial role in enabling investment and granting production licenses to enterprises seeking to join the nation. Increasing the number of participants in the sector is essential to enhance the quality and reduce costs.

The development of market interest in EVs will be greatly influenced by the literacy carried out by the industry and government in each related country, or even regionally. The challenges in the ASEAN market are not only in the fundamental infrastructure but also the market perception that is still waiting for the reliability of the technology carried by each manufacturer, it is not surprising that currently several well-known automotive brands do not immediately produce EVs but in a hybrid concept. Not entirely dependent on batteries, but also still using fossil fuels. This adopts the interests of the community in several related countries who still see conventional vehicles as having their own engine power compared to EVs. EV market penetration in ASEAN will not only be influenced by the above, but also further how after-sales services or even the second market are also growing, but inversely proportional to this, it will be a challenge in itself also related to the still expensive EV spare parts due to the still small supply. However, with these challenges, looking at the volume of interest from the data obtained from this study, it shows extraordinary market potential, and it is not impossible that it will beat the conventional automotive market that has dominated for years. One approach to consumer literacy through digital media will certainly be an important indicator for all stakeholders in responding to challenges and potential in the future.

The electric car sector will gain significant traction over the next decade. Rapid sales statistics, the growing enthusiasm, and the promises made by regulators in ASEAN will enhance the traction of growth.

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Appendix

Data is available upon request.