

**“If you build it, will they come?”****Chargepoint, Inc. And The Future Of The Electric Vehicle Charging Station Market: Parts A and B****Hector Dominguez<sup>1</sup>, Tameka Irby<sup>2</sup>, Adva Dinur<sup>3</sup>, Herbert Sherman<sup>4</sup>**<sup>1</sup> JPMorgan Chase/Long Island University MBA Program<sup>2</sup> Long Island University - Brooklyn**Abstract**

*The manufacturing and sales of Electric Vehicles (EV) has been growing rapidly in the last few years. This growth is expected to continue increasing in the years to come, as car manufacturers are becoming more environmentally conscious and are adapting to the future trends. With this growing trend, the networks of Electric Vehicle Charging Stations (EVCS) will need to expand to be able to supply electricity to all the EV entering the market. The purpose of this field case analysis is to investigate the EVCS market and its competitive situation by analyzing one of the biggest players in the industry, ChargePoint. This two part case, driven through the eyes of a potential buyer of an EV and investor in ChargePoint stock, will provide an overview of ChargePoint, and in-depth internal and external analysis of the company and the industry in which it operates. It will examine current trends, discuss the competitive landscape, and provide some details on the firm's financial performance.*

**Keywords:** Electric Vehicles, ChargePoint, Competitive Landscape, Automotive Components**INTRODUCTION****Part A*****“If you build it, will they come?”***

– modified quote from Ray Kinsella (played by Kevin Costner in the movie “Field of Dreams”, 1989)

Charles Price<sup>1</sup> loved cars. As a child he watched his father work on the old Buick station wagon and was enthralled every time his father took the family on a “road trip” – the destination wasn’t important or how long it would take to get there, what was important was the “drive.” Gas stations became the oases of the road and every stop along the way came with food, drink and mini-adventures; journeys that last a life time.

When he was old enough to drive he obtained his license and immediately bought his own junk heap – a gas guzzling 5,000 lb. Chrysler “as big as a whale” that he and his friends just about lived in through his college years. With his first job came his first muscle car, a Mustang convertible, which he spent nearly as much time with as his girlfriend and eventually wife. He traded the “Cobra” in for a minivan when his two youngest were born and through the years “traded up” and away from family cars into luxury class vehicles, most recently a BMW X5 (<https://www.bmwusa.com/vehicles/x-models/x5/sports-activity-vehicle/overview.html>), a sports activity vehicle that combined comfort and power.

Although the mpg (miles per gallon) for each car crept up through the years (from 8 mpg to now over 30), he could not but feel bad about the negative effects that vehicles with convulsion engines had on the environment. For the past few years, he has been thinking about making the switch to first a hybrid and then an electric vehicle (EV). He then read that Tesla’s had an amazing performance of 0-60 mph in 2.3 seconds (<https://www.autoblog.com/2020/04/22/tesla-model-s-0-60-ludicrous-acceleration/>) and thought that a luxury car with pep was the best of both worlds.

As exciting as it sounded, there were many decisions to consider before making the switch. The first such decision was deciding which electric vehicle to purchase. The second and even bigger decision was trying to decide how to charge this vehicle after acquiring it, and how to cope with range anxiety. Range anxiety is the feeling EV drivers get normally when their battery charge is low, or not knowing how far they can get with the amount of charge available in their vehicle. It is also the thought of not knowing where the next available source of electricity is

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<sup>1</sup> The underlying case and its main character Charles Price is fictitious and serves as the instructional vehicle for conveying information about ChargePoint and the electric vehicle infrastructure industry.

located. It sparks anxiety of getting stranded somewhere, which adds time, inconvenience, and stress to a trip. Studies show that driving range and a lack of charging infrastructure are the primary reasons people do not consider EVs when buying a new vehicle (Anonymous, November 4, 2020). Many potential EV owners purchase hybrids in order to avoid such an anxiety and at the same time “feel good” about buying a more energy sustainable vehicle. The only thing Charles knew for sure was that he was not getting a Tesla. Tesla had been able to create a great charging network in the area he lived and that was not his concern. As popular as they were, Charles did not like them. He thought they were overly pricey and wondered what their resale value would be. (<https://insideevs.com/news/490348/tesla-model-3-resale-value-unreal>) He needed to make sure that the vehicle he bought was going to be able to be retain its value over time as well as be able to be charged using the other electric vehicles (EV’s) charging networks available.

In his quest to finding out more about the charging process, Charles came across many companies that provided charge for battery operated EVs. One of the companies that called his attention was ChargePoint. As many of the players in this industry, ChargePoint provided a network of charging stations across the U.S. It also provided charging stations designed for home use. Charles set his goal in motion and set out to find out everything he could about the EV charging industry. His first question was, “Can ChargePoint, or any other firm for that matter, help ease my range anxiety if I bought an electric vehicle?” In order to answer the question, Charles had to dig deep both into both the industry and the firm in order to make an informed decision. The following is the information he found as well as how he organized that information in a way that would best help him decide if EV’s were a viable option given the current status of charging stations and ChargePoint in particular as a company to provide such services.

### Background: Charging Stations

The automobile industry had gone through a “revolution” of sorts in the 21<sup>st</sup> century. What was considered a novelty car, hybrids and then EV’s, has grown in production over 10 times from 2016 – 2020 and become what many perceive as a competition to the traditional gas propelled automobile. (<https://www.pewresearch.org/fact-tank/2021/06/07/todays-electric-vehicle-market-slow-growth-in-u-s-faster-in-china-europe/>) As consumers adopt EV technology and its way of driving, the number of charging stations needed to supply the electricity needed to grow. In 2021 there are thousands of EV charging stations across the U.S. offering different types of charging at different speeds (Citi Research, 2021).

Technavio (2021) defined the global electric vehicle charging station market as part of the global automotive components and accessories market. The global components and accessories market was valued at \$3,902.73 billion in 2020. The global automotive components and accessories market cover companies engaged in production of parts and accessories for automobiles like passenger cars, electric vehicles, commercial vehicles, heavy-duty vehicles, off-road vehicles, motorcycles, scooters, quad bikes, and three-wheelers. The global automotive components and accessories market is primarily driven by increase in vehicle sales, the rapid rate of urbanization and new technology upgrades, especially coming from the aftermarket parts sector. Some of the challenges faced ahead is the rising use of online on-demand transportation services, which can cause a decline in volume sales of combustion engine automobiles to individual consumers and increase in adoption of electric vehicles (EV), which require fewer moving parts compared to traditional vehicles. This may reduce the demand for auto parts. Overall, the combined impact of these factors will lead to moderate growth in the global automotive components and accessories market (Technavio, 2020).

Electric Vehicle charging stations are part of the Electric Vehicle charging infrastructure and their purpose is to recharge electric vehicles, such as battery electric vehicles (BEVs) and plug-in hybrid vehicles (PHEVs). They can be installed in residential, commercial, and several public places. There are mainly two types of EV charging stations, alternate current (AC) and direct current (DC). Based on the capacity, these charging stations can provide slow, fast, or rapid charging. The power capacity of an EV charging station can vary from 3kW to 350kW, with voltage rating varying from 220V (AC) to 600V (DC).




EV Charging Basics				
Type	Miles of Range Per Hour of Charging (RPH)	Time to Fully Charge	When to Use	Connector
Level 1, Standard Wall Outlet (AC)	5 RPH	+ 16 hours for an 80-mile battery + 40 hours for a 200-mile battery	+ Get some charge while you sleep Note: slower for cars with large batteries	 Note: you'll need your own cable to plug in to the wall for Level 1
Level 2 Charging Station (AC)	+ 12 RPH for cars with 3.7 kW on-board charger + 25 RPH for cars with 6.6 kW on-board charger	+ 3.5 hours for an 80-mile battery + 8 hours for a 200-mile battery	+ At work + While you sleep + Topping up around town	 J1772 connector
DC Fast Charging	100 RPH or more, depending on the power level of the charger + 24 kW (up to 100 RPH) + 44 to 50 kW (up to 200 RPH)	Depends on the power level of the charger and car model, but could be 80% charged within 30 minutes	+ Short stops + Express Corridor locations	 SAE Combo (CCS) CHAdeMO Tesla

Figure 1 EV Charging Basics

Source: derived from ChargePoint Website (<https://www.chargepoint.com/>)

According to Technavio (2021), the total market for the global EV charging station market was \$7,831.45 million in 2020. Continuous growth is expected in the coming years. By 2025, it is estimated to grow to \$29,853.89 million. This will create an incremental growth opportunity worth \$22,022.44 million between 2020 and 2025, which translates to around 282% of the market size in 2020. This represents significant growth opportunities for vendors. Vendors can continue to grow by leveraging the inherent growth opportunities available within the market while avoiding direct competition.



Figures 2-3 Charging Station Global Market Forecasts

Source: derived from Technavio Website (<https://www.prnewswire.com/news-releases/electric-vehicle-charger-market-size-to-increase-by-18-5-mn-units--25-yoy-growth-in-2020--technavio-301396740.html>)

The global EV charging station market is undergoing an accelerated momentum. Technavio (2021) also stated that this growth is driven by the following factors:

- Electric vehicles are the most promising alternatives to internal combustion engine (ICE) vehicles.
- The increasing volume sales of such vehicles are inherently driving numerous markets, including the global EV charging station market.
- Stringent emission norms, fuel economy regulations, and measures to reduce the dependence on the depleting natural resources have been the major factors that drive the global electric vehicle market.
- Since high charging times and lower efficiency of charging stations can reduce the revenue generation by the vendors in this market, investments are being pumped by them in research and development.
- Faster and efficient EV charging stations are gaining popularity among customers, thus propelling the growth of the market in focus.

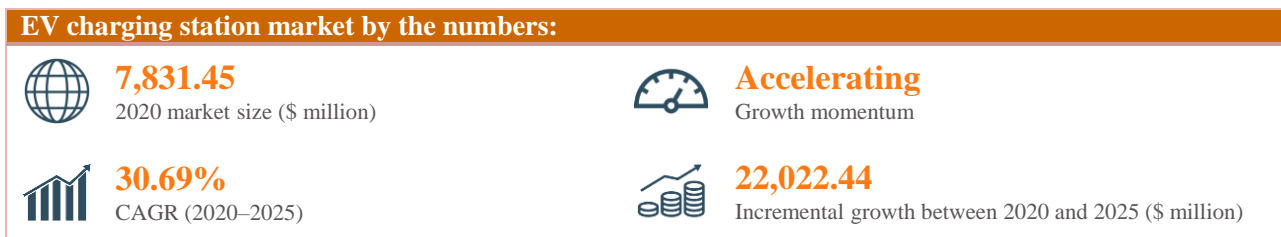


Figure 4 Charging Station by the Numbers

Source: derived from Technavio Website (<https://www.prnewswire.com/news-releases/electric-vehicle-charger-market-size-to-increase-by-18-5-mn-units--25-yoy-growth-in-2020--technavio-301396740.html>)

### External Influences

Charles thought it was a good idea to look at the Global Electric Vehicle Charging Stations industry and the external influences that may impact the stability of this industry. According to S&P (2020) and BIS Research (2019), these are some of the macro trends affecting the industry:

### Political

- ***New global trade agreements:*** Opens opportunities for companies in the industry to expand their operations internationally.
- ***Political stability in the majority of major markets:*** Political stability of major markets makes the remote or macro-environment favorable to a horizontal growth strategy, which include market penetration.
- ***The governments of numerous countries are taking initiatives to increase the adoption rate of electric vehicle:*** There are many initiatives happening. Some of them are spending money in the infrastructure to make it easier to drive an EV.
- ***Governments are offering incentives and subsidies on the purchase of electric vehicle and home chargers:*** National and State governments are encouraging the manufacturing and sale of EVs. Some of these subsidies come as tax rebates at the end of the year to offset some of the cost of purchasing an EV and home chargers.

### Economic

- ***Better global economy, more electric car sales:*** More EV sales equals more charging stations needed.
- ***High Cost of Associated with Fast Charging Systems:*** DC fast charging stations are more expensive, and it can lead to less attractiveness for EVs. This can then hurt the electric vehicle charging stations industry.
- ***Decreasing renewable energy costs:*** The business improves as renewable energy solutions become more popular and less expensive.
- ***Decreasing battery costs:*** This external factor translates to affordability of electric vehicles (EV) and hence higher need for charging stations.
- ***Economic stability issues:*** Downturn in the economy can hurt the industry as a whole particularly in Europe and Asia.

### Social

- ***Increasingly popularity of low-carbon lifestyles:*** There is a growing trend to be “green” and to eliminate greenhouse gas emissions from our environment. Products that help with this are popular and trending in the industry.
- ***Increasing preference for renewable energy:*** Wind power, solar panels, and other methods of creating renewable energy are trending. A lot of people are making the switch to these types of energy sources to power their homes.

### Technological

- ***High rate of technological change:*** The high rate may either enhance the industry’s products’ technologies or make certain technologies obsolete.
- ***Increasing popularity of online mobile systems:*** Increasing popularity of online mobile systems should prompt the industry to increasingly integrate these systems in the automobiles, accessories and charging stations being produced.
- ***Advancement of technology to reduce carbon footprint:*** Ongoing macro trend that transcends industries. There have been a lot of technologies introduced and being worked on to help reduce carbon footprint. Some of these technologies can be seen at home with smart home devices. Carbon capture plants are being created, these are usually giant arrays of fans that suck in air, directing it to specialized facilities that then separate the carbon from other gases. Meat and dairy production are responsible for 60% of the greenhouse emissions from agriculture, and hence we are starting to see more meat alternatives products hit the market. Some of these meats are being grown in a lab. (Henderson, 2019)

### Legal

- ***Expanding international patent protection:*** Companies in this industry can safely expand business overseas, considering expanding international patent protection.
- ***Energy consumption regulations:*** Companies in this industry can promote electric vehicles and energy solutions products, based on energy consumption regulations that client organizations must follow.
- ***Increased regulations related to automobile standards by various governments:*** More regulations regarding standards can mean more expenses for the industry and less profits, as many of the companies in this industry will have to increase their research and development expenses.

### Environmental

- ***Climate change:*** Ecological factors are a significant force for this industry to thrive in the future. The industry has opportunity to promote electric products based on concerns on climate change and to reduce greenhouse gas emissions.

- **Expanding environmental programs:** Many countries are expanding programs that are beneficial to the environment. In the US, the Biden administration is taking steps to combat global warming.

### Current and Future Market Trends

Charles narrowed his analysis a bit by constructing a list of current and future market trends in the of Electric Vehicle Charging Stations industry that he thought pertinent to his decision.

Trends (current)	Description
<b>Emergence of wireless charging of EVs</b>	<ul style="list-style-type: none"> <li>• Involves the transfer of electricity using an air gap among two magnetic coils (one magnetic coil fitted in the car and second magnetic coil is in the charger)</li> <li>• To charge the vehicle, the driver needs to park the car in a way that the two coils are aligned with each other</li> <li>• Wireless charging is beneficial as it reduces the size of the battery. In case of proper infrastructure for wireless charging, EVs can be charged when parked on the side of a road or while driving. This will reduce the demand for large battery packs</li> <li>• The reduction in the size of the battery will also help in decreasing the weight and cost of the vehicle</li> <li>• Makes the charging experience more user friendly, as users do not have to insert any cables to charge</li> <li>• Some countries are already investing money in this technology               <ul style="list-style-type: none"> <li>○ In January 2020, the Government of Nottingham, UK, granted \$4.34 million for the trial of wireless car charging for its taxis</li> <li>○ In May 2018, the “i” division of BMW launched a wireless charging system for plug-in hybrid vehicles. The wireless charging system used by BMW operates on inductive charging through electromagnetic fields</li> </ul> </li> </ul>
<b>Increasing number of launches in the field of EV charging solutions</b>	<ul style="list-style-type: none"> <li>• Prominent vendors operating in the market have showcased and launched advanced EV chargers in the last couple of years</li> <li>• In September 2019, Schneider Electric launched EcoStruxure for eMobility, an end-to-end solution for the EV charging infrastructure value chain</li> <li>• In September 2019, ChargePoint introduced ChargePoint Home Flex, an advanced, fast, and highly flexible home charger</li> <li>• In March 2019, Tesla introduced V3 Supercharger for superfast charging, which has a power rating of 1MW</li> <li>• The increasing number of EV charging solution launches will drive the growth of the market under focus</li> </ul>
<b>Proliferation of vehicle to grid (V2G) energy transfer</b>	<ul style="list-style-type: none"> <li>• Vehicle-to-grid (V2G) is an advanced system through which EVs can communicate with the power grid</li> <li>• This technology works on the concept of bi-directional charging, that is, the energy is transferred to the power grid from EVs when the demand for electricity is higher, and it is transferred back to the vehicle as the demand reduces</li> <li>• With the rise in focus on environmental issues in countries such as the US, the UK, and Japan, the demand for V2G technology is estimated to increase</li> <li>• In December 2018, WiTricity Corp., a US-based wireless charging company, collaborated with Honda Motor Co. Ltd., for its bi-directional wireless V2G energy management system. This technology will enable the car parked over a wireless charging pad to transfer the power from the grid to the vehicle to charge vehicle battery as well as from the vehicle to the grid to help meet the demand for electricity during peak hours</li> </ul>

Trends (Future)	Description
<p><b>Increasing investment in EV charging stations powered by renewable sources</b></p>	<ul style="list-style-type: none"> <li>• The increase in the number of EVs on the road is also driving the demand for electricity generation. Countries that primarily depend on the power generation through power plants such as coal-fired power plants are facing problems due to the increase in demand for electricity</li> <li>• This is encouraging several utilities, automotive manufacturers, and governments to invest and roll out pilot programs and services, which will allow commercial and residential customers to use renewable energy to cater to their electricity needs of EVs</li> <li>• In May 2019, EVgo Services LLC (EVgo Services) entered into a contract with its renewable energy certificate partners and energy suppliers for offering 100% renewable energy for its EV fast-charging network</li> </ul>
<p><b>Companies are investing in robot technology</b></p>	<ul style="list-style-type: none"> <li>• Companies are working on radical new technology utilizing robots for charging the electric vehicle without any human intervention</li> <li>• In December 2020, Volkswagen Group Components introduced its prototype of mobile charging robot. The charging robot through a Car-to-X communication can operate totally autonomously. It independently steers the vehicle to be charged and communicates with it; it starts from opening the charging socket flap to connecting the plug and decoupling it</li> <li>• The mobile robot functions by moving mobile energy storage units to the EV. The energy storage unit stays with the vehicle during the charging process</li> <li>• In that duration, the robot charges other electric vehicles by performing the same process</li> <li>• Once the charging service has ended, the robot independently collects the mobile energy storage unit and takes it back to the central charging station</li> <li>• Would allow parking operators to quickly convert every parking space to charging stations by using mobile charging robots, reducing construction costs that comes with building charging stations</li> </ul>
<p><b>Reduced charging times</b></p>	<ul style="list-style-type: none"> <li>• Advancements in DC charging technologies are underway, it is expected that the charging time will almost become half, while charging cost will reduce, compared to today's charging technologies</li> </ul>
<p><b>Government initiatives</b></p>	<ul style="list-style-type: none"> <li>• Government initiatives are expected to play a crucial role in promoting electric vehicles in many countries</li> <li>• In the U.S., the Biden Administration is currently proposing a robust infrastructure plan. If approved, it will add money to continue building the Electric Vehicle Charging Stations infrastructure</li> <li>• Several countries are implementing plans to ban gas and diesel cars in the 2030–2040 timeframe, to reduce emissions and encourage the sales of EVs. In addition, some countries are also providing tax incentives to encourage the sales of EVs and EV's charging stations</li> </ul>

**Figure 5 Current and Future Trends in EV Charging Stations**

Source: derived from Technavio Website (<https://www.prnewswire.com/news-releases/electric-vehicle-charger-market-size-to-increase-by-18-5-mn-units--25-yoy-growth-in-2020--technavio-301396740.html>)

**Market Drivers and Challenges**

As Charles continued his analysis he realized that this might actually be a good industry to invest in and therefore decided to perform a deeper dive – how do these trends translate into prospects and trials for The Global Electric Vehicle Charging Stations industry as it continues to grow through the years? BIS Research (2019) stated that this growth is driven by a few factors. 1) The demand for electric vehicles (EV) has surged, primarily due to growing environmental concerns that have led governments and automotive manufacturers to collectively encourage the growth of electric vehicles. 2) Rising environment pollution concern has played an important role in the need for and subsequent sales of electric vehicles. Rapid urbanization along with a sharp increase in the sales of gasoline powered vehicles has led to alarming temperatures being recorded in countries, worldwide. An increasing amount of carbon emissions in the atmosphere is resulting in global warming, a phenomenon deteriorating the earth's atmospheric condition. 3) Forcible ban on internal combustion vehicles to decrease the rising vehicle emission that is causing a lot of pollution in the air and lastly, 4) the governments of numerous countries are taking initiatives to increase the adoption rate of electric vehicle by offering subsidies on their purchase and some accessories such as charging stations for home use. Some countries committed to investing in the development of electric vehicle supply equipment (EVSE) or electric vehicle infrastructure. The following table shows some of these investment by country:

**Government Investment, \$ million (by country)**

Country	Investment (\$ million)	Year
India	1	2018
Japan	2	2018
Canada	180	2017
The U.K.	200	2018 to 2021
Germany	300	2017 to 2020
Rest of Europe	820	2017 to 2020
The U.S.	2,000	2017 to 2027

**Figure 6 Government Investments in EV Infrastructure**

Source: derived from BIS Research (2019)

Charles noted that there are also many challenges ahead for this industry. According to BIS Research (2019), the biggest challenges are 1) the lack of standardization of electric vehicle infrastructure, as different countries use different charging standard for the charging of electric vehicle with fast charging system. Lack of standardization means that a fast charging system is not able to plug in all electric vehicle and 2) the high cost associated with fast charging systems. Even though we have seen a shift from conventional level 1 and level 2 charging systems to level 3 or DC fast charging system because of time savings factor, the cost of doing so is a lot higher. This is one of the major challenges for the market currently. The following table breaks down the price involved in setting up a DC fast charging system:

Particulars	Cost
DC fast charger (hardware/equipment)	\$10,000 to \$50,000
Electrician Material	\$300 to \$600
Electrician Labor	\$1,600 to \$3,000
Other Material	\$100 to \$400
Other Labor	\$5,000 to \$15,000
Transformer	\$10,000 to \$25,000
Mobilization	\$600 to \$1,200
Permitting	\$50 to \$200

**Figure 7 Pricing of Equipment, Material and Labor for DC Fast Charging System**

Source: derived from BIS Research (2019)

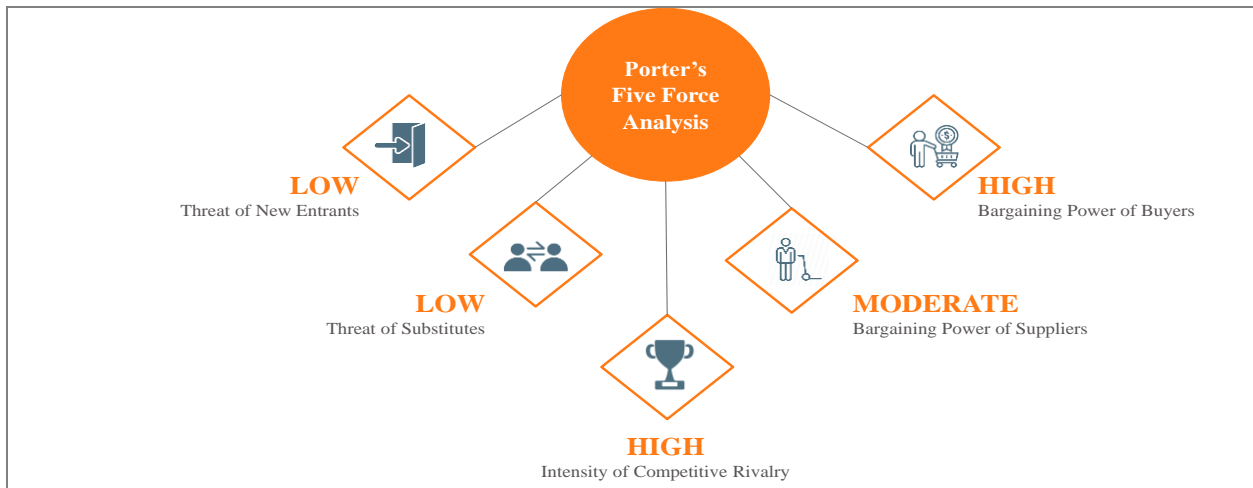
**Key Industry Success Factor – EV Sales**

Charles realized that the “fate” of the charging station industry was highly correlated to EV sales – why build charging stations for nonexistent cars? Orsay Consulting (2017) noted that EV sales were driven by several factors: 1) the acceleration of EV product offerings coming to market. There are now a lot more car manufacturers producing EVs. Companies are introducing a wide variety of models and this is making the sales of EV to increase in the years to come. In addition, companies like Volkswagen, Ford, Daimler, Volvo and many others, have pledge to introduce more EV models to the market, 2) the boost in EV performance at lower price points. Range anxiety has long been a major road-block, but it is progressively being addressed. When Nissan introduced the Nissan leaf in 2010, it only offered 84 miles with a full charge. In 2021, the Tesla Model S has a range of 373 miles on a single charge. Although the prices are still high for EVs compared to internal combustion engine (ICE) vehicles, this cost has substantially dropped from \$1,000/kWh in 2010 to about \$250 today. Technical improvements and increased volumes are expected to bring cost to \$100 somewhere around 2025-2030 depending on the source, 3) acceleration in charging network density and performance as the necessary presence of charging stations at home, at destination (e.g. work, shopping) and in route (e.g. intercity corridors) will be a decisive factor for plug-in vehicle growth. A number of initiatives, both public and private, have been announced to enhance the charging network globally, in both density and power. In the U.S. for example, the Biden administration is trying to pass an infrastructure plan that will add thousands of additional charging stations across the U.S. and 4) incentives to sustain the development of the market. Most of these incentives are coming from the public sector at the moment. EVs still represent an emerging market and as such, it needs to be sustained by public incentives until economies of scale emerge in order to justify of both vehicles and infrastructure. A lot of these incentives are coming in the form of tax write-offs.

**The Charging Station Industry Competitive Environment**

Having looked at the charging station industry overall and the influence that EV sales had on the industry, Charles turned his attention to the forces in the industry that would increase or decrease competitiveness and hence increase

or decrease industry profitability. He had read about Michael Porter’s Five Forces Analysis (1985) as a framework for analyzing a company's competitive environment and decided to apply that model to the charging station industry.



**Figure 8 A Graphic Depiction of Porter’s Five Forces Analysis Applied to the EV Charging Station Industry**  
 Source: derived from Mondor Intelligence (2020)

**Threat of New Entrants (Low)**

- The global electric vehicle charging station market is competitive and is mostly occupied by established players.
- The initial cost required to establish a charging station is very high. Installation costs are composed of land acquisition cost, labor, materials, permits, taxes, and utility upgrades. Level-1 charging stations are cheap, but they offer very slow charging speeds, providing a travel distance of 2–3 miles after an hour of charging.
- The land acquisition cost is also very high, as a large mass of land is required to provide multiple charging points.

**Bargaining Power of Buyers (High)**

- The term “buyers”, in this market, refers to the end consumers. The buyer concentration to firm concentration ratio is high.
- Public charging stations charge USD 0.08 to USD 0.27 per kilowatt-hour, depending on where you are charging. The prices for charging fluctuate depending on the current cost of energy and the time of day.
- There are three major payments options available for the buyers. They can either pay on an hourly basis (as and when needed), on a monthly subscription, or through app-based wallets.

**Bargaining Power of Suppliers (Moderate)**

The suppliers in the market mainly refer to hardware suppliers for infrastructure, which includes charging points, semiconductors, communication TCP/IP, and power sources

- There are several small players that operate in local market to supply semiconductors, cables, and electricity to the major players in the market.
- There are also big companies who provide networking solutions to the players.

**Threat of Substitute Products (Low)**

- There is no direct substitute for EV charging station currently. The indirect substitutes for the EV charging station market are lamp posts, solar panels, and electric roads
- Owing to the high cost of installing charging stations for electric vehicles, governments around the world are looking for low-cost alternatives.
- Researching the technological advancements required for other alternatives, like solar panels and electric roads can be costly.

**Intensity of Competitive Rivalry (High) (see competitive analysis below for more details)**

- The overall market for electric vehicle charging stations market is dominated by major players, such as Tesla, ABB, Siemens, and ChargePoint.
- These major players are fighting very hard to gain a competitive advantage over the others and remain market leaders. For instance, Tesla, which is an electric vehicle manufacturer, has its own charging infrastructure. Tesla’s vehicles are compatible with the company’s charging stations only.



### Industry Value Chain and Competition (Rivalry)

Since Charles was considering a ChargePoint system he felt that if he analyzed competition from their vantage point he might gain very good insights into not only the firm but the industry as a whole. He noted that “since 2007, ChargePoint has been committed to making it easy for businesses and drivers to go electric with one of the largest EV charging networks and most complete portfolio of charging solutions available today.” (ChargePoint, 2021). As of 2021, there were no companies that provided all the services that ChargePoint did, including their “cloud subscription platform and software-defined charging hardware which is designed to include options for every charging scenario from home and multifamily to workplace, parking, hospitality, retail, and transport fleets of all types.” (ChargePoint, 2021).

EV charging infrastructure companies must execute business plans that deliver value to the EV driver and shareholders. The effect is various business models that monetize different points along the charging value chain. (See Figure 11 below.) Many can be characterized as either hardware providers (revenue comes from unit sale), asset owners and/or operators (capital intensive and monetize driver), or network providers (higher margin service solutions). There are also companies that are characterized as “integrated” and offer exposure to all three buckets, i.e., ChargePoint. Within those models there’s also segregation by power type, i.e. slow, fast, and ultra-fast charging. Below is a visual of the value chain from ChargePoint’s perspective.

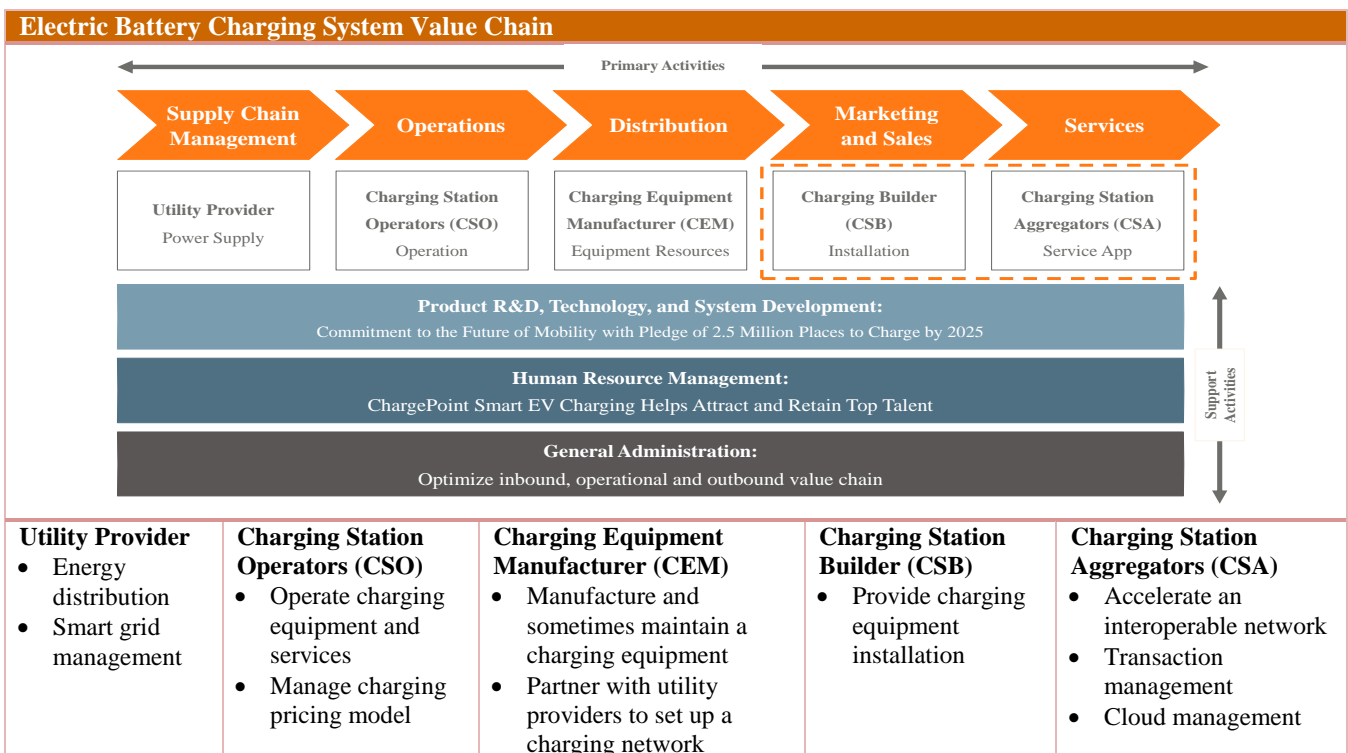


Figure 9 The Electric Battery Charging Station Value Chain

Source: derived from Frost and Sullivan (2019)

ChargePoint’s top key competitors include the following firms within the industry’s value chain.

Electric CV Charging Infrastructure Market: Charging Ecosystem Value Chain – Value Mapping, Global, 2019				
	Charging Equipment Manufacturer	Charging Station Operator	Charging Station Aggregator	Region
Tesla	✓	✓		USA, China
ABB	✓	✓		USA, Europe
Chargedot	✓	✓		China
BP Chargemaster		✓		Europe
Enel X		✓		USA, Europe
Chargepoint	✓	✓		USA, Europe
EVgo		✓		USA, Europe
Electrify America		✓		USA, Europe
Zap Map			✓	Europe
Siemens	✓			USA, Europe

Figure 10 The Global Electric Battery Charging Station Industry Value Chain including Competitors  
Sources: derived from Mondor Intelligence (2020); Frost and Sullivan (2019)

Charles also found a “side by side” comparison of several of the major players in the industry as compared to ChargePoint. (See Figure 11 below.)

### ChargePoint Inc. – Background

Now that Charles had a good handle on the industry’s structure and value chain, he now needed to learn about ChargePoint. This firm is an electric vehicle infrastructure company based in California, United States and operates the largest online network of independently owned charging stations in the world (73% of the market share in the U.S.). They mainly operate in North America and 16 European countries (Mondor Intelligence, 2020). It was founded in 2007 as Coulomb Technologies and officially changed its name to ChargePoint in 2012. The Company has grown to nearly 800 employees and on March 1, 2021, ChargePoint became a publicly-traded





ChargePoint’s competitors comparison				
	 ChargePoint	 ABB	 Siemens	 Tesla
	ChargePoint is a technology company that operates an open electric vehicle charging network.	ABB is a company providing electrification, automation, robotics, and digitalization solutions to industrial customers.	Siemens is a global technology company focusing on the areas of electrification, automation, and digitalization.	Tesla is a company that designs, develops, manufactures, and sells electric vehicles and energy storage systems.
Founding Date	2007	1988	1847	2003
Type	<b>Public</b> <small>(As of March 1, 2021)</small>	Public	Public	Public
Tags	Technology application software electric vehicles energy infrastructure mobile app	Manufacturing & Industrial automation electricity electronics energy services generators robotics	Manufacturing & Industrial Technology automation electricity electronics energy infrastructure engines infrastructure medtech renewables	Automotive & Transportation Manufacturing & Industrial car services electric vehicles energy storage self driving solar sustainability
Employees	821 <sup>↗</sup> 3% increase	144,000 <sup>↘</sup> 2% decrease	292,000	48,016 <sup>↘</sup> 2% decrease
Valuation (\$)	<b>\$2.4 billion</b> <small>(Q1 2021)</small>	66.9 b	139 b	594.6 b
Twitter followers	29.6 k	159.6 k	195.1 k	9.5 m
Number of tweets (last 30 days)	170	43	88	8
Average likes per tweet (last 30 days)	23.5	24.2	52.1	34.6 k
<b>Financial</b>				
Revenue (est.)	<b>\$146 million</b> <small>(Q1 2021)</small>	\$26.1b (FY, 2020)	€57.1b (FY, 2020)	\$31.5b (FY, 2020)
Cost of goods	N/A	\$18.3b (FY, 2020)	€37b (FY, 2020)	\$24.9b (FY, 2020)
Gross profit	N/A	\$7.9b (FY, 2020)	€20.2b (FY, 2020)	\$6.6b (FY, 2020)
Net income	N/A	\$5.2b (FY, 2020)	€4.2b (FY, 2020)	\$862m (FY, 2020)
<b>Funding</b>				
Total funding raised	\$ 659.2m	\$ 2.7m	\$ 3.2b	\$ 20.1b

Figure 11 ChargePoint’s Competitor Comparison

Source: derived from Craft.co website (<https://craft.co/chargepoint/competitors>)

company by completing a business combination with Switchback Energy Acquisition Corporation (a publicly traded special purpose acquisition company - SPAC). (ChargePoint, 3/1/21)

ChargePoint set out to build a network of charging stations way before the EV revolution. “Three years before there were any electric cars, we knew that a very successful business model would be to develop a crowd funded, networked, public charging infrastructure,” explained Dimitrios Papadogonas, Vice President of Marketing for ChargePoint (Anonymous, April 18, 2014).

According to Mondor Intelligence (2020), the company offers solutions for commercial products (charging stations, Software-as-a-Service, parts and labor warranty, ChargePoint-as-a-Service), fleet products (charging stations, annual subscriptions, vehicle scheduling and fuel optimization subscriptions, energy management, professional services for design, building, and construction) and residential products (ChargePoint home charger, and multi-family charging solutions). According to Daoud and Ferrer (2021), ChargePoint, Inc. operates a capital-light model, selling both charging hardware and recurring software/services. Their business model avoids monetizing electricity or directly relying on charging utilization, instead, the company’s customers can select how to monetize for charging (free to drive traffic or set a price).

ChargePoint’s revenue therefore derives from these two drivers: 1) Hardware sales and 2) Software/services. The company sells charging hardware and then offers recurring support and analytics through a cloud-based SaaS (software-as-a-service) offering with a 100% attach rate.

The company is well-established with more than 4,000 commercial customers and approximately \$200 million of projected revenue for 2021 (Citi Research, 2021). According to Tilley (2014), ChargePoint makes the majority of its money through charging station sales but is increasingly moving into service partnerships and hooking up more charging stations to its cloud network. In November of 2020, ChargePoint announced partnerships with Volvo and Apple. The partnership with Volvo will allow Volvo electric car drivers to buy ChargePoint home charger and use the charging stations network in the United States and Canada, where ChargePoint has 115,000 charging stations. ChargePoint Inc. announced integration with Apple CarPlay. Drivers will be able to find nearby chargers, check station status, start a session, and navigate to a station (Mondor, 2020). As of 2021, ChargePoint has partnered with 62% of the top 50 fortune companies to provide electric vehicle charging solutions.

According to Daoud and Ferrel (2021), ChargePoint’s unique business model (with an emphasis on software and an integrated network position) will allow them to become the company of choice when it comes to EV charging. The company has invested heavily in research and development to offer a premium service to customers and drivers that starts with charging hardware and is supported by recurring software and other services. Through the suite of software offerings, the station owners have access to utilization and energy management reports, control over who charges, and price setting-capabilities. In creating a high-quality experience ChargePoint aims to develop a deep ecosystem of “sticky” or recurring customers. While some competitors view the impending charging infrastructure buildout as an act of seizing land in an opportunistic or unlawful manner, ChargePoint’s focus on supporting customers and not competing with them for driver monetization will differentiate the company as the industry leader over the coming years. In addition to their business model competencies, the business combination with Switchback Energy Acquisition Corporation, leaves ChargePoint with ~\$600 million cash and virtually no debt, which provides the company with enough financial support until free cash flow is generated as forecasted by 2024. While North America has been the focus to date, the company expects to expand in Europe over the coming years. Detailed financial reports are attached in the Appendix

#### ChargePoint by the numbers:

- More than 2.6 Billion electric miles have been driven on the ChargePoint Network
- 844,000 Megawatt hours (MWh) of electric fuel dispensed
- More than 86 million charges delivered
- Drivers have avoided more than 107 million gallons of gas
- Drivers plug into the ChargePoint network approximately every 2.0 seconds
- More than 373 thousand metric tons of greenhouse gas emissions avoided

#### ChargePoint hardware portfolio



Figures 12-13 ChargePoint “Facts”/Hardware Portfolio

Source: derived from ChargePoint Website (<https://www.chargepoint.com/>); (<https://www.chargepoint.com/solutions/fleet/>)

## ChargePoint ECO Product Family

There is a version of ChargePoint ECO for all your charging needs

ChargePoint ECO Site	Fixed Power-Ceiling	Curtail chargers to fixed total site load (power-ceiling)
	Monthly Power-Ceiling	Monthly demand peaks are minimized during the month to generate the smallest possible demand charge. Historical demand levels are used to determine the appropriate target each month
	Charger Group Prioritization	Prioritize curtailment based on Station Group, Driver Group (Fleet/Public) or Charger Type (AC/DC)
ChargePoint ECO Fleet	Integrated Fleet Systems	Integrate to fleet systems for fleet scheduling information and to telematics systems for dynamic fleet information such as actual arrival times and current vehicle SOC
	Load Control and Charging Schedule	Create charging schedule based on fleet schedule and projected loads at the site
	Real-time Visibility	Dashboards provide insight to current charging activity and provide notifications and alerts to allow operators to react quickly to exception conditions
ChargePoint ECO Grid	Manage Peak Power Draw	Leverage stationary storage to manage the peak power draw of the charging process at the site
	Integrated Distributed Energy Resources	Create dynamic charging plans and stationary storage charge/discharge plans based on projected solar production, e-fueling requirements and the effective tariffs at the site
	Configured Site Implementation	Design a plan that understands the energy demands built off ROI models to achieve the ideal configuration for the site

**Figure 14 ChargePoint ECO Product Family**

Source: derived from ChargePoint Website (<https://www.chargepoint.com/>)

### Charles and ChargePoint

After reading about ChargePoint, Charles Price realized that the “range anxiety” issue was not something isolated to himself. This was a bigger issue shared by many people. He knew that ChargePoint, as a company, would have to do so much more in order to ease the anxiety shared by those thinking of buying electric vehicles. One thing he knew for sure was that he liked their home charging system, as well as the technology applications that came with it. He was almost certain that if he was going to plunge into buying an EV he was going to buy the ChargePoint Home Flex system because it made the most sense for him and his budget. Not to mention, it also qualified for a government tax rebate at the end of the year of \$1,000 in the U.S. to cover for the purchase and installation. Charles set out to answer more of the questions he still had about the overall electric vehicle charging station market, as well as to seek answers to what he considered the main problem with ChargePoint as a company. Can ChargePoint survive in the next few years no less become the leader in the global electric vehicle charging station industry? Can they further expand their network, along with their competitors, in a way that it will have a positive effect in easing the “range anxiety” issue that was plaguing potential EV consumers? The real question was, was he ready to make the decision that would alter his everyday life and purchase his first electric car and home charging system?

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## Part B

### *“If you build it, will they come?”*

Charles ended up buying an Audi e-Tron, which gave him an approximate mileage range of 225 miles on a full charge. More than what he would need on a weekly basis. He also opted to buy the ChargePoint Home Flex system to charge his EV at home. This charger allowed him to charge his car at a faster rate than the ones currently in the market. He could not be happier with his decision. Every time he drives by a gas station, he thinks back to the times he too added to the carbon monoxide problem and the seemed to not miss “the old days.”



Figure 15 Charles Price’s EV and Charging Station

Source: Anonymous

Given all of the research that Charles had done on the industry and ChargePoint, he thought that investing in ChargePoint might be an option for him – between the \$1,000 tax rebate and the monthly checks he was receiving from the federal government (COVID child support), he had about \$10,000 to invest. Yet buying an EV and charging station was one thing, investing in the charging station market and specifically ChargePoint seemed a far riskier venture from Charles’ perspective. After doing his secondary research and analyses, Charles Price did find out that companies like ChargePoint had a big network of charging stations throughout the United States and across the globe, though he still concluded that the Electric Vehicle industry was still in its infancy. “The best is yet to come”, thought Charles. “The growth could be astronomical and electric charging stations could be all over the place!” The election of Joseph Biden as President back in 2020 and his pledge to invest in the infrastructure of the country boded well for the electric charging station industry. Biden proposed an ambitious \$7.5 billion plan to expand electric vehicle charging to underserved areas. “Getting more Americans to switch to a battery-powered car by improving access to charging infrastructure is a key component of Biden’s agenda to combat climate change, with transportation

accounting for the largest share of U.S. emissions ... [yet] most of the private charging companies ... such as EVgo (EVGO.O), ChargePoint (CHPT.N) and Blink Charging Co (BLNK.O), have yet to be profitable. Executives at EVgo and ChargePoint said government support was needed to expand charging to overlooked communities and create incentives for business owners or landlords considering installation.” (Bellon, 2021)

Charles was aware of the fact that the EV market was a niche luxury market and until new EV’s became more affordable and used EV’s were actually on the market then EV’s in general were out of the question for middle and lower income communities. That meant that charging stations would have low usage and probably not recoup their costs. “High-speed charging units that can top up a vehicle battery in half an hour cost around \$100,000 to build. Experts estimate they need to be used at least 20% of the day to operate profitably at current rates - prompting many charging providers to place them in areas with higher anticipated use.” (Bellon, 2021) He also knew that the pandemic had impacted the EV and charging station market yet this market was making a comeback and predicted to increase, predominately in Asia, followed by Europe and then the U.S.. “The global Electric Vehicle Charging Stations Market is estimated to grow from \$17.59 billion in 2021 to \$111.90 billion in 2028 at a CAGR of 30.26%.” (Fortune Business Insights, Sept. 2021) Charles noted that experts indicated that industry driving factors included government support and increasing EV purchases while hampering factors were mainly large setup costs for fast (30 minute) chargers. These same experts reported that ChargePoint was the global leader in the charging station network in the US and Europe and that they planned on a 50% growth rate. (Ibid)

### ChargePoint’s Strategies, Finances and Operations

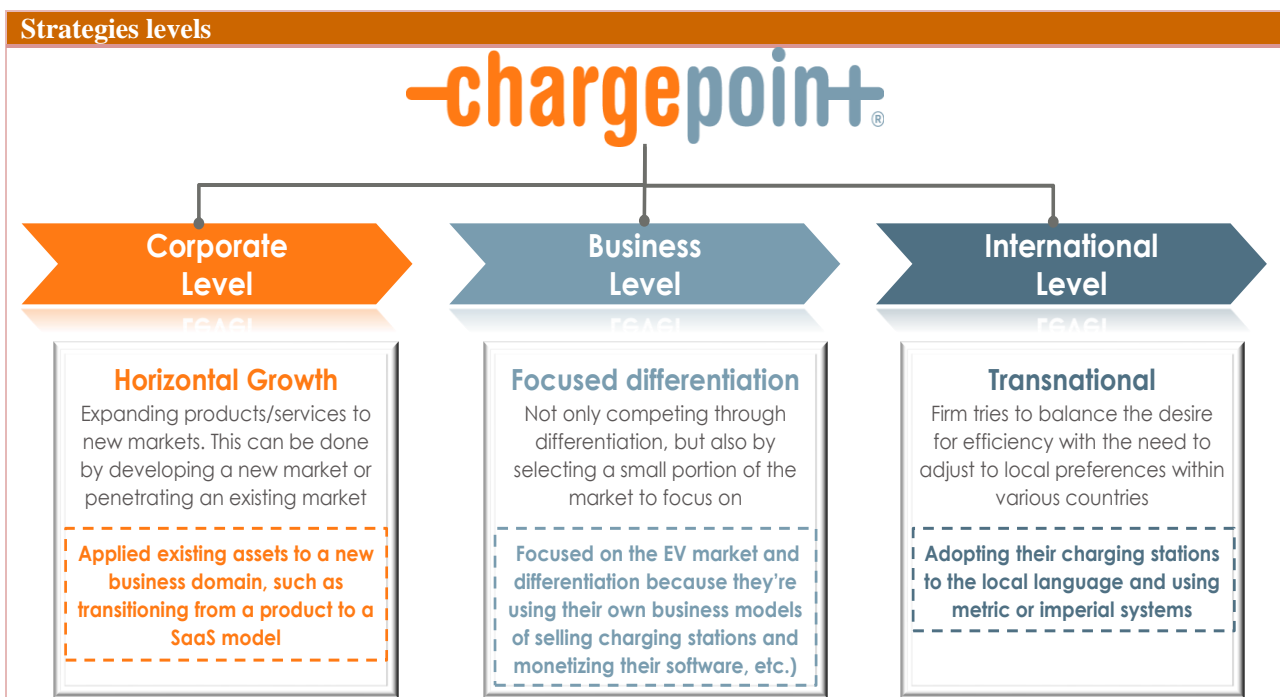


Figure 16 Charles Price’s Analysis of ChargePoint’s Strategies

Charles decided to gather his thoughts about ChargePoint and how they were competing in the charging station market. (See Figure 16, above.) His views were that Asia and Europe posed excellent market opportunities for ChargePoint but the question was, did they have the wherewithal to leverage these opportunities?

From a financial perspective, ChargePoint did not look good on paper. Charles pulled up the financials of the firm for the past two years and noticed several trends: a) total revenue was flat from 2020 – 2021 and operating expenses slightly dropped yet their net loss in 2021 was much higher due to the change in fair value of their redeemable convertible preferred stock; b) although total assets were up (especially cash on hand) liabilities were also up dramatically, mainly again due to their redeemable convertible preferred stock (see Appendices for further details). Operationally though, the firm seemed solid in terms of having the right hardware/software solutions for their commercial and retail customers and end users. (See Figure 17, below.)

ChargePoint’s Operations		Effects
<b>Resource Maximization</b>	Charging a single electric vehicle is straightforward. Charging 20+ EVs at the same time is a challenge. The dynamic, real-time optimization engine ensures that EVs are charging efficiently and economically. ChargePoint ECO provides the ability to manage the refueling needs of electric vehicles, taking advantage of the full site's electrical capacity, battery storage and renewables.	Production Strategy
<b>Ecosystem Integration</b>	Using open standards and protocols, ChargePoint ECO integrates with a variety of devices and software systems that are commonly part of an EV charging deployment, including EV chargers, electric load meters, micro-grid resources, vehicle telematics, fleet management and dispatch software.	Research and Development Strategy
<b>Operational Insights</b>	Dashboards provide detailed real-time visibility into charging activity of stations, vehicles and other onsite resources. ChargePoint ECO provides the ability to create workflows to help streamline charging operations by organizing activities into tasks, alerts and notifications. Tasks, alerts and notifications ensure that vehicles are ready to go when needed.	Marketing Strategy
<b>Custom Configurations</b>	ChargePoint ECO is a cloud solution configured to the specific needs for each customer. It is connected to your key enterprise systems, software and processes to provide the best solution to optimize charging. Our experienced implementation team will leverage industry standards and open protocols to ensure that the deployment meet your needs today and tomorrow.	Production Strategy

**Figure 17 Charles Price’s Analysis of ChargePoint’s Operations**  
 Source: derived from ChargePoint Website (<https://www.chargepoint.com/>)

### Charles Summarizes His Thoughts about ChargePoint

Charles sat down and decided that he needed to list the “pros and cons” of what he had uncovered about ChargePoint. Having gone public in 2020, this new firm had real “up sides” especially given the recent performance of Tesla. They had financially turned the corner back in 2020 and made real progress in October 2021. If Tesla could do it, why not ChargePoint? The parallel seemed obvious.




Pros	Cons
<ul style="list-style-type: none"> <li>• Brand recognition (within the EV community)</li> <li>• Capital-light model</li> <li>• Cloud based online dashboard (i.e., App)</li> <li>• Quantity of charging stations in the U.S.</li> </ul>	<ul style="list-style-type: none"> <li>• Charging time</li> <li>• Do not monetize energy or driver utilization</li> <li>• Quality and safety concerns with fast charging stations</li> <li>• Majority of charging stations are only 240v, could be obsolete in 3 years</li> </ul>
<ul style="list-style-type: none"> <li>• Positive EV sales growth</li> <li>• Governmental incentives for electric automobiles</li> <li>• Decreasing renewable energy costs</li> <li>• Increasingly popularity of low-carbon lifestyles</li> <li>• Emerging charging infrastructure market (expand in Europe and Asia)</li> </ul>	<ul style="list-style-type: none"> <li>• Low EV penetration rate due to range anxiety</li> <li>• Reliance on fuel vehicles</li> <li>• High cost associated with Fast Charging System</li> <li>• High rate of technological change</li> <li>• Long return on investment (ROI) and high investment risk</li> </ul>

**Figure 18 Charles Price’s Pro/Con Summary of ChargePoint**  
 Source: derived from Frost and Sullivan (2019)

Lastly, Charles reflected on what the options were available for ChargePoint moving ahead – if they were going to grow and go international given their business strategies, how could they do it? He saw three options for the firm:

1. *Related Forward integration* – Joint venture to create charging “mega” malls.
2. *Horizontal integration* - Merger and/or acquisition to expand the EV charging station market.
3. *Related Vertical integration* - Joint venture to enter the EV Bus/commercial trucks/RVs market.

Charles had even gone as far as researching possible “partners” that ChargePoint could team up with in order to implement each option. (See Figure 19, below)

Propose	OPTION 1	OPTION 2	OPTION 3
	Joint venture to create Charging “mega” malls with Simon Property Group 	Merger and acquisition to expand the EV charging station market with Blink Charging Co. 	Joint venture to enter the Bus/commercial trucks/RVs with BYD Co Ltd 
<b>Strategy:</b>	<b>Related Forward integration</b>	<b>Horizontal integration</b>	<b>Related Vertical Integration</b>
<b>Company stats:</b>	<ul style="list-style-type: none"> <li>Simon is a real estate investment trust that invests in shopping malls, outlet centers, and community/lifestyle centers</li> <li>Have properties across North America, Europe and Asia</li> <li>Only real estate company in the S&amp;P 100 Index of mega cap companies</li> </ul>	<ul style="list-style-type: none"> <li>Blink Charging Co. designs, manufactures, own and operate EV Charging Stations</li> <li>Currently operates 23,000 charging stations across the U.S. and 4 countries</li> </ul>	<ul style="list-style-type: none"> <li>BYD Co. Ltd. is a Chinese manufacturing company. It has two major subsidiaries, BYD Automobile and BYD Electronic</li> </ul>
<b>Industry:</b>	<ul style="list-style-type: none"> <li>Real estate investment trust company</li> </ul>	<ul style="list-style-type: none"> <li>Electric charging services company</li> </ul>	<ul style="list-style-type: none"> <li>Manufacturing company                             <ul style="list-style-type: none"> <li>Automotive</li> <li>Electronic</li> </ul> </li> </ul>
<b>Financials</b>	<ul style="list-style-type: none"> <li>Public company</li> <li>Market cap: \$39.14 billion <b>2020</b></li> <li>Revenue: \$4.609 billion</li> <li>Net income: \$1.228 billion</li> <li>Total assets: \$34.786 billion</li> <li>Total liabilities: \$ 31.315 billion</li> </ul>	<ul style="list-style-type: none"> <li>Public company</li> <li>Market cap: \$1.19 billion <b>2020</b></li> <li>Revenue: \$6.2 million</li> <li>Net income: \$(17.9) million</li> <li>Total assets: \$34 million</li> <li>Total liabilities: \$6.15 million</li> </ul>	<ul style="list-style-type: none"> <li>Public company</li> <li>Market cap: \$63.36 billion <b>2020</b></li> <li>Revenue: \$172.45 billion</li> <li>Net income: \$4.51 billion</li> <li>Total assets: \$239.93 billion</li> <li>Total liabilities: \$126.19 billion</li> </ul>
<b>Opportunity:</b>	<ul style="list-style-type: none"> <li>15 Marriott-branded hotels</li> <li>In August 2020, the company discussed repurposing large stores into warehouses and fulfillment centers for Amazon</li> </ul>	<ul style="list-style-type: none"> <li>23,000 charging stations</li> <li>Long Term Agreement to Deploy EV Charging Stations at Fattal Hotel Group Locations in Israel</li> </ul>	<ul style="list-style-type: none"> <li>Berkshire Hathaway holds an 8.2% stake in Chinese electric automaker BYD</li> <li>Does not sell in U.S.</li> </ul>
<b>Pros:</b>	<ul style="list-style-type: none"> <li>Largest shopping mall and retail center owner in the US. across 35 states and Puerto Rico</li> <li>30 Premium Outlets and Designer Outlet properties primarily located in Asia, Europe and Canada</li> <li>Ability for ChargePoint to segment its leadership status in the U.S. and allows rapid expansion to the Asian market</li> <li>No real estate investment needed</li> <li>Additional source of income by monetizing electricity</li> </ul>	<ul style="list-style-type: none"> <li>Ability to grow existing network by adding 23,000 charging stations across the U.S. and 4 countries</li> <li>Eliminates competition</li> <li>Access to Blink’s customers/clients</li> </ul>	<ul style="list-style-type: none"> <li>Ability to create additional source of income by creating vertical expansion</li> <li>Will be able to compete with their own EV</li> <li>Ability to expand in the Asian market</li> <li>Ability to produce more cost effective charging stations</li> </ul>
<b>Cons:</b>	<ul style="list-style-type: none"> <li>Changes to their capital light model</li> <li>Current customers might see them as competitors</li> </ul>	<ul style="list-style-type: none"> <li>Not a growth opportunity outside of the U.S.</li> <li>Blink does not have a presence in Europe and Asia</li> </ul>	<ul style="list-style-type: none"> <li>Extensive changes to their value chain</li> <li>Current partners will see them as competitors</li> <li>Might lose identity as BYD is a much larger company and will change ChargePoint’s operating model</li> </ul>



Propose	OPTION 1	OPTION 2	OPTION 3
Effects on the value chain:	<ul style="list-style-type: none"> <li>Becomes a Charging Station Operators (CSO) at a bigger scale</li> </ul>	<ul style="list-style-type: none"> <li>No change to value chain</li> </ul>	<ul style="list-style-type: none"> <li>Becomes Charging Station Operators (CSO) at a bigger scale</li> <li>Becomes Charging Station Aggregator (CSA)</li> <li>Charging Equipment Manufacturer (CEM)</li> </ul>
Opinion of Option:	Yes, great opportunity to expand internationally and to become a better known brand across the globe	Yes, but only in the U.S. as this option does not give ChargePoint the opportunity to expand internationally	Maybe, as it might be too spread across different businesses/markets

Figure 19 Charles Price's Growth Options for ChargePoint

### Stock Performance and Projections

The charging station market may have potential but ChargePoint stock as of October 2021 had taken a real beating. One analyst noted that "CHPT stock is down 9% in the past month and 33% over the last three months. Expect many investors to remain hesitant to buy it in the short-term. Worse yet, even if the infrastructure bill passes and Wall Street becomes more friendly to growth names, problems with its fundamentals will still call into question the stock's outlook. Consequently, investors should wait until sentiment is fully negative towards ChargePoint before buying its shares." (Neil, October 11, 2021)

Looking at the data himself, Charles noted that as of October 21, 2021 the stock was sitting at \$21.51 and that out of 12 experts, as reported by *MarketBeat*, 9 rated it a buy, 3 a hold with a target price of \$32.82 and a low price target of \$24.00. It was true that the stock had reached as high as nearly \$50/share but it was up 8.5% just in the past 5 days and had a Beta of 1.81. (American Consumer News, 2021)

With all his research and analyses done, Charles had to make a decision. To buy or not to buy CheckPoint stock, that is the question!

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## APPENDICES

### CheckPoint's Financials

#### Income Statement

(\$ in thousands; unaudited)

	Three Months Ended		Twelve Months Ended	
	January 31,		January 31,	
	2021	2020	2021	2020
<b>Revenue</b>				
Networked charging systems	\$ 28,303	\$ 29,873	\$ 91,893	\$ 101,012
Subscriptions	10,965	7,865	40,563	28,930
Other	3,123	5,506	14,034	14,573
Total revenue	<u>42,391</u>	<u>43,244</u>	<u>146,490</u>	<u>144,515</u>
<b>Cost of revenue</b>				
Networked charging systems	25,677	28,056	87,083	105,940
Subscriptions	5,838	4,725	20,385	16,244
Other	1,973	1,626	6,073	4,289
Total cost of revenue	<u>33,488</u>	<u>34,407</u>	<u>113,541</u>	<u>126,473</u>
<b>Gross profit</b>	<u>8,903</u>	<u>8,837</u>	<u>32,949</u>	<u>18,042</u>
<b>Operating expenses</b>				
Research and development	20,946	19,233	75,017	69,464
Sales and marketing	15,700	15,766	53,002	56,997
General and administrative	7,577	6,294	25,922	23,945
Total operating expenses	<u>44,223</u>	<u>41,293</u>	<u>153,941</u>	<u>150,406</u>
<b>Loss from operations</b>	<u>(35,320)</u>	<u>(32,456)</u>	<u>(120,992)</u>	<u>(132,364)</u>
Interest income	17	508	315	3,245
Interest expense	(810)	(863)	(3,253)	(3,544)
Change in fair value of redeemable convertible preferred stock warrant liability	(54,824)	(219)	(73,125)	(875)
Other income (expense), net	185	(655)	229	(565)
<b>Net loss before income taxes</b>	<u>(90,752)</u>	<u>(33,685)</u>	<u>(196,826)</u>	<u>(134,103)</u>
Provision for income taxes	(5)	126	198	224
<b>Net loss</b>	<u>\$ (90,747)</u>	<u>\$ (33,811)</u>	<u>\$ (197,024)</u>	<u>\$ (134,327)</u>
Accretion of beneficial conversion feature of redeemable convertible preferred stock	-	-	(60,377)	-
Cumulative undeclared dividends on redeemable convertible preferred stock	(12,839)	-	(16,799)	-
<b>Net loss attributable to common stockholders</b>	<u>\$ (103,586)</u>	<u>\$ (33,811)</u>	<u>\$ (274,200)</u>	<u>\$ (134,327)</u>
Net loss per share attributable to common stockholders, basic and diluted	<u>\$ (5.29)</u>	<u>\$ (3.05)</u>	<u>\$ (18.08)</u>	<u>\$ (15.05)</u>
Weighted-average shares used in computing net loss per share attributable to common stockholders, basic and diluted	<u>19,563,550</u>	<u>11,085,077</u>	<u>15,168,335</u>	<u>8,924,129</u>

#### Balance Sheet

(\$ in thousands; unaudited)

	January 31,	January 31,
	2021	2020
<b>Assets</b>		
Current assets:		
Cash and cash equivalents	\$ 145,491	\$ 72,753
Restricted cash	400	400
Short-term investments	-	47,037
Accounts receivable, net	35,075	38,488
Inventories	33,592	25,419
Prepaid expenses and other current assets	12,074	7,221
Total current assets	<u>226,632</u>	<u>191,318</u>
Property and equipment, net	29,988	27,941
Operating lease right-of-use assets	21,817	10,269
Goodwill	1,215	1,215
Other assets	10,468	3,448
Total assets	<u>\$ 290,120</u>	<u>\$ 234,191</u>
<b>Liabilities, Redeemable Convertible Preferred Stock, and Stockholders' Deficit</b>		
Current liabilities:		
Accounts payable	\$ 19,784	\$ 19,631
Accrued and other current liabilities	47,162	37,659
Deferred revenue	40,934	39,408
Debt, current	10,208	-
Total current liabilities	<u>118,088</u>	<u>96,698</u>
Deferred revenue, noncurrent	48,896	33,266
Debt, noncurrent	24,686	34,261
Operating lease liabilities	22,459	8,230
Redeemable convertible preferred stock warrant liability	75,843	2,718
Other long-term liabilities	972	798
Total liabilities	<u>290,944</u>	<u>175,971</u>
Redeemable convertible preferred stock	615,697	520,241
Stockholders' deficit:		
Common stock	2	1
Additional paid-in capital	62,736	20,331
Accumulated other comprehensive income (loss)	155	37
Accumulated deficit	<u>(679,414)</u>	<u>(482,390)</u>
Total stockholders' deficit	<u>(616,521)</u>	<u>(462,021)</u>
Total liabilities, redeemable convertible preferred stock, and stockholders' deficit	<u>\$ 290,120</u>	<u>\$ 234,191</u>