

Toward a Successful EV and HEV Market in ASEAN: Lessons From the Past

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Abstract

From the past experience of unsuccessful EV market developments all over the world, it is important to point out the role of the consumer's mind, as well as strong leadership of the government and the profit of industries. In July 2017, the ASEAN EV summit was held in Manila, Philippines. I attended and gave a keynote speech on the successful EV and HEV market. The summary of my talk is shown in this paper for future EV development. The basic idea of this EV development policy can be applicable for EV policies in all countries.

Keywords

future EV and HEV development, first ASEAN EV summit, Philippine, marketing, consumer's mind

1. INTRODUCTION

In July 2017, the ASEAN EV summit was held in Manila, Philippines. The main theme is “Strengthening Partnerships for Greener Transport in ASEAN and Beyond”. It was a wonderful opportunity for me to give a keynote speech on this theme as secretary general and chief executive of the Asia Electric Vehicles Society, AEVS. The following is the invitation letter from Mr. Rommel T. Juan, the president of Electric Vehicle Association of the Philippines.

You are cordially invited to the ASEAN Electric and Hybrid Vehicle Summit on June 29 to 30, 2017 in Manila. In line with the Philippines' assumption of the chairmanship of ASEAN in 2017 coinciding with ASEAN's 50th founding anniversary, this summit is one of the official events and activities to be hosted by our country.

With the theme: “Strengthening Partnerships for Greener Transport in ASEAN and Beyond,” the summit is envisioned to bring together for the first time, under one roof, industry players in the ASEAN community representing every aspect of the electric and hybrid vehicle supply chain including policy makers, regulators, non-government organizations and end-users.

This event aims to address technology, innovation, policy, regulatory, environmental and market topics in the electrification of the ASEAN transport sector.

Targeted as an annual event, it is envisioned to provide an opportunity for ASEAN electric and hybrid vehicle industry players to hear from international and local experts discussing the various issues

that will impact the growth and development of the electric and hybrid vehicle industries in the short, medium and long-term via a series of exclusive keynote presentations, expert panel discussions, B2B meetings and interviews.

The 2nd plenary session of the summit is entitled: GLOBAL DEVELOPMENTS “Opportunities and Challenges for Advancing the Electric (EV) and Alternative Fuels (AFV) Market” where we envision that a representative from each ASEAN country, at least from the original six (6) Member Countries will share their country's journey towards EV and hybrid vehicle adoption.

In this regard, may we request your participation as a speaker representing Japan in this plenary session?

Moreover, one of the highlights of the summit is the signing of a Memorandum of Agreement to establish an ASEAN organization that will promote the active collaboration among industry players in ASEAN as well as with their international counterparts to accelerate the mainstream adoption of electric and hybrid vehicles to achieve greener mobility for cities and countries in ASEAN. This organization, which we are proposing to be called the “ASEAN Federation of Electric and Hybrid Vehicle Industries”, will serve as the unified voice of ASEAN in the global green transport community. We are attaching the draft Memorandum of Agreement for your consideration.

The conference program is being finalized and you will receive further information on this within the month.

Thank you very much and see you at the summit.
(Invitation from the ASEAN EV summit, Philippines)

In 2001, the Asian Electric Vehicles Society, AEVS, was established. The main aim of the AEVS is to con-

sider the issue of an increasing world-wide population and oil demand, especially in Asia, and to find a way for people's happiness and prosperity, as well as the improvement of environmental issues from the point of transportation.

It is well known that remaining oil resources are almost 2 trillion barrels, which is same as 20 % volume of Mt. Fuji. The residual oil all over the world is about 300 barrels per person. Currently, a person in the world uses 3.5 barrels of oil per year. The oil must be kept as much as possible for future generations and used not just for transportation, but also for chemical materials. The issue of energy and informatics currently become very important for the sustainable society [Chan, 2015].

2. IMPORTANCE OF REAL EXPERIENCE ON EV DEVELOPMENT

In my laboratory, I have encouraged students to experience real EV for their research. Figure 1 shows that the hybrid vehicle is emitting a bad smell together with a loud sound in the EV because of the installed diesel engine for generating electricity. Such an experience can be obtained through the real use of EVs.

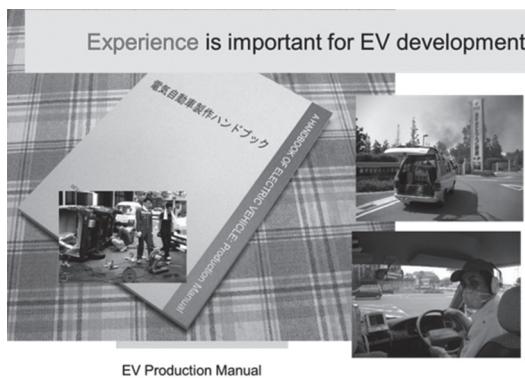


Fig. 1 A photograph of the book, EV production manual, which was published in order for readers to understand about real EVs

A book as shown in Figure 1 was published in order for readers to understand that the production of EV is not easy; however, it can provide a lot of real experience to understand about EVs.

By making EVs, it is also found that the performance of the produced EVs is not remarkably better than ICE cars, because low emission ICE cars are already clean with excellent performances. Instead of EV, it can be said that the conversion of a diesel engine boat to electric can bring great advantages, because almost all small boats have no surrounding cabin to prevent noise and polluted gas emissions. We must have a flexible mind and correct recognition for the electrifi-

cation of vehicles.

It can also be said that these experiences can create our own technology and it is important to create original technologies through technical experiences. We must not focus on purchasing excellent cars from abroad as shown in Figure 2. Only experience shows the real facts for consumers to maintain vehicles. It is important to know their mind for market development.



Fig. 2 Importance of experiencing the real EV by building your own EV

3. QUANTITY MATTERS MORE THAN QUALITY FOR EFFECTIVE ENVIRONMENTAL CONTRIBUTION

It is shown here that effective environmental contribution by the electrification of vehicles "quantity often matters more than quality". Figure 3 shows an annual e-bike production in China. Great achievement of e-bike production has been made during the last 15 years. China's annual production is currently more than 50 million units. This can really solve environmental issues. Most of polluted gas emission is caused by motorcycles and heavy duty vehicles. The total production of e-bikes as of 2016 is 350,000, 000 units. Japanese makers have been continually seeking quality of e-bikes for years, aiming up to 10,000 units and nothing has been done for environmental issues.

4. FLEXIBLE MIND IS IMPORTANT

It is pointed out here that a flexible mind is important for EV development. People often say that good mileage cars can contribute to energy saving and contribute to the environment. This is often incorrect. The important thing is "to understand the real facts and not just understand on paper". It is shown here that good energy efficiency cars are not always friendly for energy usage.

Figure 4 shows an example of the annual mileage of Toyota Prius and Toyota Camry. The average annual

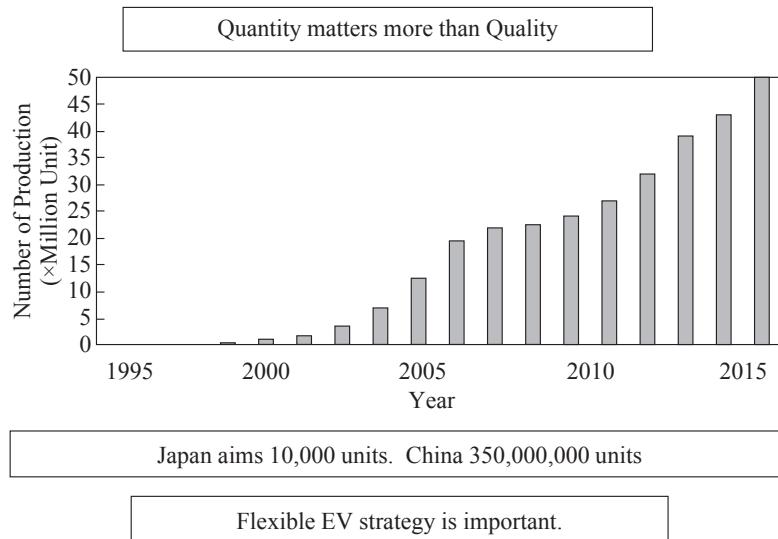


Fig. 3 Annual production of e-bikes in China

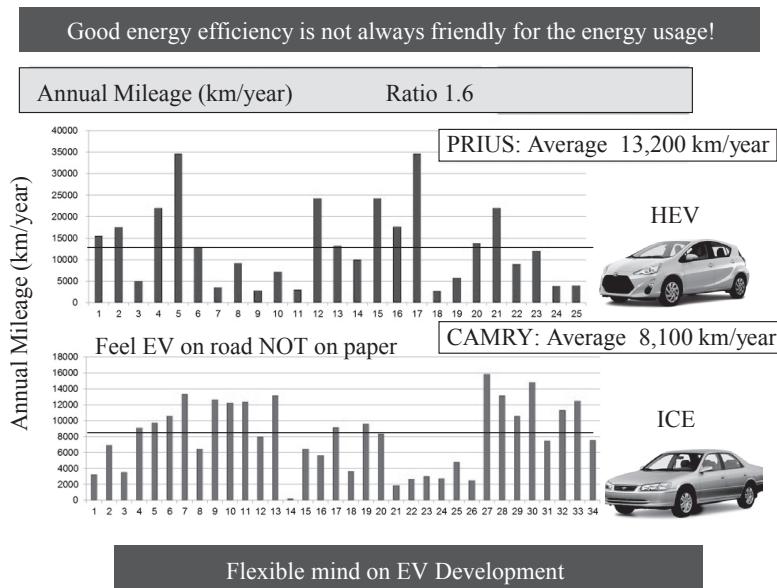


Fig. 4 Sampled annual mileages of Toyota Prius and Toyota Camry.

mileage for Prius shows 1.6 times longer than that of Camry. It means that the performance of good mileage causes not only more traffic jams and accidents but more annual oil usage. It teaches us that the political guidelines of environmental performance must be determined on the road and not just on paper. We should not focus on the value of simple mileage, but we need to consider people's minds. It is necessary for politicians to provide not a concrete mind, but a flexible one.

5. TOWARD SUCCESSFUL EV MARKET DEVELOPMENT

Three elements are often shown for successful market development [Chan, 2013], as shown in Figure 5. For

EV development, government leadership and policy is based on the global environmental point of view. Also, industry seeks profit and promotion of public images. And, the market requests EV performance and comfort. Among them, it is most important to consider the consumers' mind. For EV, the running cost and life cycle performance are important for the consumer, which can be recognized after they purchase EVs. Examples of past business failures in Japan are shown in Figure 6. In the 1990's, resort development was becoming popular in Japan. People became frenzied, and pushed forward with resort development without considering the consumer's needs, thinking only about the government's self-satisfaction and the constructor's profit. In 1993, Sea Gaia, Kyusyu, Japan opened

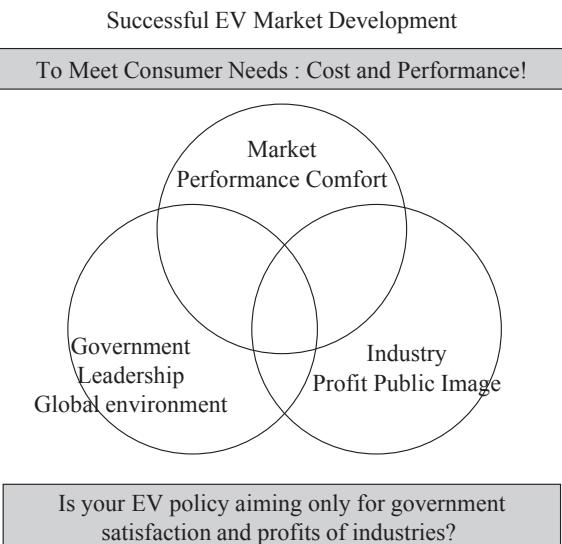


Fig. 5 Three important factors for EV development shown by Chan [2013a]

and then closed in 2001. The Alfa Resort in Hokkaido opened in 1987 and closed in 1997. Many resort marinas were opened and closed during the same era. Such business failures made by the so-called third sectors were mainly caused by ignoring the consumer's mind. No users were permitted to attend the business meetings. These results tell us that EV development projects in many cases also had and still have such failure tendencies. As a science, it is important to remember what we can do and we what cannot do through EV. For example, in many countries in South-East Asia, big EV development projects have been becoming popular recently, however, it is important to think



Fig. 6 Many businesses of big resort projects became failures because of the lack of marketing the consumer's desire

about the consumer's needs once again.

6. PREDICTING FUTURE EV BASED ON FORKLIFT DEVELOPMENT

Often it is misunderstood that good EVs will be dominant; the number of EV products is negligibly small compared with ICE car population. We have very useful data of the 50 years history of forklift electrification to predict future EV development. Figure 7 shows the change of percentages of individual function of forklift sales in Japan. It is clear that the electrification of forklifts is advancing. Also, it should be noted that the diesel version of forklifts still remains a major market, even after 50 years of history. Figure 8 shows 50 years of forklift export sales from Japan. It is clear to say that the percentage of electric forklifts is decreasing, and the diesel version is increasing. These results show the "bread before breeding" of people's natural tendency. From the initial and lifecycle cost point of view, ICE is still very valuable. It is a clear

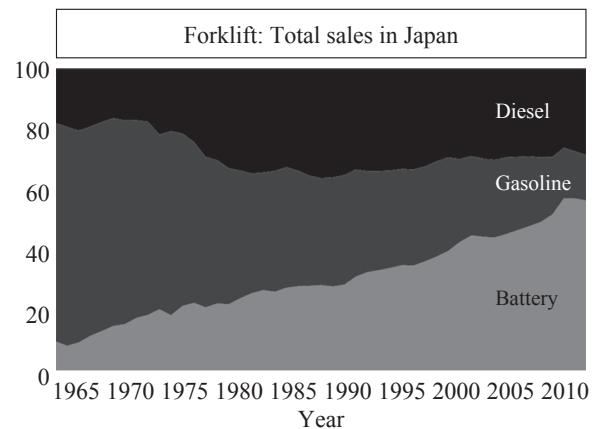


Fig. 7 Percentage of electrification of total forklift sales by Japanese makers

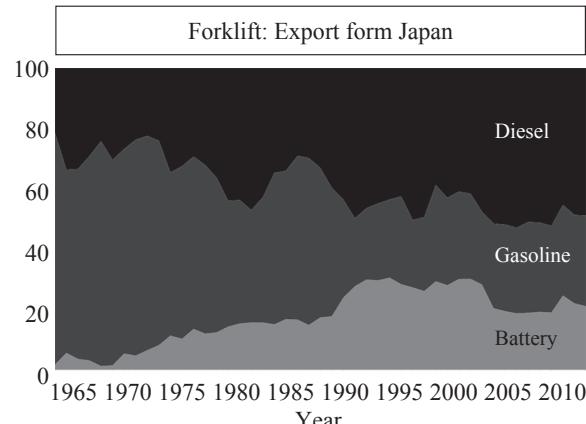


Fig 8 Percentage of electrification of total exported forklift sales by Japanese makers (Note that the percentage of electrification is saturated recently)

thing if people have experience and are the user of forklifts. On paper, electric forklifts are supposed to be selected because they do not emit polluted gas locally. The facts show that the cost is more important than the comfort. Especially, heavy diesel forklifts cannot be eliminated by EV because of the cost. For passenger cars, it would take more than 50 years to become dominant because of the production ability and the consumer's usefulness.

In short, it is important to make clear a strategy toward a successful EV business. As shown in Figure 9, it is necessary to ask oneself about one's own EV business [Chan and Minami, 2009, Chan, 2013b]. In the figure, it is pointed out that the spirit of business is important. Ask yourself if the EV development project is just pretending to contribute to the environmental issue, or is it providing a strong mind to develop mass productive EVs supported by the company's key persons and strong government support.

Toward a successful EV business, make clear your own strategy.

Is your purpose of EV business,

- Just to pretend to behave environmental friendly?
- Aiming to contribute to the society effectively by mass-production?
- Determining the electrification of vehicles to ICE vehicles?
- Strongly supported by the company leaders to conduct the EVbusiness?
- Can the price and performance of your products be accepted by the users? Engineers often aim at high performance without thinking about the customer's mind? For the "Effectiveness", often Quantity matters more than Quality!

Fig. 9 It is important to make clear whether the EV project is just aiming at a small amount of EVs to raise the stock price, or to contribute to the society by mass production.

EVs are also necessary to meet the real consumer's desires. As was mentioned, the quantity matters more than quality. This fact was proved by Chinese e-bike production. Sometimes it is important to focus on ICE cars rather than losing money by a small amount of EV R&D. If the expensive EVs do not contribute to the wealth of society, it is meaningful to say "we will keep our culture and focus on developing our own technology". With such a kind of thought, you have a right to say clearly that the free trade agreement is not at all good for us.

The main thing for the EV development is the impor-

Do not focus on seeking the happiness of the players:
e.g. Industries and Government for EV

Japanese lesson:
Good for everyone:
Three-way satisfaction;
Win-win:
e.g. purchaser, buyer and society



Fig. 10 It is important to know that EV marketing should provide outstanding profit to the society.

tance of a non-zero sum philosophy. The Japanese lesson tells us "Good for everyone". The benefit should be supplied not only for purchase and buyer, but it should be for the society itself. Do not focus on seeking the happiness of card players as shown in Figure 10.

7. FROM A CONVERSATION AT THE ASIAN EV SUMMIT 2017

At the summit, a question was made from the floor on the future development of auto tricycles in the Philippines. The following is my answer:

- Tricycle is agile and convenient even in a narrow place.
- It should match the culture of the country.
- Tricycle is a vehicle that can be made in this country.
- I want you to advance your own technology and improve product capabilities.
- I want you to make a vehicle that can be sold overseas.
- If you buy a foreign vehicle, it will cause a trade deficit. In order to solve the problem, the government should have a policy that can look to twenty years ahead.
- You should learn from China and disseminate a large number of electric vehicles of three wheels. There is a big 2 billion USA dollar market.

8. CONCLUSION

In this paper, the following thoughts for EV market development are shown:

- It is pointed out that it is important to talk about the experience of EV owners.
- For EV development, the government, industry and society, all three parties, should each have benefit. Without this, the project will fail. Examples of failure have been introduced.
- Only mass production can provide the effectiveness of EV performance. Otherwise, EV can be used

only for limited purposes. China's e-bike development policy can be a good example. The idea of "Quantity rather than quality" is exemplified. The expectation of future EV development is shown based on the 50 years history of forklift electrification.

- It is pointed out that there is an importance to make clear one's own purpose to contribute to EV marketing. You should ask your own spirit whether it is just for the small profit of the industry or for the global happiness of the society.
- The idea of "Good for everyone" based on the Japanese lesson is introduced for EV development. Only the non-zero sum philosophy makes it possible for EV development.

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(Received September 25, 2017; accepted October 28, 2017)