



## Case Study

# Tesla (Act 1): Disruptor or Disrupted?



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This case was written by Nathan Furr, Professor of Strategy at INSEAD, and Jeff Dyer, the Horace Beesley Professor of Strategy at Brigham Young University. It is intended to be used as a basis for class discussion rather than to illustrate either effective or ineffective handling of an administrative situation.

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## Introduction

Back in the early 2010s, driving down the Silicon Valley corridor from San Francisco to the brown hills of Palo Alto, a casual observer might catch a rare sighting of the Tesla Model S, an all-electric vehicle made by Tesla Motors with a range of almost 300 miles. At that time, sceptics argued that there was no way a company led by a former internet entrepreneur could surmount the immensely high barriers to the automobile industry, reliably produce high volumes, and convince people to change to a new, unproven technology. But by the mid-2020s one would see dozens of Tesla vehicles – not just in Silicon Valley but all over the world – while other automakers played catch-up, desperately launching fleets of new electric vehicles.

Yet having achieved what many thought impossible—disrupting the auto industry—Tesla then faced a new possibility: being disrupted by low-end upstarts like BYD, and even by the polarizing nature of its CEO, Elon Musk. Would Tesla remain a disruptor or be disrupted?

This case study (Act 1) begins with a snapshot of a company trying to disrupt an industry, highlighting the uncertainties and strategies at the heart of disruption. Act 2 updates the story to the mid-2020s, exploring the issue of whether Tesla can sustain its success.

### Act 1: A Disruptor?

In the early 2010s, while Tesla had many fans in the tech-friendly world of Silicon Valley, it also had its critics. Ranked by *Forbes* as the 'World's Most Innovative Company' in 2015, the front cover of the September issue<sup>i</sup> featured its second model, the Model S, which had been named 'car of the year' by the magazine *MotorTrend* in 2013, the only unanimous choice anyone could remember. *Consumer Reports* gave it the highest rating ever (99 out of 100) for overall performance. The car could do 0 to 60 in just over three seconds (shaved to 2.7 seconds in "Ludicrous Mode," a feature launched that summer), was possibly the safest sedan ever built (protected in part by the battery packs that lined the chassis), required less maintenance than a combustion engine (no oil changes, spark plugs, filters or hoses) and its curved lines were reminiscent of a Maserati or Jaguar. These characteristics combined to garner rave reviews from the media and owners alike.

However, for a company trying to change the automotive industry, many roadblocks remained. With a price tag over \$67,500, topping out at \$135,000 fully loaded, the Model S was affordable for only a small niche of wealthy customers. Although Tesla executives were pleased with its sales, the roughly 20,000 units sold in 2014 represented less than 0.06% of the 16.5 million cars sold in the United States that year. Moreover, they were boosted by a government subsidy of at least \$7,500 per vehicle that could be removed at any moment.

Furthermore, Tesla was trying to succeed in one of the most difficult-to-enter industries, controlled by a handful of global players who were struggling to squeeze out profitability. Perhaps more telling, the majority of drivers were sceptical of electric vehicles, afraid of getting stranded by a lack of recharging or repair stations.



Just a few years earlier, Better Place, a start-up with almost \$1 billion in funding, had attempted to introduce electric vehicles in Israel, a smaller, well-defined market, with the backing of Renault and the Israeli government – but had been defeated by the immense costs of building EVs and the infrastructure to support them. Tesla seemed to be heading down the same path of trying to do it all: creating its own vehicles, charging stations, and a network of company-owned dealerships. Moreover, experienced executives who had toured the Tesla factory whispered behind closed doors that the manufacturing line had major inefficiencies that signalled deeper problems in the production process.

Could Tesla really manufacture high volumes efficiently enough to make the company profitable? *New York Times* columnist Joe Nocera voiced concerns about the ability to make money of “a company that eats through cash, loses money on every sedan it sells, routinely overpromises what it will deliver to Wall Street, and is regularly in need of new funding.”<sup>ii</sup>

It was with this blend of enthusiasm and scepticism that the company announced it would launch the Model X in fall 2015. The Model X was an SUV that could take seven passengers, with falcon-winged doors that opened vertically, designed to appeal to the same high-end niche as the Model S. On a broader scale, it planned to launch Model 3 in 2017, a four-door sedan with a starting price of \$35,000. The goal was to build an EV for the masses and sell significant volumes – upwards of 500,000 – bringing them into the mainstream in the US.

Tesla executives liked to say they were on a mission to transform the automotive industry, from one dominated by combustion engines that polluted the air with carbon emissions to one driven by electric vehicles using battery technology charged at Tesla's super charging stations. In short, they were out to disrupt combustion engine vehicles. The question was could they do it, and how?

## History of Tesla

In 2003, Martin Eberhard, a serial entrepreneur concerned about global warming, noticed many people buying the Toyota Prius: “It was clear that people weren’t buying a Prius to save money on gas—gas was selling close to inflation-adjusted all-time lows. They were buying them to make a statement about the environment.”<sup>iii</sup> After investigating a variety of alternative fuel options, Eberhard concluded that an electric-powered vehicle was the answer to provide the greatest efficiency and performance. During his investigation he came into contact with Al Cocconi, founder of AC Propulsion (an electric vehicle firm) and one of the original engineers of GM’s ill-fated electric vehicle, the EV-1. AC Propulsion had produced an electric car called the tzero, that could go from 0-60 mph in 4.1 seconds. Eberhard was impressed but the tzero used heavy lead-acid batteries – he felt that he could improve performance using lighter lithium ion batteries, which were mass-produced for electronics such as laptops. Said Marc Tarpenning, a Tesla co-founder and co-founder of an earlier venture with Eberhard:

*“One of the things we kept running across was these articles that would say the reason why electric cars will never succeed is that battery technology has not improved in a hundred years. Literally, articles would say that, and it’s true of lead acid batteries. Yet*



*it is not true of lithium-ion batteries... They get better, on average, at around 7% a year...It goes in fits and starts as they roll out new chemistries ... They get cheaper and better.*<sup>iv</sup>

After several failed attempts to talk AC Propulsion into producing the vehicles, Eberhard licensed its electric drive train technology and teamed up with Tarpenning to found Tesla Motors, named after Nicolai Tesla, the inventor of the key ideas behind AC electrical systems used in the US today.

Around the same time, Elon Musk, co-founder of X.com (the online banking company that later became PayPal) and the space exploration company SpaceX, got interested in developing electric vehicles based on the tzero. Like Eberhard, Musk had concerns about fossil fuels, but was impressed with his plan and agreed to put in \$6.3 million to fund the development of a long-range EV. Musk would become the chairman of the company, while Eberhard would serve as CEO. J.B. Straubel, a young engineer who was fascinated with the idea of building electric-powered vehicles, joined the Tesla team as another co-founder.

According to technology writer Ashlee Vance, “Had anyone from Detroit stopped by Tesla Motors at this point, they would have ended up in hysterics. The sum total of the company’s automotive expertise was that a couple of the guys at Tesla really liked cars.”<sup>v</sup>

## The Tesla Roadster

The first Tesla car, the Roadster, was built on the architecture of the Lotus Elise, a fast and light sports car that seemed to fit perfectly with the all-electric car vision of Eberhard and Musk. However, the Roadster suffered many problems and delays. Its early transmission could not handle the high-torque gear changes from the electric motor, resulting in transmission failure within a few thousand miles.<sup>1</sup> The electronics and mechanical components like door latches struggled to work together. After launch, it had to be immediately recalled for loose hub flange bolts that could cause a crash. Moreover, if the Roadster battery reached zero, it would become an unusable “brick” requiring a \$40,000 replacement battery.

Despite the problems, Tesla started to produce the first Roadsters in March 2008 (dubbed the “Founder’s Series”). Enthusiasm was high among celebrities and wealthy individuals.

## The Model S

Just as the first Roadsters started to appear on the road, Tesla announced the Model S—a high-performance sedan priced at \$65,000 to \$85,000, to compete with cars like the BMW 5 Series. The Model S had an all-aluminium lightweight body and could run for up to 300 miles on a single charge. The development costs were expected to reach \$500 million, but Tesla

<sup>1</sup> The transmission allows a vehicle to change “gears”, or the torque an engine provides, and is typically a complex module consisting of over 100 parts.



was fortunate to receive a \$465 million loan from the US government to build the car as part of an initiative to promote energy independence.

To build the Model S, Tesla purchased a recently shut down automobile plant in Fremont, California. Before it closed, the plant and land had reportedly been appraised at \$1 billion, but it had been labelled by the United Auto Workers Union as having the “worst workforce in the automobile industry”). In a bold move, Tesla purchased the factory (which had far more space than needed to manufacture the Model S), at the bargain price of \$42 million and rehired the former workforce.

By May 2012, Tesla was said to have 10,000 reservations from customers hoping to buy a Model S. Although it encountered several challenges in designing the car, production went more smoothly than the Roadster. By June 2012 the first cars were rolling off the production line.

Critical reception of the Model S exceeded all expectations. The car won virtually every major automobile award in the book. Critics, however, cited reliability issues in the car’s electric components (the 17-inch touchscreen, stalling) and design flaws in its uncomfortable rear seats.

## The Model X

As the Model S gained prominence, Tesla unveiled the prototype for the Model X, a full-size crossover utility vehicle that would go into production in late 2013 or 2014. The Model X could seat seven and sported falcon-wing doors, making it easy to enter and exit (Figure 1). The initial cost of a Signature Series model was a pricey \$130,000.

Figure 1. The Model X with Falcon Wing Doors



Like the Model S, the Model X could go from 0-60 mph in less than three seconds in “Ludicrous Mode” and could travel roughly 250 miles on a single charge. The production date

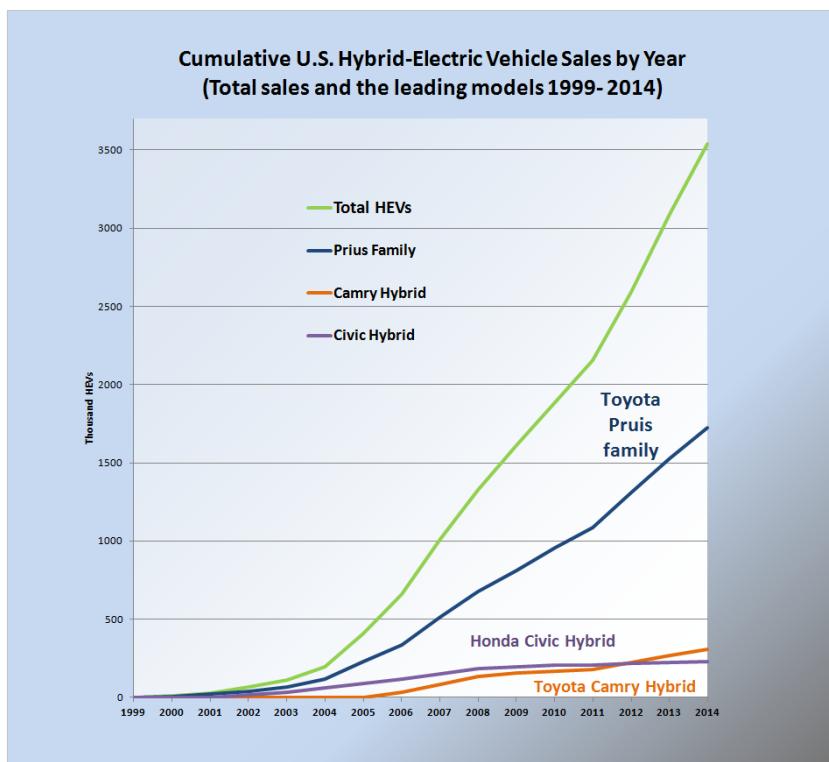
for the Model X was pushed back numerous times to accommodate increased production of the Model S. As Musk conceded, “The Model X is a particularly challenging car to build – maybe the hardest car to build in the world.”

With the announcement that the first Model X vehicles would come off the production line in September 2015, Tesla revealed pre-orders of roughly 23,000 vehicles. At the same time, production of the Model 3, its more modestly priced four-door sedan for the masses, would start in late 2016 or early 2017, with hints of future models in the future (what would eventually become known as the Model Y).

## The Electric Vehicle Market

Tesla introduced battery electric vehicles (EVs) (sometimes called “plug-in electric vehicles” or PEVs) to a market that was virtually non-existent. Although hybrid electric vehicles (HEVs) had gained some traction, notably with the Toyota Prius, as had plug-in hybrid vehicles (PHEVs) with the Chevy Volt and the Prius, Musk claimed that they were “bad electric cars” since they carried around an additional gas engine and drive train, adding weight, cost and parts to maintain and repair. Despite his criticisms, for many customers these vehicles alleviated the “range anxiety” of being stranded without a charge or service. Hybrid volumes grew steadily (see Figure 2) and in 2012 Toyota estimated that sales would top 1 million per year going forward and that it planned to roll out 21 new or redesigned hybrid vehicles by 2015.<sup>vi</sup> If HEVs could get fuel economy up to 75 or 100 miles per gallon, some observers felt this would prevent EVs from gaining traction.

Figure 2. Cumulative US Hybrid Electric Vehicles Sales by Year



Source: [https://en.wikipedia.org/wiki/Hybrid\\_electric\\_vehicles\\_in\\_the\\_United\\_States](https://en.wikipedia.org/wiki/Hybrid_electric_vehicles_in_the_United_States)



Tesla faced battery electric vehicle competition from the Nissan Leaf (launched in 2010) and Ford Focus (launched in 2011), and PHEV competition from GM's Chevy Volt (launched in 2007). The Leaf was priced from \$22,000 to \$29,000 (not including tax credits of roughly \$7,500 for which all US buyers of electric vehicles qualified), had a range of 75 miles, and was the largest seller worldwide, selling 80,000 total units in the US (30,200 in 2014). The Ford Focus, a vehicle with similar price and specifications, was launched in 2011 but had sold less than 5,000 units by 2015. The Chevy Volt, priced at \$40,000, could do 50 miles on a charge and had a back-up gasoline engine. It sold 23,000 units in 2013, but that figure had dropped 20% by 2015, the year that GM launched the Cadillac ELR, another PHEV, priced at \$65,000.<sup>vii</sup>

Other car manufacturers were getting into the game. In 2014, BMW launched its all-electric i3, a small sedan priced at \$43,000 with a range of 80 miles. It also launched the plug-in hybrid i8, a high-performance sports car starting at \$136,000 that directly targeted Tesla. In 2015, Porsche announced the Mission E sports sedan concept car, another direct challenger to the Model S.<sup>viii</sup> A potential threat at the low end of the electric vehicle market was BYD, a Chinese manufacturer poised to break into western markets. BYD attracted the attention of Warren Buffett, who invested \$230 million for a 10% equity stake. The price of BYD cars was anticipated to be close to \$20,000 for a BEV that would go up to 250 miles on a single charge.

Despite the fanfare surrounding EV and PHEV vehicles, total unit sales were quite small and some players went out of business (Fisker had launched a beautifully designed high-end electric vehicle in 2011, but declared bankruptcy in 2013, having only sold 3,000). In 2014 there were 119,710 plug-in electric vehicles (BEV plus PHEV) sold in the United States, (representing a mere 0.07% of the entire market of 16.5 million vehicles) up 23% from the 97,235 sold in 2013.<sup>ix</sup>

## Tesla's Approach and Strategies

### Product Development and Design

On the surface, the Tesla looked much like other cars, but below that it hid a significant difference which drew praise from some and criticism from others. Remove the bodywork from a Tesla and compare it to a combustion engine vehicle or an electric vehicle like the Nissan Leaf, and the architecture was completely different. All major auto manufacturers operated off the traditional combustion engine platform, inserting the battery as a module into the standard platform, which included space in the frame for gear transmission and often for the drivetrain, which created a tunnel through the frame (see Figure 3).

Figure 3. Comparison of Tesla S and Nissan Leaf



By contrast, in designing the Model S, Tesla abandoned the standard architecture – the systems and drive train were engineered from the ground up around the battery packs. Chief Designer Franz von Holhausen described the design process:

*"We weren't taking the recipe of what we had known as a car with a big block somewhere in the car in the front, the middle or the rear, and having to work around that. With the new architecture that we created, electric propulsion allowed us to innovate what a car experience could be beyond a normal ICE motor. I think that is something where we were able to give back space and create an experience that you just can't get in another premium sports sedan."*<sup>x</sup>

Moreover, some of the car's subsystems, like traction control, were based on different technologies from a standard car. Perhaps most surprising, the Tesla Model S eliminated transmission. Yet while its designers hailed the benefits of the new architecture, critics pointed out the challenges: unforeseen errors could crop up in designing a new platform, and how to do repairs on an architecture that many mechanics would not understand.

## Manufacturing

Unlike other major automakers, the factory was highly vertically integrated and automated, with extensive use of 8-10ft tall red robots, reminiscent of Transformers. While typical auto factory robots performed one function, Tesla's performed up to four tasks on multiple models: welding, riveting, bonding and installing a component. "From the manufacturing standpoint, the way we assemble this car is essentially different from any other car," said Gilbert Passin, VP of Manufacturing at Tesla and a 23-year industry veteran.<sup>xi</sup>

Yet other experts pointed out serious flaws. For example, employing only one robot per task typically resulted in more efficient manufacturing, which in the hyper cost-competitive auto industry could be a significant disadvantage.

In addition to the body, Tesla had to manufacture or purchase the battery. Batteries had been a concern for EVs for some time. In addition to being heavy, volatile and expensive, chemical

batteries had limited storage capacity. Dealers reported that their greatest challenge with customers was the fear of running out of power. Tesla invested heavily in developing the battery, starting construction of a “Gigafactory,” intended to produce more batteries in 2020 (when at full production) than in the entire world in 2013 (see Figure 4). Like most Tesla moves, it drew praise as well as criticism.

Hitherto, lithium-ion batteries were produced in a complex supply chain, with raw materials mined in South America, shipped to North America for processing, then to Japan for further processing and back to North America. Tesla hoped to save on costs – an estimated 30% – by bringing all these operations under one roof in a net zero-energy factory. It also had plans to sell batteries for other applications, including a “Powerwall”—for home use—marketed as a money-saving device because it recharged when utility rates were low.<sup>2</sup> To achieve its ambitious goal, Tesla committed to build a \$5 billion dollar factory that would be operational by 2017—a massive investment for a new company, even with Panasonic putting up 30-40% of the capital (see section on Tesla’s Strategic Partnerships).

Overshadowing Tesla’s massive investment, a Japanese company announced it would commercialize an aluminium-air battery 40 times more efficient than Tesla’s by the end of the year. If true, this would make the Gigafactory obsolete before it even started production.<sup>xii</sup> An analysis published in *Forbes* magazine estimated that consumers would pay 30 cents/kWh for energy with a Powerwall, whereas grid power was often much cheaper (an average of 12.5 cents/kWh in the US), arriving at the conclusion that the Powerwall was “just another toy for rich green people.”<sup>3</sup>

Figure 4: Tesla Gigafactory 1



Despite the challenges, Tesla invested significantly to improve the performance of lithium-ion batteries, developing its own techniques—a new architecture—for linking the battery cells

2 The Powerwall is also marketed as a battery for solar systems and has been employed in pilot projects with SolarCity and Sun Edison

3 Helman, Christopher (1 May 2015). "Why Tesla's Powerwall Is Just Another Toy For Rich Green People". *Forbes*. Retrieved 28 June 2015.



and cooling them. The battery cells were designed to vent heat in a proprietary way and employ coolant running through the entire pack to maintain an optimal temperature.

It also invested heavily in protecting its innovations, refusing to let outsiders tour battery production and heavily patenting its innovations. Musk insisted that: "We felt compelled to create patents out of concern that the big car companies would copy our technology and then use their massive manufacturing, sales and marketing power to overwhelm Tesla." However, in a surprise move in 2014 he renounced patent control in a blog post titled, "All Our Patents Belong to You," making them "open" to others.<sup>4</sup> Following this invitation, Nissan and BMW reportedly contacted Tesla to potentially cooperate on charging networks. As the Huffington Post commented, "That pretty much validates why the Silicon Valley company freed up its patents in the first place: Tesla wants its superchargers to become the industry standard."<sup>xiii</sup>

## Marketing

Tesla was unusual in that it neither spent money on advertising, nor planned to use TV or print advertising in the future, as spokesperson Alexis Georgeson explained: "Right now, the stores are our advertising. We're very confident we can sell 20,000-plus cars a year without paid advertising.... It may be something we will do years down the road." Early on, when Eberhard had hired PR professionals to build publicity for the Tesla Roadster, Musk reportedly fired them because he felt his involvement would generate enough publicity.<sup>xiv</sup>

As of 2015, marketing at Tesla was done by a small team of less than 10 individuals. Its marketing and advertising spend was minuscule compared to major automotive companies (General Motors spent over \$3 billion on advertising and marketing in 2013; Nissan spent \$25 million just advertising the Leaf).<sup>xv</sup> But whether Tesla could realistically sell more than 20,000-30,000 vehicles per year without significant advertising was unclear.

## Distribution and Service

Rather than follow the typical franchise-dealership arrangements used by typical automakers to sell cars, Tesla chose instead to own and operate its own "dealerships", located in high-end malls, not far from the Apple stores on which they were modelled. Walk-in customers would see one or two Model S cars, plus an exposed version of the car's chassis near the back of the store to show off the battery pack. They could order a car from the store or online, and it would be delivered to their home.

Without a large inventory of cars or salesmen, Tesla stores were far less expensive than typical dealerships. Moreover, because electric vehicles had so few moving parts compared

<sup>4</sup> The "open" nature of Tesla's patents remains a subject of significant debate since patent's are "open," meaning searchable, already but cannot be used unless they are licensed or assigned. Tesla however has not assigned or licensed their patents to anyone and has vaguely stated they would not initiate legal proceedings against anyone who uses them "in good faith." (see Roberts, Jeff John. 2014. "What Elon Musk did—and did not—do when he "opened" Tesla's patents.")

to a combustion engine, they didn't require a service bay at the store; servicing was typically be done by technicians at the customer's home and later at Tesla Service centers.

But the question was how this could possibly work if a large number of customers were to start buying Tesla vehicles. As electric vehicles were so different from combustion engines, customers could not service their own vehicle or tap into the ubiquitous auto service shops.

## Charging Stations

At the core of transforming the auto industry from gas to electric engines was ensuring that customers could conveniently charge the battery when traveling. To address that issue, Tesla started building "supercharging" stations, that were supposedly solar-powered, where customers could charge their battery when on the go (see Figure 5).

Figure 5. Tesla Supercharging Station



Tesla claimed that it took 30 minutes to charge a battery up to 175 miles and 45 minutes for a full charge (although these numbers were later challenged). Self-service charging stations were located on major freeways and at locations near restaurants or malls so that customers could do other things while the car charged. By late 2015, Tesla had built over 500 supercharging stations—most with 6-8 chargers—and had many more planned. These only worked with Tesla cars and were provided for free—for life. This was promoted as a major advantage over gas vehicles, with an estimated \$10,000 of gas savings over a 4–5-year period.

Some questioned whether Tesla could – or should – afford to provide free charging for the life of its vehicles. If, as one estimate reckoned, Tesla allocated roughly 5% of its capital budget of \$1-1.5 billion to expand its charging stations by 50% in 2015<sup>xvi</sup>, each charging station must cost \$200,000 to \$300,000. What would happen if the Tesla Model 3 became so



popular that there were queues at supercharging stations—further increasing the time needed to charge up?

## Tesla's Strategy

According to Elon Musk, Tesla's strategy was to start selling vehicles in the high-end niche and gradually move downmarket. If all went according to plan, the Model S and X would be followed in 2017 by a far cheaper Model 3, starting around \$35,000 (though many observers questioned whether the Model 3 could really hit this price point given that the Model X came in higher than expected at around \$130,000). And even if it did, could it succeed given that gas prices looked set to remain low for some time and overall sales for electrics and hybrids were basically flat?

As Tesla prepared to launch the Model X, onlookers tended to polarize: idealists believed it would change the industry, while sceptics doubted its ability to change one of the oldest technology paradigms in history. Displacing the internal combustion engine (ICE) would require significant technology advancements, changes in customer preferences, infrastructure enhancements and changes to government policy – well beyond the reach of a start-up with limited capital. Tesla seemed to be thinly spread – developing multiple lines of vehicles, then adding home energy storage, the Gigafactory, charging stations, and dealerships. Even its manufacturing appeared inefficient compared to incumbent auto manufacturers who had been working for years to shave cents off the production process, while ICE technologies continued to improve. Indeed many hybrids had become comparatively less attractive as ICE engine efficiencies increased globally, a fate that may befall electric cars.

In this context, could Tesla ever make money?

Idealists pointed to the incredible strides made from the Roadster to the Model S, which seemed to be selling well, then the Model X, with plans for the Model 3 in the pipeline. Clearly investors believed in Tesla's innovations, judging by the premium paid by investors betting on its future growth. But would Tesla ever make a profit? And if so, when?

Tesla's income statement showed large losses and growing liabilities (See Table 1). Was its business model sustainable or would it eventually become yet another electric vehicle failure like Better Place or Fisker?

## Key Questions at the End Act 1

1. Why would Tesla enter such an unattractive industry as the auto industry? What are the risks in entering such a difficult industry?
2. When Clayton Christensen, the author of the theory of disruptive innovation, said publicly that Tesla was not disruptive, Elon Musk was furious. Do you agree with Clayton?



3. If you expand the lens of analysis from the product (the traditional focus in strategy) to the system, meaning all the players and technologies that contribute to a focal technology, what is the “system” that impacts Tesla and its ability to succeed?
4. Is Tesla foolish to pioneer a new architecture and make everything itself? Does this lower or increase the risk? Why is Tesla’s factory so different from other factories around the world?
5. Why has Tesla opened up its patents? What are the pros and cons of such a move? If it’s willing to open the patents, why are there no tours of the Gigafactory? What does this tell us about Tesla’s strategy?
6. New companies often struggle because they try to do too many things at once. Tesla makes all its own components, charging stations, dealerships and repair centres. Should it have diversified into Powerwall? Did Better Place fail by doing too much?
7. What factors are most important for predicting Tesla’s future success? Do you think electric vehicles will disrupt internal combustion engine vehicles?

Table 1. Tesla Financials (in thousands)

Fiscal Year	2014	2013	2012	2011	2010
<b>Income Statement Items</b>					
Revenues	\$ 3 198 356	\$ 2 013 496	\$ 413 256	\$ 204 242	\$ 116 744
Automotive Sales	\$ 3 192 723	\$ 1 997 786	\$ 385 699	\$ 148 568	\$ 97 078
Cost of Revenues	\$ 2 316 685	\$ 1 557 234	\$ 383 189	\$ 142 647	\$ 86 013
General and administrative	\$ 603 660	\$ 285 569	\$ 150 372	\$ 101 102	\$ 84 573
Operating Expenses	\$ 1 068 360	\$ 517 545	\$ 424 350	\$ 313 083	\$ 177 569
<b>Operating Income</b>	\$ (186 689)	\$ (61 283)	\$ (394 283)	\$ (251 488)	\$ (146 838)
Interest Expense	\$ (100 886)	\$ (32 934)	\$ (254)	\$ (43)	\$ (992)
Income Tax	\$ 9 404	\$ 2 588	\$ 136	\$ 489	\$ 173
<b>Net Loss</b>	\$ (294 040)	\$ (74 014)	\$ (396 213)	\$ (254 411)	\$ (154 328)
<b>Balance Sheet Items</b>					
Cash and cash equivalents	\$ 1 905 713	\$ 845 899	\$ 201 890	\$ 255 266	\$ 99 558
Total Current Assets	\$ 3 198 657	\$ 1 265 939	\$ 524 768	\$ 372 838	\$ 235 886
Property and equipment, net	\$ 1 829 267	\$ 738 494	\$ 552 229	\$ 298 414	\$ 114 636
Total Assets	\$ 5 849 251	\$ 2 416 930	\$ 1 114 190	\$ 713 448	\$ 386 082
Current Liabilities	\$ 2 107 166	\$ 675 160	\$ 539 108	\$ 191 339	\$ 85 565
Total Liabilities	\$ 4 879 345	\$ 1 749 810	\$ 989 490	\$ 489 403	\$ 179 034
Total Equity	\$ 911 710	\$ 667 120	\$ 124 700	\$ 224 045	\$ 207 048

Source: <http://ir.teslamotors.com/secfiling.cfm?filngid=1564590-15-1031&cik=1318605>  
<http://ir.teslamotors.com/secfiling.cfm?filngid=1193125-13-96241&cik=>



## References

- i Dyer, J, Gregersen, H., and N. Furr. "Decoding Tesla's Secret Formula." Forbes, September 7, 2015. <http://www.forbes.com/sites/innovatorsdna/2015/08/19/teslas-secret-formula/>
- ii [http://www.nytimes.com/2015/08/29/opinion/joe-nocera-the-tesla-cheerleader.html?\\_r=0](http://www.nytimes.com/2015/08/29/opinion/joe-nocera-the-tesla-cheerleader.html?_r=0)
- iii Copeland M.V. 2008. "Tesla's Wild Ride." Fortune, Vol. 158, issue 2, pg. 82-94
- iv <http://www.businessinsider.com/tesla-the-origin-story-2014-10>
- v Vance, Ashlee 2015. Elon Musk. New York, NY: Harper Collins, pg. 155.
- vi Dawson,C. (2012). "Toyota details broader hybrid lineup," The Wall Street Journal, September 24.
- vii <http://insideevs.com/chevrolet-volt-sales-plunge-in-january-2015-to-just-542-units/>
- viii <http://www.dezeen.com/2015/09/17/porsche-mission-e-concept-electric-sports-car-frankfurt-motor-show/>
- ix <http://fortune.com/2015/01/08/electric-vehicle-sales-2014/>
- x Casewriter interview with Franz von Holhausen. May 10, 2015.
- xi <http://seekingalpha.com/article/2604485-teslas-highly-scalable-model>
- xii <http://fortune.com/2015/04/27/gigafactory-obsolete/>
- xiii [http://www.huffingtonpost.com/2014/06/16/tesla-patent-supercharger-station\\_n\\_5500724.html](http://www.huffingtonpost.com/2014/06/16/tesla-patent-supercharger-station_n_5500724.html)
- xiv Shilling, Melissa. Tesla Motors. Case. Pg. 3-202.
- xv <http://www.statista.com/statistics/192043/ad-spending-of-general-motors-in-the-us/>
- xvi <http://www.fool.com/investing/general/2015/08/26/what-does-providing-free-charging-cost-tesla-motor.aspx>