Disruption in the Auto Industry: How Silicon Valley is Driving Change in Detroit

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In late 2017, I authored a piece in this series detailing changes in the auto industry due to electric and autonomous vehicles and how companies were positioning themselves to succeed in a future where those technologies had become mainstream and traditional automobiles were a thing of the past. Roughly two years later, the auto industry remains on a trajectory for change, with every major auto manufacturer investing heavily in electric and autonomous technology. The rate of change in the auto industry has been accelerated by non-traditional influences, as tech start-ups make their way into the fold. Tesla proved there was widespread demand for an electric vehicle that didn’t force consumers to sacrifice on performance. Uber and Lyft created an entirely new industry, ride-sharing, that may have some people pondering a life without owning a car. Finally, Waymo and other companies from the tech world (including the three listed above), have made dramatic leaps in autonomous technology, making the concept of driverless cars no longer a fantasy. Some will say the fast-moving tech industry will be the death of traditional auto companies, but we would argue this is simply the jumpstart the auto industry needed to evolve and maintain its position.

Electric Vehicles

For years, there was talk of electric vehicles entering the market, but no one seemed to seriously consider the possibility. In 1996, GM had one electric vehicle in production, but it was more of a pet project rather than a viable product opportunity. Over the years the technology improved, but there was still the issue of determining whether there was demand for the product. With the introduction of the Tesla Model S in 2012, the industry saw that demand not only existed but that it was fairly strong. Tesla took the “if you build it they will come” approach, while the rest of the industry wanted proof they could make a profit. That thinking is why Tesla currently has a stranglehold on the electric vehicle market, but that dominance may be short-lived. This year, we started to see more entries into the electric vehicle market from traditional auto makers that were far superior to their previous entries, narrowing the product gap with Tesla. In 2020, we will have a steady stream of new electric vehicle options from Ford, GM, Volkswagen, and most of the other large, global automakers. Until now, Tesla has enjoyed what was essentially a monopolistic environment, but that is changing. Every year, more competition will enter the market, and Tesla will become less of a tech innovator and more like a traditional automaker. Yes, Tesla has innovative products with steady sales growth, but growth has slowed and they are facing motivated competitors with deep pockets looking to protect their market share.

Ride-Sharing

The ride-share industry attacks car ownership in general, which has been a staple in the U.S. for years. Two companies, Uber and Lyft, have challenged the perception that we need to own a car as our primary mode of transportation. Both companies have been making in-roads over the past few years, primarily in major cities, giving people another transportation option. In 2018, vehicle miles travelled (VMT) for ride-share companies only accounted for 0.5% of all VMT in the U.S., but in New York City this was north of 10%. The reason for the higher penetration in New York City and other major cities is that ride-sharing is most effective when there are many people in a small area. Potentially, the most important aspect of a ride-share business is the scale of its driver network. As a company adds more drivers, it can better serve customers, which brings more users to its platform, which in turn attracts more drivers. With the early success of these businesses, the
greater number of people moving to urban centers, and fewer teenagers getting driver’s licenses than ever before, many people point to ride-share as the downfall of personal vehicle ownership and a crippling blow to the auto industry. However, we see flaws in this thesis. For starters, in order for ride-share companies to succeed, they need tremendous scale so they can take a greater share of the revenue from each ride. Currently, drivers keep 70% to 75% of the cost of each ride, with the remaining amount going to the company. In order for Uber and Lyft to get a greater share of the bookings’ revenue, they need more riders using their platforms so driver utilization increases, which in turn increases the daily earning potential for drivers. To increase their take rate, Uber and Lyft need to attract drivers and riders to their platform, which is done through discounts and incentives. Ride-share companies essentially buy their scale, which eats into the profitability of the business. Normally, in a duopolistic structure similar to what we see with Uber and Lyft, the industry would act rationally and stabilize pricing to improve profitability, but given the industry dynamic where scale is paramount, these companies cannot afford to lose drivers and riders, as it would jeopardize their entire network. Under the right circumstances, this industry can succeed, but it will take a change in consumer psychology to see ride-sharing as a replacement for more than just taxis and public transportation. For long-term success, drivers must be taken out of the equation, as they are the largest cost for ride-sharing companies. Removing drivers would bring the cost per mile closer to the $0.60 per mile cost of owning a personal vehicle in the U.S., which would entice more people into giving up their own car in favor of a robo-taxi. However, this scenario may be further away than some originally thought, with traditional auto companies playing a bigger role than originally anticipated.

Autonomous Vehicles

While some may debate who has the lead in the development of autonomous vehicles, we believe Waymo is the industry leader. What isn’t up for debate is how many companies are pouring resources into research and development so they can participate in this potentially massive industry. California has been a focal point for autonomous vehicle testing, as they track the efforts of companies involved by the number of disengagements a vehicle experiences. A disengagement is anytime the safety driver has to take over control from the autonomous system. In 2018, Waymo led the pack with around 11,000 miles per disengagement, with GM Cruise in second place at roughly 5,000 miles per disengagement. These are fairly impressive statistics, but when you consider a human driver on average goes over 150,000 miles without an accident, you start to realize the efficacy of autonomous vehicles may be further away than some may have hoped. Every disengagement does not equate to a potential accident, it just points to the level of complexity involved in developing this technology. An incremental step that could help solve this issue is geo-fencing, which requires vehicles to operate in a restricted area. This would give the vehicle a known environment to navigate, leading to fewer surprises requiring the system to disengage. Within the next two years, we could see autonomous taxis in dense urban centers, college campuses, or other areas that can be digitally mapped and have a limited number of potential routes. Tesla has stated they will have a robo-taxi network with potentially 1 million robo-taxis on the road by the end of 2020. However, that statement is a bit misleading, as Tesla’s CEO has stated that even navigating parking lots is incredibly difficult, using this as justification for why their auto summon feature, which is essentially a built-in autonomous valet for a Tesla to pick you up curbside, has not launched yet. Additionally, Tesla would need incredible support and cooperation from its customer base, as current Tesla owners would supply the vehicles for Tesla’s taxi network, assuming they are willing to pay for the necessary software upgrades on their vehicles. Based on these hurdles, primarily their inability to produce a truly autonomous vehicle, we do not believe Tesla will be leading the robo-taxi market in 2020. Over the next two to five years, we believe we will see the introduction of range-restricted autonomous vehicles. Waymo, GM Cruise, Aptiv, and others have pilot programs underway, tasking customers with using their autonomous vehicles, with safety drivers in place, to test their applications in a ride-share environment. As the technology continues to prove itself, we believe we will see autonomous vehicles supplement Uber and Lyft’s ride-share networks.

Looking Forward

Silicon Valley has challenged the auto industry, the way we think about what a car should be, and how we should get around, but it would be foolish to believe that traditional auto makers would sit idly by and let new entrants push them to the brink of irrelevance. The technology evolution in the auto industry has spurned more partnerships and a change in how the industry operates. Many partnerships are with the very companies some would say will kill the auto industry. Every year, the number of electric vehicles on the road will rapidly increase, as well as the number of vehicles with autonomous features as we move toward full autonomy over the next decade and beyond. In the end, we will have an auto industry that looks very different than 10 years ago, but at the same time it will look very much the same.