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Can Innovation in Sustainability be a Sustainable Competitive Advantage?

Mohd. Azmi Khan [1] and Dr. Salma Ahmed [2]
[1] Research Scholar,[2] Faculty, Department of Business Administration,
Faculty of Management Studies & Research, Aligarh Muslim University, Aligarh-202002

Abstract

The car culture, that is the aspiration to own a car, is spreading at a rapid pace across the world. The number of car owners are increasing, be it in developed countries like the USA, the Europe, or even in emerging economies like India and China. The automobile industry has also witnessed changes all across the world. And what is fascinating to note is that these changes can be said to be similar or homogeneous with respect to demand of customer and the increasing desire for newer models, which is on the rise. The changes in demand have been for automotive and autonomous driving, electrification, connectivity and infotainment. And most importantly, globally there is a pressure for environmental requirements. Keeping these changes in perspective, Tesla Inc. (formerly Tesla Motors) has launched the first luxury electric car, the Roadster, in 2008. It received immense popularity and acceptance as public at large has become conscious of sustainability and climate change. However, the response has been from the elite class. It now wants to target the mass market. Being a new player in the automobile industry, with small capital base, a weak supply chain, it faces many challenges and how far it is able to fulfill its vision as a technologically innovative automobile company remains to be seen. Tesla Inc., the company has challenges in expanding the business despite being a market leader in electronic vehicle. The aim of the study is to analyze the transformation led by Tesla in the automobile industry in spite being younger than older market players. Further SWOT analysis of company's present situation would be needed and in order to recommend the ways to mitigate weaknesses and threats to business, Tesla needs to frame its future strategy to remain in top and gain competitive advantage. That would be interesting to see whether **Tesla, a small-time player would be able to ward off competitors and retain the competitive advantage that it now enjoys.**

Keywords: Electric car, Sustainability, Automobile, Innovation, Supply Chain
JEL classification: M and O

**Corresponding Author*: Tel.: +91 999 756 42 10, +91 963 431 33 43
E-mail address: [1]azmikhan2011@gmail.com, [2]salmaahmed6@rediffmail.com

Innovation refers to the process of translating an idea or invention into a good or service that creates value or for which customers will pay. To be called innovation, an idea must be replicable at an economical cost and must satisfy a specific need. Innovation involves deliberate application of information, imagination and initiative in deriving greater or different values from resources, and includes all processes by which new ideas are generated and converted into useful products. Innovation can be classified into two dimensions based on 'Technology' and 'Market', which would result in the following four types of innovation:

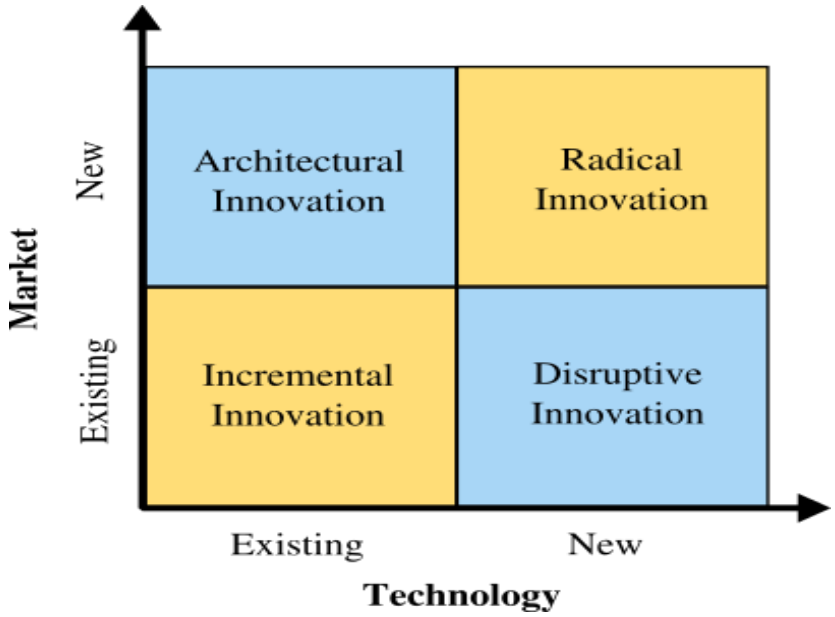

Figure-I

Incremental Innovation is the most common form of innovation. It utilizes a company's existing technology and increases value to the customer. It involves bringing a change in product features, or change in design; but changes within an existing market. Therefore, the technology and the market remain the same. Most companies engage in incremental innovation. Examples would include adding new features to existing products or services.

Architectural Innovation applies the lessons, skills and overall technology within a different market. This innovation creates new customers. However, the risk involved in architectural innovation is low as it uses a proven technology.

Radical Innovation is a kind of innovation that uses a new technology and creates a new market. It gives birth to new industries (or swallows existing ones) and involves creating revolutionary technology.

Disruptive Innovation is a kind of innovation that uses a new technology or processes to an existing market. The resultant product using the new technology is generally more expensive, as

is in case of Tesla. Tesla is a new product using new technology in an existing market that of automobile market. Therefore, Tesla falls in the category of disruptive innovation.

Background of Tesla

Tesla Inc. (formerly Tesla Motors) was established in the year 2003. It is an American multinational corporation which focuses on the manufacturing of electric vehicles, energy storage and solar panel. It is based in Palo Alto, California. The company specializes in electric cars, lithium-ion battery energy storage, and residential photovoltaic panels (through the subsidiary company Solar City). It also sells the Tesla Power wall and Power pack batteries, solar panels and solar roof tiles.

Tesla Inc gained popularity the world over as it launched the first ever electric car the Roadster in 2008. With the launch of this product it entered the automobile industry. It is a new player, with small capital base, and a weak supply chain. It faces many challenges. It would also face competition from other automobile manufacturers who would enter the EV market. How far Tesla is able to fulfill its vision as a technologically innovative automobile company and also ward off competition from other automobile manufacturers remains to be seen.

The Focus

Tesla Inc.'s focus is on climate change. It created ground breaking new ideas around sustainable mobility and automotive technology. It defines its mission statement as "accelerate the advent of sustainable transport by bringing compelling mass market electric cars to market as soon as possible." It wanted to tap on the sentiment of public which was increasing growing conscious of greening of the environment. In this respect Tesla has performed incredibly well and has become one of the most recognizable brands in the world. Investor confidence also grew and an increase in its stock prices by tenfold in the last five years is a testimony to this fact. It has become a leader and many companies are following its lead.

Tesla is today acknowledged to be one of the most technologically innovative companies dealing with climate change. Its first product was priced at $100,000 which is beyond the reach of the common man. As such its target audience (consumers) was only the affluent who were conscious of eco-friendliness and also the celebrities. However, of late it launched other lower priced brands like Model-S at $69,900 (this is the company's flagship Model), the Model-X, and most recently the Model-3, priced at $35,000 which received widespread acceptance. (See Exhibit-I and Table-I) Therefore an increase and expansion of its product line did give it the response it expected. Data suggests that the company Tesla sold over 76,000 cars in 2016 compared to 700 Roadsters in 2012. The company's focus on environmental sustainability, safety, and innovation made their electric cars get the response it anticipated and made it very popular.

Expansion in Products

Tesla expanded its product line. It changed its strategy from targeting only the eco-conscious affluent to targeting the eco-conscious middle-class mass market consumers too. Further, it also increased its product portfolio to include solar panels, solar roof tiles, and battery storage. And for this, in 2016, it acquired Solar City. Batteries basically complement the generation profile of solar panels that charge only during the day when the sun is bright and shining. It stores electricity for use on cloudy days and also at night.

Expansion in other Markets

Solar and battery storage are useful not only in the developed world but also in the emerging markets like India where the dependence for electricity is still based on non-renewable sources like coal and petroleum. In particular, in India, in 2018 the passenger vehicle sales touched 3.2 million units and is further expected increase to 10 million units by 2020. Additionally, commercial vehicle sales grew 75.95 per cent year-on-year in April 2018 (See Table II and Exhibit-II). In the words of the CEO of Tesla Inc., Elon Musk when one can couple solar and battery storage means "you can avoid building electricity plants at all"; instead set up self-sustaining micro-grids in small villages that previously had no electricity.

Therefore, it has a market not only in the developed countries but also in emerging markets like India. Therefore, though its target market currently is USA, it could later on focus on the emerging markets and enter these markets too.

Tesla-An Innovator and Market Leader

Tesla is known as an innovator which invented and manufactured the electric car Roadsters in 2008. No other major automotive manufacturers, not even the Big Three were making electric cars until Tesla made it in 2008. Ever since the big automakers, which has sound capital base, a strong list of supplier base and strong relationship with them, and also a very cost effective and efficient supply chain, have started developing their own electric cars. They were motivated by the success of Tesla and also by the shift in demand by consumers and governments towards pursuing eco-friendly and low-emissions transit options. The next electric car was launched by Mitsubishi Motors, two years later in 2010.
The number of hybrid electric vehicles (EVs) sold in the U.S. reached 100,000 only in 2005. However, the sales picked up showing its increasing acceptance.

The Issues

- **Supplier Base**

Tesla Inc. focus is on climate change. With the launch of its first product the Roadsters in 2008 and later on with other models like Model S, the Model X, and the Model 3 has spurred demand

and it was itself unable to meet this increase in demand. It could not deliver its product on time. The automobile industry is largely dependent upon its large range of component suppliers and any kink in the supply chain has far reaching implications. Tesla has limited number of suppliers and in most cases a single supplier (one supplier, they being innovative components) for certain components. Therefore, the company has much more supply-chain volatility as compared to most automakers.

According to Brian Loh, a partner at McKinsey & Company; innovation is at an "all-time high" in the auto industry. Therefore, all the automobile companies should make best of the opportunities but Tesla is unable to do so because its weak point is its supply chain. Further Loh opined that in general, the auto industry does not single source, and described the average auto supply chain as being far more efficient and effective than Tesla's. In his words, "Typically an OEM will have a supplier panel or a collection of a few suppliers, anywhere from 2-5 suppliers they source from for that commodity," "Oftentimes for a particular vehicle, they might be single sourced on that vehicle, like one supplier would have all of a certain part for a Honda Accord or something like that, but it's extremely rare for a supplier to be single sourced across an entire commodity for all their vehicles".

Further, Tesla's supply chain is in the formative stages; it does not have established suppliers, and does not have strong relationship developed with them yet. In such a setup it is difficult for Tesla to operate without hiccups and manage the production bottlenecks.

- **Capital Base**

Tesla is a small company whose history goes back to 2003. (It was established only in 2003). Financially it is not as strong as other automobile players (like the Big Three) and is not able to provide financial and infrastructure support to its suppliers which the other automobile manufacturers are able to. In fact, such support to suppliers and thereby development of close bond and relationship with the component suppliers has become a norm in the automobile industry. Many a time, Tesla is able to pay its suppliers only when it has been able to sell its products and receive payment for the same.

Often it wants to use the entire (100%) capacity of the supplier to get best costs but is unable to do so because many a time supplier is not willing to totally rely on a single original equipment manufacturer (OEM). It is difficult to predict whether a supplier would be willing to undertake the associated risks.

What also needs to be noted is that the company has not been able to reap profits yet.

- **New Player in Auto-Industry**

Tesla is still new in the automobile industry. It is still learning the rules of the game. It therefore is a weak player as compared to the established players who have strong supplier base as well as

sound financial back-up and a history of years of operation in manufacturing and marketing its products.

Despite the breakthrough innovation, with a history of not delivering on time, delivering defective products, it will be difficult for it to retain the trust of the consumers and also retain its brand image.

Though Tesla has been an inspiration in the industry, and demonstrated that year old convention could be defied, it needs to understand that the key factors of success for an automobile industry are its supply chain and financial power, and a history of existence in the sector.

Tesla therefore needs to iron out the kinks in its supply chain and also create sound financial background in order to pursuing big goals and its vision of a future filled with electric cars.

Positioning

The company Tesla is manufacturing cars. Therefore, it sees itself as an automobile company. However, it is an innovator of electric cars; as such it is a technological company. With automotive driving catching up and gaining acceptance, Tesla could position itself as a technology company. (But with increase instances of consumers misusing the facility and crashing cars, it needs to work to reconcile these safety concerns). However, as it is manufacturing cars, it could also gain by positioning itself as an automobile company.

Electronic Manufacturing Model

Tesla has adopted the electronic manufacturing services (EMS) model of production that is a norm in the consumer electronics industry. Therefore, it is often seen as a being a technology company than a traditional automobile company. This means that Tesla needs to internalize much of the hardware and software development, and also the systems integration. The company is largely dependent and reliant on its engineers from all over Silicon Valley. Since it adopts a design and build model, it has direct control over the finished product, more control over the user experience and also over quality and performance. This can be said to be its competitive advantage. But the adoption of the EMS model has its own set of problems.

If it faces technical software problems, there would be a need to upgrade the software which is a costly affair leading to an investment of tens of millions of dollars. This could further lead to a poor customer experience, and erosion of the brand image.

The EMS model to manufacturing which is its competitive advantage may not remain so forever. This is because the EMS model is widely being adopted by the automotive industry at large like that of Chrysler, Ford, and General Motors to name a prominent few.

Green Initiative

Tesla is 100% in the green car industry. It is focusing only on this market segment. All research and development (R&D) efforts are solely dedicated for this purpose and thus the company would come up with better innovations. Also, Tesla is a pioneer and a market leader of EVs and has about five-year head start over the other companies. While other companies are still evolving and developing their green car designs, Tesla has already made a name for itself. The future is for electric cars which would be dependent on renewable sources of energy.

Transformation of the Auto-Industry

Tesla has been able to transform the auto industry. It has had a significant impact on the auto industry and innovation is depicted as its greatest strength. It has influenced what kinds of cars its competitors make and what kind of cars consumers drive. It has brought the concept of self-driving. It would be remembered as an innovator. This would be its most strong competitive advantage.

Conclusion

Tesla has a competitive advantage over auto industry rivals in design innovation and also as a pioneer; but these advantages would gradually erode away as other companies have also entered the electric-cars arena**.** It would face stiff competition with big players; like the Big Three-Ford, GM, Chrysler; who have more financial power, years of industry experience and well-established brand. Tesla is a small-time player with not even a decade of experience in the industry. Would it be able to ward off competition and retain the competitive advantage that it now enjoys? It remains to be seen.

Table-I

Name	Market Share
Tesla Model S	29%
Tesla Model X	16%
Chevrolet Bolt	16%
Nissan Leaf	15%
Fiat 500e	8%
VW e-Golf	4%
Ford Focus	2%
BMW i3	2%
Kia Soul	2%
Others	6%

Exhibit-I US electric vehicle sales share (based on number of units sold between Jan-June 2017)

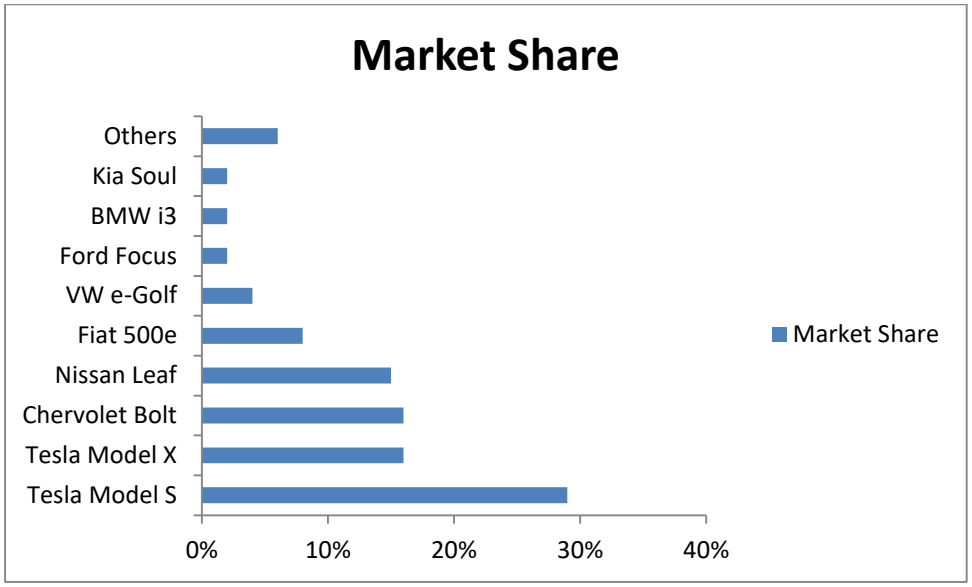

Figure II: Number of units sold between January to June 2017 (Source: Moody's)

Table: II

Years	Units Sold (Millions)
FY 2012	20.4
FY 2013	20.6
FY 2014	21.5
FY 2015	23.4
FY 2016	24.0
FY 2017	25.3
FY 2018	26.4

Exhibit-II Number of automobiles produced in India

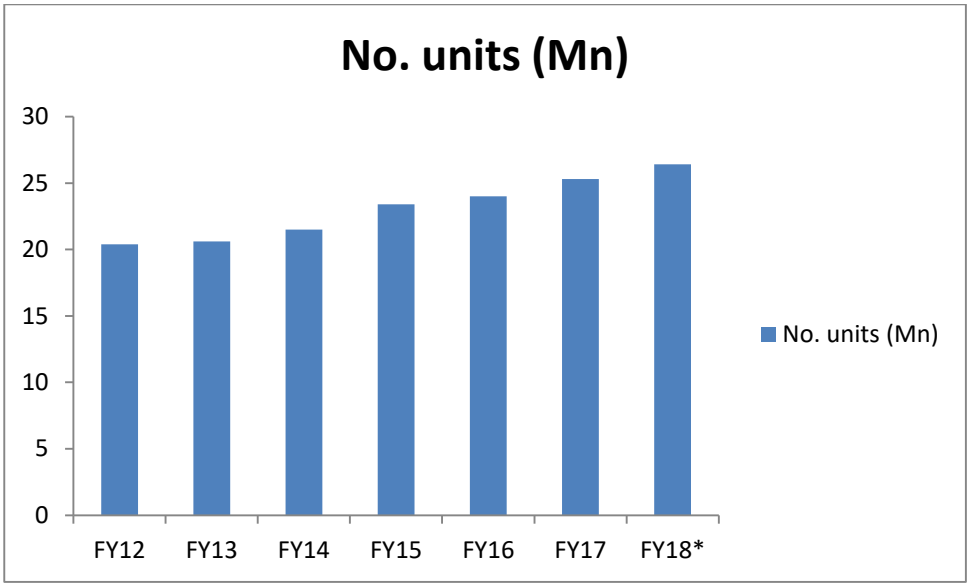

Figure III: Number of automobiles produced in India (Source: www.siamindia.com)

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