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TESLA, INC.: THE STRATEGIC PARTNERSHIP FOR A NEW GIGAFACTORY IN CHINA[[1]](#endnote-1)

Wiboon Kittilaksanawong and Viktor Johann Winkler wrote this case solely to provide material for class discussion. The authors do not intend to illustrate either effective or ineffective handling of a managerial situation. The authors may have disguised certain names and other identifying information to protect confidentiality.

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Tesla could in the future launch full-fledged production in China—and we could produce jointly. Though Elon’s comments are unpredictable, we will continue to monitor Tesla’s operations to ensure no chaos there and will work in step with the company.[[2]](#endnote-2)

Kazuhiro Tsuga, president and chief executive officer (CEO) of Panasonic Corporation

In October 2018, Tesla, Inc. (Tesla), an American automotive and energy company, received an approval from the Shanghai government to acquire a plot of land to build a new electric-vehicle (EV) factory. The factory was planned to produce the first cars within three years, with an initial annual capacity of 250,000 vehicles.[[3]](#endnote-3) Discussions leading to the deal began in July 2018 in response to the rise of the Chinese EV market and the additional tariffs imposed on imported vehicles by the Chinese government during the 2018 trade war with the United States.[[4]](#endnote-4) In 2013, Tesla partnered with Panasonic Corporation (Panasonic), the consumer electronics company and world leader in battery technology, to build “Gigafactory 1” in Nevada, United States, to manufacture batteries—the most critical component in electric vehicles[[5]](#endnote-5)—and this partnership resulted in significant mutual benefits.[[6]](#endnote-6)

Panasonic hoped to launch full-fledged battery production in China in partnership with Tesla but first wanted Tesla to give priority to building additional capacity at Gigafactory 1.[[7]](#endnote-7) Because there was no obligation for either company to not collaborate with other companies,[[8]](#endnote-8) Tesla and Panasonic could each be worried that the other would collaborate with a third company, which would threaten their respective markets and large investments in Gigafactory 1. In fact, Tesla announced that it was considering partnership with several battery cell suppliers for its first overseas factory in China, and Panasonic was also considering collaboration with other battery suppliers and automakers to strengthen its competitive position in the country.[[9]](#endnote-9)

Management at Tesla had many decisions to make and questions to answer for the near future: What should be Tesla’s growth strategy in China, the world’s largest automotive market? Could Tesla establish a wholly-owned subsidiary in China on its own? Should Tesla continue its partnership with Panasonic in China or should it look for other Chinese or non-Chinese suppliers or partners? Could Tesla still be successful globally if it were not successful in China?

TESLA AND ITS DEVELOPMENT

History

Tesla was founded in 2003 by Martin Eberhard and Marc Tarpenning with the vision to produce fully electric sports cars designed to offer performance, aesthetics, and sex appeal. Within a short history of 15 years, the company had mastered many challenges and experienced soaring growth. Although the impressive growth had not resulted in significant profits, by 2018 Tesla had managed to become one of the most valuable car companies in the world with a market capitalization of about US$59 billion[[10]](#endnote-10) and approximately 46,000 employees.[[11]](#endnote-11)

Elon Musk joined the company in 2004 as chairman, and took a decisive role in the design and development of the Tesla Roadster, a battery-powered sports car that was introduced to the public in July 2006. After many production delays and financial troubles, the board of directors dismissed the two founders, and Musk took over as CEO in October 2008. At that time, Tesla was producing less than 200 Roadsters, filling a niche in an industry that produced several million vehicles per year.[[12]](#endnote-12) Tesla was facing serious liquidity problems with cash reserves reaching a critical level during the financial crisis of 2008, but the company eventually managed to secure financing to keep its business going.[[13]](#endnote-13)

Beginning of the Turnaround

In 2010, several events turned out to be in favour of Tesla’s growth. First, Daimler AG (Daimler), a German multinational automotive company, bought a 10-per-cent stake in Tesla for $50 million, while also providing the company with engineering supports and parts for the its planned new Model S. Meanwhile, Tesla continued to provide battery packs and battery integration and management services for Daimler’s smart electric cars.[[14]](#endnote-14) Second, the U.S. federal government granted Tesla a loan of $465 million to produce and market its Model S. Third, Toyota Motor Corporation (Toyota), due to the financial crisis, sold its production facilities—with a capacity of 500,000 vehicles a year—to Tesla, which then shifted its production sites from Lotus in England to Fremont in California.[[15]](#endnote-15) Fourth, Tesla announced its initial public offering (IPO), while establishing an agreement with Toyota to jointly develop EVs. Toyota also purchased $50 million worth of Tesla stocks at the IPO, even though Tesla had increasingly accumulated losses of $154.3 million, compared to $55.7 million in 2009.[[16]](#endnote-16)

Tesla’s success continued in 2012 with the delivery of the Model S; Tesla reported the first quarterly profit in 2013 of $11.2 million.[[17]](#endnote-17) Tesla then unveiled a prototype of the Model X, a sport-utility vehicle (SUV) built on the platform of the Model S. The company also announced the Model 3—an affordable car to serve the mass market. It also planned to introduce superchargers, which would allow a car to replenish 50 per cent of its batteries in 30 minutes, along with the accompanying charging network to reduce the owner’s “range anxiety.”[[18]](#endnote-18) Tesla also ventured into the stationary energy field by introducing solar panels and home batteries (e.g., the “Powerwall”).[[19]](#endnote-19) In 2017, the company introduced the Tesla Semi, an all-electric battery-powered truck.[[20]](#endnote-20)

Batteries were the most critical component in all battery-powered vehicles. Since 2013, Tesla partnered with Panasonic, the consumer electronics company and a world leader in battery technology, to build Tesla’s Gigafactory 1 in Nevada, and then Gigafactory 2 in Buffalo, New York. In 2018, the company planned to enter the world’s largest automotive market, in China, with a local production site. After building Gigafactory 2 in Buffalo, there was a chance that Tesla might partner with Panasonic again to build Gigafactory 3 in Shanghai.[[21]](#endnote-21) However, Tesla was also considering other local and overseas potential partners.

OVERVIEW OF the ELECTRIC-VEHICLE MARKET

Significant Rise of the Global EV Market

The EV market had grown globally at a compound annual growth rate of 32.57 per cent and was on track to grow from an estimated 1.50 million units in 2018 to an expected 10.79 million units in 2025.[[22]](#endnote-22) This trend was in response to a massive decline of urban air quality, volatile global oil and fuel prices, and the public’s attempts to de-carbonize transportation to reduce greenhouse gas emissions. Countries in Asia Pacific, especially China, were the largest markets for EVs. The alarming levels of pollution in these countries had prompted their governments to provide incentives to promote the sales of EVs.[[23]](#endnote-23) Globally, governmental subsidies, grants, and tax rebates contributed to the EV market’s growth, as did improved charging infrastructures, increased EV battery range, and reduced battery costs.[[24]](#endnote-24)

In 2017, the total number of EVs in circulation worldwide exceeded 3 million, an increase of 50 per cent from 2016, with the United States, Europe, and China consuming approximately 0.76, 0.82, and 1.23 million vehicles, respectively. The number of new vehicles sold around the world—both battery-powered and plug-in hybrid types—was over 1 million. China had the largest number of sales at 579,000 vehicles, while the second largest market—American customers—bought 198,350 vehicles (see Exhibit 1). The market share of EVs in the highly competitive Chinese market was around 2.2 per cent, compared to 1.2 per cent of the U.S. market. Norway had the most impressive market share of 39 per cent, with sales of 62,260 vehicles. The sales figures in emerging economies like India and Brazil, where road and electrical infrastructure still needed further improvement, were only 2,000 and 360 vehicles respectively.[[25]](#endnote-25)

Importance of Lithium-Ion Batteries for the EV Industry

Batteries accounted for over one-third of the total vehicle price. Sourcing the right suppliers was therefore crucial for vehicle manufacturers, and the market for lithium-ion batteries was expected to grow strongly to $50 billion in 2020.[[26]](#endnote-26) In 2018, the major lithium-ion battery makers were Panasonic, Contemporary Amperex Technology Co. Limited (CATL), BYD Auto Co., Ltd. (BYD), LG Chem Ltd. (LG Chem), and Samsung Group (Samsung). These makers held over 60 per cent of the global market share (see Exhibit 5).[[27]](#endnote-27)

Primarily located in Asia, these manufacturers created an oligopolistic industry structure with a relatively high bargaining power toward vehicle manufacturers. To reduce its dependency on battery makers, in 2014 Tesla, in partnership with Panasonic, began the construction in Nevada of Gigafactory 1—the world’s largest production plant for lithium-ion batteries. This factory, expected to be completed in 2020, would eventually cost Tesla around $5 billion. Tesla estimated that this plant would reduce the battery price by roughly 30 per cent by using economies of scale and having the production plant on its doorstep.[[28]](#endnote-28) Through the $2.6-billion acquisition of SolarCity Corporation (SolarCity) in 2016, the companies built Gigafactory 2 in Buffalo to produce photovoltaic components.

TESLA’S BUSINESS MODEL

The Sustainable Solutions for the World’s Transport and Energy

Tesla’s business model was different from that of traditional car manufacturers (see Exhibit 2). The company did not set goals of producing high-end EVs for the affluent to make money and move up in the business rankings. Instead, its value proposition was to offer sustainable solutions for the world’s transport and energy needs.[[29]](#endnote-29) The initial target customers were in the premium segment, and the company planned to make its cars more affordable in the future. In 2014, Tesla’s typical customers lived in California and earned more than $100,000 a year.[[30]](#endnote-30) However, its Model S and Model 3, introduced respectively in 2012 and 2017, were designed to be affordable cars for the mass market.[[31]](#endnote-31) To keep this value proposition, Tesla had established strategic partnerships in various sectors.

Growth through Strategic Partnerships

In 2010, Tesla acquired Daimler as a shareholder and strategic partner with whom it exchanged knowledge in research and development (R&D), production processes, supply-chain management, and battery technologies. Tesla also partnered with Toyota on the development and production of Toyota’s EVs, and Toyota aimed to learn from Tesla’s decision-making and management style.[[32]](#endnote-32) Tesla established partnerships with mobile communications operators, such as AT&T Inc. for installing wireless connections in its cars to enable machine-to-machine communications for safety diagnostics, as well as for remote monitoring and repair.[[33]](#endnote-33) Tesla collaborated with Nvidia Corporation early during the development of its Model S in 2012—all Tesla’s vehicles, including the Model S, Model X, and Model 3 were equipped with Nvidia’s supercomputer, which could provide full self-driving capability.[[34]](#endnote-34)

In the energy sector, Tesla established strong partnerships with Panasonic and SolarCity. Panasonic became Tesla’s shareholder in 2010 when it invested $30 million in the company.[[35]](#endnote-35) Tesla partnered with SolarCity, an active enterprise in the solar energy field, to exploit its battery know-how to develop a complete off-the-grid kit for storing solar power.[[36]](#endnote-36) This backward integration would enable Tesla to become more than just a car manufacturer. The close collaboration with SolarCity, and the eventual acquisition of the company in 2016, allowed Tesla to diversify into solar energy services. In 2015, Tesla announced the release of the Powerwall—an energy storage unit targeting niche households that already had a solar panel—to store surplus energy that could be used when a home’s solar panel was not producing enough energy.[[37]](#endnote-37) Financial services and sales or leasing of the Powerwalls were also added to Tesla’s revenue model.[[38]](#endnote-38)

Key Resources, Activities, and Revenue Sources

Some of Tesla’s strategic resources were its patents, which included expertise in software and battery technology. The charging infrastructure for its vehicles, plus their energy management and storage, were also counted among Tesla’s strategic assets.[[39]](#endnote-39) Located in Palo Alto, California, a part of the Silicon Valley, Tesla could attract highly qualified employees, which were its key human resource. Musk was also regarded as a key resource. By using Twitter for marketing activities, Musk had made Tesla’s overall business highly dependent on him.[[40]](#endnote-40)

The biggest change in Tesla’s key resources was the transfer of all of its patents to become open-source platforms in 2014. Tesla believed that technology leadership was not defined by patents; rather, that they were small protection against a determined competitor.[[41]](#endnote-41) Tesla applied the open-source philosophy to its patents, arguing that it would strengthen, rather than diminish, its competitive position. It might be argued that Tesla intended its patents to become industry standards for networks of charging infrastructures—to be used by its customers and competitors. The wide adoption of such standards could help Tesla sell more of its cars and other innovative products, and could become the foundation that would support its future business models.[[42]](#endnote-42)

Tesla’s three key activities and main revenue sources were R&D, sales and service activities of its cars and energy storage products, and its charging infrastructure. [[43]](#endnote-43)

GROWTH STRATEGY IN CHINA

Attempts to Enter the World’s Largest EV Market

Tesla began to enter the Chinese market in 2014 and 2015, but failed to gain traction. In 2016, however, its sales in China exceeded $1 billion—three times more than 2015 sales. In 2017, the company failed to maintain this growth rate, but still doubled its sales to surpass $2 billion.[[44]](#endnote-44) China was the largest automotive market in the world and the fastest growing EV market as of 2016 (see Exhibit 3). The market potential was attributed to the rise of a middle class—people who were willing and able to spend on innovative and sustainable cars.[[45]](#endnote-45) Importantly, the Chinese government offered a substantial subsidy for electric cars that was worth up to $15,000 per vehicle in 2016 (see Exhibit 4).[[46]](#endnote-46)

To fully penetrate the Chinese market, Tesla decided to establish a manufacturing plant in Shanghai to sell cars directly, without having to ship them from the United States.[[47]](#endnote-47) Tesla could significantly leverage China’s lower labour costs and proximity to rare minerals—especially lithium—that were required to build the batteries. While markets for EV batteries were predominantly located in Europe, the United States, and Japan, an increasing shift toward China was predicted for the near future. These location advantages would lower Tesla’s production costs, allowing the company to sell its cars at a more competitive price in the Chinese market. The China location would also lower the risks and expenses of shipping components by air, especially flammable and heavy batteries from the United States.[[48]](#endnote-48)

A more recent aspect, which influenced Tesla to make the relocation decision, was the ongoing trade war between the United States and China. The Chinese market contributed 17 per cent to Tesla’s revenue in 2017. In response to the trade war, which had raised the tariff on imported American cars, Tesla had to raise the prices of its cars in the Chinese market by an average of $20,000 to maintain its profit margin. An additional tariff of 25 per cent on imported American products imposed by the Chinese government could be bypassed if Tesla produced the cars in China.[[49]](#endnote-49)

Construction of the Shanghai Gigafactory 3

In July 2018, Tesla announced a deal with Chinese authorities to build the battery manufacturing plant—Gigafactory 3—in Shanghai to accelerate production and to avoid increasingly expensive import tariffs. The government approved the acquisition of an 864,885-square metre plot in Shanghai’s Lingang area, where several auto manufacturers with foreign ties had facilities. In March 2019, the Chinese authority also approved that part of the production line would begin operation by the end of the year. Tesla was advancing its plan to produce around 500,000 vehicles per year for Chinese customers by 2022–23, which would double the size of global electric car manufacturing.[[50]](#endnote-50)

In March 2019, Musk confirmed that Tesla would also produce battery cells in the Chinese factory, which had not been included in his initial plans for China, thereby returning to the goal of producing everything at the same place in a “one-stop shop.” Tesla manufactured its lithium-ion batteries in Nevada and its vehicles in Fremont, California. According to Musk, “Things are moving fast. This will actually be, once complete, the equivalent of our Fremont factory plus our Nevada battery Gigafactory combined. It’s integrating the two, which kind of make sense.”[[51]](#endnote-51) The new factory was expected to cost around $5 billion. Meanwhile, Tesla secured as much as $521 million in loans from Chinese banks, bringing the carmaker a step closer to producing the Model 3 sedans at its first overseas plant.[[52]](#endnote-52)

STRATEGIC PARTNERSHIP WITH PANASONIC

Synergistic Benefits

Panasonic was engaged in the development of electronics technologies and solutions for the consumer electronics, housing, automotive, enterprise solutions, and device industries. The automotive batteries were made in a three-pillar global production system in Japan, the United States, and China. In 2010, the company began mass production of lithium-ion batteries for hybrid EV automobiles. It had developed strong partnerships with Tesla and Toyota, and focused sales in the high-growth Chinese market. In March 2018, the company commenced mass production of automotive lithium-ion batteries at its first plant in Dalian, China. In 2018, with about 274,000 employees, Panasonic achieved revenues of $75 billion, in which Japan, China, Asia, Europe, and the Americas contributed 47, 12, 14, 10, and 17 per cent, respectively.[[53]](#endnote-53)

In 2014, Tesla and Panasonic signed an agreement to build a $5 billion lithium-ion battery manufacturing plant, known as the Gigafactory 1, in Nevada. This factory would produce cells, modules, and packs for Tesla’s vehicles and for the stationary storage market to reduce cell costs, and to produce more lithium-ion batteries annually.[[54]](#endnote-54) This partnership continued in building the next Gigafactory 2 in New York to manufacture solar cells, following the $2.6-billion acquisition of SolarCity in 2016.[[55]](#endnote-55) Both Gigafactories were Tesla’s backward integration to secure the critical supply of batteries and alternative energies.[[56]](#endnote-56)

Tesla could also benefit from its supply contract with Panasonic, which reduced uncertainties in the supply of batteries. The partnership also provided the opportunity to drive down the unit price of batteries by 30 per cent by 2020.[[57]](#endnote-57) Panasonic would not have committed to such high investments if it did not expect sales and profitability to be driven by battery sales through scale economies. As expected, Panasonic’s operating profits had significantly increased by 11.7 per cent to $3.87 billion in fiscal year 2018.[[58]](#endnote-58) Other potential synergies included additional visibility and market reach for Panasonic in the United States, and for Tesla in Asia through their strong brands in their respective markets.[[59]](#endnote-59)

Panasonic hoped to launch full-fledged production in China together with Tesla; however, that agreement was not yet confirmed.[[60]](#endnote-60) The continued collaboration would make sense because Tesla and Panasonic worked together before and their technologies were already customized to be compatible. This prior experience would reduce the lead time and costs of the cars when production was finally ramped up in China. Panasonic also had a strong interest in having a production facility in China to leverage the country’s lower labour cost and weaker currency. Japanese companies were, in fact, struggling with their sales figures due to the strong performance of the yen.[[61]](#endnote-61)

Uncertainty of Partnership in China

In November 2018, Musk announced that Tesla was considering several battery cell suppliers for the factory in China.[[62]](#endnote-62) In January 2019, Tesla signed a preliminary agreement with state-owned Lishen Battery just days after Tesla began building a factory in Shanghai with an aggressive production goal. It was unclear, however, what the firms had agreed to.[[63]](#endnote-63) In March 2019, Tesla was reportedly discussing a partnering potential with CATL for its battery supply.[[64]](#endnote-64) The partnership between Tesla and Panasonic seemed to be diverging in the Chinese Gigafactory 3 project.

In December 2018, Panasonic joined with LG Chem to add more production capacity for EV batteries in China. This collaboration was in response to the Chinese government loosening of its restrictions to attract foreign investments and to promote new-energy vehicles as the country’s environmental problems worsened.[[65]](#endnote-65) In January 2019, in order to compete more effectively on cost and scale with rising Chinese players, Panasonic planned to establish a joint venture to produce batteries with Toyota in 2020, and also planned to move some plants in Japan and China to this new facility. However, the U.S. plant with which Panasonic had partnered with Tesla would not be involved in the Toyota deal. The new venture aimed to supply batteries to Mazda Motor Corporation—Toyota’s partner on electric car technology—Toyota subsidiary Daihatsu Motor Co., Ltd., and Subaru Corporation. The venture would also encourage Honda Motor Company, Ltd., which used Panasonic batteries in its hybrid vehicles, to adopt the new cells.[[66]](#endnote-66)

OTHER POTENTIAL PARTNERS

It would be convenient for Tesla to continue collaborating with Panasonic to build Gigafactory 3. However, another player among the top four makers—Panasonic, CATL, BYD, and LG Chem—might provide more partnering advantages in some other aspects (see Exhibit 5). The Chinese CATL and BYD and the South Korean LG Chem companies were the top battery suppliers with sales revenues totalling $4.4 billion, $17.7 billion, and $25.6 billion respectively in 2018, and the number of employees amounting to 14,000, 220,000, and 18,000 respectively. CATL and BYD had respectively 98 per cent and 87 per cent of total sales in their home Chinese market, while LG Chem had 32, 33, and 20 per cent, respectively, in its home South Korean market, China, and other Asian markets.[[67]](#endnote-67)

Chemistry of the Batteries

Tesla claimed the highest energy density and low cobalt for its lithium-ion batteries, which were co-produced with Panasonic. BYD and CATL could offer a lithium-iron phosphate battery that did not contain cobalt.[[68]](#endnote-68) Lithium-iron phosphate batteries had lower energy density but were safer, especially in terms of flammability, while offering a cycle life similar to those batteries with cobalt. Cobalt was a very rare earth, primarily found in the unstable Democratic Republic of Congo, which in turn, created supply uncertainties. Lithium-iron phosphate batteries could therefore be a viable option for Tesla, especially to prevent new scandals about spontaneously burning cars.[[69]](#endnote-69) CATL and LG Chem were also working to lower cobalt content in their batteries (see Exhibit 5).[[70]](#endnote-70)

Lithium, as the main component of batteries, was a critical cost driver. Although lithium was mostly used in lithium-ion batteries, it was also widely used in the production of glass, grease, air treatments, polymers, pharmacy drugs, metals, and other products. The price of lithium had continued to rise over the years, which increased production costs of batteries (see Exhibits 6 and 7), and access to a local reserve of lithium was therefore very valuable. BYD seemed to be a potential partner for Tesla in China because of its location advantage—available access to 80 per cent of the local lithium reserves in China’s Xining city.[[71]](#endnote-71)

Regulations and Incentives from the Chinese Government

To stimulate the transfer of new, more advanced technologies from abroad, the Chinese government required that for foreign companies entering the automotive industry partner with a local company, the foreign equity be capped at 50 per cent. Although either CATL or BYD could be a good candidate, Tesla could be subject to the risks of losing its strategic intellectual-based assets to these local companies, due to the joint venturing and partial control.[[72]](#endnote-72) Given the continuing desire of the Chinese government to stimulate the use of renewable energy through various regulations and incentives, and given Tesla’s strong technological capability in the field, Tesla would need to negotiate with the government to establish a wholly-owned production facility in the country.

Since 2012, the Chinese government had invested over $10 billion into the EV battery industry, which resulted in a significant rise in the number of EV manufacturers. This support would end in 2020, however, as the government sought to encourage companies to become more competitive. BYD and CATL would have to be careful about the prospect of competing without subsidies with foreign rivals like Panasonic and LG Chem.[[73]](#endnote-73) In response to the soaring demand for new-energy vehicles, to gain a larger market share, and to expand its production capacity, BYD planned to spin off its automotive battery division by 2022. Meanwhile, CATL joined forces with many powerful domestic and global automakers that were aiming to reduce the pressure of supplying batteries and expedite the production of new-energy vehicles.[[74]](#endnote-74)

LOOKING FORWARD

Tesla had managed to expand its business successfully through various strategic partnerships with Daimler, Toyota, Nvidia, and Panasonic, as those companies brought in essential technologies and financing. Panasonic had helped Tesla reduce the bargaining power of its battery suppliers, thereby mitigating the inherent risk of supply bottlenecks and excessive production costs. Through this partnership, the unit costs for lithium-ion batteries were expected to be reduced at the Gigafactory 1 in Nevada, thereby giving Tesla the opportunity to significantly increase profit margins.[[75]](#endnote-75) Meanwhile, Panasonic could capitalize on the massive contract volume with Tesla, thereby increasing its operating profits in the battery cell business.

Although this partnership had been very fruitful for both Tesla and Panasonic, Tesla was considering whether to go it alone or to partner with other companies for its expansion in China. The company could also consider continuing its partnership with Panasonic and one or more other companies. Two potential partners seemed to be the Chinese CATL and BYD, which held the second- and third-largest share in the global lithium battery market (see Exhibit 5).[[76]](#endnote-76) Tesla needed to answer several important questions before making a final decision.

What was the overall competitive situation of Tesla and its partnership with Panasonic? How should Tesla and Panasonic strategically manage their partnership to optimize the mutual benefits? How should Tesla overcome challenges in investing in China, the world’s largest automotive market? Which battery suppliers other than Panasonic could be potential partners for Tesla in its direct investments in China? Tesla, as a young start-up company, strove to maintain its leadership as one of the top-selling manufacturers in the established automotive industry as the large incumbents were beginning to make significant investments in the manufacture of EVs and other related sustainable businesses. Overall, could Tesla still be successful globally if it were not successful in China?

Exhibit 1: SALES FIGURES OF ELECTRIC VEHICLES IN SELECTED COUNTRIES IN 2017

|  |  |
| --- | --- |
| **Country** | **Sales Figure (Vehicles)** |
| China | 579,000 |
| United States | 198,350 |
| France | 118,770 |
| Norway | 62,260 |
| Germany | 54,560 |
| Japan | 54,100 |
| United Kingdom | 47,250 |
| Australia | 2,280 |
| India | 2,000 |
| Brazil | 360 |

Note: The number was for both battery electric vehicle (BEV) and plug-in hybrid electric vehicle (PHEV).

Source: Created by the case authors based on Niall McCarthy, “Electric Car Sales Are Surging In China [Infographic],” *Forbes*, June 1, 2018, accessed October 31, 2018, www.forbes.com/sites/niallmccarthy/2018/06/01/electric-car-sales-are-surging-in-china-infographic/.

EXHIBIT 2: TESLA’S BUSINESS MODEL

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |  |  |
|  |  |  | **Value Proposition**  Sustainable solutions for the world’s transport and energy | | |  |  |  |
|  |  |  |  |  |  |  |  |  |
| **Strategic Partnerships**  Cars  - Daimler  - Toyota  Energy  - SolarCity  - Panasonic  Mobile Communications Operators  - AT&T  - Telefonica  - TeliaSonera  Processors  - Nvidia |  |  | **Key Resources**  - Open-source technology and innovation  - Charging Infrastructure  - Energy Management Storage  - Human Resources  - Elon Musk |  | **Key Activities**  - Research and development  - Production  - Sales via online shops  - Servicing  - Providing charging infrastructure |  |  | **Customers**  Cars  - Premium customer segment with earning over $100,000 per year  - Mass Market  Energy Storage  - Niche market  Domestic household who already had a solar panel |
|  |  |  |  |  |  |  |  |  |
|  |  |  | **Revenue Streams**  - Car sales  - Financial services  - Charging infrastructure  - Sales/lease of Powerwall | | |  |  |  |
|  |  |  |  |  |  |  |  |  |

Source: Created by the case authors based on Arieez Dutta, “A Deep Dive into Tesla Business Strategy,” Feedough, July 26, 2017, accessed October 31, 2018, www.feedough.com/tesla-business-strategy-and-business-model/; Erwin Hettich and Günter Müller-Stewens, “Tesla Motors: Business Model Configuration,” University of St. Gallen, 2014, accessed October 31, 2018, www.alexandria.unisg.ch/252556/1/Tesla\_Case\_314-132-1.pdf, 10–11; “Tesla and Nvidia Automotive Partners,” accessed October 31, 2018, www.nvidia.com/en-us/self-driving-cars/partners/tesla/; “Panasonic Invests $30 Million in Tesla: Companies Strengthen Collaborative Relationship,” Tesla, November 3, 2010, accessed October 31, 2018, http://ir.tesla.com/news-releases/news-release-details/panasonic-invests-30-million-tesla-companies-strengthen; Michael Safi, “Tesla Announces Low-Cost Batteries for Homes,” *The Guardian*, May 1, 2015, accessed October 31, 2018, www.theguardian.com/technology/2015/may/01/tesla-announces-low-cost-solar-batteries-elon-musk; Elon Musk, “All Our Patents Are Belong to You,” Tesla, June 12, 2014, accessed October 31, 2018, www.tesla.com/blog/all-our-patent-are-belong-you?redirect=no; Kirsten Korosec, “Tesla Has a New Type of Buyer,” *Fortune*, July 29, 2015, accessed October 31, 2018, http://fortune.com/2015/07/29/tesla-millennials/.

EXHIBIT 3: ATTRACTIVENESS OF the ELECTRIC-VEHICLE MARKET

|  |  |  |
| --- | --- | --- |
| **Best-in-Class** | **High Potentials** | **Hesitators** |
| China | Canada | Brazil |
| United States | France | India |
|  | Germany | Russia |
|  | Japan |  |
|  | Netherlands |  |
|  | Norway |  |
|  | South Korea |  |
|  | Sweden |  |
|  | United Kingdom |  |

Note: Best-in-Class, High Potentials, and Hesitators refer to large and high-growth market, small but high-growth market, and small and low-growth market, respectively.

Source: Created by the case authors based on Andreas Gissler, Christina Raab, Matthias Tix, and Steffen Merk, “Electric Vehicle Market Attractiveness,” Accenture, 2016, accessed November 8, 2018, www.accenture.com/t00010101T000000\_\_w\_\_/nz-en/\_acnmedia/PDF-37/accenture-electric-vehicle-market-attractiveness.pdf, Figure 2.

Exhibit 4: GOVERNMENT SUBSIDIES FOR ELECTRIC CARS IN 2014

|  |  |
| --- | --- |
| **Country** | **Tax Incentive per Car (€)** |
| Norway | 16,910 |
| Denmark | 15,650 |
| China | 7,546 |
| France | 6,500 |
| United Kingdom | 6,022 |
| Japan | 5,976 |
| United States | 5,512 |
| Netherlands | 5,365 |
| Italy | 3,810 |
| Germany | 150 |

Note: € = European euro; US$1 = €.86 on October 1, 2018.

Source: Created by the case authors based on Daniel Delhaes and Simon Book, “Government to Offer Electric Car Subsidies,” Handelsblatt, April 26, 2016, accessed October 30, 2018, https://global.handelsblatt.com/politics/government-to-offer-electric-car-subsidies-504392.

EXHIBIT 5: POTENTIAL PARTNERS FOR TESLA IN CHINA

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Panasonic** | **CATL** | **BYD** | **LG Chem** |
| **Country of origin** | Japan | China | China | South Korea |
| **Global market share (%)** | 21.1 | 14.4 | 11.0 | 10.6 |
| **Technology** | Lithium-ion battery | Lithium-ion battery and lithium iron phosphate battery | Lithium iron phosphate battery | Lithium-ion battery |
| **Properties** | Highest energy density in the market, fast charging time, long range, use of less cobalt, highly inflammable | Lower energy density with less or no cobalt | Lower energy density with no cobalt, safe, stable, environmentally friendly, longer lifetime | Lower energy density with less cobalt, safe, environmentally friendly, good life-time, lower energy density |
| **Familiarity with Tesla** | Yes | No | No | No |
| **Eligibility for joint venturing condition in China** | No | Yes | Yes | No |
| **Access to lithium reserves in China** | No | No, but access to large reserves in Canada | Yes, access to 80 per cent of the reserves | No |

Source: Created by the case authors based on Jason Deign and Julia Pyper, “11 Lithium-Ion Battery Makers that Don’t Need Cobalt,” Greentect Media, July 9, 2018, accessed November 2, 2018, www.greentechmedia.com/articles/read/11-lithium-ion-battery-makers-that-dont-need-cobalt; Tim Dixon, “Chinese Battery Giant CATL to Become #1 EV Battery Producer By 2020?,” CleanTechnica, April 14, 2018, accessed November 5, 2018, https://cleantechnica.com/2018/04/14/chinese-battery-giant-catl-to-become-1-ev-battery-producer/; Fred Lambert, “Tesla Releases Rare Details about Model 3’s Battery Cells, Claims Highest Energy Density and Less Cobalt,” Electrek, May 3, 2018, accessed November 2, 2018, https://electrek.co/2018/05/03/tesla-model-3-battery-cells-rare-data-energy-density-cobalt/; Su-hyun Song, “LG Chem to Raise Low CobaltBattery Sales to 40% Next Year,” *The Korea Herald*, August 27, 2018, accessed November 2, 2018, www.koreaherald.com/view.php?ud=20180827000620; “Global Market Share of Lithium Ion Battery Makers in the 1st Quarter of 2018,” Statista, accessed November 1, 2018, www.statista.com/statistics/235323/lithium-batteries-top-manufacturers/; Shunsuke Tabeta and Soichi Takano, “BYD to Quadruple Car Battery Output with Lithium Site Plants,” *Nikkei Asian Review*, June 28, 2018, accessed November 2, 2018, https://asia.nikkei.com/Spotlight/Electric-cars-in-China/BYD-to-quadruple-car-battery-output-with-lithium-site-plants.

Exhibit 6: LITHIUM PRICE FORECAST FROM 2015–2025 (US$ PER KILOGRAM)

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Year** | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 |
| **Price** | 7.08 | 7.39 | 7.69 | 7.97 | 8.20 | 8.43 | 8.64 | 8.83 | 9.02 | 9.20 | 9.39 |

Note: The price was for 99.5 per cent lithium carbonate.

Source: Created by the case authors based on “Forecast of Annual Price Averages for Lithium Chemicals Worldwide from 2015 to 2025,” Statista, accessed November 2, 2018, www.statista.com/statistics/452028/average-annual-price-projection-for-lithium-chemicals-globally/.

Exhibit 7: LITHIUM MARKET DEMAND BY END USAGE IN 2015

|  |  |
| --- | --- |
| **Industry** | **Demand (%)** |
| Lithium ion battery | 39 |
| Glass | 24 |
| Grease | 12 |
| Air treatment | 4 |
| Polymer | 4 |
| Pharmacy | 5 |
| Metal | 3 |
| Others | 9 |

Source: Created by the case authors based on Matt Bohlsen, “The Lithium Boom—An Analysis of Future Demand Vs. Supply,” Seeking Alpha, June 27, 2016, accessed November 2, 2018, https://seekingalpha.com/article/3984654-lithium-boom-analysis-future-demand-vs-supply.

ENDNOTES

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76. “CATL & BYD Rise to Join World’s Top 3 Battery Makers,” op. cit. [↑](#endnote-ref-76)