



Tesla: A Successful Entrepreneurship Strategy

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Abstract

This article is about Tesla, Inc., which was founded in 2003 by a group of engineers in Silicon Valley whose objective was to create zero-emission electric cars better than gasoline automobiles and to accelerate the advent of sustainable transport by providing compelling, mass-market electric cars as soon as possible. Tesla is not just an automaker. It is also a technology company with a focus on energy innovation. Its CEO is American's most well-known entrepreneur, Elton Musk.

Introduction

The latest view of climate change and its devastating effect on the environment has scientists, politicians, and the business community worried about the contribution of human activities to the production of greenhouse gases such as the carbon dioxide emitted by cars (*Transportation's Role in Climate Change*, 2016). The Intergovernmental Panel on Climate Change (IPCC), which includes more than 1,300 scientists from the United States and other countries, has forecasted a temperature rise of 2.5 to 10 degrees Fahrenheit over the next century (*The consequences of climate change*, 2016). Furthermore, the spectacular increase in the production of industrial output in China, just like other industrial production centers such as Germany and the USA, has accelerated the depletion of global oil reserves (*The structure of China's oil industry*, 2016). The explosion of industrial output is driven by the attempt to satisfy the voracious consumption and the increasing demand for consumer goods around the world.

Rapid oil depletion has increased the call for renewable and diversified sources of energy given the unsustainability of oil-dependent economic development. Hence, in 2014, a resolution by the UN General Assembly declared 2014-2024 the United Nations Decade of Sustainable Energy for All (*Sustainable development*, 2016). Elton Musk, CEO of Tesla, Inc. (formerly Tesla Motors) believes that in the future solar and wind farms can provide electric power when the sun is not shining and when the wind is not blowing by storing electricity generated when the sun is shining or the wind is blowing in new types of batteries. He is encouraged by market readiness and public policies' willingness to explore alternative sources of energy.

Musk and his team claim that the owner of a small sedan being driven 15,000 miles annually will spend an average of \$6,957 on gasoline (*Driving cost per mile*, 2014). In contrast, the owner of an electric car running the same annual mileage will spend \$540 (Moloughney, 2016). In addition, an electric car's maintenance cost is 35% less than for a gasoline-powered car (Ingram, 2016). It is based on this analysis that electric-powered vehicles became commercially viable.

Directly competing with Tesla is the Chevrolet Bolt. Other potential competing EVs are in development. Currently Tesla has the high-end market to itself. One advantage of EVs over vehicles with gasoline engines is the lack of a drive shaft that makes for a more roomy interior.

South African native Musk, who studied economics and physics in college, is co-founder, CEO, and product architect of Tesla; the founder, CEO and CTO of SpaceX; co-founder and chairman of OpenAI; co-founder of Zip2; and founder of X.com which, after

merging with Confinity, took the name PayPal. (See interview with Musk at <https://www.youtube.com/watch?v=lgKWPdJWuBQ> in which he discusses the need for and advantages of electric vehicles.)

Supply Chain Management Strategy

Tesla's business model is different from that of most automobile manufacturing companies because it owns the entire supply chain from manufacturing to distribution. This strategy is driven by the ultimate goal of lowering manufacturing costs and costs of goods sold, thereby assuring the business' sustainability. Under the leadership of Musk, the company unveiled its Model S following its very first model, the Roadster. Tesla is now in the process of producing its latest models, Model X and Model 3, which, unlike its previous models, target the mass market for electric vehicles. It is worth noting that Tesla's supply chain management strategy focuses on a long-term growth strategy involving production, inventory management, and distribution.

Growth Strategy

Tesla's growth strategy is mostly driven by the anticipated high demand for Model 3. Hence, research and development costs rose to \$81.5 million from \$54.9 million a year ago (Ramsey, 2016). Following the R&D budget increase of 48% from the first quarter of 2013 to the first quarter of 2014, the company planned to grow R&D expenses for the second quarter by 30% from the first quarter (Ramsey, 2016). The focus on research and development in the company's growth strategy involved the modification of the existing assembly line to handle the production of two different models: Model S and Model X (Crawford, 2016). In addition, its plant modification involved the development of advanced computer programs for assembly robots (Crawford, 2016). The company's growth strategy was to increase production of the model S and to unveil its Model X in 2015 and Model 3 in 2017. This was in line with its production strategy and initiatives. (See a documentary about Tesla at <https://www.youtube.com/watch?v=ncw4ISEU5ik> .)

Production

Musk has promised to dramatically increase car production, expand Tesla's charging infrastructure to accommodate increasing the number of tesla cars on the road, and conquer self-driving vehicles by 2020 (Thompson, 2016). In addition to making electric cars, Musk also wants the company to produce the energy that power his cars. (See how Tesla manufactures cars at https://www.youtube.com/watch?v=8_lfxPI5ObM .)

Production level:

The company has expanded its manufacturing tentacles into Tilburg, the Netherlands, where it has an assembly facility, and Lathrop, California, where it has a specialized production plant (*About Tesla*, 2016). In November 2015 during the Baron Funds investor conference Musk suggested that Tesla is on the way to become larger than auto giants like General Motors, Volkswagen, and Toyota (Thompson, 2016).

Charging infrastructure:

With the ambition to have close to 500,000 Tesla cars on the road by 2018 (DeBord,2016), Musk aims to expand Tesla's supercharging network which currently offers electric filling stations that are capable of charging a Tesla vehicle enough to give it almost 200 miles of range in just 30 minutes (Thompson, 2016). During the Model 3 unveiling in March, Musk suggested that Tesla would double the number of its superchargers worldwide from some 3,600 to more than 7,000 by 2018 (Thompson, 2016). Currently Tesla provides the only electric cars with an official range of more than 200 miles per charge.) Tesla's supercharger network gives it a competitive advantage over actual and potential competitors.

Autonomous driving:

Musk promises that his cars will be autonomous by 2018 (Thompson, 2016). The company rolled out its semi-autonomous autopilot system at the end of October 2016. Musk suggests a two-year timeline to achieve "level 4" autonomy in Tesla's cars and also adds that, while the technology may be there, the user may not get full access to it because it is unlikely regulators will have laws in place by the time Tesla's autonomous cars are ready (Thompson, 2016).

Battery production:

One significant source of cost for Tesla cars is the lithium ion battery packs. Tesla and key strategic partners including Panasonic have begun construction of a Gigafactory in Nevada that will supply low cost lithium ion battery packs and facilitate the production of a more affordable vehicle, Model 3 (*About Tesla*, 2016). By 2020, the Gigafactory is expected to achieve an output of battery packs that can be used not only for cars but also in stationary storage, helping to improve the reliability of the electrical grid, reduce energy costs for businesses and residences, and provide a backup supply of power (*About Tesla*,

2016). Tesla estimates the factory will help reduce the cost of its batteries by as much as 30% once it is fully operational in 2020 (Thompson, 2016). While the record for hypermiling in a Tesla is almost 500 miles, the official range of Tesla's Model S is about 265 miles per charge, according to ratings by the Environmental Protection Agency (Thompson, 2016). Musk claims that by 2020 Tesla will likely be able to make its cars go as far as 745 miles per charge (Thompson, 2016).

Musk believes that it is likely that in the future electric vehicles will depend on super-capacitors, rather than on batteries. Like batteries, super-capacitors store energy, but they would be much more efficient at storing the massive amounts of energy needed for non-mechanical braking and accelerating. (Electric cars accelerate more rapidly than do gasoline-powered cars.)

Inventory Management

Tesla's success in reducing costs was to minimize risk by keeping very little inventory. Such inventory cost reduction was achieved by batch production after prepaid orders were obtained. Its order-production strategy offers a few advantages. First, customers waiting for their cars to be delivered can choose to further customize their cars. Second, keeping little inventory allows the company to minimize the amount of capital and risk tied up with storing excess inventory (Tao, 2016). Moreover, saving from avoiding excess inventory can be redirected toward R&D to grow the company. Better inventory management contributed over \$30 million in cash and reduced logistic costs in the quarter ended March 31, 2013 (Tao, 2016). Furthermore, sales for this quarter were up to \$526 million, and direct savings from better inventory management was around 5.3% (Tao, 2016).

Distribution

Tesla chose to reject the traditional franchise-dealer sales model for the following reasons: The company argued that selling to customers prevents unnecessary additional costs. A report, published by Goldman Sachs, an investment bank, estimated that the savings for customers in the direct-to-consumer model is around \$2,225 for a \$26,000 vehicle, or an 8.6% savings (Tao, 2016). Customers can view the cars in the showrooms and complete orders at the showroom or online or on the phone and have the cars delivered to them. Even though the wait time might not be always desirable, Tesla's revenue increase is reflective of customers' willingness to trade a few months of waiting time for an affordable and reliable electrical car. The company's current success can be attributed to its nonconventional supply chain management strategy.

Tesla's Successes

Tesla's engineers first designed a powertrain for a sports car named the Roadster. Launched in 2008, the 2,400 Roadsters sold were on the road in more than 30 countries (*About Tesla*, 2016). In 2012, Tesla launched Model S, and it was named Motor Trend's 2013 Car of the Year ("About Tesla", 2016). The delivery of Model S generated a revenue increase of 11% to \$618 million in the first quarter of 2014 compared to the first quarter of 2013 (*Tesla's financial statements show the company's rapid growth*, 2014). As a result of controlling costs through better supply chain management, Tesla had a 25% gross profit margin. This is almost twice that of GM, which had a 13% gross profit margin in 2013 (*Tesla's financial statements show the company's rapid growth*, 2014). The encouraging revenue growth and the performance rating of Tesla's Model S certainly explain the production forecast of 55,000 cars: Model S (35,000) and Model X (20,000).

Tesla posted a quarterly profit in the third quarter of 2016 of \$22 million. This was the second time it posted a quarterly profit. It produced 80,000 cars in 2016) Driving its 2016 third quarter profit was improved sales of the Model S sedan and Model X sport-utility vehicle, reduced spending, and selling pollution tax credits to other automobile manufacturers. The price of the new version of the model S was \$66,000. Purchasers of full electric or plug-in hybrid cars may be eligible to receive up to a \$7,500 federal tax credit. At \$2.3 billion, 2016 revenue was substantially above the previous year's \$936.8 million.

The *Financial Times* reports that "As of Mar 18, 2017, the consensus forecast amongst 23 polled investment analysts covering Tesla Inc. advises investors to hold their position in the company. This has been the consensus forecast since the sentiment of investment analysts deteriorated on Aug 14, 2015 (consensus recommendation, 2017).

Tesla's Challenges

It's difficult to produce automobiles when you have never done so before. A unique challenge for Tesla is vertical integration--owning and operating everything. Despite the many challenges his company faces, Musk asserts that his EVs will soon be found in millennials' driveways as they switch from apartments to home ownership.

Tesla's fund raising initiatives to gather capital to upgrade the production plant and get it ready for the production forecast of 55,000 cars in 2015 proved to be more challenging than anticipated. The initial plan to sell \$500 million of stock was later revised to \$640 million as feasibility costs were increasing and cash reserve decreased (Crawford, 2016). Furthermore, the heavy task of reprogramming the highly computerized assembly robots needed more time for completion than planned (Young, 2015). As a result of the need for additional capital and time to get the production plant ready, delivery to customers had to be delayed for a few months. Consequently, Tesla announced the reduction of its production forecast for 2015 from 55,000 to 50,000 (Young, 2015). This reduction in production and delivery delay shook investors' confidence and caused the stock price to drop 12% (Crawford, 2016).

Musk has admitted he spent the first part of 2016 in production hell (DeBord, 2017). Fortunately J. D. Powers found that Tesla's quality problems with its expensive luxury cars had not tarnished its brand image and sales because their owners view themselves as pioneers who enjoy being early adopters of new technology (Murtha, 2017).

Conclusion

Tesla's nonconventional supply chain management strategy to cut operation costs and successfully deliver a reliable and affordable product rests on a short term goal of product acceptance and a long term strategy for growth and profitability. The company's current challenges of funding and the technological feasibility of mass production is a reminder that flooding the roads in America and around the globe with electric cars at affordable prices is a daunting task that explains the failure of previous attempts. In 2006, Musk asserted that "The strategy of Tesla is to enter at the high end of the market, where customers are prepared to pay a premium, and then drive down market as fast as possible to higher unit volume and lower prices with each successive model" (Musk, 2006). Despite Tesla's present challenges, the company's current record of 400,000 reservations for the model 3 is not only a testament that Tesla cars have passed the test of product acceptance, but is also a demonstration of the viability of Musk's strategy since it was put in place in 2006.

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