

Executive Summary

The world's energy shortage is becoming urgent, and various countries and governments are committed to developing new energy vehicles to face this serious problem. With the trend of electric vehicles (EV) as an opportunity, Tesla has become the world's largest car company, while a once obscure Chinese car company - BYD, successfully transformed into the electric car industry, overtaking Volkswagen and BMW to become the world's third largest car company. Hence, this report used Tesla and BYD as EV precedents and analyzed their path to EV industry success by exploring these two companies' development histories and business strategies.

In the report, the history of the whole EV industry was introduced, supported by a more detailed explanation of product design, industrial manufacturing, and quality control processes in the automotive sector. Furthermore, the paper listed and explained the ten strategic decision areas for EV operations management (OM) concerning the industry missions. EV manufacturers should consider optimizing product design cycles while reducing costs with two main strategies - platformization and intellectualization. Manufacturers widely apply those two product design strategies to reduce cost, shorten the design and research cycle, and simplify EV design and manufacturing.

Detailed research was performed on the OM strategies of Tesla. As a result, it could be concluded that Tesla's manufacturing revolution can be characterized by the use of technologies, including using artificial intelligence (AI) and robots, to create automated factory settings and using large-scale die casting, and additive manufacturing, with bold use of new and innovative ideas for manufacturing. In comparison, as Tesla's products are characterized by standardized mainstream passenger cars, BYD's commercial new energy vehicle business started to revolve around the U.S market in California and the European market, with the Netherlands as the headquarters. In addition, BYD plans to launch a high-end series of models to improve its brand image and sales prices through tonal upgrading. However, the company has faced the challenges of poor brand influence, unclear target market strategies, and low competitiveness in the smart car market.

As the demand for EVs escalates, more tech companies and traditional automotive manufacturers enter the market, and the overall industry tends towards saturation. How to overcome the OM limitations and challenges become decisive for the market players to stay competitive. The microchip shortage, adaptability and scalability of automated factories, material limitations for the production of EVs, and the constant influx of new competitors pose a hindrance to the entire EV industry. Hence manufacturers should focus on shifting their OM strategies to target those issues. Nevertheless, the current situation of tension between China and the U.S might worsen the unstable supply chain of the automotive industry. Both companies significantly impact the global market layout of EV manufacturers, and the tension has posed considerable trade barriers for supplies and sales of EV products. Therefore, it might be an urgent need for manufacturers to develop local supplier resources to prevent supply chain breakdowns in auto parts, such as batteries. While it is expected that the China U.S could be eased gradually in the future, both Chinese and U.S EV companies could mutually benefit from each other and achieve shared prosperity in the global economy and human welfare.