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Study on Success Strategies of Japan's Automobile Industry in the Age of Electric Vehicles

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Abstract: *The automobile industry is Japan's key industry, accounting for nearly 20% of the total manufacturing industry based on product shipments. Japanese cars, which have solid mechanical reliability, high durability, excellent fuel efficiency, and are cheap, have been exported around the world as a source of foreign currency revenue, and have been a symbol of the "manufacturing powerhouse Japan" for half a century. There are also problems with the use of EVs as commercial vehicles at the time of short mileage, long charging time, use in cold or mountainous areas, and life-related problems due to long congestion, but the big trend is global EV conversion." In this state, I think it is meaningful at this point to look at the feasibility of EV conversion of Japanese cars and how their future strategies are progressing and future strategies for Japanese cars. Therefore, this paper will examine the actual state and future strategies of EV conversion in the Japanese automobile industry.*

Keywords: *Japanese Automotive Industry, Technology Deterioration, Strategy Failure, New Challenges, Change in EV, Future of Japanese Automotive Industry*

1. Introduction

1.1 The State of the Japanese Automobile Industry

The EV market in China grew rapidly in a short period of time. Whether it has had an edge in the engine car market, Germany and Japan are facing a new phase. Mitsubishi Motors has already withdrawn from the Chinese market due to uncertainty in the future. Mitsubishi Motors' sales in China were 81,000 units in the first half of 2019, but decreased to 1.5 million units in the first half of 2023. Mitsubishi Motors has withdrawn from the world's largest Chinese market and is focusing its main markets in Southeast Asia and Oceania. Toyota Motor also saw its sales in China decline 2% (1.72 million units) in 2012 from the same period last year, and Honda Motor Company's 13.5% (1.06 million units). Japanese cars' competitiveness in the Chinese market is falling sharply, including 20.7% (690,000 units) of Nissan Motor Company and 27.5% of Mazda's decline (6.8 million units). Meanwhile, along with Tesla and BYD, Chinese automakers such as GUANGZHOUQICHE and CHANGANQICHE independently began producing EV brands. Now, foreign companies are gradually losing their market share in China due to the increase in EV competitiveness of Chinese companies.Japanese cars are facing challenges in the Chinese market in the United States. Toyota is building a battery plant in North Carolina. It is also planning to produce EVs in Kentucky starting in 2025. Honda Motor is planning to produce EVs by overhauling its existing factory production facilities in three Ohio locations.SUBARU has already started EV production in the United States in 2023. US production was judged by considering the speed of movement of EVs in the United States. However, the barrier to replacing all cars with ZEVs is high. California, an advanced area for electricity, has also been on the rise in recent years with HV. HV, which is the strength of Japanese cars, is important even to raise R&D funds for ZEVs in the transition period of a full-fledged EV furnace. Toyota is strengthening HV by producing two models in 2024, including the new camry of the HV-only model. Mazda is planning to introduce HV models of SUVs (CX-50) in the U.S. market within the near year. EVs and PHVs were rapidly distributed to China in the world's largest automobile market in 2023. At the time of the mid-announcement in 2023, it is a Japanese company that compensated for the sluggish sales in China with strong sales in the United States, but it is expected to be affected by the rapid electrification in the United States. Japanese cars, which are late in EV development, are at a crossroads between maintaining the U.S. market or maintaining balance with HV.

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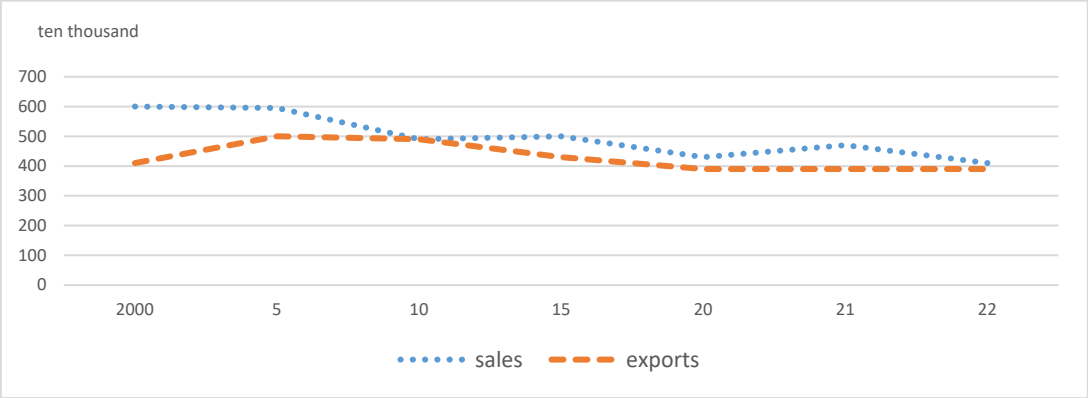
1.2 Crisis in the Japanese Automobile Industry

Japan has dominated the global market with engine cars, but the detection of the flow of EVs in the new automobile era is late. As a result, it is currently struggling with the trend of EVs in the global automobile market. In addition to the technical aspect, protection trade in each country has been strengthened, and risk factors are increasing. First, it is the US IRA (Inflation Control Act). In the United States, IRA is a tax preferential condition when purchasing EVs, and the main content is to exclude Chinese products from the use of parts or minerals in the mounted battery. In other words, the premise of preferential treatment is that vehicles assembled in North America can be given preferential treatment, but EVs exported from Japan are excluded from support. A movement to exclude imported EVs from subsidies has also begun in Europe. The target is the boundary of Chinese EVs, but it affects all automobiles in the world. Second, it is a threat from companies that have succeeded in making advanced EVs, such as China's BYD and Tesla in the United States. It is expected that fierce competition between existing companies and already dominant companies is expected. How to overcome the EV crisis will determine the success or failure of Japanese cars [1].

The Japanese automobile industry has long been the subject of fighting protectionism. Since the 1970s, when new car exports to the United States began in earnest, overseas production has been expanded and localized to alleviate the intensifying trade friction. As a result, it reached 13.5 million units in 1990, but production of Japanese cars has been reduced since then. Currently, 5 million out of a total production of 9 million units depend on foreign exports. For details, please see the following Figure 1:



Data: Japanese Automobile Manufacturers Association (2023), Japanese automobile production trend[8]

Figure 1: Trends in sales and exports of Japanese automobiles

However, EVs cannot rely solely on exports. Toyota Motor, Nissan Motor, Honda Motor, and SUBARU are also planning to produce EV cars and batteries locally in the United States or Europe in response to these environmental changes. If the domestic market for new cars shrinks due to the decline in the driving population in Japan, and export sales decline, restructuring of domestic production capacity is inevitable. It also affects a wide range of industries such as parts, materials, and transportation services.It was automobiles that have led the Japanese export industry over the past 30 years.

However, in detail, the trade balance has worsened. For Japan, which relies on imports for resources and energy, exports are more important than anything else. The hope of Japanese automakers is to survive the EV industry. Third, for EVs, it is very important to meet consumer needs such as diversification of software functions. Japanese automobiles are also increasingly using software in Korea. KINTO, under Toyota Motor, is a part of the new PRIUS and produced KINTO Unlimited, seeking to diversify safety functions such as collision prevention brakes and hardware equipment and functions through Over The Air= wireless communication (OTA).It is important for KINTO to establish its own organization to maintain the decline in the value of general vehicles. In the past, the value of the vehicle decreases over time after purchasing a new car, and the price of the used car also falls. However, the software service aims to prevent the price of used cars from falling by increasing the value of their vehicles.Boston Consulting Group [2] predicts automakers' revenue from $87 billion to $248 billion by 2030 from the current $87 billion in automotive software and electronic devices. It forecasts the size of the related supply market to expand from $236 billion to $410 billion.

However, Japanese cars are planning to install OTAs after 2025. Tesla and BYD are implementing

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them as advanced services, and Japan is now at the beginning of a task for Japanese cars on how to provide the software services that customers require for profitability in the future. The fourth is whether value can be improved. AFEELA is a generic term for the EV brand jointly developed by Sony and Honda Motor. The new car is expected to be sold in the United States in 2026. It is equipped with a high-performance chip from Qualcomm in the United States and is preparing for an automatic driving function up to level 3. The biggest difference from EVs being developed by other companies is expandability. It gives a new impression to users[3].

Specifically, the Android OS is mounted on the vehicle, allowing users to customize the car's function as a metaphor within the range that there is no safety problem. For example, it is the display content of the in-vehicle display. The user can change the light emitting pattern of the decorative lighter in the vehicle and the sound of the motor flowing from the speed car while driving. In addition, the content of customization is intended to be shared with users in addition to the Internet so that users can feel attached.When it comes to ordering elements in existing cars, many cars are accompanied by physical tasks such as changing the color of the exterior or the part of the drive system (the part involved in the machine's movement by transmitting power), and software modification was not active.

However, in the CASE era, automatic driving made it easier to use the space in the car. AFEELA's cars are equipped with multiple large screens, and there are more room for software orders than conventional cars.Sony has previously specialized in manufacturing products that can be customized according to users' preferences, such as releasing a corresponding Walkman that can replace external parts. Development such as applications running on AFEELA was opened so that external engineers or design managers could be involved. If this is done well, AFEELA's platform is likely to be used in EVs developed by other companies. The experiment has begun in earnest to see if the new values Sony and Honda are able to accommodate.

2. The dilemma of EV development

It is a dilemma for Japanese cars to become EVs. It is a growing competition in the Chinese automobile market and a barrier to protectionism in the US market. The US market is also difficult amid the loss of competition in the Chinese market. The US is an important market with a Japanese car share of more than 30%. It is a place where many high-profit large vehicles such as SUVs and pickup trucks are sold. However, it is unclear whether Japanese cars will continue to be a stable seller in the United States in the future. This is because EV sales are also increasing in the United States. The Biden administration is aiming for more than 50% of new car sales to be EVs, PHVs, and FCVs by 2030. For some examples, the first is the US Environmental Protection Agency (EPA) announced in 2023. It is demanding an average reduction of 56% carbon dioxide (CO2) emissions for the 2032 model compared to the 2026 model. The EPA expects that 67% of new car sales for light vehicles[4] will be EVs by 2032. These requirements are strict.

The US automobile production group regulation bill is considered difficult to reasonably achieve for a number of reasons, including cost[5]. Second, state-level regulations. The California Department of Atmospheric Resources (CARB) 2022 approval regulation refers to all EVs, PHVs, and ZEVs such as FCVs, for new vehicle sales in California by 2035. According to the California Energy Commission (CEC), the proportion of ZEVs in new vehicle sales is about 25% in 2023. The new system requires that the EV ratio be raised to 35% in 2026 and 68% in 2030. Failure to meet these standards will result in fines.California is a large market in which new car registrations for light vehicles in 2023 account for more than 10% of the total United States.

Currently, California ranks first in the new car market share. In addition, more than 10 weeks, including Washington State, have decided to introduce ZEV regulations. Competition is expected to be fierce in these states due to the large presence of the entire new car market in the United States. Third, the IRA (Inflation Control Act). The law, announced in 2022, provides up to $7,500 in tax credits to vehicle buyers who meet certain requirements on the premise of an electric vehicle finally assembled in North America. However, the requirements are complicated. In other words, a certain percentage of battery parts require that they be manufactured or assembled in North America. Important minerals in batteries require a certain percentage of them to be extracted or processed in the United States or countries that have a free trade agreement with the United States.

Japanese automakers are deeply concerned in the future as the existence of tax credits directly affects sales competitiveness. Fourth, BYD is a threat to Japan, a large automobile manufacturing powerhouse. BYD's Sea Gul price in China is about $7,000. It is cheaper than Japan's flagship small cars, Toyota

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(YARIS) and Nissan Motor (NOTE). It is popular in China because of its high convenience and speed range of 300 to 400 kilometers. BYD is also actively engaged in overseas production. Thailand and Brazil, where BYD is currently building factories, are the bases of production for Japanese cars. If BYD begins mass production centering on EVs, chances are high that Japanese cars, which mainly focus on small cars, will directly compete.In particular, Japanese automobiles, including Toyota Motor, ISUZU Motor, and Mitsubishi Motors, account for 80% of Thailand's automobiles.

By 2030, the Thai government also aims to convert about one-third of its 25 million annual production into EVs. Competition for EV cars will begin in earnest at the end of 2023, with Toyota and Honda starting to produce EVs for SUV models.For EVs that are difficult to make profits, it is of utmost importance to establish a value chain that is conscious of the prices of used cars. It is necessary to cultivate brand power by supplying genuine parts management of high quality such as maintenance, inspection, and repair and continuously providing high-quality follow-up management.

Fifth, China has the largest EV sales market. After Corona, the recovery of domestic demand in China has been slowing due to adjustments in the real estate market, but sales of new energy vehicles (NEVs) such as EVs and PHVs are on the rise. NEV sales from 1.02 million in 2019 exceeded 7.5 million in 2023. The ratio of NEVs to the total number of passenger cars exceeds 40% for the first time in 2023, and NEV improvement is entering a new stage. Currently, there is fierce price competition in the new car market in China. Tesla in the United States raised prices in 2022 with the end of its subsidy policy for NEV. With this opportunity, not only EV companies such as BYD and Shanghai WWILAI cars (NIO), but also Toyota cars and German Volkswagen (VW) are raising prices.

In the Chinese market, price competition for EV cars is severe. Each of the Sino-Japanese mergers is struggling with the decline in the value of competing vehicles and the offensive of Chinese NEVs. Excluding Toyota Hybrid Vehicle (HV) and China First Merger, which are popular in China, Chinese-Chinese mergers are allowed to sell in China. After reaching 23.1% in 2020 and the highest level in the past decade, the share of Japanese cars in the Chinese passenger car market has fallen to below 15% in 2023.Japanese cars were popular with buyers from the middle income class or higher due to their advantages such as low fuel efficiency and reliability.

In China, sedans are popular among consumers who value the cost-effectiveness and function of the brand. SUVs (sports multipurpose cars) are also popular with young people as they have good ride comfort and are evaluated for design.The fact that Japanese cars, which have been so popular, have been struggling recently suggests that Japanese cars have entered a transition period, not a daily adjustment. This is because the Japanese car brand power that has been built in the mass car market weakens competition with Chinese cars' NEVs.

3. Japanese automakers' EV strategy

3.1 Toyota's EV Strategy

Toyota is facing EV competition with GM and Ford in its flagship market in the U.S., but HV sales in the U.S. reached 470,000 units in 2023, exceeding the same period last year. The replacement of gasoline cars to HV with excellent environmental performance seems to have affected Toyota's performance. Toyota has sold a new model of its flagship sedan (CAMRY) as HV-only cars in North America since 2024. Cars that have been sold mainly in Japan in the past are also fighting against Tesla for EVs by strengthening the diversification of HV products. Toyota is planning a new EV strategy. It aims to produce and sell 1.5 million new EV 10 models by 2026.

By integrating each function, such as EV opening, production, and business, a specialized organization was established to reorganize the EV business strategy by simplifying the organization. Toyota unveiled a wide range of EVrelated technologies during development. Its representative is gigacasting, a casting technology that integrates large body parts. Tesla has already adopted rusty aluminum to make the mold high pressure. Toyota is considering introducing the next generation of EVs from 2026.The advantage of gigacasting is that it can significantly reduce the number of parts and processes. For the rare parts of Toyota EV (bZ4X), 86 steel parts are integrated into 33 processes. By using gigacasting, one aluminum alloy part can be reduced to one process.

In addition, the module structure is used by dividing the body into three. Production reforms that utilize automated technologies such as self-powered technologies and AI, such as technologies by production vehicles during production, unmanned movement technologies, etc., will reduce the cost of

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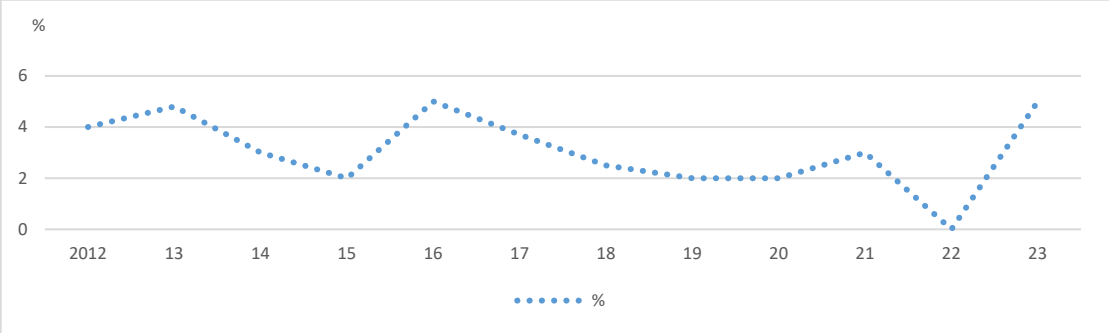
putting them into factories, the production preparation period, and the number of processes in half.In addition to the process, batteries are other important things for EVs. Toyota pursues their multi-layered strategy. In other words, the company plans to use an all-solid-state battery of an improved latium battery capable of securing a mileage of 1,000 km, a lithium perrous phosphate (LFP) battery with low production cost and excellent safety, and a next-generation battery capable of realizing a mileage of 1,200 km with a charging time of less than 10 minutes, in the new EV after 2026. Toyota is still establishing a multi-pathway[6] strategy that will deploy the wide range of electric vehicle options to the world, such as HV, EV, and fuel cell vehicle (FCV). In addition, criticism of the EV retreat was high from European and American investors and environmental groups.

However, there are many challenges to develop this series of new technologies. The most important thing is to secure profits from the value chain. It is mainly the profits of the after-sales service business such as maintenance, insurance, and used cars. In the case of Toyota, the cumulative operating profit from 2020 to 2023 accounts for 50% each of the profits from new car sales and value chain.

From now on, the company is focusing on improving services by improving the driving performance of automobiles, safety technology, and entertainment functions through software updates through OTA. Tesla and BYD are the leading groups in such advanced service deployment. The software service market is expected to expand by improving the performance of their vehicles without the need to replace new cars on a regular basis. Toyota is also pushing to develop an on-board OS (basic software) independently to strengthen its competitiveness. Its feature is to expand the functions of the purchased vehicle by updating the software. If it is competitive in the software sector, Toyota will be able to maintain value chain profits by playing a leading role in the EV market. Fortunately, Gumi is not yet competitive in the EV market.

3.2 Honda Motor Company's EV Strategy

Honda is the only company in Japan that has declared a new engine. Honda plans to produce all new car sales either as EVs or FCVs by 2040. It has given up commercializing small and medium-sized EVs that Honda and GM are jointly developing. The two companies' factories have established a production system of millions of units, but it is difficult to balance marketability and price.Honda's ongoing project aims to produce 30 types of EVs in the global EV market by 2030 and sell 2 million EVs annually. It plans to target the world as a dedicated platform. In China, GUANGZHOUQICHE Group and its merger CHUANGZHOUQICHE have laid off about 900 dispatchers who work alone in factories. At the same time, production began controlling production by more than 20% as of October 2023 compared to the previous year. For details, please see the following Figure 2.



Data: Honda Motor (2023), Honda Motor Company Settlement[9]

Figure 2: Trend of Honda Motor Company's operating profit ratio

In China, the EV market is expanding mainly by Chinese companies such as BYD. Honda is also selling a variety of EVs, but it is not competitive with Chinese companies or Tesla. Honda has weakened its brand power as the company is trying to find solutions on its own. As the U.S. and China account for more than 60 percent of global sales, the success or failure of Honda can be determined. Honda is also expanding its EV lineup to strengthen its competitiveness. The EV, which was developed jointly with GM, will be sold in the first batch by 2025, including the Honda brand and the high-end brand ACURA. In China, the company will sell a total of three models, including GUANGZHOUQICHE Honda and DONGFENGQICHE Honda. In Japan, the company plans to end production of its first mass-produced EV (Honda) in January 2024, followed by small cars and SUVs.Honda is developing various businesses as well as EVs in 2023.

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Based on Yamada Transport and (9N-VAN), the company has begun demonstrating the installation of replaceable batteries developed by Honda in commercial EVs for light vehicles. The replaceable batteries can be applied to two wheels or several places. It has also started an electricity business with Mitsubishi to expand power infrastructure. Batteries installed in light vehicle EVs will be recycled into fixed storage batteries in 2024. From new cars to used cars to storage batteries, the condition of the batteries is monitored and properly managed. It increases the value of the battery itself through long-term use. In the future, a charging and discharging structure will be built with EVs that have a power storage function to meet power management.Honda is seeking additional services by improving functions by updating the EV's software.

Originally, EVs are batteries that use a lot of rare metals, and the procurement cost is high and the product price is higher than that of gasoline cars. If the price is restrained to secure a certain sale, profits will decrease. As long as it is difficult to make a profit like a gasoline car, it is essential to secure an alternative profit. In particular, Honda, which aims to run a car engine, is required to present a detailed overall structure of how to make a profit.

3.3 Nissan's EV Strategy

Until now, Nissan has been highly recognized in the Chinese market for engine cars. However, as EVs are rapidly progressing, more research on the Chinese market is needed. Already in the Chinese market, competition for EVs, PHVs, and NEVs is fierce, and demand has increased a lot. Currently, the share of the foreign car market in the Chinese market continues to decline. On the other hand, demand for electric vehicles in China is increasing rapidly.Nissan was the best-performing Japanese car in China in the past. However, 2023 is down 23.4% (800,000 units) from the previous year, almost half of the 1.56 million units in 2018. Mitsubishi Motors withdrew from China due to a sharp decline in sales, but Nissan cannot choose the same. Nissan's net profit in China accounts for 30% of global sales, which is 50% dependent on China. In addition to selling four EVs and PHVs under the Nissan brand by 2026, the company plans to export 100,000 units in 2025 to boost the utilization rate of its local merger plants.

Ten years have passed since Nissan announced the invitation (LEAF). Tesla had difficulty rotating its funds by producing the highly hobbyist (ROADSTER). The future of the car is expected to depend on EVs, but Nissan's advance into EVs was fast. However, Nissan's EV sales in 2023 totaled 1 million units, but Tesla became an EV branded automaker with 2 million units per year. Nissan is the best Japanese brand for EVs, but it has not received attention in the global EV market. It was Prius that was conscious when developing the LEAF. By distinguishing the same thing, the Prius was assumed to be the same price to be competitive.

In the case of EV production for the first time, it was expected that it would be difficult to sell it at a high price due to high development costs. As a premium car, brand awareness was low. In addition, in an era of low social awareness of EVs, the price is relatively higher than that of Prius, and the LEAF with intermediate performance did not produce enough to be profitable.It also suffered from a dispute with France's Renault. Nissan fell to a deficit in 2019-2020 due to Carios Ghosn Bichara's unreasonable expansion of its business. Following the LEAF, the full-fledged EV did not produce even small-vehicle EVs (sakura) or SUVs (ARIYA) in 2022.

However, the balance, which equates relations with Renault, was completed in 2023. Nissan has resolved the management turmoil and established a strategy for full-fledged EV production. Following China in 2023, it announced that all new vehicle sales in Europe will be produced as EVs in 2030. Additional investments were also made in the production of new EVs and the expansion of battery factories for automobiles in the UK, Europe's main base. For details, please see the following Figure 3:

The success or failure of the EV strategy in the future depends on the EV's new company (amphere) separated by Renault. Nissan plans to invest 600 million euros to send management. Although the relationship with Renault is weak, Nissan cannot afford software development alone, so cooperation is needed. The true value of the alliance[7] in the fourth half century is required. The alliance that creates new growth opportunities by utilizing mutual strengths is the core of Nissan's automobile strategy.

It is necessary to respond with the reader's hybrid technology (e-power) to the reality that the speed of EVs is different in the country or region. Efficiency can be achieved by promoting the common use of EVs and e-power parts. The number of power trains of automobiles itself will be reduced from 49 types in 2020 to 27 types in 2026, thereby securing profitability. Nissan has advantages in its accumulation technology and experience. LEAF is highly evaluated for safety because it can prevent the occurrence of fire due to defective batteries. Each company is rushing to develop all-solid batteries by

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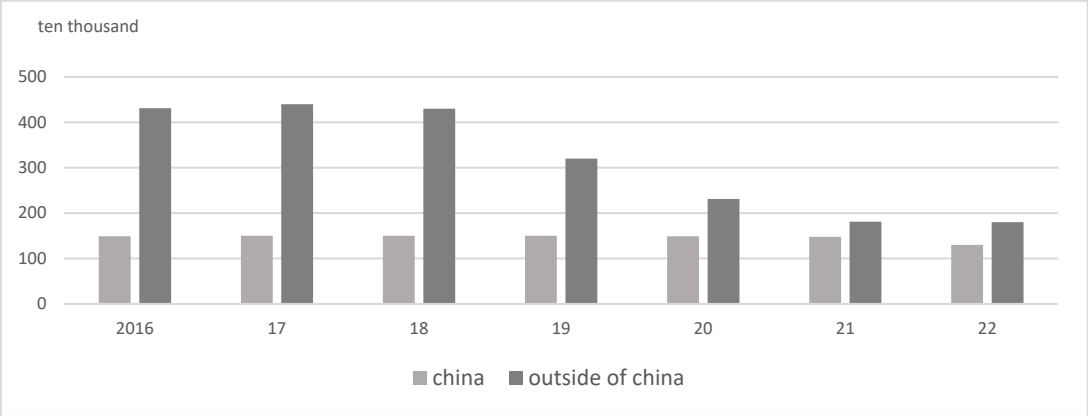
Nissan, which has the potential to return to the leading group of EVs.



Data: Toyota Motor Corporation (2023), accounting data [10]

Figure 3: Nissan Motor Company's Global Sales and China Sales Trends

However, there are also negative views in Nissan's EV market. Although the Chinese market was sluggish in 2023, it turned to a surplus in the second quarter, and profit increased by 60% due to the resolution of semiconductor shortages, price hikes, and weak yen, resulting in an operating margin of 4.8%. However, the rate of return is lower than that of Toyota Motor Corp. (10.5% of the same year) and Honda Corp. (6.0% of the same year).Of course, the fundamental problem is overproduction. Global sales fell from a peak of 5.77 million in 2017 to 3.3 million in 2022. It is 3.7 million units in 2023, but it is also a big difference from the total production capacity of 5.4 million units. It is essential to improve profitability to continue investing in large amounts of EVs. It is of paramount importance to optimize production capacity and increase sales, that is, to make cars that can be sold.

3.4 SUZUKI's EV Strategy

SUZUKI has a 1.14-fold PBR (share price net asset ratio) at the time of 2023, which is higher than 1.11 times that of Toyota Motor Corp., which is good. On a relative note, SUZUKI is on the good side of the industry.The question is whether EV will succeed or not. EV cars are rapidly increasing in the Chinese market, but other companies are experiencing difficulties due to the sales of gasoline cars. It is not easy for foreign automakers to compete with EV cars in the Chinese market due to price differences.Although it is not as big as the Chinese market, Tesla in the United States has strong competitiveness in EV sales in the US market. There is little presence of Japanese cars in the EV market alone, and SUZUKI did not have business dominance in the Chinese and US markets. Overall, Japanese cars are late to enter EVs, but SUZUKI is also late to respond. SUZUKI's main market is 57.9% in the Indian market, and Japan accounts for 20.3% of small cars. SUZUKI is in the top group with a 40% share in India ('22 years). However, India's per capita income is $2,400 in the world (117 countries surveyed), and only a few have the economic power to purchase EV cars that are more expensive than gasoline cars. In addition, the infrastructure such as charging stations is also insufficient.We cannot rest assured of SUZUKI's future. This is because other companies are aggressively marketing in India, the central market of SUZUKI. Korean cars, such as Japanese cars, that are struggling in the Chinese market are withdrawing from the Chinese market and entering the world's No. 1 population Indian market. Competition to expand the EV market in the Indian market is expected to be fiercer.

In particular, India's TATA car is expanding its EV models in 2020. With TATA accounting for more than 80% of the EV market in India ('22), Hyundai Motor in Korea sells EV cars in 2019, but its market share is still low. However, Hyundai in Korea is also continuing to make large investments in EVs.Meanwhile, SUZUKI's sales of the first SUV (eVX) in the 2024 EV world strategy vehicle are sluggish in India, Japan, and Europe. SUZUKI plans to invest $13.22 million in electricity by 2030. In addition, it plans to accelerate the installation of charging facilities such as technology development. Infrastructure maintenance is important for the distribution of EVs in India. Therefore, SUZUKI has already secured more than 3,500 vendors and is accelerating its advancement outside of urban areas. This is because trying to install rapid chargers at dealers is advantageous in securing customers.

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3.5 SUBARU's EV Strategy

SUBARU is strong in producing sports cars and mountain cars. In 2024, 67.9% of 1.01 million global sales are in the U.S. market. Japan is next at 11.4%, and other countries are below 1%. It is expected that the U.S. will continue to favor the U.S. side.The United States has a large land area in the east, west, north, and south, and the resulting climate differences are also very large. Among them, SUBARU is an advantage in SUVs (sports multipurpose cars) that have a high price range, but poor road conditions and good frequency, and are especially strong in cold areas. SUBARU is highly interested in the Canadian market. Canada also has a large land area and the entire region is further north than the northern United States. It plans to make EV cars that are resistant to cold with EVs that can adapt to this environment. In this SUBARU plan, Tokai Tokyo Intelligence Laboratory Co, Lit [8] is the advantage of SUBARU to ensure the characteristics and needs of its customer base. EVs' sales measures are an important factor that determines a company's success in cold areas, as the battery condition sometimes declines at low temperatures. SUBARU is a small company with a strong specific consumer group as it is developing its own technology to manage battery temperature. So, R&D can be developed according to a specific purpose.

However, there is also a task. First, the United States has a tax-preferential restriction law (IRA) only for EVs that meet production conditions in North America. Half of new cars SUBARU sells in the United States are locally produced but half are exported from Japan. The high export rate in Japan is due to the weak yen. In other words, this means that it will be difficult to respond to the IRA in the future. Second, it is the EV regulation introduced by multiple states such as California. It requires that the sales ratio of environmentally responsive vehicles such as EVs be higher than a certain level. The standard ratio must be increased every year and be 100% in 2035. If it is not reached, a maximum fine of $20,000 per vehicle will be imposed.The replacement of EV cars may have been relatively delayed in the mountains of cold areas where SUBARU customers are many. The problem of lifting regulations is not simple. In order to remain a competitive company even though it is small, it is necessary to overcome regulations while taking advantage of its advantages.

4. Conclusion

Engine cars have been developing around the global market for about 100 years. In addition to hardware maturity, the social system was completed on the premise of engine cars, from gasoline refining to tax systems such as transportation, standard operation, and follow-up management.

However, EVs are developing in hardware for about 10 years since they appear in the market in earnest. Users are uncomfortable due to the lack of infrastructure maintenance such as chargers. The rapid development of EV distribution today is due to strong government support. It has emerged as the center of each country's industrial policies as well as the purpose of deoxygenation. However, anti-EV movements in countries and regions are also increasing as negative aspects appear due to the rapid EV progress.However, if carbon-neutral (CN) is the purpose, EV development is inevitable in the mid to long term. There are options such as hydrogen, synthetic fuel, and bioethanol, but the difficulty of implementation such as technology, cost, stable procurement, and foundation is higher than that of EV. Also, such options are likely to remain in some areas such as commercial vehicles.EVs (electric vehicles) are far from CN as long as they currently charge electricity based on fossil fuels. However, in order to get closer to CN society, it is essential to expand power to deoxygenate electricity and renewable energy. In order to use highly fluctuating renewable energy power, it is essential to supply EVs with a power storage function. By improving renewable energy power, EVs can also get a good cycle to low carbon.Then, the last two to three years, when the leading group for EVs was caught up in turbulence, is an opportunity for Japanese companies to return to technological development. As already mentioned, each company is announcing new plans without stopping despite the movement of EV market modulation.Originally, a new path is a difficult one. Selling an engine car or a hybrid car makes profits, but selling an EV accumulates a deficit at the moment.

At least, even though EVs are said to be sold, engine cars are still the center of the market. The more you listen to consumer demand, the more you sell engine cars. The reality is that it is difficult for the winner of the existing business to enter the new business.However, Tesla's initial profit margin declined, but it reached a profitable sales scale from EVs. Chinese companies, led by BYD, are not afraid of a number of failures and produce new cars at a speed that exceeds the common sense of existing automakers, and the evolution into EVs is rapidly progressing. What they have done before is not stopping at the hardware of EVs but to build service models including energy.

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Most of the emerging EVs have been eliminated or surviving companies have secured high competitiveness. Not all Japanese companies have failed, and about eight companies are currently struggling. Strengthening global protectionism and progressing to EVs must be considered at the same time. Over the past 30 years, with globalization, each company has freely established an optimal supply chain across the border, but recently it needs to be modified. This is not only automobiles but also the supply chain of batteries, a core component of EVs, is under pressure to localize. Automobile exports are also facing a new phase.

References

[1] Kitajima H, Yamada S, Tomita H, et al. An Architecture for Cyber Business Community Platform in Business-to-Business Commerce and Clooaboration[J]. IEEJ Transactions on Electronics, Information and Systems, 2002, 122(5): 767-772.
[2] Dyba W. Hybrid and electric cars: Rare novelty for elites or a future ubiquitous good?[M]//The Economic Geography of the Car Market. Routledge, 2022: 127-158.
[3] Lee B H. The political economics of industrial development in the Korean automotive sector[J]. International Journal of Automotive Technology and Management, 2011, 11(2): 137-151.
[4] Moriarty P, Honnery D. Slower, smaller and lighter urban cars[J]. Proceedings of the Institution of Mechanical Engineers, Part D: Journal of Automobile Engineering, 1999, 213(1): 19-26.
[5] Aguilera R V. Directorship interlocks in comparative perspective: The case of Spain[J]. European sociological review, 1998, 14(4): 319-342.
[6] Wong, E. Y. C., Ho, D. C. K., So, S., Tsang, C. W., & Chan, E. M. H. Life cycle assessment of electric vehicles and hydrogen fuel cell vehicles using the greet model—A comparative study[J]. Sustainability, 2021. 13(9), 4872.
[7] Ikenoyama Y, Yoshio T, Tokura J, et al. Artificial intelligence diagnostic system predicts multiple Lugol-voiding lesions in the esophagus and patients at high risk for esophageal squamous cell carcinoma[J]. Endoscopy, 2021, 53(11): 1105-1113.
[8] Japanese Automobile Manufacturers Association, Japanese automobile production trend, 2023
[9] Honda Motor Co.,Ltd., Settlement of Honda Motor Co.,Ltd. 2023
[10] Toyota Motor Corporation, fiscal 2023 data. 2023